Appendices for SWMU 43 RFI

Final

January 2011

Appendix A

QA/QC

Appendix A-1

Analytical Services

ANALYTICAL SERVICES AND PROCEDURES

ANALYTICAL SERVICES

The analytical services for the field investigation program were provided by the following USACE and National Environmental Laboratory Accreditation Conference (NELAC) accredited laboratories:

- Accutest Laboratories, Inc. (Accutest), Orlando, FL: Accutest used *USEPA Office of Soil Waste and Emergency Response Test Methods for Evaluating Soil Waste Physical and Chemical Methods, Update IIIB.* (SW-846) (USEPA, 2004) methodologies in providing analytical support for this investigation. Chemical analyses included: volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polynuclear aromatic hydrocarbons (PAHs), metals, pesticides, polychlorinated biphenyls (PCBs), herbicides, explosives, full toxicity characteristic leaching procedure (TCLP) analysis, ignitability, reactive sulfide, reactive cyanide, and corrosivity as pH. Accutest used *USEPA Methods for Chemical Analysis of Water and Wastes* (MCAWW) (USEPA, 1983) for chemical oxygen demand (COD) and biological oxygen demand (BOD) analysis.
- Datachem Laboratories, Inc. (Datachem), Salt Lake City, UT: Datachem was subcontracted by Accutest to perform analytical support for perchlorates. Datachem used *USEPA Office of Soil Waste and Emergency Response Test Methods for Evaluating Soil Waste Physical and Chemical Methods, Update IIIB* (SW-846) (USEPA, 2004) methodologies for this analysis.
- SGS Environmental Services, Inc. (SGS), Wilmington, NC: SGS was subcontracted by Accutest to perform analytical support for dioxins/furans. SGS used *USEPA Office of Soil Waste and Emergency Response Test Methods for Evaluating Soil Waste Physical and Chemical Methods, Update IIIB* (SW-846) (USEPA, 2004) methodologies for this analysis.

ANALYTICAL PROCEDURES

Analytical protocols used were in accordance with USEPA-approved methods for the analysis of environmental (i.e., organic, and inorganic parameters) and waste characterization samples. All methods performed were within the *DoD Quality Systems Manual for Environmental Laboratories, Final Version 3* (DoD, 2006) and the *DoD Perchlorate Handbook* (DoD, 2006) guidelines. The methodologies for environmental samples are summarized in **Table A-1** and for waste characterization samples in **Table A-2**. A brief discussion of the methodologies is presented in the following sections below.

Organics

Target compound list (TCL) VOCs, TCL SVOCs, TCL pesticides, TCL PCBs, herbicides, explosives, including nitroglycerin (NG) and pentaerythritol tetranitrate (PETN), PAHs, and dioxins/furans were analyzed using USEPA-approved methodologies. The laboratory procedures and methodologies for organic compounds are summarized below.

Table A-1
Summary of Analytical Methods for Environmental Samples

Parameter	Matrix	Analytical Method
Chemical Parameters		
TCL VOCs	Aqueous	USEPA SW-846 5030B/8260B
	Soil	USEPA SW-846 5035A/8260B
TCL SVOCs	Aqueous	USEPA SW-846 3510C/8270C
	Soil	USEPA SW-846 3550B/8270C
TCL Pesticides	Aqueous	USEPA SW-846 3510C/8081A
	Soil	USEPA SW-846 3550B/8081A
TCL PCBs	Aqueous	USEPA SW-846 3510C/8082
	Soil	USEPA SW-846 3550B/8082
Herbicides	Aqueous	USEPA SW-846 3510C/8151A
	Soil	USEPA SW-846 3550B/8151A
Explosives	Aqueous	USEPA SW-846 3535A/8330A Modified
	Soil	USEPA SW-846 8330B/8330A Modified
Nitroglycerin & PETN	Aqueous	USEPA SW-846 3535A/8332
	Soil	USEPA SW-846 8330B/8332
Polynuclear Aromatic Hydrocarbons	Aqueous	USEPA SW-846 3510C/8270C SIM
	Soil	USEPA SW-846 3550B/8270C SIM
Perchlorates	Aqueous	USEPA SW-846 LC-MS-CLO_4/6850 SIM
Dioxins/furans	Aqueous	USEPA SW-846 8290
	Soil	USEPA SW-846 8290
TAL Metals	Aqueous	USEPA SW-846 3010A/6010B & 7470A
	Soil	USEPA SW-846 3050B/6010B & 7471A

Table A-2
Summary of Analytical Methods for Waste Characterization Samples

Parameter	Matrix	Analytical Method
TCLP VOCs	Solid	USEPA SW-846 1311/5030B/8260B
TCLP SVOCs	Solid	USEPA SW-846 1311/3510C/8270C
TCLP Pesticides	Solid	USEPA SW-846 1311/3510C/8081A
TCLP Herbicides	Solid	USEPA SW-846 1311/3510C/8151A
TCLP Metals	Solid	USEPA SW-846 1311/3010A/6010B & 1311/7470A
TCL PCBs	Solid	USEPA SW-846 3550B/8082
Explosives	Solid	USEPA SW-846 8330B/8330A Modified
Nitroglycerin & PETN	Solid	USEPA SW-846 8330B/8332
Ignitability	Solid	USEPA SW-846 1010
Reactive Cyanide	Solid	USEPA SW-846 Chapter 7.3.3
Reactive Sulfide	Solid	USEPA SW-846 Chapter 7.3.4
Biological Oxygen Demand	Aqueous	USEPA MCAWW 405.1
Chemical Oxygen Demand	Aqueous	USEPA MCAWW 410.1
Corrosivity as pH	Aqueous	USEPA SW-846 9040C

TCL VOCs: Aqueous and solid samples were analyzed for TCL VOCs using USEPA SW-846 Method 5030B/8260B for aqueous samples and USEPA SW-846 5035A/8260B for solid matrices using purge and trap technology. TCLP extracts were analyzed according to USEPA SW-846 Method 1311/5030B/8260B for investigative-derived material (IDM) solid samples. Soil samples were collected using field preservation techniques. Approximately 5 grams of soil sample was added to pre-tarred vials containing methanol and/or de-ionized ultra filtered water (DIUF); then sent to the laboratory for analysis. Aqueous samples were sent to the laboratory in zero headspace vials. An inert gas was bubbled through a mixture of reagent water and 5 gram soil sample or through a 25 mL aqueous sample contained in a specifically designed purging chamber at 40°C for soil and ambient temperature for water. The vapor was swept through a sorbent column where the purgeable compounds were trapped. After purging was completed for both solid and aqueous samples, the sorbent column was heated and backflushed with the inert gas to desorb the purgeable compounds onto a gas chromatograph programmed to separate the purgeable compounds, which were then detected with a mass spectrometer. The gas chromatography/mass spectroscopy (GC/MS) instrument was calibrated for a series of target analytes using chemical standards of known concentration and purity. Quantification of these target analytes was performed against specific internal standards as identified in the respective method. Identification of these target analytes was based on a comparison of the analyte to the chemical standards used during calibration based on the analyte's retention time and mass spectra.

TCL SVOCs/PAHs: Aqueous and solid samples were analyzed for TCL SVOCs and PAHs using USEPA SW-846 Method 8270C. The use of selective ion monitoring (SIM) using USEPA SW-846 Method 8270C SIM was employed for PAH analysis to achieve lower quantitation and detection limits in order to meet screening criteria. Soil samples were extracted using ultrasonic extraction according to USEPA SW-846 Method 3550B and aqueous samples were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 3510C. TCLP SVOC extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The extracts were injected into a gas chromatograph programmed to separate the compounds, which are then detected with a mass spectrometer. The gas chromatograph/mass spectrometer instrument was calibrated for a series of target analytes using chemical standards of known concentration and purity. Quantification of these target analytes was performed against specific internal standards as identified in the respective method. Identification of these target analytes was based on a comparison of the analyte to the chemical standards used during calibration based on the analyte's retention time and mass spectra.

TCL Pesticides/PCBs: Aqueous and solid samples were analyzed for TCL pesticides using USEPA SW-846 Method 8081A and for TCL PCBs using USEPA SW-846 Method 8082. Samples were prepared for analysis using extraction techniques. Soil samples were extracted using ultrasonic extraction according to USEPA SW-846 Method 3550B and aqueous samples were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 3510C. TCLP pesticide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The extracts were injected onto a gas chromatography programmed to separate the compounds, which are then detected with an electronic capture device (ECD). Sulfur cleanups were employed to aid in the quantification based upon the matrix interferences. Sample concentrations were confirmed on dissimilar columns.

Herbicides: Aqueous and solid samples were analyzed for herbicides according to USEPA SW-846 Method 8151A. Samples were prepared for analysis using extraction techniques. Soil samples were extracted using ultrasonic extraction according to USEPA SW-846 Method 3550B and aqueous samples were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 3510C. TCLP herbicide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. Aqueous and solid samples were extracted with diethyl ether and then esterified with diazomethane. The derivatives were determined by gas chromatography with an electron capture detector (GC/ECD). The results were reported as acid equivalents. Sample concentrations were confirmed on dissimilar columns.

Explosives: Aqueous and solid (including IDM) samples were analyzed for explosives using USEPA SW-846 Method 8330A Modified. Aqueous samples were extracted using a Solid-phase Extraction (SPE) procedure USEPA SW-846 3535A. A measured volume of sample was adjusted to a specified pH and then extracted using a SPE device. Target analytes were eluted from the solid-phase media using methylene chloride. The resulting solvent extract was dried using sodium sulfate and concentrated. The concentrated extract were exchanged into a solvent compatible with subsequent cleanup procedures and then measurement of the target analytes separated on a C-18 reverse phase column. The wavelength was set at 254 nanometers and confirmed on a cyanide reverse column. For soil samples, they were homogenized and analyzed using USEPA SW-846 Method 8330B/8330A Modified. Because only a small 2-g portion (sub-sample) of the 10-g or larger sample was taken for analysis, the bulk sample was thoroughly mixed to allow for representative sub-sampling. This was achieved by air-drying at room temperature for 24 hours, sieving through a 30-mesh sieve, grinding, and mixing the bulk sample, after subjectively removing vegetation (organic debris) and pebbles. Soil samples were extracted using acetonitirile in an ultrasonic bath, then filtered and determined similarly to aqueous samples. Sample concentrations were confirmed on dissimilar columns.

Nitroglycerin/PETN: Aqueous and solid (including IDM) samples were analyzed for nitroglycerin and PETN using USEPA SW-846 Method 8332. For soil samples, they were homogenized and analyzed using USEPA SW-846 Method 8330B/8330A Modified. Solid samples were extracted with acetonitrile in an ultrasonic bath, then filtered and mixed with a calcium chloride solution. Aqueous samples were extracted using a Solid-phase Extraction (SPE) procedure USEPA SW-846 3535A, as described for explosives. The concentrations were quantified using an isocratic high pressure liquid chromatography (HPLC) system equipped with a column heater and ultraviolet (UV) detector. Sample concentrations were confirmed on dissimilar columns. Identification of these target analytes was based on a comparison of the analyte to the chemical standards used during calibration based on the analyte's retention time using primary and secondary columns.

Dioxins/Furans: Aqueous and solid samples were analyzed for dioxin/furans using USEPA SW-846 Method 8290. The analytical method used high-resolution gas chromatography and high-resolution mass spectrometry (HRGC/HRMS) on purified sample extracts. This method is specific for the analysis of 2,3,7,8-tetrachlorinated dibenzofuran (2,3,7,8-TCDD), substituted penta-, hexa-, hepta- and octachlorinated dibenzo-p-dioxins and substituted penta-, hexa-, hepta- and octachlorinated dibenzofurans in aqueous and solid samples. The extracts were injected onto a high-resolution gas chromatograph programmed to separate the compounds, which are then detected with a high-resolution mass spectrometer as confirmation.

Inorganics

Target analyte list (TAL) metals and perchlorate were analyzed using USEPA SW-846 methodologies. The laboratory procedures for inorganic compounds are summarized below.

TAL Metals: Aqueous and solid samples were analyzed for TAL metals using a combination of the following methodologies: inductively coupled plasma (ICP) and cold vapor atomic absorption (CVAA). Trace metals were analyzed using USEPA SW-846 3010A/6010B for aqueous samples and USEPA SW-846 Method 3050B/6010B for solid samples. TCLP extracts were digested according to USEPA SW-846 Method 1311/3010A/6010B for the solid IDM samples collected. The ICP method involved the simultaneous or sequential multi-element determination of trace elements in solution. The basis of the method is the measurement of atomic emission by optical spectrometry. Samples were nebulized and the aerosol that was produced was transported to the plasma torch where excitation occurs. Characteristic atomic-line emission spectra are produced by a radio-frequency ICP. A background correction technique was utilized to compensate for variable background contribution for the determination of trace elements.

Aqueous and solid samples were analyzed for mercury using CVAA according to USEPA SW-846 Method 7470A for aqueous samples and Method 7471A for solid samples. TCLP extracts were digested according to USEPA SW-846 Method 1311/7470A for solid IDM samples. A sample aliquot was initially digested with nitric acid to free combined mercury. The mercury was then reduced to its elemental state and aerated from the solution into a closed system. The mercury vapor was passed through a cell positioned in the path of the mercury light source and the measured abundance was proportional to the concentration of mercury in the sample.

Perchlorate: Perchlorate was analyzed for aqueous samples by using either USEPA SW-846 Method 6850 SIM by HPLC/MS following the *DoD Perchlorate Handbook* (DoD, 2006b) requirements. The HPLC-MS method 6850 uses a second order external standard approach using laboratory ChemStation software. The method provides HPLC-MS conditions for the detection of perchlorate in SIM mode at m/z 83 and 85, which corresponds to the loss of one oxygen atom from the perchlorate molecule. In general, water samples were extracted at a neutral pH with methylene chloride, using LC-MS-CLO_4 method. Sample extracts were injected into the HPLC-MS and the ion ratio of m/z 83 to 85 was used to positively identify the response peak as perchlorate. Quantitation was performed using the m/z 83 peak area. An internal standard of ^{18}O labeled perchlorate was added to each sample to establish the perchlorate peak retention time and used in the quantitation. Confirmation was obtained by the use of the mass spectrometer.

Waste Characterization

Samples were collected on a site wide basis to characterize IDM and were analyzed for hazardous waste characteristics using USEPA-approved methodologies, including TCLP VOCs, TCLP SVOCs, TCLP metals, TCLP pesticides, TCLP herbicides, ignitability, reactive cyanide, reactive sulfide, TCL PCBs, explosives, chemical oxygen demand (COD), biological oxygen demand (BOD), and corrosivity as pH. The laboratory procedures and methodologies are summarized below and in the prior section.

TCLP Extraction: Solid IDM samples were collected for full TCLP waste characterization and extracted using the USEPA SW-846 Method 1311. Aqueous IDM samples were collected for TCLP metals analysis. The final liquid extract was separated from the sample material and combined with the initial liquid phase (if applicable). The sample TCLP extract was then treated as an aqueous sample for analysis for TCLP VOCs, TCLP SVOCs, TCLP pesticides, TCLP herbicides, and TCLP metals. Brief discussions of the procedures and methodologies are presented below and in the prior section.

Explosives/PETN/NG: Solid IDM samples were analyzed for explosives and PETN using USEPA SW-846 Method 8330B/8330A Modified and for NG using USEPA SW-846 Method 8330B/8332 Modified. Brief discussions of these procedures and methodologies are presented in the prior section.

Reactive Cyanide: Solid IDM samples were analyzed for reactive cyanide using USEPA SW-846 Method Chapter 7.3.3. The cyanide as hydrocyanic acid (HCN) was released from cyanide complexes by means of a reflux-distillation operation and absorbed in a scrubber containing sodium hydroxide solution. The cyanide ion in the absorbing solution was then determined colorimetrically. In the colorimetric measurement, the cyanide was converted to cyanogen chloride, CNCl, by reaction with chloramine-T at a pH less than 8.0 without hydrolyzing the cyanate. After the reaction was completed, color was formed on the addition of pyridine-pyrazolone or pyridine-barbituric acid reagent. The absorbance was read at 578 nm for pyridine-barbituric acid. To obtain colors of comparable intensity, the sample and the standards contain the same salt content. The titrimetric measurement uses a standard solution of silver nitrate to titrate cyanide in the presence of a silver sensitive indicator.

Reactive Sulfide: Solid IDM samples were analyzed for reactive sulfide using USEPA SW-846 Method Chapter 7.3.4. This procedure is a colorimetric determination. Sulfide reacts with dimethyl-p-phenylenediamine in the presence of ferric chloride to produce methylene blue.

Flashpoint: Solid IDM samples were analyzed for flashpoint or ignitability using USEPA SW-846 Method 1010. A sample was heated at a slow, constant rate with continual stirring. A small flame was directed into the cup at regular intervals with simultaneous interruption of stirring. The flash point is the lowest temperature at which application of the test flame ignites the vapor above the sample.

TCL PCBs: Solid IDM samples were analyzed for TCL PCBs using USEPA SW-846 Method 3550B/8082. A brief discussion of this procedure and methodology is presented in the prior section.

TCLP VOCs: Solid IDM samples were analyzed for TCLP VOCs using USEPA SW-846 Method 1311/8260B. A brief discussion of this procedure and methodology is presented in the prior section.

TCLP SVOCs: Solid IDM samples were analyzed for TCLP SVOCs using USEPA SW-846 Method 1311/8270C. A brief discussion of this procedure and methodology is presented in the prior section.

TCLP Pesticides: Solid IDM samples were analyzed for TCLP pesticides using USEPA SW-846 Method 1311/8081A. The samples were prepared for analysis using extraction techniques. TCLP pesticide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The

extracts were injected onto a gas chromatography programmed to separate the compounds, which are then detected with an electronic capture device (ECD). Sulfur cleanups were employed to aid in the quantification based upon the matrix interferences. Sample concentrations were confirmed on dissimilar columns.

TCLP Herbicides: Solid IDM samples were analyzed for TCLP herbicides according to USEPA SW-846 Method 1311/8151A. Samples were prepared for analysis using extraction techniques. TCLP herbicide extracts were extracted using a separatory funnel liquid-liquid extraction technique according to USEPA SW-846 Method 1311/3510C for solid IDM samples. The samples were extracted with diethyl ether and then esterified with diazomethane. The derivatives were determined by gas chromatography with an electron capture detector (GC/ECD). The results were reported as acid equivalents. Sample concentrations were confirmed on dissimilar columns.

TCLP Metals: Aqueous and solid IDM samples were analyzed for TCLP metals using a combination of the following methodologies: inductively coupled plasma (ICP) and cold vapor atomic absorption (CVAA). Aqueous IDM samples were extracted using the USEPA SW-846 Method 1311. The final liquid extract was separated from the sample material and combined with the initial liquid phase (if applicable). The sample TCLP extract was then treated as an aqueous sample for analysis for TCLP metals. Brief discussions of these procedures and methodologies are presented in the prior section.

Corrosivity as pH: Aqueous IDM samples were analyzed for corrosivity as pH using USEPA SW-846 Method 9040C. A sample pH was directly measured electrometrically using either a glass electrode in combination with a reference potential or a combination electrode.

BOD: Aqueous IDM samples were analyzed for BOD using USEPA MCAWW Method 405.1. A seeded sample, or an appropriate dilution, was incubated for 5 days at 20 degrees Celsius in the dark. The dilution water or seeded dilution water was added as a buffered salt solution to minimize oxygen uptake. The reduction in dissolved oxygen concentration during the incubation period yields a measure of the biological oxygen demand.

COD: Aqueous IDM samples were analyzed for COD using USEPA MCAWW Method 410.1. Organic and oxidizable inorganic substances were oxidized by potassium dichromate in 50% sulfuric acid solution at reflux temperature. Silver sulfate was used as a catalyst and mercuric sulfate was added to remove chloride interference. The excess dichromate was titrated with standard ferrous ammonium sulfate using orthophenanthroline ferrous complex as an indicator.

Appendix A-2

QA Analysis

QUALITY ASSURANCE/QUALITY CONTROL EVALUATION

The project quality assurance and quality control criteria to perform characterization and remediation activities at eleven Solid Waste Management Units (SWMUs) and Areas of Concern at Radford Army Ammunition Plant (RFAAP) are based on *RFAAP Final Master Work Plan* (MWP) (URS, 2003) as specified in MWP Addendum 019 (Shaw, 2007). The MWP and Addendum 019 were implemented through the integration of well-defined quality control elements for activities associated with the task assignment. The quality control criteria defined for sampling and analysis activities were developed in conjunction with specifications contained in *USACE EM200-1-3, Requirements for the Preparation of Sampling and Analysis Plans*, (USACE, 2001), *DoD Quality Systems Manual for Environmental Laboratories, Final Version 3* (DoD, 2006a), *USEPA Office of Solid Waste and Emergency Response Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), Update IIIB* (November, 2004), *USEPA Methods for the Chemical Analysis of Water and Wastes* (March, 1983), and *DoD Perchlorate Handbook* (March, 2006b).

Table A-3 outlines the data quality indicators as to their definitions, project goals, sampling and analytical assessments. Data quality was assessed through the evaluation of sampling activities and field measurements associated with the chemical analytical data in order to assess the reliability of the chemical analyses and the accuracy and precision of information acquired from the laboratory.

Table A-3
RFI Data Quality Indicators

Data Quality Indicator	Definition	Goal	Sampling Assessment	Analytical Assessment
Precision	Quantitative measure of the variability of a group of measurements in comparison to the average value	Low relative percent difference	Duplicate samples	MS/MSD or lab sample duplicate; Field sample duplicate
Accuracy	Bias in a measurement system	Low bias	Blank contamination	Analysis spike results (LCS, MS, surrogate, MSD)
Representativeness	Degree to which the measured results accurately reflect the medium being sampled	100%	Holding times, blanks, associated documentation	Inferred from accuracy, precision, and completeness evaluation
Completeness	Percentage of measurements which are judged to be usable	≥90%	Records review	Data validation
Comparability	Qualitative parameter expressing the confidence with which one data set can be compared with another	High	Work plans, quality documents	Analytical methods
Sensitivity	Quantitative measure of the level of detection and quantitation.	High	Review of analytical method or procedures and instrumentation	Analysis of MDLs and MRLs per analyte, analytical method, and matrix

Review of Documentation

The following documentation was required by the field investigation program in order to provide a quality assessment of data collected during routine investigative activities:

- **Field Logbooks:** Hardback logbooks with numbered pages were used to log daily activities, and data collected during the course of field activities. Designated logbooks were also used to record calibration records and equipment maintenance as they were performed. Entries into field logbooks were evaluated for completeness and accuracy.
- **Field Parameter Table:** Documentation of collected samples was provided to the laboratory on a spreadsheet developed by Shaw specifically for USACE investigations. Field Parameter Tables were electronically generated based on information recorded in field logbooks and Chain-of-Custody for every sample, including QC samples. The completed forms contained the required information for encoding chemical data into Environmental Restoration Information System (ERIS) database.
- **Chain-of-Custody:** Samples were collected and relinquished under stringent Chain-of-Custody protocols as specified in the project MWP. A review of the Chain-of-Custodies identified transcription errors that were corrected by drawing a single line through the incorrect information and subsequently correct information was supplied, dated, and initialed.
- **Sample Tracking Table:** Documentation of collected samples was recorded in an electronic sample tracking table as a tool to track project status. Field entries included the field sample identification, sample depth (where applicable), date collected, laboratory ID, deliverable due dates, and requested laboratory analyses. The status of completeness was tracked from work planning stage through data validation completion.

Sampling activities were performed in compliance with standard operating procedures (SOPs) and each individual performing sampling was aware of the requisite protocols for collection of environmental samples.

Data Reporting

Data packages were provided to Shaw in Shaw Alliance Level 4 CLP-like deliverables with electronic data deliverable files from the laboratory. Detected target compound values above the reporting limit and within the acceptable calibration range were reported as determined to no more than three significant figures. Target analytes detected below the lower calibration standard, estimated detection limit (dioxin and furans), or the reporting limit (whichever was greater) and above the method detection limit were reported as estimated values "J." Appropriate data qualifiers were applied during validation process and recorded in an electronic database.

Data Reduction and Validation

Data validation determines the acceptability or unacceptability of the data quality based on a set of pre-defined criteria. Data validation is defined as the systematic process for reviewing a data package against a set of criteria to provide assurance that the data is adequate for its intended uses. These criteria depend upon the type(s) of data involved and the purpose for which data are collected. The intended use of the data and the associated acceptance criteria for data quality was identified before the data collection effort began. Both the organic and inorganic chemical data (except for the waste characterization and natural attenuation data) were validated. The data were validated in accordance with *RFAAP Final Master Work Plan* (URS, 2003) QAP requirements, *DoD Quality Systems Manual for Environmental Laboratories, Final Version 3* (DoD, 2006a), *USEPA Office of Solid Waste and Emergency Response Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW-846), Update IIIB* (November, 2004), *USEPA Methods for the Chemical Analysis of Water and Wastes* (March, 1983), *DoD Perchlorate Handbook* (March, 2006b), and laboratory SOPs. The data qualifier scheme was consistent with USEPA Region III conventions using the *USEPA Region III Modifications to National Functional Guidelines for Inorganic Data Review* (USEPA, 1993b), *USEPA Region III Modifications to the National Functional Guidelines for Organic Data Review Multi-media, Multi-concentration* (USEPA, 1994c), and the *USEPA Region III Dioxin/Furan Data Validation Guidance* (USEPA, 1999d) as appropriate.

Data packages were validated to ensure compliance with specified analytical, Quality Assurance/Quality Control (QA/QC) requirements, data reduction procedures, data reporting requirements, and required accuracy, precision, and completeness criteria. This includes (as applicable), but is not limited to:

- Sample temperature, preservation, and holding times.
- Instrument performance check (for GC, GC/MS, LC/MS).
- Calibration (initial and continuing).
- Blanks (calibration, preparatory, rinse, and trip).
- Matrix spike and spike duplicate recoveries.
- Laboratory and field sample duplicate pairs.
- Surrogate spike recoveries (for organics).
- Laboratory control samples.
- Interference check sample (for metals).
- Serial dilution (for metals).
- Internal standards and retention times (for GC, GC/MS, LC/MS).
- Quantitative verification.

Results were assessed for accuracy and precision of laboratory analysis to identify the limitations and quantity of data. The data validation reports are contained in **Appendix A-3**. The quality of the data collected in support of the sampling activity was considered acceptable, unless qualified rejected "R" during the validation process. The samples that qualified "B" for blank contamination were considered non-detect at the MRL or level of blank contamination, whichever was greater. The samples qualified "J", "UJ", "L", "UL", or "K" were considered acceptable as estimated or non-detect estimated.

Data Review

Data obtained from both the laboratory and data validation were reviewed by the Shaw Project Chemist to assess whether the project-specific data quality objectives, as defined in the associated MWP, were met.

Data Quality Objectives

Data quality objectives were developed concurrently with the Work Plan to ensure: (1) the reliability of field sampling, chemical analyses, and physical analyses; (2) the collection of sufficient data; (3) the quality of data generated was acceptable for its intended use; and (4) valid assumptions could be inferred from the data. Attainment of data quality objectives was assessed through evaluation of data collected using the following data quality indicators:

- **Precision** - a quantitative measure of the variability of a group of measurements in comparison to the average value.
- **Accuracy** - the bias in a measurement system.
- **Representativeness** - the degree to which the measured results accurately reflect the medium being sampled. Representativeness will be assessed based on accuracy, precision, and completeness.
- **Completeness** - the percentage of measurements which are judged to be useable.
- **Comparability** - defined as a qualitative parameter expressing the confidence with which one data set can be compared with another.
- **Sensitivity** - describes the method detection, quantitation, and reporting limits. It also may be expressed as the slope of the analytical curve (intensity verses concentration).

Data quality was assessed through the evaluation of sampling activities and field measurements associated with the chemical data in order to verify the reliability of the chemical analyses and the accuracy and precision of information acquired from the laboratory.

Precision: Method or laboratory precision performed by the laboratory was evaluated during the validation process. Overall sampling or field precision was evaluated during the data review process. Precision is measured by calculating and evaluating the relative percent difference (RPD) between the results of field or laboratory duplicate pairs. The RPD is calculated by the following equation:

$$RPD = \frac{/XA-XB/ * 100}{XM}$$

Where:
XA and XB are duplicate analyses, and
XM is the average value [(XA + XB)/2] of the duplicate analyses.

The RPD was calculated for those analytes which were detected at levels exceeding the method detection limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Analytical results were qualified as estimated (J) for RPDs exceeding criteria for both the sample and its duplicate pair.

Laboratory duplicate sample determinations were used to demonstrate acceptable method precision by the laboratory at the time of analysis and evaluated. Laboratory precision was performed either on the sample and its duplicate pair or the matrix spike and its spike duplicate pair. Duplicate analyses were performed to generate data in order to assess the long-term precision of the analytical method on various matrices. RPDs must be within established control limits.

- **Laboratory Duplicate Analysis:** Laboratory duplicate pairs (dupe) or laboratory spiked duplicate pairs (MSDs) were evaluated for the SWMU 43 samples. Laboratory duplicate pairs or laboratory spiked duplicate pairs were within specified precision criteria for each parameter and/or compound except for those compounds listed in the **Table A-4**. Analytical results were qualified as estimated (J) for RPDs exceeding criteria for where the associated compounds were detected. The RPD for beryllium (40%) in sample 43SW1 was outside the criteria. However, the reported values used in the evaluation are less than 5x the MDL; therefore, no qualifier was applied based upon this outlier. While these parameters were qualified estimated due to the high RPDs, the data was still considered useable, the precision data quality goal was met, and the qualified data did not impact the data quality for the RFI. Further discussion may be found in the data validation reports located in **Appendix A-3**.

Table A-4
Laboratory Duplicate Analysis

Field ID	Analyte	QC Type	Val Qual.	Comments
43SB03B	Aluminum	Sample Dupe	J	High RPD
43SB03B	Calcium	Sample Dupe	J	High RPD
43SB03B	Chromium	Sample Dupe	J	High RPD
43SB03B	Copper	Sample Dupe	J	High RPD
43SB03B	Iron	Sample Dupe	J	High RPD
43SB03B	Lead	Sample Dupe	J	High RPD
43SB03B	Vanadium	Sample Dupe	J	High RPD
43SB03B	Mercury	Sample Dupe	J	High RPD
43SB09B	Antimony	Sample Dupe	J	High RPD
43SB09B	Arsenic	Sample Dupe	J	High RPD
43SB09B	Calcium	Sample Dupe	J	High RPD

43SB09B	Copper	Sample Dupe	J	High RPD
43SB09B	Iron	Sample Dupe	J	High RPD
43SB09B	Lead	Sample Dupe	J	High RPD
43SB09B	Magnesium	Sample Dupe	J	High RPD
43SB09B	Zinc	Sample Dupe	J	High RPD
43SB10C	Calcium	Sample Dupe	J	High RPD
43SB10C	Cobalt	Sample Dupe	J	High RPD
43SB10C	Lead	Sample Dupe	J	High RPD
43SB10C	Manganese	Sample Dupe	J	High RPD
43SB10C	Selenium	Sample Dupe	J	High RPD

J = Indicates estimated value due to QC non-conformance. Reported value may not be accurate or precise.

- **Field Duplicate Analysis:** Field duplicates were collected during the RFI on a 10% frequency per matrix to identify the cumulative precision of the sampling and analytical process, which includes the homogenization of soil samples. The RPD was calculated for those analytes that were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. For where values exceeding calibration range, the diluted values were evaluated. If one of the duplicate pair was non-detect and other <MRL, then the field duplicate was not evaluated. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD (35% RPD for metals) for the aqueous and solid matrix sample pairs. Field precision frequency was conducted on a site-wide basis. Field duplicate pairs were within specified precision criteria for each parameter and/or compound except for those compounds listed in the **Table A-5**. Analytical results were qualified as estimated "J" or "UJ" for exceeding criteria. While these noted parameters were qualified estimated due to the high RPDs or detections greater than the MRL and a non-detect in the duplicate, the data was still considered useable, the precision data quality goal was met, and the qualified data did not impact the data quality for the RFI.

Table A-5
Field Duplicate Analysis

Field ID	Duplicate Pair	Analyte	Val Qual.	Comments
43SB01C	TMSB01C	Antimony	J	High RPD
43SB02B	TMSB02B	2,4-dinitrotoluene	J/UJ	Detection>MRL;ND in duplicate
43SB02B	TMSB02B	Bis(2-ethylhexyl)phthalate	J	High RPD
43SB02B	TMSB02B	n-nitrosodiphenylamine	J	High RPD
43SB02B	TMSB02B	Arsenic	J	High RPD
43SB02B	TMSB02B	Beryllium	J	High RPD
43SB02B	TMSB02B	Calcium	J	High RPD
43SB02B	TMSB02B	Carbon disulfide	J/UJ	Detection>MRL;ND in duplicate
43SB02B	TMSB02B	Chromium	J	High RPD
43SB02B	TMSB02B	Copper	J	High RPD
43SB02B	TMSB02B	di-n-butylphthalate	J/UJ	Detection>MRL;ND in duplicate
43SB02B	TMSB02B	Ethylbenzene	J/UJ	Detection>MRL;ND in duplicate
43SB02B	TMSB02B	Lead	J	High RPD
43SB02B	TMSB02B	Manganese	J	High RPD
43SB02B	TMSB02B	Potassium	J	High RPD

43SB02B	TMSB02B	Vanadium	J	High RPD
43SB02B	TMSB02B	Zinc	J	High RPD
43SB02B	TMSB02B	Mercury	J	High RPD

J = Indicates an estimated value due to QC non-conformance. Reported value may not be accurate or precise.
UJ= Indicates an estimated non-detected value due to QC non-conformance. Reported value may not be accurate or precise.
MRL= Method Reporting Limit
ND= Non-detect

Accuracy: Accuracy is the measure of bias in a system. The accuracy of the results is measured by percent recovery (%R). Laboratory analytical accuracy was assessed through the use of laboratory blanks (method and calibration), rinse blanks, trip blanks, laboratory control samples (LCSs), matrix spike samples (MSs) and surrogates. Trip blanks were not required for soil samples, but were collected with associated rinse blank samples and evaluated. Laboratory analytical accuracy was reviewed during the validation of data. Sampling accuracy was assessed by evaluating blank contamination and the impact of contaminant contributions originating from non-point sources, such as field sampling equipment decontamination procedures, or laboratory contamination. QC samples evaluated for this assessment included equipment blanks and laboratory method or preparatory blanks. The data validation qualifiers would be applied for analytical non-conformances as outlined in the USEPA Region III validation guidance. Accuracy was measured as percent recovery by the following equation:

$$\%R = \frac{(\text{test value} - \text{spiked value}) * 100}{(\text{true value amount spiked})}$$

The test value is the concentration of the LCS, MS, or MSD determined from analysis. The spiked value for the MS and MSD is the original un-spiked sample concentration and for the LCS is zero. The true value is the concentration of amount spiked into the MS or MSD and the true concentration for the LCS.

Method and calibration blanks, rinse blanks, trip blanks, surrogates, laboratory control samples, and matrix spikes were evaluated and discussion follows.

Method and Calibration Blanks: A method blank also known as a preparatory blank is a volume of analyte-free water or soil that is processed through the entire analytical scheme (i.e., extraction, digestion, concentration, and analysis) as with the actual samples. Method blanks monitor potential laboratory-induced contamination. Results were qualified "B" for blank contamination by the laboratory and/or through the data validation process. In accordance with USEPA Region III data validation guidelines, reported sample results were considered "non-detect" and qualified with the letter "B" if the detected sample concentration was within 5 times (10 times for common laboratory contaminants: methylene chloride, acetone, 2-butanone, OCDD, OCDF, and common phthalate esters) the concentration in the associated method blank. The method blank contamination assessment was evaluated during the data validation process and may be found in the data validation reports located in **Appendix A-3**. Method blanks were calculated and compared against the same matrix environmental samples on a batch specific basis. Method (preparatory) blanks were reported in ng/L, mg/L, or µg/L units for aqueous matrices and pg/g, mg/kg, or µg/kg for solid matrices. No unit conversions were necessary for method blanks since they were treated in the same manner as the samples. Calibration blanks were also compared against the environmental samples for select parameters. Calibration blanks are aqueous samples and were reported in aqueous units. Performing blank assessments for solid matrix samples, action levels were calculated and expressed in soil units pg/g, µg/kg, or mg/kg from the given aqueous rinse blank or calibration blanks concentrations to be compared against actual solid sample concentrations. This conversion is dependent upon the method performed, sample amounts used, and final digestate or extract volumes used during the analytical analysis. Action levels were based upon 100% solids and 1x dilution factor and adjusted for each sample as appropriate.

- **Method and Calibration Blank Analysis:** For aqueous matrices, the method and calibration blanks were non-detect for all target parameters and/or compounds of interest. For solid matrices, the method blanks were non-detect for all target parameters and/or compounds of interest except for antimony, beryllium, potassium, sodium, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, OCDF, Total HxCDFs, and Total HpCDFs. The "B" flagged sample data from the evaluation of QC blanks is presented in **Table A-6**. Analytical results qualified "B" were considered non-detect at the MRL or level of contamination, whichever was greater. Samples meeting the USEPA Region III condition were qualified. While these noted parameters were qualified "B" due to the blank contamination, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI. For each of the other noted analytes not presented in **Table A-6**, the samples were either non-detect for that compound or greater than the blank action level. Further discussion as to method and calibration blanks may be found in the data validation reports located in **Appendix A-3.**

Rinse Blanks: The blank contamination assessment was performed to assess the impact of contaminant contributions originating from non-point sources, such as field sampling equipment decontamination procedures. Rinse blanks were intended to identify cross-contamination between samples as a result of sampling equipment decontamination procedures. Rinse blanks were collected by pouring the required volume of de-ionized, organic-free water over the equipment and collecting the water in the appropriate sample containers. Rinse blanks were performed at a rate of one per 20 samples collected or 5% per matrix per sampling technique. The rinse blank results were evaluated to ascertain the efficiency of decontamination and assess

the potential for cross-contamination. Rinse blanks were analyzed for the analytes of concern for the RFI. In accordance with USEPA Region III data validation guidelines, the detected concentration in the sample were qualified "B" for blank contamination and was considered non-detect if the sample concentration was within five times (10 times for common laboratory contaminants such as acetone, 2-butanone, methylene chloride, OCDD, OCDF, and phthalate esters) the concentration in the associated equipment blank. Rinse blanks are aqueous samples and were reported in ng/L, µg/L, or mg/L units. Performing blank assessments for solid matrix samples, action levels were calculated and expressed in soil units pg/g, µg/kg, or mg/kg from the given aqueous rinse blank concentrations to be compared against actual solid sample concentrations. This conversion is dependent upon the method performed, sample amounts used, and final digestate or extract volumes used during the analytical analysis. Action levels were based upon 100% solids and 1x dilution factor and adjusted for each sample as appropriate.

Table A-6
B-Qualified Data Summary

Field ID	Analyte	Result	LQ	Units	Field ID	Analyte	Result	LQ	Units
43SB01A	Antimony	0.78	J	MG/KG	43SB06A	Antimony	0.71	J	MG/KG
43SB01A	Potassium	922		MG/KG	43SB06B	Antimony	0.73	J	MG/KG
43SB01B	Antimony	1.4	J	MG/KG	43SB06B	Beryllium	0.77		MG/KG
43SB01C	Antimony	1.0	J	MG/KG	43SB06C	Antimony	0.47	J	MG/KG
43SB02A	Antimony	1.1	J	MG/KG	43SB06C	Beryllium	0.77		MG/KG
43SB02A	Potassium	757		MG/KG	43SB07A	Antimony	0.67	J	MG/KG
43SB02A	Sodium	30.6	J	MG/KG	43SB07B	Antimony	0.54	J	MG/KG
43SB02B	Antimony	1.3	J	MG/KG	43SB07C	Antimony	0.59	J	MG/KG
43SB02C	Antimony	0.36	J	MG/KG	43SB08A	Antimony	0.53	J	MG/KG
43SB02C	Sodium	377	J	MG/KG	43SB08A	1,2,3,4,7,8-HxCDF	0.934	A	PG/G
43SB03A	Antimony	1.2	J	MG/KG	43SB08A	1,2,3,6,7,8-HxCDF	0.417	A	PG/G
43SB03A	Potassium	930		MG/KG	43SB08A	OCDF	21.1		PG/G
43SB03A	1,2,3,4,7,8-HxCDF	1.26	A	PG/G	43SB08B	Antimony	0.83	J	MG/KG
43SB03A	1,2,3,6,7,8-HxCDF	0.600	A, EMPC	PG/G	43SB08C	Antimony	0.67	J	MG/KG
43SB03B	Antimony	1.1	J	MG/KG	43SB08C	1,2,3,4,6,7,8-HpCDD	1.65	A	PG/G
43SB03B	Sodium	92.1	J	MG/KG	43SB08C	1,2,3,4,6,7,8-HpCDF	0.515	A	PG/G
43SB03C	Antimony	1.3	J	MG/KG	43SB08C	OCDD	32.9		PG/G
43SB03C	Sodium	414	J	MG/KG	43SB08C	OCDF	1.54	A, EMPC	PG/G
43SB03C	1,2,3,4,6,7,8-HpCDF	1.25	A	PG/G	43SB09A	Antimony	0.65	J	MG/KG
43SB03C	1,2,3,4,7,8-HxCDF	0.170	A	PG/G	43SB09B	Antimony	0.68	J	MG/KG
43SB03C	1,2,3,6,7,8-HxCDF	0.185	A, EMPC	PG/G	43SB09C	Antimony	0.68	J	MG/KG
43SB03C	OCDF	3.58	A	PG/G	43SB10A	Antimony	0.89	J	MG/KG
43SB03C	Total HpCDFs	3.79	EMPC	PG/G	43SB10B	Antimony	0.89	J	MG/KG
43SB03C	Total HxCDFs	1.23	EMPC	PG/G	43SB10C	Antimony	0.72	J	MG/KG
43SB04A	Antimony	1.4	J	MG/KG	TMSB01C	Antimony	1.5	J	MG/KG
43SB04B	Antimony	1.5	J	MG/KG	TMSB02B	Antimony	1.3	J	MG/KG
43SB04C	Antimony	1.4	J	MG/KG	TMSB02B	Potassium	678		MG/KG
43SB05A	Antimony	1.1	J	MG/KG	TMSB02B	Sodium	33.5	J	MG/KG
43SB05B	Antimony	1.4	J	MG/KG	TMSB05B	Antimony	1.5	J	MG/KG

43SB05C	Antimony	0.85	J	MG/KG	TMSB10B	Antimony	0.76	J	MG/KG

J = A = Indicates an estimated value for estimating a concentration <MRL or <EDL and ≥ MDL.
B = The analyte has been detected in the sample and the associated laboratory or field blank.
EMPC= Estimated Maximum Possible Concentration.

- **Rinse Blank Analysis:** Rinse blank 072607R applies to the soil samples collected at SWMU 43. This rinse blank was taken from the stainless steel bowl and trowel used to collect the field soil samples. Rinse blank 082307R (low-flow pump) applies to groundwater samples for VOCs, SVOCs, and PAHs at SWMU 43. For rinse blank 072607R, all analytes were non-detect for all target parameters and/or compounds of concern except for nickel, potassium, sodium, 1,2,3,4,6,7,8-HpCDF, OCDF, and Total HpCDFs. For rinse blank 082307R, all analytes were non-detect for all target parameters and/or compounds of concern. The "B" flagged sample data from the evaluation of QC blanks is presented in **Table A-6**. Analytical results qualified "B" were considered non-detect at the MRL or level of contamination, whichever was greater. Samples meeting the USEPA Region III condition were qualified. While these noted parameters were qualified "B" due to the blank contamination, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI. For each of the other noted analytes not presented in **Table A-6**, the samples were either non-detect for that compound or greater than the blank action level. Further discussion as to rinse blanks may be found in the data validation reports located in **Appendix A-3.**

Trip Blanks: Trip blanks were prepared by the project contract laboratory and accompanied the samples requiring VOC analysis. One trip blank was transported with each VOC sample cooler to the laboratory for each day of sampling. The trip blanks were prepared by pouring the required volume of de-ionized, organic-free water into appropriate sample containers in the laboratory. The trip blanks were analyzed for the TCL VOCs. The trip blank results were used to assess the potential incidental contamination due to sample transport before, during, and after field operations (i.e., exposure to air) and/or contamination due to the sample container. In accordance with USEPA Region III data validation guidelines, the detected concentration in the sample was considered a "non-detect" (i.e., qualified "B" for blank contamination) and was excluded from consideration if the sample concentration was within five times (10 times for common laboratory contaminants such as acetone, 2-butanone, methylene chloride) the concentration in the associated trip blank. Trip blanks are aqueous samples and were reported in µg/L units. Performing blank assessments for solid matrix samples, action levels were calculated and expressed in soil units µg/kg from the given aqueous rinse blank VOC concentrations to be compared against actual solid sample concentrations. This conversion is dependent upon the method performed, sample amounts used, and final volumes used during the analytical analysis. Action levels were based upon 100% solids and 1x dilution factor and adjusted for each sample as appropriate.

- **Trip Blank Analysis:** The trip blank TB082207 applies to groundwater samples collected on 8/22/07 at SWMU 43. For trip blank TB082207, all target analytes were non-detect for all parameters and/or compounds of concern, except for chloroform. The trip blanks TB072607W and TB072607S apply to both surface and subsurface soil samples collected on 7/26/07 at SWMU 43. For trip blanks TB072607W and TB072607S, all target analytes were non-detect for all parameters and/or compounds of concern, except for methyl chloride in trip blank TB072607W. The "B" flagged sample data from the evaluation of QC blanks is presented in **Table A-6**. Analytical results qualified "B" were considered non-detect at the MRL or level of contamination, whichever was greater. Samples meeting the USEPA Region III condition were qualified. While these noted parameters were qualified "B" due to the blank contamination, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI. For each of the other noted analytes not presented in **Table A-6**, the samples were either non-detect for that compound or greater than the blank action level. Further discussion as to trip blanks may be found in the data validation reports located in **Appendix A-3.**

Surrogates: Laboratory performance on individual samples is evaluated through the review of surrogate spike samples for organic compounds. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%R) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-2 and Table D-3 of the DoD QSM (DoD, 2006).

- **Surrogates:** For aqueous matrices, surrogate recoveries were within criteria for all target parameters and/or compounds of interest except for decachlorobiphenyl (pesticide/PCB) and tetrachloro-m-xylene (pesticide/PCB) for select SDGs. Sample 43SW5 was qualified estimated non-detect "UJ" based upon the low recoveries for all of the spiked surrogates in the sample. For solid matrices, the surrogates were within criteria for all target parameters and/or compounds of interest except for tetrachloro-m-xylene (Pesticide/PCB) for select SDGs. In most cases, no data qualification was required in either matrices due to either other spiked surrogates were within criteria not warranting qualification or the laboratory accidentally double spiked the surrogate into the sample. Further discussion about surrogates may be found in the data validation reports located in **Appendix A-3.**

Laboratory Control Samples: The LCSs were analyzed to assess general method performance by the ability of the laboratory to successfully recover the target analytes from a control matrix. The LCS is similar in composition to the method blank. For aqueous analyses, spiked analyte-free reagent water was used. For soil analyses, a purified solid matrix (e.g., sand, sodium sulfate, or other purified solid) was used. The LCSs were spiked with single-component target analytes before it is carried through the preparation, cleanup, and determinative procedures. LCSs were performed at a rate of one per preparation batch per matrix. When samples were not subjected to a separate preparatory procedure (i.e., purge and trap VOC analyses, or aqueous Hg analysis), the CCV may have been used as the LCS, provided the CCV acceptance limits were used for evaluation.

- **Laboratory Control Sample Recovery Analysis:** The results of the LCS were evaluated, in conjunction with other QC information during the data validation process to ascertain the acceptability of the data generated for that batch of samples. The LCS samples were evaluated for each SDG and are matrix specific. For LCS samples, USACE DoD QSM and laboratory criteria limits were used for each method in the validation process. The aqueous LCS samples were within specified criteria for all target parameters and/or compounds of concern except for endrin aldehyde, and 2-amino-4,6-dinitrotoluene for select SDGs. The solid LCS samples were within specified criteria for all target parameters and/or compounds of concern except for 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, beta-BHC, dicamba, dichloroprop, endrin, endrin aldehyde, and vinyl chloride. Data qualifiers were applied as appropriate to associated samples based upon these outliers. In some cases, the associated sample was non-detect for a high recovery; therefore, no qualifiers were required. Further discussion about laboratory control samples may be found in the data validation reports located in **Appendix A-3.** While qualification was applied due to high or low LCS recoveries, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI.

Matrix Spikes: The MS was used to assess the performance of the method as applied to a particular project matrix. A MS is an environmental sample to which known concentrations of certain target analytes have been added before sample manipulation from the preparation, cleanup, and determinative procedures have been implemented. The original field sample was mixed or shaken to ensure homogeneous fractions when allowed by the method. MSs were performed at a rate of one per preparation batch or 5% whichever was more frequent per matrix. The results of the MS are evaluated, in conjunction with other QC information during the validation process to assess the effect of the matrix on the bias of the analysis. If a matrix spike duplicate (MSD) was analyzed, it was also evaluated.

- **Matrix Spike and Matrix Spike Duplicate Recovery Analysis:** The results of the MS/MSD were evaluated, in conjunction with other QC information during the data validation process to ascertain the acceptability of the data generated for that batch of samples. Only spiked project site SWMU 43 samples were evaluated. For MS/MSD samples, USACE DoD QSM and laboratory criteria limits were used for each method in the validation process. For aqueous matrices, MS and MSD samples were within specified criteria for all target parameters and/or compounds of interest except for dinoseb. For solid matrices, MS and MSD samples were within specified criteria for all target parameters and/or compounds of interest except for 1,1,1-trichloroethane, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1-methylnaphthalene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2,4-DB, 2,4-D, 2,4-dinitrotoluene, 2,4-dimethylphenol, 2,6-dinitrotoluene, 2-hexanone, 2,4,5-TP, 2,4,5-T, 2,4,6-trinitrotoluene, 2-amino-4,6-dinitrotoluene, 3,3'-dichlorobenzidine, 4-amino-2,6-dinitrotoluene, 4-chloroaniline, 4,6-dinitro-2-methylphenol, 4-nitrotoluene, 4-4'-DDD, 4,4'-DDE, 4-methyl-2-pentanone, acetone, aldrin, alpha-BHC, aluminum, antimony, arsenic, barium, benzoic acid, cadmium, calcium, carbon disulfide, carbon tetrachloride, cis-1,3-dichloropropene, chloroform, chromium, chrysene, cobalt, copper, delta-BHC, dalapon, dicambia, dichloroprop, dinoseb, endrin, endrin aldehyde, endosulfan I, endosulfan II, ethylbenzene, gamma chlorodane, heptachlor, heptachlor epoxide, hexachloroethane, hexachlorocyclopentadiene, iron, lead, magnesium, manganese, methyl bromide,

methoxychlor, methyl ethyl ketone, nickel, PCB-1016, p-nitrotoluene, potassium, selenium, silver, sodium, tetryl, thallium, toluene, trans-1,3-dichloropropene, trichloroethene, vanadium, zinc, vinyl chloride, and o-xylene. The spiked samples were qualified as applicable to USEPA Region III guidance. In some cases, the sample amount was greater than the amount spiked or the associated sample was non-detect for a high recovery; therefore, no qualifiers were required. Further details may be found in the data validation reports located on a CD at the back of this report. While qualification was applied due to high or low MS or MSD recoveries in some cases, the data was still considered useable, the accuracy data quality goal was met, and the qualified data did not impact the data quality for the RFI.

Completeness: Completeness is a measure of the amount of information that must be collected during the field investigation to allow for successful achievement of the objectives. An adequate amount and type of data must be collected for conclusions to be valid. Missing data may reduce the precision of estimates or introduce bias, thus lowering the confidence level of the conclusions. While completeness has been historically presented as a percentage of the data that is considered usable, this does not take into account critical sample locations or critical analytical parameters.

The amount and type of data that may be lost due to sampling or analytical error cannot be predicted or evaluated in advance. The importance of lost or suspect data will be evaluated in terms of the sample location, analytical parameter, nature of the problem, decision to be made, and the consequence of an erroneous decision. Critical locations or parameters for which data is found to be inadequate will either be re-sampled and re-analyzed or the data will be appropriately qualified based on the decision of the project QA manager. The completeness goal percentage of usable data is set at 90%.

Sampling completeness was assessed through evaluation of the total number of samples proposed for collection in the work plan versus the actual number of samples collected and analyzed. Analytical completeness was assessed by comparing the number of useable data points collected to the total number of data points generated. Completeness is calculated using the following equations:

$$\%\,\text{Sampling Completeness} = \frac{\text{No. of actual samples collected}}{\text{No. of proposed samples}}$$

$$\%\,\text{Analytical Completeness} = \frac{\text{No. of usable data}}{\text{No. of requested analyses}}$$

For the purposes of this report, unusable data are defined to include rejected data points (“R” qualifier).

- **Completeness Analysis - SWMU 43:** Thirty soil samples, six groundwater samples, two surface water samples, two project wide IDM samples (one aqueous and one solid), three trip blanks, and three rinse blanks were proposed for collection at SWMU 43 as specified in MWP Addendum 019 (Shaw, 2007). The field duplicates, rinse blanks, and IDM samples were collected on a site-wide basis. All samples were collected and analyzed for the parameters as specified in MWP Addendum 019, except for one rinse blank for the 07/26/07 soil samples and two surface waters because of dry conditions. The resulting sampling completeness quotient is 93.4% and meets the pre-defined goals of 90% for the sampling program. There were no direct impacts for the omitted rinse blank. The overall analytical percent completeness was assessed by parameter group and matrix for the samples collected. Analysis of the all samples resulted in the generation of 7,630 out of 7,632 data points deemed to be useable, generating an overall analytical completeness quotient of 99.9%. Endrin aldehyde and dalapon were rejected in sample 43SB03B. Endrin aldehyde was rejected based upon no recoveries in the MS/MSD sample with LCS recoveries below criteria limits (i.e. <10%). Analysis of the all the samples analyzed for herbicides resulted in the generation of 416 out of 417 data points deemed to be useable, generating an overall analytical completeness of 99.8%. Dalapon was rejected based upon no recoveries in the MS/MSD sample. The LCS was within criteria limits. Analysis of the all the samples analyzed for pesticides resulted in the generation of 860 out of 861 data points deemed to be useable, generating an overall analytical completeness of 99.9%. All other completeness scenarios for all other parameter groups and/or matrices were 100%. The completeness percentages met the pre-defined goal of 90% for all SWMU 43 sampling events and did not impact the overall RFI.

Representativeness: Representativeness is a measure of the degree to which the measured results accurately reflect the medium being sampled. It is a qualitative parameter that is addressed through the proper design of the sampling program in terms of sample location, number of samples, and actual material collected as a "sample" of the whole.

Sampling protocols were developed to assure that samples collected are representative of the media. Field handling protocols (e.g., storage, handling in the field, and shipping) were designed to protect the representativeness of the collected samples. Proper field documentation and QC inspections were used to establish that protocols were followed and that sample identification and integrity was maintained and met pre-defined goals.

Comparability: Comparability is the confidence with which one data set can be compared to another. Comparability was controlled through the use of SOPs that have been developed to standardize the collection of measurements and samples and approved analytical technique with defined QC criteria. USEPA-approved methodologies were used in providing laboratory analytical support for this project. Laboratory SOPs were developed from these methods. Consistent and proper calibration of equipment throughout the field exercises, as described in MWP Addendum 019 and the MWP (URS, 2003), will assist in the comparability of measurements. Field documentation and QA audits were used to establish that protocols for sampling and measurement follow appropriate SOPs and met pre-defined goals.

Levels of Concern

An integral part of the identification of DQOs is the establishment of LOCs. These levels were compared with analytical PQLs and MDLs prior to analytical method selection to ensure the method was capable of addressing project DQOs, preclude occurrence of false negative issues, and assess best available technology limitations. Although LOCs selected as potential concerns may not necessarily reflect RFI-specific objectives, they were developed to ensure that the chosen analytical methods have detection limits sensitive enough to achieve compliance with appropriate site-specific screening levels or other specified criteria for soil. The LOCs for SWMU 43 are based on soil applicable or relevant and appropriate requirements (ARARs) and To-Be-Considered (TBC) guidance and are as follows:

The sediment ARAR/TBC guidance includes:

- RFAAP Facility-Wide Background inorganic soil concentrations (IT, 2001).
- Oakridge National Laboratory (ORNL) Regional Screening Table – Residential and Industrial Scenarios with a hazard index (HI) = 0.1 for non-carcinogen compounds and a dilution attenuation factor (DAF) = 20 for the SSL Transfer levels (September 12, 2008)

The groundwater and surface water ARAR/TBC guidance includes:

- Oakridge National Laboratory Regional Screening Table – Tap Water Scenario (September 12, 2008) with a hazard index (HI) = 0.1 for non-carcinogen compounds.
- USEPA Drinking Water Maximum Contaminant Levels (August, 2006).

Sensitivity (quantitation, reporting, and detection limits): The term sensitivity is used broadly to describe the method detection, quantitation, and reporting limits established to meet project-specific data quality objectives; and not limited to the definition which describes the capability of a method or instrument to discriminate between measurement responses. The method detection limits (MDLs) and the practical quantitation limits (PQLs) published within USEPA methods are based upon a reagent water matrix, and are not necessarily reflective of typical sample matrices; therefore, care was taken in establishing limits for laboratory analysis. Methods were selected based upon their sensitivity, technological, and economical considerations while keeping the screening values and available methodology in mind and were sufficient in meeting the given levels of concern (LOCs).

The laboratory generated PQLs and MDLs were compared at the onset of the project. The MDL is the minimum concentration of an analyte that can be measured and reported with a 99% confidence that the analyte is above zero and is identified from the analysis of a sample in a given matrix containing the analyte. The MDLs were derived by the method based upon 40 CFR Chapter 136 Appendix B. The MDL values differ and change periodically because each MDL is laboratory, instrument, analyst, matrix, and method specific. Therefore, the more conservative MDLs were reported where there were multiple instruments and or studies performed. The PQLs are the values at which the laboratory has demonstrated the ability to reliably quantitate the target value of an analyte for the method performed and are based upon the lowest calibration standard used for the initial calibration curve or the lowest verification standard performed. PQLs must be at least 3 times the MDL.

The laboratory used a method reporting limit (MRL) or sample quantitation limit to report non-detects for each sample. The MRL is the threshold value below which the laboratory reports non-detected values as "U," "ND," or "<" and will vary for each sample based upon matrix, dilution, sample volumes, percent moistures (for solids), and the method performed. For dioxin and furans, the estimated detection limit (EDL) method was reported. The sample specific EDL is the concentration of a given analyte required to produce a signal with a peak height of at least 2.5 times the background signal level and is calculated only for where each 2,3,7,8-substituted congener was not identified. The sample specific EDL level is above the actual MDL levels at a representative level for reporting dioxins and furans.

Data was calculated over a linear range and the resulting highest concentration within the linear range represents the upper quantitation limit. Each target compound for every sample was reported at a specific level. Any target analytes detected above the MDL, but less than the MRL or 3 times the MDL (whichever was greater), were reported as estimated values "J." Target analytes detected above the upper calibration standard were diluted and analyzed within established calibration windows or qualified. The units used for aqueous samples were ng/L, µg/L, or mg/L and for solid samples were pg/g, µg/kg, or mg/kg.

- Comparing the groundwater samples from SWMU 43 against the USEPA ORNL tap water RBCs, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2-dichloroethane, 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, 2,4-dinitrophenol, 2,4,6-trichlorophenol, 3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-chloroaniline, aldrin, antimony, arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, bis(2-chloroethyl)ether, bis(chloroisopropyl)ether, carbon tetrachloride, chloroform, dibenz(a,h)anthracene, dieldrin, heptachlor epoxide, hexachlorobenzene, hexachlorobutadiene, hexachloroethane, indeno(1,2,3-cd)pyrene, MCPA, MCPP, mercury, naphthalene, nitrobenzene, nitroglycerin, n-nitrosodi-n-propylamine, pentachlorophenol, PCB-1016, PCB-1221, PCB-1232, PCB-1242, PCB-1248, PCB-1254, PCB-1260, tetrachloroethene, thallium, toxaphene, and vinyl chloride had MDLs greater than the given tap water RBCs for select samples. Comparing the groundwater samples against the Drinking Water MCLs, aluminum, antimony, hexachlorobenzene, pentachlorophenol, and thallium had MDLs greater than the given MCLs for select samples. The samples had higher sensitivity levels due to the given available USEPA method sensitivity capabilities as well as any required sample dilutions and/or sample volume adjustments due to either high analyte concentration and/or matrix interferences. Though an uncertainty may be present with these sensitivity gaps between the MCLs and/or tap water RBCs to the MDLs for these compounds, it is unlikely that they present an impact to the decisions regarding the RFI.

- Comparing the soil samples from SWMU 43 against the USEPA ORNL residential RBCs, nitroglycerin, PCB-1254, and thallium had MDLs greater than the given residential RBCs for select samples. Comparing the soil samples against the USEPA ORNL industrial RBCs, all target compound MDLs were less than the given industrial RBCs except for thallium for select samples. Comparing the soil samples against site-wide metals background concentrations, thallium had an MDL greater than the given site-wide metals background for select samples. The samples had higher sensitivities due to the given available USEPA method sensitivity capabilities as well as percent solid adjustments for dryness, and any required sample dilutions or sample volume adjustments due to either high analyte concentration and/or matrix interferences. Though an uncertainty may be present with these sensitivity gaps between the residential RBCs, industrial RBCs, and/or background concentrations to the MDLs for these compounds, it is unlikely that they present an impact to the decisions regarding the RFI.

Appendix A-3

Data Validation Reports and Form I

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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Richard McCracken, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Explosives, PETN, & Nitroglycerin
Accutest Laboratories, Inc., SDG F51300

DATE: December 28, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at RFAAP on July 25, 2007. The samples were analyzed for explosives using USEPA SW846 Method 8330A, and nitroglycerin & PETN using USEPA SW-846 Method 8332A. A total of 1 aqueous and 30 soil samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
59SB06A	F51300-1	43SB06C	F51300-17
59SB06B	F51300-2	43SB07A	F51300-18
59SB06C	F51300-3	43SB07B	F51300-19
59SB05A	F51300-4	43SB07C	F51300-20
59SB05B	F51300-5	43SB08A	F51300-21
59SB05C	F51300-6	43SB08B	F51300-22
59SB04A	F51300-7	43SB08C	F51300-23
59SB04B	F51300-8	43SB09A	F51300-24
59SB04C	F51300-9	43SB09B	F51300-25
TMSB04C	F51300-10	43SB09C	F51300-26
59SB02A	F51300-11	43SB10A	F51300-27
59SB02B	F51300-12	43SB10B	F51300-28
TMSB02B	F51300-13	43SB10C	F51300-29
59SB02C	F51300-14	TMSB10B	F51300-30
43SB06A	F51300-15	072507R	F51300-31
43SB06B	F51300-16		

Data were reviewed by Richard McCracken and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Blank Analysis
	X	Initial Calibration
	X	Continuing Calibration
	X	System Monitoring Compounds
	X	Laboratory Control Sample
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable.

Richard McCracken, Chemist

12/28/07
Date

RFAAP VALIDATION REPORT
EXPLOSIVES REVIEW
SDG F51300

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Solid samples must be cooled @4°C ± 2°C, with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. Aqueous samples must be cooled @4°C ± 2°C, with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: A temperature blank was sent with each cooler and recorded by the laboratory upon receipt. The samples collected on 7/25/07 were sent in five coolers, and were received by the laboratory on 7/26/07 at temperatures ranging from 2.6 °C to 4.0 °C. No qualifiers were applied.

- Holding Time Review: The samples were collected on 7/25/07. The water sample was extracted on 7/31/07, while the soils were extracted on 8/7/07. The water sample was analyzed for all explosives on 8/1/07; the soils were analyzed for PETN & nitroglycerine on 8/8/07, and for all other explosives on 8/9/07 & 8/10/07. All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be present in the blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5x) the maximum amount for explosive target compounds. **Table 2** summarizes the blank contamination analysis.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
8/1/07	OP21682-MB	All target explosives <½MRL	NA	NA	None
8/1/07	OP21682-MB	PETN & NG <½MRL	NA	NA	None
8/9/07	OP21778-MB	All target explosives <½MRL	NA	NA	None
8/8/07	OP21778-MB	PETN & NG <½MRL	NA	NA	None
8/9/07	OP21779-MB	All target explosives <½MRL	NA	NA	None
8/8/07	OP21779-MB	PETN & NG <½MRL	NA	NA	None
8/1/07	072507R	All target explosives <½MRL	NA	NA	None
8/1/07	072507R	PETN & NG <½MRL	NA	NA	None
8/1/07	072607R	All target explosives <½MRL	NA	NA	None
8/1/07	072607R	PETN & NG <½MRL	NA	NA	None

072507R and 072606R are rinsate blanks.
MRL = Method Reporting Limit
NA = Not Applicable

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5-point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. The DoD QSM specifies that the correlation coefficient (r^2) must be ≥0.990 and/or the percent relative standard deviation (%RSD) must be ≤20%. All detects were qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- During the explosives initial calibration performed on 10/18/06 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. All samples were analyzed in conjunction with this initial calibration.

- During the PETN and nitroglycerine initial calibration performed on 03/15/07 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. All samples were analyzed in conjunction with this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. Continuing calibration standards are analyzed after every 10 injections, and at the end of the analysis sequence. The DoD QSM specifies that the percent difference (%D) from initial calibration should be no greater than ±20%. All detects were qualified as estimated "J" for where there were exceeding %Ds, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- During the explosives initial calibration verification performed on 10/18/06 @1739 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples were analyzed after this initial calibration verification.

- During the explosives initial calibration verification performed on 10/19/06 @1344 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples were analyzed after this initial calibration verification.

- During the explosives continuing calibration verification performed on 8/1/07 @1220 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Sample F51300-31 was analyzed following this continuing calibration.

- During the explosives continuing calibration verification performed on 8/1/07 @1705 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Sample F51300-31 was analyzed before this continuing calibration.

- During the explosives continuing calibration verification performed on 8/8/07 @2354 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 51300-19, -20, -21, -22, -23, -24, and -26 were analyzed after this continuing calibration.

- During the explosives continuing calibration verification performed on 8/9/07 @0457 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 51300-19, -20, -21, -22, -23, -24, and -26 were analyzed before this continuing calibration, while samples 51300-27, -28, -29, and -30 were analyzed after this continuing calibration.

- During the explosives continuing calibration verification performed on 8/9/07 @0915 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 51300-27, -28, -29, and -30 were analyzed before this continuing calibration.

- During the explosives continuing calibration verification performed on 8/9/07 @1050 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5, and -6 were analyzed after this continuing calibration.

- During the explosives continuing calibration verification performed on 8/9/07 @1553 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5, and -6 were analyzed before this continuing calibration, while samples F51300-7, -8, -9, -10, -11, -12, -13, -14, -15, and -16 were analyzed after this continuing calibration.

- During the explosives continuing calibration verification performed on 8/9/07 @2123 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples F51300-7, -8, -9, -10, -11, -12, -13, -14, -15, and -16 were analyzed before this continuing calibration, while samples F51300-17, -18, -25, and -27 were analyzed after this continuing calibration.

- During the explosives continuing calibration verification performed on 8/10/07 @0254 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples F51300-17, -18, -25, and -27 were analyzed before this continuing calibration.

- During the PETN and nitroglycerin initial calibration verification performed on 3/15/07 @1235 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples were analyzed in conjunction with this initial calibration verification.

- During the PETN and nitroglycerin continuing calibration performed on 8/1/07 @1027 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Sample F51300-31 was analyzed after this continuing calibration.

- During the PETN and nitroglycerin continuing calibration performed on 8/1/07 @1136 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Sample F51300-31 was analyzed before this continuing calibration.

- During the PETN and nitroglycerin continuing calibration performed on 8/8/07 @1717 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 51300-19, -20, -21, -22, -23, -24, and -26 were analyzed after this continuing calibration.

- During the PETN and nitroglycerin continuing calibration performed on 8/8/07 @1843 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 51300-19, -20, -21, -22, -23, -24, and -26 were analyzed before this continuing calibration, while samples F51300-27, -28, -29, -30, -1, and -2 were analyzed after this continuing calibration.

- During the PETN and nitroglycerin continuing calibration performed on 8/8/07 @2026 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples F51300-27, -28, -29, -30, -1, and -2 were analyzed before this continuing calibration, while samples F51300-3, -4, -5, -6, -7, -8, -9, -10, -11, and -12 were analyzed after this continuing calibration.

- During the PETN and nitroglycerin continuing calibration performed on 8/8/07 @2209 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples F51300-3, -4, -5, -6, -7, -8, -9, -10, -11, and -12 were analyzed before this continuing calibration, while samples F51300-13, -14, -15, -16, -17, -18, -25, and -27 were analyzed after this continuing calibration.

- During the PETN and nitroglycerin continuing calibration performed on 8/8/07 @2352 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples F51300-13, -14, -15, -16, -17, -18, -25, and -27 were analyzed before this continuing calibration.

V-System Monitoring Compound (Surrogates)

Laboratory performance on individual samples is established by means of spiking activities. The percent recovery (%R) for all samples and blanks must be within the laboratory control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria: 3,4-dinitrotoluene (72-145%)

Aqueous Criteria: 3,4-dinitrotoluene (70-136%)

- Sample F51300-21 had high recoveries from both signals during explosives (202.54%, 202.18%), and PETN & nitroglycerin (211.59%, 217.05%) analyses. The lab reported that they suspected a double spike of the surrogate. No target compounds were detected in F51300-21, no data qualification was required.

- All other samples met surrogate recovery criteria during explosives, PETN, and nitroglycerin analyses. No qualifiers were applied.

VI-Laboratory Control Sample

Laboratory control samples (LCS) are used to monitor long-term accuracy of the analytical method. The analysis is performed at a frequency of 1 per analytical batch. The percent recoveries (%Rs) must be within the laboratory control limits. DoD QSM solid matrix LCS recovery limits are specified in Table D-13 of the DoD QSM (DoD, 2006), while the aqueous LCS recovery limits are specified in Table D-12 of the DoD QSM. If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21682-BS was used as the aqueous LCS for explosives, PETN, and nitroglycerin analysis. All compounds met recovery criteria. Sample F51300-31 was analyzed in conjunction with this LCS.

- Sample OP21778-BS was used as the solid LCS for explosives, PETN, and nitroglycerin analysis. All compounds met recovery criteria. Samples F51300-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15, -16, -17, -18, -25, and -27 were analyzed in conjunction with this LCS.

- Sample OP21779-BS was used as the solid LCS for explosives, PETN, and nitroglycerin analysis. All compounds met recovery criteria. Samples F51300-19, -20, -21, -22, -23, -24, -26, -27, -28, -29, and -30 were analyzed in conjunction with this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the laboratory control limits. DoD MS/MSD recovery limits follow the LCS criteria specified in Table D-12 (aqueous) and D-13 (solid matrix) of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51300-31 was used as the aqueous MS/MSD during PETN & nitroglycerine analysis. All compounds met criteria. Sample F51300-31 was analyzed in conjunction with this MS/MSD.

- Sample F51300-27 was used as a solid MS/MSD during PETN & nitroglycerine analysis. All compounds met criteria. Sample F51300-27 was analyzed in conjunction with this MS/MSD.

- Sample F51300-29 was used as a solid MS/MSD during explosives analysis. p-Nitrotoluene (126%) had a high recovery, but no p-nitrotoluene was detected in any samples. All other compounds met criteria. Samples F51300-19, -20, -21, -22, -23, -24, -26, -28, -29, and -30 were analyzed in conjunction with this MS/MSD.

- Sample F51300-25 was used as a solid MS/MSD during explosives analysis. All compounds met criteria. Samples F51300-1 thru -18 and -25 were analyzed in conjunction with this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field duplicate pairs in this data package included 59SB04C (F51300-9) & TMSB04C (F51300-10), 59SB02B (F51300-12) & TMSB02B (F51300-13), and 43SB10B (F51300-28) & TMSB10B (F51300-30). All compounds detected above the reporting limit (RL) met RPD criteria.

IX-Quantitation Verification
The accuracy of analytical results was verified through the calculation of several parameters. The calculation was based calibration factors. The absolute percent difference (%D) between the calculated and the reported value must be within 10% difference. All values >MDL and <MRL or <3*MDL (whichever was greater) were qualified as estimated "J".

Sample: OP21778-BS, HMX

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * Ps * 1000)

where: Ax = Area response for the compound being measured
Vt = Total volume of extract, taking into account dilutions (uL)
DF = Dilution factor
CF = Calibration Factor from initial calibration (area/pg)
Vi = Volume of extract injected (uL)
Ws = weight of sample (g)
Ps = percent solids/100

Conc. µg/kg = (1696865 * 20000 * 1) / (2764 * 1 * 2 * 1 * 1000)
= 6140 ug/kg

Reported Value = 6140 µg/kg
% Difference = 0.0%, values were within 10% difference

Sample: OP21779-BS2, nitroglycerin

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * Ps * 1000)

where: Ax = Area response for the compound being measured
Vt = Total volume of extract, taking into account dilutions (uL)
DF = Dilution factor
CF = Calibration Factor from initial calibration (area/pg)
Vi = Volume of extract injected (uL)
Ws = weight of sample (g)
Ps = percent solids/100

Conc. µg/kg = (3484549 * 20000 * 1) / (1228 * 1 * 2.0 * 1 * 1000)
= 28400 ug/kg

Reported Value = 28400 µg/kg
% Difference = 0.0%, values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: GG023257.D PP022134.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023257.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022134.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.11 g	20.0 ml
Run #2	2.11 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	98	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023258.D PP022135.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023258.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022135.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.14 g	20.0 ml
Run #2	2.14 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	83	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	66	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	96	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023259.D PP022138.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023259.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022138.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.03 g	20.0 ml
Run #2	2.03 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	250	51	ug/kg	
121-82-4	RDX	ND	250	49	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	250	49	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	88	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	49	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	250	49	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	250	53	ug/kg	
98-95-3	Nitrobenzene	ND	250	70	ug/kg	
88-72-2	o-Nitrotoluene	ND	250	76	ug/kg	
99-08-1	m-Nitrotoluene	ND	250	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	250	68	ug/kg	
479-45-8	Tetryl	ND	490	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	250	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	250	49	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	740	ug/kg	
78-11-5	PETN	ND [a]	2000	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023260.D PP022139.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023260.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022139.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.13 g	20.0 ml
Run #2	2.13 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	51	ug/kg	
98-95-3	Nitrobenzene	ND	230	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023261.D PP022140.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023261.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022140.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.17 g	20.0 ml
Run #2	2.17 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	48	ug/kg	
121-82-4	RDX	ND	230	46	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	46	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	82	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	46	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	46	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	65	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	71	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	95	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	460	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	54	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	46	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	690	ug/kg	
78-11-5	PETN	ND [a]	1800	690	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023262.D PP022141.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023262.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022141.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.14 g	20.0 ml
Run #2	2.14 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	83	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	66	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	96	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	107%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023265.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022142.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.03 g	20.0 ml
Run #2	2.03 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	250	51	ug/kg	
121-82-4	RDX	ND	250	49	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	250	49	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	88	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	49	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	250	49	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	250	53	ug/kg	
98-95-3	Nitrobenzene	ND	250	70	ug/kg	
88-72-2	o-Nitrotoluene	ND	250	76	ug/kg	
99-08-1	m-Nitrotoluene	ND	250	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	250	68	ug/kg	
479-45-8	Tetryl	ND	490	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	250	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	250	49	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	740	ug/kg	
78-11-5	PETN	ND [a]	2000	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	104%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023266.D PP022143.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023266.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022143.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.25 g	20.0 ml
Run #2	2.25 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	79	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	92	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	670	ug/kg	
78-11-5	PETN	ND [a]	1800	670	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	114%	118%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023267.D PP022144.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023267.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022144.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.21 g	20.0 ml
Run #2	2.21 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	81	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	64	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	70	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	93	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	113%	118%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023268.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022145.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.05 g	20.0 ml
Run #2	2.05 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	51	ug/kg	
121-82-4	RDX	ND	240	49	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	49	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	87	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	49	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	49	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	53	ug/kg	
98-95-3	Nitrobenzene	ND	240	69	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	75	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	67	ug/kg	
479-45-8	Tetryl	ND	490	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	49	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	730	ug/kg	
78-11-5	PETN	ND [a]	2000	730	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	111%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023269.D PP022146.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023269.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022146.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.12 g	20.0 ml
Run #2	2.12 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	111%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023270.D PP022147.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023270.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022147.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.12 g	20.0 ml
Run #2	2.12 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	110%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023271.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022150.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.15 g	20.0 ml
Run #2	2.15 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	48	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	83	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	66	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	96	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023272.D PP022151.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023272.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022151.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.11 g	20.0 ml
Run #2	2.11 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	98	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	110%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023273.D PP022152.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023273.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022152.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.03 g	20.0 ml
Run #2	2.03 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	250	51	ug/kg	
121-82-4	RDX	ND	250	49	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	250	49	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	88	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	49	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	250	49	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	250	53	ug/kg	
98-95-3	Nitrobenzene	ND	250	70	ug/kg	
88-72-2	o-Nitrotoluene	ND	250	76	ug/kg	
99-08-1	m-Nitrotoluene	ND	250	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	250	68	ug/kg	
479-45-8	Tetryl	ND	490	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	250	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	250	49	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	740	ug/kg	
78-11-5	PETN	ND [a]	2000	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	101%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023274.D PP022153.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023274.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022153.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.12 g	20.0 ml
Run #2	2.12 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	112%	110%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023277.D PP022154.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023277.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022154.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.22 g	20.0 ml
Run #2	2.22 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	80	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	64	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	69	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	93	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	114%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023278.D PP022155.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023278.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022155.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.20 g	20.0 ml
Run #2	2.20 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	81	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	65	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	70	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	94	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	63	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	54	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	112%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023234.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022117.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.09 g	20.0 ml
Run #2	2.09 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	50	ug/kg	
121-82-4	RDX	ND	240	48	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	48	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	85	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	48	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	48	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	52	ug/kg	
98-95-3	Nitrobenzene	ND	240	68	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	74	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	99	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	66	ug/kg	
479-45-8	Tetryl	ND	480	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	48	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	720	ug/kg	
78-11-5	PETN	ND [a]	1900	720	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	102%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023235.D PP022118.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023235.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022118.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.11 g	20.0 ml
Run #2	2.11 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	98	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	95%	92%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023236.D PP022119.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023236.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022119.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.04 g	20.0 ml
Run #2	2.04 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	250	51	ug/kg	
121-82-4	RDX	ND	250	49	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	250	49	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	87	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	49	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	250	49	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	250	53	ug/kg	
98-95-3	Nitrobenzene	ND	250	70	ug/kg	
88-72-2	o-Nitrotoluene	ND	250	75	ug/kg	
99-08-1	m-Nitrotoluene	ND	250	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	250	68	ug/kg	
479-45-8	Tetryl	ND	490	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	250	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	250	49	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	740	ug/kg	
78-11-5	PETN	ND [a]	2000	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	203% [b]	212% [b]	72-145%

(a) Result is from Run# 2
(b) Outside control limits. Suspected double surrogate; however, sample was ND.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023237.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022120.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.08 g	20.0 ml
Run #2	2.08 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	50	ug/kg	
121-82-4	RDX	ND	240	48	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	48	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	86	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	48	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	48	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	52	ug/kg	
98-95-3	Nitrobenzene	ND	240	68	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	74	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	99	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	66	ug/kg	
479-45-8	Tetryl	ND	480	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	57	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	48	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	720	ug/kg	
78-11-5	PETN	ND [a]	1900	720	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	114%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023238.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022121.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.18 g	20.0 ml
Run #2	2.18 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	48	ug/kg	
121-82-4	RDX	ND	230	46	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	46	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	82	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	46	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	46	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	65	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	71	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	94	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	63	ug/kg	
479-45-8	Tetryl	ND	460	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	54	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	46	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	690	ug/kg	
78-11-5	PETN	ND [a]	1800	690	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	110%	115%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023239.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022122.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.09 g	20.0 ml
Run #2	2.09 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	50	ug/kg	
121-82-4	RDX	ND	240	48	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	48	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	85	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	48	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	48	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	52	ug/kg	
98-95-3	Nitrobenzene	ND	240	68	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	74	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	99	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	66	ug/kg	
479-45-8	Tetryl	ND	480	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	48	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	720	ug/kg	
78-11-5	PETN	ND [a]	1900	720	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	110%	117%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023279.D PP022156.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023279.D	1	08/09/07	NAF	08/07/07	OP21778	GGG996
Run #2	PP022156.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766

	Initial Weight	Final Volume
Run #1	2.11 g	20.0 ml
Run #2	2.11 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	240	49	ug/kg	
121-82-4	RDX	ND	240	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	240	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	240	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	240	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	240	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	240	51	ug/kg	
98-95-3	Nitrobenzene	ND	240	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	240	73	ug/kg	
99-08-1	m-Nitrotoluene	ND	240	98	ug/kg	
99-99-0	p-Nitrotoluene	ND	240	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	240	56	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	240	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	710	ug/kg	
78-11-5	PETN	ND [a]	1900	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	110%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023240.D PP022123.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023240.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022123.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.03 g	20.0 ml
Run #2	2.03 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	250	51	ug/kg	
121-82-4	RDX	ND	250	49	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	250	49	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	88	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	49	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	250	49	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	250	53	ug/kg	
98-95-3	Nitrobenzene	ND	250	70	ug/kg	
88-72-2	o-Nitrotoluene	ND	250	76	ug/kg	
99-08-1	m-Nitrotoluene	ND	250	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	250	68	ug/kg	
479-45-8	Tetryl	ND	490	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	250	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	250	49	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	740	ug/kg	
78-11-5	PETN	ND [a]	2000	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	113%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023243.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022126.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766
Run #3	PP022157.D	1	08/08/07	NAF	08/07/07	OP21778	GPP766
Run #4	GG023282.D	1	08/10/07	NAF	08/07/07	OP21778	GGG996

	Initial Weight	Final Volume
Run #1	2.02 g	20.0 ml
Run #2	2.02 g	20.0 ml
Run #3	2.02 g	20.0 ml
Run #4	2.02 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	250	51	ug/kg	
121-82-4	RDX	ND	250	50	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	250	50	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	88	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	50	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	250	50	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	250	53	ug/kg	
98-95-3	Nitrobenzene	ND	250	70	ug/kg	
88-72-2	o-Nitrotoluene	ND	250	76	ug/kg	
99-08-1	m-Nitrotoluene	ND	250	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	250	68	ug/kg	
479-45-8	Tetryl	ND	500	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	250	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	250	50	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	740	ug/kg	
78-11-5	PETN	ND [a]	2000	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
610-39-9	3,4-Dinitrotoluene	106%	111%	110%	72-145%
610-39-9	3,4-Dinitrotoluene				72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023244.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022129.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.22 g	20.0 ml
Run #2	2.22 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	80	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	64	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	69	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	93	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	110%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023245.D PP022130.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023245.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022130.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.03 g	20.0 ml
Run #2	2.03 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	250	51	ug/kg	
121-82-4	RDX	ND	250	49	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	250	49	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	250	88	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	250	49	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	250	49	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	250	53	ug/kg	
98-95-3	Nitrobenzene	ND	250	70	ug/kg	
88-72-2	o-Nitrotoluene	ND	250	76	ug/kg	
99-08-1	m-Nitrotoluene	ND	250	100	ug/kg	
99-99-0	p-Nitrotoluene	ND	250	68	ug/kg	
479-45-8	Tetryl	ND	490	140	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	250	58	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	250	49	ug/kg	
55-63-0	Nitroglycerine	ND [a]	2000	740	ug/kg	
78-11-5	PETN	ND [a]	2000	740	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	104%	112%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8330A SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023248.D	1	08/09/07	NAF	08/07/07	OP21779	GGG995
Run #2	PP022131.D	1	08/08/07	NAF	08/07/07	OP21779	GPP766

	Initial Weight	Final Volume
Run #1	2.15 g	20.0 ml
Run #2	2.15 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	48	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	83	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	66	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	96	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	114%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
Method:	SW846 8330A SW846 3535A	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023035.D	1	08/01/07	NAF	07/31/07	OP21682	GGG990
Run #2	PP021891.D	1	08/01/07	NAF	07/31/07	OP21682	GPP756

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2	1000 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.20	0.051	ug/l	
121-82-4	RDX	ND	0.20	0.060	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.20	0.056	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.20	0.071	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.20	0.097	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	0.20	0.065	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	0.20	0.056	ug/l	
98-95-3	Nitrobenzene	ND	0.20	0.073	ug/l	
88-72-2	o-Nitrotoluene	ND	0.20	0.12	ug/l	
99-08-1	m-Nitrotoluene	ND	0.20	0.078	ug/l	
99-99-0	p-Nitrotoluene	ND	0.20	0.10	ug/l	
479-45-8	Tetryl	ND	0.20	0.068	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.20	0.065	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.20	0.050	ug/l	
55-63-0	Nitroglycerine	ND [a]	2.0	0.50	ug/l	
78-11-5	PETN	ND [a]	2.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	95%	91%	70-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Richard McCracken, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Dioxin Furans
SGS Paradigm Analytical Laboratories, Inc. Project G383-585
(Accutest SDG F51300)

DATE: January 8, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at RFAAP on July 25, 2007. The samples were analyzed for Dioxin and Furan compounds using USEPA SW-846 Method 8290 High Resolution Gas Chromatography/High Resolution Mass Spectroscopy (HRGC/HRMS). A total of 1 aqueous and 17 soil samples were validated, as follows:

Field Sample ID	Lab Sample ID	**Field Sample ID**	Lab Sample ID
59SB06A	F51300-1	TMSB04C	F51300-10
59SB06B	F51300-2	59SB02A	F51300-11
59SB06C	F51300-3	59SB02B	F51300-12
59SB05A	F51300-4	TMSB02B	F51300-13
59SB05B	F51300-5	59SB02C	F51300-14
59SB05C	F51300-6	43SB08A	F51300-21
59SB04A	F51300-7	43SB08B	F51300-22
59SB04B	F51300-8	43SB08C	F51300-23
59SB04C	F51300-9	072507R	F51300-31

Data were reviewed and validated using a combination of project QAPP, *DOD Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *USEPA Region III Dioxin/Furan Data Validation Guidance* (March, 1999). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
X		Blank Analysis
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Internal Standards (IS) Recovery Standard Solutions
	X	Cleanup Standards
	X	Laboratory Control Standard or Ongoing Precision Result (OPR)
	X	Matrix Spike and Spike Duplicate
X		Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Richard M. Cracken

Richard McCracken, Chemist

1/8/08

Date

RFAAP VALIDATION REPORT
DIOXIN FURAN REVIEW
SDG G383-587
(Accutest SDG F51300)

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Dioxin and furan samples must be shipped @4°C ± 2°C, with a maximum holding time of 30 days from sample collection to preparative extraction and 45 days from preparative extraction to determinative analysis.

- Temperature Review: A temperature blank was sent with each cooler and recorded by the laboratory upon receipt. The samples collected on 7/25/07 were sent in five coolers, and were received by the laboratory on 7/26/07 at temperatures ranging from 2.6 °C to 4.0 °C. No qualifiers were applied. Accutest shipped the dioxin aliquots to SGS Paradigm Analytical Laboratories on 7/27/07, and they were received by SGS Paradigm on 7/31/07 at 4.6°C. No qualifiers were applied.

- Holding Time Review: The samples were collected on 7/25/07; the water sample was extracted on 8/1/07; the soil samples were extracted on 8/5/07, 8/7/07, & 8/13/07; the water sample was analyzed on 8/3/07; and the soil samples were analyzed on 8/8/07, 8/9/07, 8/10/07, & 8/20/07. All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory (or field) blank analyses is to determine the existence and magnitude of contamination problems resulting from field and laboratory activities. No contamination should be found in any of the blanks >EDL (estimated detection limit). The DoD QSM criteria specifies all concentrations should be less than ½ MRL (<MRL for common laboratory contaminants OCDD and OCDF) and <2EDL for the calibration blanks. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants OCDD or OCDF, or 5 times (5X) the maximum amount for other target compounds. **Table 2** summarizes the blank contamination.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. pg/g	Action Level pg/g	B qualified samples
8/2/07	LMB14393	All	ND	NA	None
8/8/07	LMB14398	OCDD	3.63	36.3	F51300-23
8/8/07	LMB14398	1,2,3,4,6,7,8-HpCDF	0.966	4.83	F51300-1 thru -5, -7 thru -14, -23
8/8/07	LMB14398	OCDF	1.78	17.8	F51300-1, -4, -6, -7, -8, -10 thru -14, -23
8/9/07	LMB14402	1,2,3,4,6,7,8-HpCDD	0.446	2.23	F51300-9, -10, -23
8/9/07	LMB14402	OCDD	2.84	28.4	None
8/9/07	LMB14402	1,2,3,4,7,8-HxCDF	0.258	1.29	F51300-4, -5, -9, -10, -12, -13, -14, -21
8/9/07	LMB14402	1,2,3,6,7,8-HxCDF	0.126	0.63	F51300-4, -9, -11, -21
8/9/07	LMB14402	1,2,3,4,6,7,8-HpCDF	1.23	6.15	F51300-1 thru -5, -7 thru -14, -23
8/9/07	LMB14402	OCDF	1.95	19.5	F51300-1, -4, -6, -7, -8, -10 thru -14, -21 -23
8/16/07	LMB14410	All	ND	NA	None
8/3/07	F51300-31	1,2,3,4,6,7,8-HpCDF	0.00849 ng/L	0.000017	None
8/3/07	F51300-31	OCDF	0.0142 ng/L	0.000028	None
8/3/07	F51353-8	1,2,3,4,6,7,8-HpCDF	0.0137 ng/L	0.000027	None
8/3/07	F51353-8	OCDF	0.0254 ng/L	0.000051	None

F51300-31 and F51353-8 are rinsate blanks
J = Estimated value <MRL and >EDL.

III-Instrument Performance Check
Instrument must be tuned with perfluorokerosene (PFK) to achieve a static resolving power of at least 10,000 (10% valley) and lock-mass ion between lowest and highest masses for each descriptor and level of reference compound ≤10%. Documentation of the mass spectrometer resolving power is accomplished by recording the peak profile of the high-mass reference signal (typically m/z 330.9792) obtained during a peak examination by using the low-mass PFK ion at m/z 292.9825 or lower in mass as reference. At the beginning of the each 12-hour period, the chromatographic resolution is verified in the same fashion as in the initial calibration through the analysis of HRCC solution on the DB-5 (or equivalent) column or through the analysis of the column performance solution on the SP-2331 or SP-225 (or equivalent) column. A 25% valley must be achieved between the close eluters.

- All PFK forms were verified and found to be in compliance with method specification. No qualifiers were applied.

IV-Initial Calibration
Once the window defining mix has been analyzed and the descriptor switching times have been verified, the five point calibration solutions can be analyzed prior to sample analysis. Per method and DoD QSM, the initial calibration criteria are as follows:

  - The percent relative standard deviations for the mean response factors RRF(n) from the 17 unlabeled standards must not exceed ±20%, and those for the labeled reference compounds must not exceed ±30%;
  - The signal to noise ratio ≥10% for all target ions;
  - Ion abundance ratios must be within the specified control limits in Table 8 (SW846 Method 8290).

- During initial calibration performed on 07/10/07 using instrument HRMS1, all compounds met criteria. No qualifiers were applied. Sample F51300-2, -3, was analyzed in conjunction with this initial calibration.

- During initial calibration performed on 11/2/06 using instrument HRMS3, all compounds met criteria. No qualifiers were applied. Samples F51300-1, -4 thru -14, and -21 thru -23 were analyzed in conjunction with this initial calibration.

V-Continuing Calibration
The continuing calibration consists of two parts: evaluation of the mass resolution and retention time check. Per method and DoD QSM, the following stipulates the continuing calibration criteria.

  - The signal signal-to-noise ratio (S/N) must be at least 10:1 for each selected ion current profile (SICP) and for each GC signal representing the elution of a target analyte or labeled standard for each analyte.
  - The relative response factor of each analyte for the unlabeled standard must be within ±20% of the average RF obtained from the initial calibration, and the RRF of each labeled standard must be within ±30% of the average RRF established during initial calibration. This is expressed in term of percent difference %D.
  - Ion abundance ratios must be within the specified control limits in Table 8 (SW846 Method 8290).

- During the continuing calibration performed on 8/2/07 @1603 on instrument HRMS1, all criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed after this continuing calibration.

- During the continuing calibration performed on 8/3/07 @0324 on instrument HRMS1, all criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed before this continuing calibration.

- During the continuing calibration performed on 8/8/07 @0947 on instrument HRMS3, 13C-1,2,3,4-TCDD (38.9%) and 13C-1,2,3,7,8,9-HxCDD (35.8%) had high %D. These labeled standards are injection standards only, the standards used for quantitation met criteria, so no data qualifiers were applied. All other standards met criteria. No field samples were analyzed after this continuing calibration.

- During the continuing calibration performed on 8/8/07 @1436 on instrument HRMS3, 13C-1,2,3,4-TCDD (46.8%) and 13C-1,2,3,7,8,9-HxCDD (47.6%) had high %D. These labeled standards are injection standards only, the standards used for quantitation met criteria, so no data qualifiers were applied. All other standards met criteria. Samples F51300-1, -4, -5, -6, -7, -8, were analyzed after this continuing calibration.

- During the continuing calibration performed on 8/9/07 @0159 on instrument HRMS3, 13C-1,2,3,4-TCDD (46.6 %) and 13C-1,2,3,7,8,9-HxCDD (48.0%) had high %D. These labeled standards are injection standards only, the standards used for quantitation met criteria, so no data qualifiers were applied. All other standards met criteria. Samples F51300-1, -4, -5, -6, -7, -8, were analyzed before this continuing calibration, while samples F51300-9 and -10 were analyzed after this continuing calibration.

- During the continuing calibration performed on 8/9/07 @1323 on instrument HRMS3, all criteria were met. No qualifiers were applied. Samples F51300-9 and -10 were analyzed before this continuing calibration.

- During the continuing calibration performed on 8/9/07 @2234 on instrument HRMS3, 13C-1,2,3,4-TCDD (37.2%) and 13C-1,2,3,7,8,9-HxCDD (36.4%) had high %D. These labeled standards are injection standards only, the standards used for quantitation met criteria, so no data qualifiers were applied. All other standards met criteria. Samples F51300-11 thru -17 were analyzed after this continuing calibration.

- During the continuing calibration performed on 8/10/07 @0555 on instrument HRMS3, 13C-1,2,3,4-TCDD (36.6%) and 13C-1,2,3,7,8,9-HxCDD (31.0%) had high %D. These labeled standards are injection standards only, the standards used for quantitation met criteria, so no data qualifiers were applied. All other standards met criteria. Samples F51300-11 thru -17 were analyzed before this continuing calibration.

- During the continuing calibration performed on 8/20/07 @0949 on instrument HRMS1, all criteria were met. No qualifiers were applied. Samples F51300-2 and -3 were analyzed after this continuing calibration.

- During the continuing calibration performed on 8/20/07 @2111 on instrument HRMS1, all criteria were met. No qualifiers were applied. Samples F51300-2 and -3 were analyzed before this continuing calibration.

VI-Internal Standards (IS) Recovery Standard Solutions

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: Recoveries of the isotopically-labeled recovery standards to fall within the 40 to 135 percent range for the tetra- through octachlorinated congeners, or as stated in the data package (DoD QSM limits 40-135%).

- All field samples met criteria. No qualifiers were applied.

VII-Cleanup Standards
Cleanup standards are added to every sample, blank, quality control sample, and calibration solution. This compound is added to the samples after extraction but prior to cleanup and is used to verify the percent recovery obtained using the isotope dilution technique. The control limits are 40 to 135 percent (DoD QSM limits 40-135%).

- All field samples met criteria. No qualifiers were applied.

VIII-Laboratory Control Standard (LCS) or Ongoing Precision Result (OPR)
LCSs are used to monitor laboratory accuracy and precision by calculating the percent recoveries of the spiked compounds. Per DOD QSM and method criteria, acceptable performance is determined by:

1. Recoveries of the isotopically-labeled extraction standards to fall within 40-135% control limits for the tetra- through octachlorinated congeners, or as stated in the data package;

2. Recoveries (accuracy) of the unlabeled compounds should be within $\pm$35% when spiked at the method quantitation limit and within $\pm$30% when spiked above 20 times the method quantitation limit, or as stated in the data package;

3. When duplicate OPR are required, the relative percent difference (RPD) of the unlabeled analytes concentrations should be within 30% when spiked at the method quantitation limit and within $\pm$20% when spiked above 20 times the method quantitation limit.

- Sample OPR14393 was used as the aqueous LCS/LCSD during the 8/2/07 analytical run. All criteria were met. No qualifiers were applied. Sample F51300-31 was were analyzed in conjunction with this LCS.

- Sample OPR14398 was used as the solid LCS/LCSD during the 8/8/07 analytical run. All criteria were met. No qualifiers were applied. Samples F51300-1, -4 thru -14, and -21 thru -23 were analyzed in conjunction with this LCS.

- Sample OPR14402 was used as the solid LCS/LCSD during the 8/9/07 analytical run. All criteria were met. No qualifiers were applied. Samples F51300-1, -4 thru -14, and -21 thru -23 were analyzed in conjunction with this LCS.

- Sample OPR14410 was used as the solid LCS/LCSD during the 8/16/07 analytical run. All criteria were met. No qualifiers were applied. Samples F51300-2 and -3 were analyzed in conjunction with this LCS.

IX-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. Per DoD QSM, MS/MSD recoveries must be within in-house laboratory limits (75-125%) and RPD $\leq$20%.

- MS/MSD analysis was not performed on an RFAAP sample. No data qualification was required.

X-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field duplicate pairs in this data package included F51300-9 & F51300-10, and F51300-12 & F51300-13. Analytes with high RPDs included OCDD (83%) in duplicate pair F51300-9/10; and 1,2,3,4,6,7,8-HpCDD (119%), OCDD (133%), 1,2,3,4,6,7,8-HpCDF (54%), and OCDF (85%). All results for these four compounds have been qualified "J/UJ".

XI-Quantitation Verification
The accuracy of analytical results was verified through the calculation of at least one the several parameters such as the %D, %RSD, % recovery, and/or compound concentration. Values were found to be within 10%. Any value reported by the laboratory as estimated "A" based on an analyte to internal standard ratio below the calibration curve was qualified as estimated "J". The signal signal-to-noise ratio (S/N) must be greater than 2.5 for each selected ion current profile (SICP) and for each GC signal representing the elution of a target analyte or labeled standard. Any detected value with ether interference (I-lab flag) was qualified as estimated "J". When the ion ratio failed the 25% criteria (*-lab flag), the estimated maximum possible concentration (EMPC) was reported and flagged estimated "J". If of quantitation interference was present (Q-lab flag), the date was flagged estimated "J" for detects and "UJ" for non-detects.

- The 2,3,7,8-TCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-1 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit.

- The 1,2,3,4,6,7,8-HpCDF result in F51300-2 has been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit, while the OCDD result has been qualified "J" as estimated because the detected amount exceeded the Upper Calibration Limit.

- The 1,2,3,4,6,7,8-HpCDF result in F51300-3 has been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The lab reported 1,2,3,4,7,8,9-HpCDF as an EMPC, but with a EMPC of 0.00 pg/g – the result should therefore be used as a non-detect (ND) at an EDL of 1.22 pg/g.

- The 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-4 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 1,2,3,4,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, and 1,2,3,4,7,8-HxCDF did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required. The OCDD result has been qualified "J" as estimated because the detected amount exceeded the Upper Calibration Limit.

- The 2,3,7,8-TCDF, 1,2,3,4,7,8-HxCDF, and 1,2,3,4,6,7,8-HpCDF results in F51300-5 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratio for 2,3,7,8-TCDF did not meet criteria and has been reported as an Estimated Maximum Possible Concentration (EPMC). Since the result has already been qualified "J", no further qualification is required.

- The 2,3,7,8-TCDF and OCDF results in F51300-6 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratio for 2,3,7,8-TCDF did not meet criteria and has been reported as an Estimated Maximum Possible Concentration (EPMC). Since the result has already been qualified "J", no further qualification is required.

- The 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 2,3,7,8-TCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-7 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratio for 1,2,3,7,8,9-HxCDD did not meet criteria and has been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required. The OCDD result has been qualified "J" as estimated because the detected amount exceeded the Upper Calibration Limit.

- The 1,2,3,7,8,9-HxCDD, 2,3,7,8-TCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-8 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 1,2,3,7,8,9-HxCDD, 1,2,3,4,6,7,8-HpCDF, and OCDF did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required.

- The 2,3,7,8-TCDD, 1,2,3,4,6,7,8-HpCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, and 1,2,3,4,6,7,8-HpCDF results in F51300-9 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 2,3,7,8-TCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, and 1,2,3,4,7,8-HxCDF did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required.

- The 1,2,3,4,6,7,8-HpCDD, 2,3,7,8-TCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, OCDF results in F51300-10 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 1,2,3,4,6,7,8-HpCDD, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required.

- The 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, and OCDF results in F51300-11 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 2,3,7,8-TCDF, and 1,2,3,7,8-PeCDF did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required.

- The 2,3,7,8-TCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-12 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratio for 2,3,7,8-TCDF did not meet criteria and has been reported as an Estimated Maximum Possible Concentration (EPMC). Since the result has already been qualified "J", no further qualification is required.

- The 1,2,3,7,8,9-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-13 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The OCDD result has been qualified "J" as estimated because the detected amount exceeded the Upper Calibration Limit.

- The 1,2,3,6,7,8-HxCDD, 1,2,3,4,7,8-HxCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-14 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratio for 1,2,3,6,7,8-HxCDD did not meet criteria and has been reported as an Estimated Maximum Possible Concentration (EPMC). Since the result has already been qualified "J", no further qualification is required.

- The 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, and 1,2,3,4,7,8,9-HpCDF results in F51300-21 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, and 1,2,3,4,7,8,9-HpCDF did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required.

- The 2,3,7,8-TCDD, 1,2,3,7,8-PeCDD, 1,2,3,4,7,8-HxCDD, 1,2,3,6,7,8-HxCDD, 1,2,3,7,8,9-HxCDD, 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, 1,2,3,4,7,8-HxCDF, 1,2,3,6,7,8-HxCDF, 2,3,4,6,7,8-HxCDF, 1,2,3,7,8,9-HxCDF, and 1,2,3,4,6,7,8-HpCDF results in F51300-22 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 2,3,7,8-TCDD and 1,2,3,7,8-PeCDD did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required.

- The 1,2,3,4,6,7,8-HpCDD, 2,3,7,8-TCDF, 1,2,3,7,8-PeCDF, 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-23 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit. The ion abundance ratios for 1,2,3,7,8-PeCDF and OCDF did not meet criteria and have been reported as an Estimated Maximum Possible Concentration (EPMC). Since the results have already been qualified "J", no further qualification is required.

- The 1,2,3,4,6,7,8-HpCDF, and OCDF results in F51300-31 have been qualified "J" as estimated since the amount detected was less than the Lower Method Calibration Limit.

Sample: F51300-3, OCDD

A(x) = sum of the integrated ion abundances of the quantitation ions for the unlabeled ions;
A(is) = sum of the integrated ion abundances of the quantitation ions for the labeled ions;
Q(is) = quantity, in ng/ul, of the internal standard added to the sample before extraction;
Avg. RRF = calculated mean relative response factor for the unlabeled analyte.
Ws = weight of sample (g)
Ps = percent solids/100

$$\text{Conc. (ng/L)} = \frac{(A(x)) * Q(is) * 1000}{A(is) * \text{Avg. RRF} * Ws * Ps} = \frac{(232000000) * 4.0 * 1000}{(41200000) * 1.0783 * 11.94 * 0.824} = 2120 \text{ pg/g}$$

Reported Value = 2120 pg/g
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ EDL and <MRL or <3*EDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥EDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ EDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Method 8290
F51300-1
Accutest

DATA VAL

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier	QUALIFIER
2,3,7,8-TCDD	ND	0.369					
1,2,3,7,8-PeCDD	ND	0.475					
1,2,3,4,7,8-HxCDD	ND	0.475					
1,2,3,6,7,8-HxCDD	ND	0.475					
1,2,3,7,8,9-HxCDD	ND	0.475					
1,2,3,4,6,7,8-HpCDD	9.48			39.91	1.03		J
OCDD	441			44.03	0.91		J
2,3,7,8-TCDF	0.340			30.25	0.69	A	J
1,2,3,7,8-PeCDF	ND	0.475					
2,3,4,7,8-PeCDF	ND	0.475					
1,2,3,4,7,8-HxCDF	ND	0.475					
1,2,3,6,7,8-HxCDF	ND	0.475					
2,3,4,6,7,8-HxCDF	ND	0.475					
1,2,3,7,8,9-HxCDF	ND	0.475					
1,2,3,4,6,7,8-HpCDF	0.838			38.68	1.10	A	BJ
1,2,3,4,7,8,9-HpCDF	ND	0.475					
OCDF	2.11			44.32	0.89	A	BJ
Total TCDDs	ND	0.369					
Total PeCDDs	ND	0.475					
Total HxCDDs	0.927		2.01				
Total HpCDDs	29.5						
Total TCDFs	0.340						
Total PeCDFs	ND	0.475					
Total HxCDFs	ND	0.475	0.450				
Total HpCDFs	2.03						
WHO-2005 TEQ (ND=0)	0.270		0.270				
WHO-2005 TEQ (ND=½)	0.939		0.939				

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-1		Weight / Volume:	11.59 g
			Solids / Lipids:	90.8 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14398
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-1B		Filename:	c08aug07a_2-6
Collection Date/Time:	07/25/07	7:25	Retchk:	c08aug07a-7
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a-7
Extraction Date:	08/05/07		End ConCal:	c08aug07a_2-14
Analysis Date/Time:	08/08/07	19:33	Initial Cal:	m8290-c110206a

Method 8290
F51300-2
Accutest

Analytical Data Summary Sheet

DATA VAL QUALIFIER

Analyte	Amount pg/g	EDL pg/g	EMPC pg/g	RT (min.)	Ratio	Qualifier	
2,3,7,8-TCDD	ND	0.532					
1,2,3,7,8-PeCDD	ND	0.637					
1,2,3,4,7,8-HxCDD	ND	0.859					
1,2,3,6,7,8-HxCDD	ND	0.874					
1,2,3,7,8,9-HxCDD	ND	0.887					
1,2,3,4,6,7,8-HpCDD	26.7			40:42	1.07		J
OCDD	4990			45:15	0.89	E	J
2,3,7,8-TCDF	ND	0.379					
1,2,3,7,8-PeCDF	ND	0.552					
2,3,4,7,8-PeCDF	ND	0.552					
1,2,3,4,7,8-HxCDF	ND	0.568					
1,2,3,6,7,8-HxCDF	ND	0.552					
2,3,4,6,7,8-HxCDF	ND	0.565					
1,2,3,7,8,9-HxCDF	ND	0.658					
1,2,3,4,6,7,8-HpCDF	0.845			39:24	1.11	A	BJ
1,2,3,4,7,8,9-HpCDF	ND	1.14					
OCDF	ND	2.69					UJ
Total TCDDs	ND	0.532					
Total PeCDDs	ND	0.637					
Total HxCDDs	1.81						
Total HpCDDs	53.6						
Total TCDFs	ND	0.379					
Total PeCDFs	ND	0.552					
Total HxCDFs	ND	0.658					
Total HpCDFs	0.845						
WHO-2005 TEQ (ND=0)	1.77		1.77				
WHO-2005 TEQ (ND=½)	2.72		2.72				

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-2		Weight / Volume:	10.52 g
			Solids / Lipids:	86.1 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14410
Project ID:	G383-585		Instrument:	HRMS1
Sample ID:	G383-585-2C		Filename:	a18aug07a_5-8
Collection Date/Time:	07/25/07	7:35	Retchk:	a18aug07a_4-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	a18aug07a_4-14
Extraction Date:	08/13/07		End ConCal:	a18aug07a_5-14
Analysis Date/Time:	08/20/07	16:21	Initial Cal:	m8290-071007a

Method 8290
F51300-3
Accutest

Analytical Data Summary Sheet

DATA VAL QUALIFIER

Analyte	Amount pg/g	EDL pg/g	EMPC pg/g	RT (min.)	Ratio		Qualifier	
2,3,7,8-TCDD	ND	0.528						
1,2,3,7,8-PeCDD	ND	0.579						
1,2,3,4,7,8-HxCDD	ND	0.852						
1,2,3,6,7,8-HxCDD	ND	0.867						
1,2,3,7,8,9-HxCDD	ND	0.880						
1,2,3,4,6,7,8-HpCDD	11.0			40:42	1.02			J
OCDD	2120			45:15	0.90			J
2,3,7,8-TCDF	ND	0.357						
1,2,3,7,8-PeCDF	ND	0.508						
2,3,4,7,8-PeCDF	ND	0.508						
1,2,3,4,7,8-HxCDF	ND	0.575						
1,2,3,6,7,8-HxCDF	ND	0.542						
2,3,4,6,7,8-HxCDF	ND	0.571						
1,2,3,7,8,9-HxCDF	ND	0.665						
1,2,3,4,6,7,8-HpCDF	EMPC	0.959	0.821	39:22	0.81	*	A	BJ
1,2,3,4,7,8,9-HpCDF	EMPC	1.22	0.00	0:00	0.00	*		U
OCDF	ND	3.09						UJ
Total TCDDs	ND	0.528						
Total PeCDDs	ND	0.579						
Total HxCDDs	ND	0.880	0.648					
Total HpCDDs	25.3							
Total TCDFs	ND	0.357						
Total PeCDFs	ND	0.508						
Total HxCDFs	ND	0.665						
Total HpCDFs	1.53							
WHO-2005 TEQ (ND=0)	0.746		0.754					
WHO-2005 TEQ (ND=½)	1.66		1.66					

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-3		Weight / Volume:	11.94 g
			Solids / Lipids:	82.4 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14410
Project ID:	G383-585		Instrument:	HRMS1
Sample ID:	G383-585-3C		Filename:	a18aug07a_5-9
Collection Date/Time:	07/25/07	7:45	Retchk:	a18aug07a_4-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	a18aug07a_4-14
Extraction Date:	08/13/07		End ConCal:	a18aug07a_5-14
Analysis Date/Time:	08/20/07	17:09	Initial Cal:	m8290-071007a

Method 8290
F51300-4
Accutest

DATA VAL
QUALIFIER

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier	
2,3,7,8-TCDD	ND	0.240						
1,2,3,7,8-PeCDD	ND	0.548						
1,2,3,4,7,8-HxCDD	EMPC	0.548	0.235	36.57	0.68	*	A	J
1,2,3,6,7,8-HxCDD	0.318			36.67	1.33		A	
1,2,3,7,8,9-HxCDD	EMPC	0.548	0.432	36.89	1.45	*	A	
1,2,3,4,6,7,8-HpCDD	51.0			39.90	1.09			
OCDD	5350			44.04	0.91		E	
2,3,7,8-TCDF	ND	0.243						
1,2,3,7,8-PeCDF	ND	0.548						
2,3,4,7,8-PeCDF	ND	0.548						
1,2,3,4,7,8-HxCDF	EMPC	0.548	0.423	35.87	0.91	*	A	BJ
1,2,3,6,7,8-HxCDF	0.125			35.97	1.17		A	BJ
2,3,4,6,7,8-HxCDF	ND	0.548						
1,2,3,7,8,9-HxCDF	ND	0.548						
1,2,3,4,6,7,8-HpCDF	2.00			38.65	1.05		A	BJ
1,2,3,4,7,8,9-HpCDF	ND	0.548						
OCDF	2.83			44.32	0.84		A	BJ
Total TCDDs	ND	0.240						
Total PeCDDs	ND	0.548	0.248					
Total HxCDDs	2.68		3.97					
Total HpCDDs	133							
Total TCDFs	ND	0.243	0.189					
Total PeCDFs	ND	0.548						
Total HxCDFs	0.316		0.739					
Total HpCDFs	2.00		2.33					
WHO-2005 TEQ (ND=0)	2.18		2.29					
WHO-2005 TEQ (ND=½)	2.82		2.84					

Client Information			**Sample Information**		
Project Name:	F51300		Report Basis:	Dry	
			Matrix:	Solid	
Sample ID:	F51300-4		Weight / Volume:	12.68 g	
			Solids / Lipids:	72.0	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14398	
Project ID:	G383-585		Instrument:	HRMS3	
Sample ID:	G383-585-4B		Filename:	c08aug07a_2-9	
Collection Date/Time:	07/25/07	8:00	Retchk:	c08aug07a-7	
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a-7	
Extraction Date:	08/05/07		End ConCal:	c08aug07a_2-14	
Analysis Date/Time:	08/08/07	21:57	Initial Cal:	m8290-c110206a	

Method 8290
F51300-5
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier	DATA VAL QUALIFIER
2,3,7,8-TCDD	ND	0.219					
1,2,3,7,8-PeCDD	ND	0.559					
1,2,3,4,7,8-HxCDD	ND	0.559					
1,2,3,6,7,8-HxCDD	ND	0.559					
1,2,3,7,8,9-HxCDD	ND	0.559					
1,2,3,4,6,7,8-HpCDD	11.8			39.90	1.07		J
OCDD	1830			44.03	0.91		J
2,3,7,8-TCDF	EMPC	0.264	0.320	30.22	0.51 *	A	J
1,2,3,7,8-PeCDF	ND	0.559					
2,3,4,7,8-PeCDF	ND	0.559					
1,2,3,4,7,8-HxCDF	0.137			35.88	1.22	A	BJ
1,2,3,6,7,8-HxCDF	ND	0.559					
2,3,4,6,7,8-HxCDF	ND	0.559					
1,2,3,7,8,9-HxCDF	ND	0.559					
1,2,3,4,6,7,8-HpCDF	0.723			38.67	1.19	A	BJ
1,2,3,4,7,8,9-HpCDF	ND	0.559					
OCDF	ND	1.12					UJ
Total TCDDs	ND	0.219					
Total PeCDDs	ND	0.559					
Total HxCDDs	ND	0.559	0.911				
Total HpCDDs	31.9						
Total TCDFs	0.255		0.575				
Total PeCDFs	ND	0.559					
Total HxCDFs	0.137		0.273				
Total HpCDFs	0.985						
WHO-2005 TEQ (ND=0)	0.688		0.720				
WHO-2005 TEQ (ND=½)	1.35		1.37				

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-5		Weight / Volume:	11.14 g
			Solids / Lipids:	80.2 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-5B		Filename:	c08aug07a_2-10
Collection Date/Time:	07/25/07	8:10	Retchk:	c08aug07a-7
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a-7
Extraction Date:	08/07/07		End ConCal:	c08aug07a_2-14
Analysis Date/Time:	08/08/07	22:46	Initial Cal:	m8290-c110206a

Method 8290
F51300-6
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier	DATA VAL QUALIFIER
2,3,7,8-TCDD	ND	0.199						
1,2,3,7,8-PeCDD	ND	0.525						
1,2,3,4,7,8-HxCDD	ND	0.525						
1,2,3,6,7,8-HxCDD	ND	0.525						
1,2,3,7,8,9-HxCDD	ND	0.525						
1,2,3,4,6,7,8-HpCDD	7.69			39.91	1.02			J
OCDD	894			44.03	0.90			J
2,3,7,8-TCDF	EMPC	0.212	0.181	30.19	0.32	*	A	J
1,2,3,7,8-PeCDF	ND	0.525						
2,3,4,7,8-PeCDF	ND	0.525						
1,2,3,4,7,8-HxCDF	ND	0.525						
1,2,3,6,7,8-HxCDF	ND	0.525						
2,3,4,6,7,8-HxCDF	ND	0.525						
1,2,3,7,8,9-HxCDF	ND	0.525						
1,2,3,4,6,7,8-HpCDF	ND	0.525						UJ
1,2,3,4,7,8,9-HpCDF	ND	0.525						
OCDF	0.963			44.34	0.97		A	BJ
Total TCDDs	ND	0.199						
Total PeCDDs	ND	0.525						
Total HxCDDs	ND	0.525	0.462					
Total HpCDDs	19.3							
Total TCDFs	0.174		0.355					
Total PeCDFs	ND	0.525						
Total HxCDFs	0.172							
Total HpCDFs	ND	0.525						
WHO-2005 TEQ (ND=0)	0.345		0.363					
WHO-2005 TEQ (ND=½)	0.994		1.00					

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-6		Weight / Volume:	11.46 g
			Solids / Lipids:	83.0 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-6B		Filename:	c08aug07a_2-11
Collection Date/Time:	07/25/07	8:20	Retchk:	c08aug07a-7
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a-7
Extraction Date:	08/07/07		End ConCal:	c08aug07a_2-14
Analysis Date/Time:	08/08/07	23:34	Initial Cal:	m8290-c110206a

Method 8290
F51300-7
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.294					
1,2,3,7,8-PeCDD	ND	0.528					
1,2,3,4,7,8-HxCDD	ND	0.528					
1,2,3,6,7,8-HxCDD	0.558			36.69	1.31		A
1,2,3,7,8,9-HxCDD	EMPC	0.543	0.682	36.91	1.50	*	A
1,2,3,4,6,7,8-HpCDD	46.4			39.90	1.03		
OCDD	5980			44.04	0.90		E
2,3,7,8-TCDF	0.378			30.22	0.76		A
1,2,3,7,8-PeCDF	ND	0.528					
2,3,4,7,8-PeCDF	ND	0.528					
1,2,3,4,7,8-HxCDF	ND	0.528					
1,2,3,6,7,8-HxCDF	ND	0.528					
2,3,4,6,7,8-HxCDF	ND	0.528					
1,2,3,7,8,9-HxCDF	ND	0.528					
1,2,3,4,6,7,8-HpCDF	2.19			38.68	1.07		A
1,2,3,4,7,8,9-HpCDF	ND	0.528					
OCDF	5.17			44.31	0.76		A
Total TCDDs	ND	0.294					
Total PeCDDs	0.714		1.04				
Total HxCDDs	4.20		5.28				
Total HpCDDs	125						
Total TCDFs	0.378		0.860				
Total PeCDFs	ND	0.528	0.177				
Total HxCDFs	1.02		1.42				
Total HpCDFs	5.52						
WHO-2005 TEQ (ND=0)	2.38		2.44				
WHO-2005 TEQ (ND=½)	3.03		3.08				

DATA VAL QUALIFIER

J

BJ

BJ

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-7		Weight / Volume:	11.29 g
			Solids / Lipids:	83.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-7B		Filename:	c08aug07a_2-12
Collection Date/Time:	07/25/07	8:15	Retchk:	c08aug07a-7
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a-7
Extraction Date:	08/07/07		End ConCal:	c08aug07a_2-14
Analysis Date/Time:	08/09/07	0:23	Initial Cal:	m8290-c110206a

Method 8290
F51300-8
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.220					
1,2,3,7,8-PeCDD	ND	0.515					
1,2,3,4,7,8-HxCDD	ND	0.515					
1,2,3,6,7,8-HxCDD	ND	0.515					
1,2,3,7,8,9-HxCDD	EMPC	0.515	0.233	36.92	0.93	*	A
1,2,3,4,6,7,8-HpCDD	21.2			39.91	1.03		
OCDD	2990			44.04	0.89		
2,3,7,8-TCDF	0.328			30.25	0.85		A
1,2,3,7,8-PeCDF	ND	0.515					
2,3,4,7,8-PeCDF	ND	0.515					
1,2,3,4,7,8-HxCDF	ND	0.515					
1,2,3,6,7,8-HxCDF	ND	0.515					
2,3,4,6,7,8-HxCDF	ND	0.515					
1,2,3,7,8,9-HxCDF	ND	0.515					
1,2,3,4,6,7,8-HpCDF	EMPC	0.515	0.389	38.68	0.82	*	A
1,2,3,4,7,8,9-HpCDF	ND	0.515					
OCDF	EMPC	1.03	0.661	44.30	1.08	*	A
Total TCDDs	ND	0.220					
Total PeCDDs	ND	0.515	0.124				
Total HxCDDs	1.26		1.50				
Total HpCDDs	61.3						
Total TCDFs	0.328		0.649				
Total PeCDFs	ND	0.515					
Total HxCDFs	0.103						
Total HpCDFs	ND	0.515	0.707				
WHO-2005 TEQ (ND=0)	1.14		1.17				
WHO-2005 TEQ (ND=½)	1.78		1.78				

DATA VAL QUALIFIER

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Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-8		Weight / Volume:	12.15 g
			Solids / Lipids:	79.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-8B		Filename:	c08aug07a_2-13
Collection Date/Time:	07/25/07	8:25	Retchk:	c08aug07a-7
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a-7
Extraction Date:	08/07/07		End ConCal:	c08aug07a_2-14
Analysis Date/Time:	08/09/07	1:11	Initial Cal:	m8290-c110206a

Method 8290
F51300-9
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	0.231	0.166	31.02	0.35	*	A
1,2,3,7,8-PeCDD	ND	0.531					
1,2,3,4,7,8-HxCDD	ND	0.531					
1,2,3,6,7,8-HxCDD	ND	0.531					
1,2,3,7,8,9-HxCDD	ND	0.531					
1,2,3,4,6,7,8-HpCDD	1.14			39.91	1.01		A
OCDD	56.8			44.04	0.93		
2,3,7,8-TCDF	EMPC	0.230	0.272	30.21	1.08	*	A
1,2,3,7,8-PeCDF	EMPC	0.531	0.0807	33.23	2.50	*	A
2,3,4,7,8-PeCDF	ND	0.531					
1,2,3,4,7,8-HxCDF	EMPC	0.531	0.159	35.90	1.60	*	A
1,2,3,6,7,8-HxCDF	0.0807			36.00	1.42		A
2,3,4,6,7,8-HxCDF	ND	0.531					
1,2,3,7,8,9-HxCDF	ND	0.531					
1,2,3,4,6,7,8-HpCDF	0.593			38.69	1.04		A
1,2,3,4,7,8,9-HpCDF	ND	0.531					
OCDF	ND	1.06					
Total TCDDs	ND	0.231	0.166				
Total PeCDDs	ND	0.531					
Total HxCDDs	ND	0.531					
Total HpCDDs	2.45						
Total TCDFs	ND	0.230	0.272				
Total PeCDFs	ND	0.531	0.0807				
Total HxCDFs	0.198		0.395				
Total HpCDFs	0.807						
WHO-2005 TEQ (ND=0)	0.0424		0.254				
WHO-2005 TEQ (ND=½)	0.685		0.735				

DATA VAL QUALIFIER
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Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-9		Weight / Volume:	11.42 g
			Solids / Lipids:	82.5 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-9B		Filename:	c08aug07a_3-4
Collection Date/Time:	07/25/07	8:35	Retchk:	c08aug07a_2-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_2-14
Extraction Date:	08/07/07		End ConCal:	c08aug07a_3-14
Analysis Date/Time:	08/09/07	5:20	Initial Cal:	m8290-c110206a

Method 8290
F51300-10
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier	DATA VAL QUALIFIER
2,3,7,8-TCDD	ND	0.170						
1,2,3,7,8-PeCDD	ND	0.533						
1,2,3,4,7,8-HxCDD	ND	0.533						
1,2,3,6,7,8-HxCDD	ND	0.533						
1,2,3,7,8,9-HxCDD	ND	0.533						
1,2,3,4,6,7,8-HpCDD	EMPC	0.533	1.38	39.89	1.24	*	A	BJ
OCDD	138			44.02	0.87			J
2,3,7,8-TCDF	0.258			30.23	0.75		A	J
1,2,3,7,8-PeCDF	ND	0.533						
2,3,4,7,8-PeCDF	EMPC	0.533	0.0746	33.83	1.30	*	A	J
1,2,3,4,7,8-HxCDF	EMPC	0.533	0.141	35.88	0.79	*	A	BJ
1,2,3,6,7,8-HxCDF	ND	0.533						
2,3,4,6,7,8-HxCDF	ND	0.533						
1,2,3,7,8,9-HxCDF	ND	0.533						
1,2,3,4,6,7,8-HpCDF	EMPC	0.533	0.449	38.68	0.86	*	A	BJ
1,2,3,4,7,8,9-HpCDF	ND	0.533						
OCDF	1.16			44.32	0.80		A	BJ
Total TCDDs	ND	0.170						
Total PeCDDs	ND	0.533	0.102					
Total HxCDDs	ND	0.533						
Total HpCDDs	2.22		3.60					
Total TCDFs	0.354							
Total PeCDFs	ND	0.533	0.0746					
Total HxCDFs	ND	0.533	0.241					
Total HpCDFs	ND	0.533	0.449					
WHO-2005 TEQ (ND=0)	0.0675		0.122					
WHO-2005 TEQ (ND=½)	0.701		0.644					

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-10		Weight / Volume:	11.59 g
			Solids / Lipids:	81.0 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-10B		Filename:	c08aug07a_3-5
Collection Date/Time:	07/25/07	8:35	Retchk:	c08aug07a_2-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_2-14
Extraction Date:	08/07/07		End ConCal:	c08aug07a_3-14
Analysis Date/Time:	08/09/07	6:08	Initial Cal:	m8290-c110206a

Method 8290
F51300-11
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.137					
1,2,3,7,8-PeCDD	EMPC	0.446	0.119	34.01	0.84	*	A
1,2,3,4,7,8-HxCDD	EMPC	0.446	0.148	36.58	0.90	*	A
1,2,3,6,7,8-HxCDD	EMPC	0.446	0.310	36.66	0.92	*	A
1,2,3,7,8,9-HxCDD	0.308			36.90	1.36		A
1,2,3,4,6,7,8-HpCDD	14.8			39.89	1.12		
OCDD	736			44.03	0.91		
2,3,7,8-TCDF	EMPC	0.148	0.157	30.23	1.86	*	A
1,2,3,7,8-PeCDF	EMPC	0.446	0.291	33.21	1.97	*	A
2,3,4,7,8-PeCDF	0.282			33.81	1.34		A
1,2,3,4,7,8-HxCDF	1.92			35.87	1.40		A
1,2,3,6,7,8-HxCDF	0.683			35.96	1.07		A
2,3,4,6,7,8-HxCDF	0.246			36.46	1.06		A
1,2,3,7,8,9-HxCDF	0.121			37.24	1.26		A
1,2,3,4,6,7,8-HpCDF	3.51			38.67	1.02		A
1,2,3,4,7,8,9-HpCDF	0.287			40.57	0.92		A
OCDF	6.93			44.31	0.93		A
Total TCDDs	ND	0.137	0.0606				
Total PeCDDs	0.504		0.704				
Total HxCDDs	2.91		3.62				
Total HpCDDs	43.3						
Total TCDFs	0.225		1.24				
Total PeCDFs	0.877		2.01				
Total HxCDFs	5.71						
Total HpCDFs	8.43		8.60				
WHO-2005 TEQ (ND=0)	0.821		1.01				
WHO-2005 TEQ (ND=½)	1.17		1.08				

DATA VAL QUALIFIER

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Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-11		Weight / Volume:	14.27 g
			Solids / Lipids:	78.6 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-11B		Filename:	c08aug07a_5-2
Collection Date/Time:	07/25/07	8:50	Retchk:	c08aug07a_4-10
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_4-10
Extraction Date:	08/07/07		End ConCal:	c08aug07a_5-9
Analysis Date/Time:	08/10/07	0:17	Initial Cal:	m8290-c110206a

Method 8290
F51300-12
Accutest

Analytical Data Summary Sheet

DAM VAL QUALIFIER

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier	
2,3,7,8-TCDD	ND	0.198						
1,2,3,7,8-PeCDD	ND	0.619						
1,2,3,4,7,8-HxCDD	ND	0.619						
1,2,3,6,7,8-HxCDD	ND	0.619						
1,2,3,7,8,9-HxCDD	ND	0.619						
1,2,3,4,6,7,8-HpCDD	9.87			39.90	1.08			J
OCDD	1490			44.03	0.90			J
2,3,7,8-TCDF	EMPC	0.182	0.260	30.25	0.92	*	A	J
1,2,3,7,8-PeCDF	ND	0.619						
2,3,4,7,8-PeCDF	ND	0.619						
1,2,3,4,7,8-HxCDF	0.144			35.87	1.12		A	BJ
1,2,3,6,7,8-HxCDF	ND	0.619						
2,3,4,6,7,8-HxCDF	ND	0.619						
1,2,3,7,8,9-HxCDF	ND	0.619						
1,2,3,4,6,7,8-HpCDF	0.617			38.68	0.98		A	BJ
1,2,3,4,7,8,9-HpCDF	ND	0.619						
OCDF	1.30			44.30	0.89		A	BJ
Total TCDDs	ND	0.198						
Total PeCDDs	ND	0.619	0.384					
Total HxCDDs	0.268							
Total HpCDDs	25.8							
Total TCDFs	ND	0.182	0.349					
Total PeCDFs	ND	0.619						
Total HxCDFs	0.235		0.384					
Total HpCDFs	1.23							
WHO-2005 TEQ (ND=0)	0.567		0.593					
WHO-2005 TEQ (ND=½)	1.28		1.29					

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-12		Weight / Volume:	10.02 g
			Solids / Lipids:	80.6 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-12B		Filename:	c08aug07a_5-3
Collection Date/Time:	07/25/07	8:50	Retchk:	c08aug07a_4-10
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_4-10
Extraction Date:	08/07/07		End ConCal:	c08aug07a_5-9
Analysis Date/Time:	08/10/07	1:05	Initial Cal:	m8290-c110206a

Method 8290
F51300-13
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	0.172				
1,2,3,7,8-PeCDD	ND	0.594				
1,2,3,4,7,8-HxCDD	ND	0.594				
1,2,3,6,7,8-HxCDD	ND	0.594				
1,2,3,7,8,9-HxCDD	0.188			36.88	1.33	A
1,2,3,4,6,7,8-HpCDD	39.1			39.90	1.08	
OCDD	7470			44.03	0.90	E
2,3,7,8-TCDF	ND	0.196				
1,2,3,7,8-PeCDF	ND	0.594				
2,3,4,7,8-PeCDF	ND	0.594				
1,2,3,4,7,8-HxCDF	0.185			35.88	1.11	A
1,2,3,6,7,8-HxCDF	ND	0.594				
2,3,4,6,7,8-HxCDF	ND	0.594				
1,2,3,7,8,9-HxCDF	ND	0.594				
1,2,3,4,6,7,8-HpCDF	1.07			38.68	1.06	A
1,2,3,4,7,8,9-HpCDF	ND	0.594				
OCDF	3.23			44.30	0.91	A
Total TCDDs	ND	0.172				
Total PeCDDs	ND	0.594	0.330			
Total HxCDDs	0.625		1.70			
Total HpCDDs	98.7					
Total TCDFs	ND	0.196	0.200			
Total PeCDFs	ND	0.594	0.0689			
Total HxCDFs	0.575					
Total HpCDFs	3.19					
WHO-2005 TEQ (ND=0)	2.68		2.68			
WHO-2005 TEQ (ND=½)	3.32		3.32			

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Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-13		Weight / Volume:	10.51 g
			Solids / Lipids:	80.0 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-13B		Filename:	c08aug07a_5-4
Collection Date/Time:	07/25/07	9:00	Retchk:	c08aug07a_4-10
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_4-10
Extraction Date:	08/07/07		End ConCal:	c08aug07a_5-9
Analysis Date/Time:	08/10/07	1:54	Initial Cal:	m8290-c110206a

Method 8290
F51300-14
Accutest

Analytical Data Summary Sheet

DATA VAL QUALIFIER

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier	
2,3,7,8-TCDD	ND	0.192						
1,2,3,7,8-PeCDD	ND	0.540						
1,2,3,4,7,8-HxCDD	ND	0.540						
1,2,3,6,7,8-HxCDD	EMPC	0.540	0.106	36.69	0.98	*	A	J
1,2,3,7,8,9-HxCDD	ND	0.540						
1,2,3,4,6,7,8-HpCDD	7.82			39.90	1.05			J
OCDD	987			44.03	0.89			J
2,3,7,8-TCDF	ND	0.147						
1,2,3,7,8-PeCDF	ND	0.540						
2,3,4,7,8-PeCDF	ND	0.540						
1,2,3,4,7,8-HxCDF	0.177			35.87	1.11		A	BJ
1,2,3,6,7,8-HxCDF	ND	0.540						
2,3,4,6,7,8-HxCDF	ND	0.540						
1,2,3,7,8,9-HxCDF	ND	0.540						
1,2,3,4,6,7,8-HpCDF	0.984			38.69	1.19		A	BJ
1,2,3,4,7,8,9-HpCDF	ND	0.540						
OCDF	1.70			44.32	0.94		A	BJ
Total TCDDs	ND	0.192						
Total PeCDDs	ND	0.540	0.192					
Total HxCDDs	ND	0.540	0.650					
Total HpCDDs	17.8							
Total TCDFs	0.0669		0.246					
Total PeCDFs	0.0410							
Total HxCDFs	0.432		0.622					
Total HpCDFs	1.93							
WHO-2005 TEQ (ND=0)	0.402		0.413					
WHO-2005 TEQ (ND=½)	1.03		1.01					

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-14		Weight / Volume:	11.19 g
			Solids / Lipids:	82.8 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-14B		Filename:	c08aug07a_5-5
Collection Date/Time:	07/25/07	9:10	Retchk:	c08aug07a_4-10
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_4-10
Extraction Date:	08/07/07		End ConCal:	c08aug07a_5-9
Analysis Date/Time:	08/10/07	2:42	Initial Cal:	m8290-c110206a

Method 8290
F51300-21
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.180					
1,2,3,7,8-PeCDD	EMPC	0.519	0.320	34.01	1.94	*	A
1,2,3,4,7,8-HxCDD	EMPC	0.519	0.521	36.61	0.92	*	A
1,2,3,6,7,8-HxCDD	1.78			36.69	1.14		A
1,2,3,7,8,9-HxCDD	1.25			36.92	1.27		A
1,2,3,4,6,7,8-HpCDD	42.8			39.90	1.06		
OCDD	764			44.04	0.90		
2,3,7,8-TCDF	0.415			30.22	0.80		A
1,2,3,7,8-PeCDF	0.178			33.21	1.61		A
2,3,4,7,8-PeCDF	0.369			33.84	1.49		A
1,2,3,4,7,8-HxCDF	0.934			35.88	1.19		A
1,2,3,6,7,8-HxCDF	0.417			35.97	1.22		A
2,3,4,6,7,8-HxCDF	0.562			36.47	1.23		A
1,2,3,7,8,9-HxCDF	ND	0.519					
1,2,3,4,6,7,8-HpCDF	8.29			38.68	1.00		
1,2,3,4,7,8,9-HpCDF	EMPC	0.519	0.502	40.57	1.25	*	A
OCDF	21.1			44.31	0.94		
Total TCDDs	0.237		1.05				
Total PeCDDs	1.05		2.55				
Total HxCDDs	8.90		9.92				
Total HpCDDs	91.3						
Total TCDFs	0.853		1.47				
Total PeCDFs	1.20		2.59				
Total HxCDFs	8.52		8.62				
Total HpCDFs	25.5		26.0				
WHO-2005 TEQ (ND=0)	1.40		1.78				
WHO-2005 TEQ (ND=½)	1.80		1.89				

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Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-21		Weight / Volume:	10.72 g
			Solids / Lipids:	89.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-15B		Filename:	c08aug07a_5-6
Collection Date/Time:	07/25/07	12:15	Retchk:	c08aug07a_4-10
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_4-10
Extraction Date:	08/07/07		End ConCal:	c08aug07a_5-9
Analysis Date/Time:	08/10/07	3:30	Initial Cal:	m8290-c110206a

Method 8290
F51300-22
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	0.186	0.659	31.08	0.60	*	A
1,2,3,7,8-PeCDD	EMPC	0.590	0.576	34.03	1.03	*	A
1,2,3,4,7,8-HxCDD	0.468			36.60	1.22		A
1,2,3,6,7,8-HxCDD	5.62			36.69	1.25		A
1,2,3,7,8,9-HxCDD	2.37			36.92	1.21		A
1,2,3,4,6,7,8-HpCDD	169			39.91	1.04		
OCDD	2080			44.05	0.92		
2,3,7,8-TCDF	5.53			30.25	0.75		
1,2,3,7,8-PeCDF	0.593			33.22	1.47		A
2,3,4,7,8-PeCDF	0.924			33.85	1.66		A
1,2,3,4,7,8-HxCDF	2.14			35.90	1.30		A
1,2,3,6,7,8-HxCDF	1.09			35.99	1.17		A
2,3,4,6,7,8-HxCDF	1.02			36.46	1.11		A
1,2,3,7,8,9-HxCDF	0.508			37.25	1.27		A
1,2,3,4,6,7,8-HpCDF	24.3			38.69	1.04		
1,2,3,4,7,8,9-HpCDF	1.88			40.57	0.97		A
OCDF	103			44.33	0.89		
Total TCDDs	0.475		1.35				
Total PeCDDs	3.40		5.04				
Total HxCDDs	34.2		35.2				
Total HpCDDs	379						
Total TCDFs	15.8		17.1				
Total PeCDFs	4.97		6.56				
Total HxCDFs	22.0		23.8				
Total HpCDFs	108		108				
WHO-2005 TEQ (ND=0)	4.78		6.01				
WHO-2005 TEQ (ND=½)	5.16		6.01				

DATA VAL QUALIFIER
J
J

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Dry
			Matrix:	Solid
Sample ID:	F51300-22		Weight / Volume:	10.33 g
			Solids / Lipids:	82.0 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-585		Instrument:	HRMS3
Sample ID:	G383-585-16B		Filename:	c08aug07a_5-7
Collection Date/Time:	07/25/07	12:30	Retchk:	c08aug07a_4-10
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_4-10
Extraction Date:	08/07/07		End ConCal:	c08aug07a_5-9
Analysis Date/Time:	08/10/07	4:19	Initial Cal:	m8290-c110206a

Method 8290
F51300-23
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier	DATA VAL QUALIFIER
2,3,7,8-TCDD	ND	0.143						
1,2,3,7,8-PeCDD	ND	0.519						
1,2,3,4,7,8-HxCDD	ND	0.519						
1,2,3,6,7,8-HxCDD	ND	0.519						
1,2,3,7,8,9-HxCDD	ND	0.519						
1,2,3,4,6,7,8-HpCDD	1.65			39.92	0.98		A	BJ
OCDD	32.9			44.03	0.93			BJ
2,3,7,8-TCDF	0.268			30.19	0.80		A	J
1,2,3,7,8-PeCDF	EMPC	0.519	0.0914	33.22	1.08	*	A	J
2,3,4,7,8-PeCDF	ND	0.519						
1,2,3,4,7,8-HxCDF	ND	0.519						
1,2,3,6,7,8-HxCDF	ND	0.519						
2,3,4,6,7,8-HxCDF	ND	0.519						
1,2,3,7,8,9-HxCDF	ND	0.519						
1,2,3,4,6,7,8-HpCDF	0.515			38.68	1.08		A	BJ
1,2,3,4,7,8,9-HpCDF	ND	0.519						
OCDF	EMPC	1.04	1.54	44.32	1.06	*	A	BJ
Total TCDDs	ND	0.143						
Total PeCDDs	0.316							
Total HxCDDs	ND	0.519	0.453					
Total HpCDDs	4.47							
Total TCDFs	0.268		0.567					
Total PeCDFs	ND	0.519	0.143					
Total HxCDFs	0.0748		0.164					
Total HpCDFs	1.13							
WHO-2005 TEQ (ND=0)	0.0583		0.0615					
WHO-2005 TEQ (ND=½)	0.660		0.655					

Client Information			**Sample Information**		
Project Name:	F51300		Report Basis:	Dry	
			Matrix:	Solid	
Sample ID:	F51300-23		Weight / Volume:	11.19 g	
			Solids / Lipids:	86.1	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14402	
Project ID:	G383-585		Instrument:	HRMS3	
Sample ID:	G383-585-17B		Filename:	c08aug07a_5-8	
Collection Date/Time:	07/25/07	12:45	Retchk:	c08aug07a_4-10	
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_4-10	
Extraction Date:	08/07/07		End ConCal:	c08aug07a_5-9	
Analysis Date/Time:	08/10/07	5:07	Initial Cal:	m8290-c110206a	

Method 8290
F51300-31
Accutest

Analytical Data Summary Sheet

DATA VAL QUALIFIER

Analyte	Amount ng/L	EDL ng/L	EMPC ng/L	RT (min.)	Ratio	Qualifier	
2,3,7,8-TCDD	ND	0.00482					
1,2,3,7,8-PeCDD	ND	0.00605					
1,2,3,4,7,8-HxCDD	ND	0.00777					
1,2,3,6,7,8-HxCDD	ND	0.00791					
1,2,3,7,8,9-HxCDD	ND	0.00802					
1,2,3,4,6,7,8-HpCDD	ND	0.00702					
OCDD	ND	0.0186					
2,3,7,8-TCDF	ND	0.00376					
1,2,3,7,8-PeCDF	ND	0.00605					
2,3,4,7,8-PeCDF	ND	0.00605					
1,2,3,4,7,8-HxCDF	ND	0.00605					
1,2,3,6,7,8-HxCDF	ND	0.00605					
2,3,4,6,7,8-HxCDF	ND	0.00605					
1,2,3,7,8,9-HxCDF	ND	0.00605					
1,2,3,4,6,7,8-HpCDF	0.00849			39:19	0.95	A	J
1,2,3,4,7,8,9-HpCDF	ND	0.00714					
OCDF	0.0142			45:24	0.95	A	J
Total TCDDs	ND	0.00482					
Total PeCDDs	ND	0.00605					
Total HxCDDs	ND	0.00802					
Total HpCDDs	ND	0.00702					
Total TCDFs	ND	0.00376					
Total PeCDFs	ND	0.00605					
Total HxCDFs	ND	0.00605					
Total HpCDFs	0.00849						
WHO-2005 TEQ (ND=0)	0.0000892		0.0000892				
WHO-2005 TEQ (ND=½)	0.00918		0.00918				

Client Information			**Sample Information**	
Project Name:	F51300		Report Basis:	Wet
			Matrix:	Water
Sample ID:	F51300-31		Weight / Volume:	827 mL
			Solids / Lipids:	NA %
			Original pH :	7
Laboratory Information			Batch ID:	WG14393
Project ID:	G383-585		Instrument:	HRMS1
Sample ID:	G383-585-18C		Filename:	a30jul07a_9-10
Collection Date/Time:	07/25/07	14:35	Retchk:	a30jul07a_8-4
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	a30jul07a_8-4
Extraction Date:	08/01/07		End ConCal:	a30jul07a_9-14
Analysis Date/Time:	08/03/07	0:11	Initial Cal:	m8290-071007a

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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I RFAAP Project Manager

FROM: Richard McCracken, Shaw E&I RFAAP Project Chemist

SUBJECT: Radford Army Ammunition Plant (RFAAP) Data Validation – Herbicides
Accutest Laboratories, Inc., SDG F51300

DATE: December 28, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at RFAAP on July 25, 2007. The samples were analyzed for chlorinated herbicides using USEPA SW846 Method 8151A. A total of 1 aqueous and 30 soil samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
59SB06A	F51300-1	43SB06C	F51300-17
59SB06B	F51300-2	43SB07A	F51300-18
59SB06C	F51300-3	43SB07B	F51300-19
59SB05A	F51300-4	43SB07C	F51300-20
59SB05B	F51300-5	43SB08A	F51300-21
59SB05C	F51300-6	43SB08B	F51300-22
59SB04A	F51300-7	43SB08C	F51300-23
59SB04B	F51300-8	43SB09A	F51300-24
59SB04C	F51300-9	43SB09B	F51300-25
TMSB04C	F51300-10	43SB09C	F51300-26
59SB02A	F51300-11	43SB10A	F51300-27
59SB02B	F51300-12	43SB10B	F51300-28
TMSB02B	F51300-13	43SB10C	F51300-29
59SB02C	F51300-14	TMSB10B	F51300-30
43SB06A	F51300-15	072507R	F51300-31
43SB06B	F51300-16		

Data were reviewed by Richard McCracken and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
	X	Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Richard McCracken, Chemist

12/28/08
Date

RFAAP VALIDATION REPORT
CHLORINATED HERBICIDES REVIEW
SDG F51300

I-Holding Times

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Solid samples must be cooled @4°C ± 2°C, with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. Aqueous samples must be cooled @4°C ± 2°C, with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: A temperature blank was sent with each cooler and recorded by the laboratory upon receipt. The samples collected on 7/25/07 were sent in five coolers, and were received by the laboratory on 7/26/07 at temperatures ranging from 2.6 °C to 4.0 °C. No qualifiers were applied.

- Holding Time Review: The samples were collected on 7/25/07; extracted on 7/31/07 (water & soils) & 8/2/07 (soils only); and analyzed on 8/2/07, 8/3/07, 8/4/07, & 8/6/07. All criteria were met. No qualifiers were applied.

II-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The DoD QSM specifies that the percent relative standard deviation (%RSD) for a 5-point standard calibration should be ≤20% for each target compound.

- No initial calibration data was provided for MCPP or MCPA. During discussions with the laboratory, they indicated that they perform a one-point calibration each day that analysis for MCPP or MCPA is conducted. A five-point initial calibration was not performed, therefore all data for these two compounds has been qualified "J/UJ".

- During the initial calibration performed on 8/1/07 on instrument GC-GG, pentachlorophenol (20.65%) and 2,4,5-TP (Silvex) (20.32%) had %RSD > 20% on signal #1 - the results for these two compounds have been qualified "J/UJ". The other target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. All samples were analyzed following this initial calibration.

III-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration establishes the response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The DoD QSM specifies that the percent difference (%D) between the initial calibration CF and the continuing calibration CF must be ≤20%.

- A one-point daily calibration from 8/2/07 @1149, 8/3/07 @1729, and was provided for MCPP and MCPA, indicating that the lab is able to detect and quantitate both compounds. %D data was not supplied since a five-point initial calibration was not performed. All MCPP and MCPA data has already been qualified (see initial calibration), no additional qualification is required.

- During continuing calibration performed on 8/2/07 @1244 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Samples F51300-1, -2, -3, -4, and -5 were analyzed after this continuing calibration.

- During continuing calibration performed on 8/2/07 @2009 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Samples F51300-1, -2, -3, -4, and -5 were analyzed before this continuing calibration, while samples F51300-7, -8, -9, -10, -11, -12, -13, -14, -15, and -16 were analyzed after this continuing calibration.

- During continuing calibration performed on 8/3/07 @0134 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Samples F51300-7, -8, -9, -10, -11, -12, -13, -14, -15, and -16 were analyzed before this continuing calibration, while sample F51300-25 was analyzed after this continuing calibration.

- During continuing calibration performed on 8/3/07 @0350 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Sample F51300-25 was analyzed before this continuing calibration, while sample F51300-6 was analyzed after this continuing calibration.

- During continuing calibration performed on 8/3/07 @0805 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Sample F51300-6 was analyzed before this continuing calibration.

- During continuing calibration performed on 8/3/07 @1756 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Samples F51300-31 and -17 were analyzed after this continuing calibration.

- During continuing calibration performed on 8/3/07 @2322 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Sample F51300-31 and -17 were analyzed before this continuing calibration, while samples F51300-18, -22, -23, -28, -29, and -30 were analyzed after this continuing calibration.

- During continuing calibration performed on 8/6/07 @1221 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Sample F51300-19, -20, -21, -24, -26, and -27 were analyzed after this continuing calibration.

- During continuing calibration performed on 8/6/07 @1722 on instrument GC-GG, all target compounds (except MCPP and MCPA – see above) met criteria for signal #1 and signal #2. No qualifiers were applied. Sample F51300-19, -20, -21, -24, -26, and -27 were analyzed before this continuing calibration.

IV-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field or laboratory activities. No contaminants should be detected in any of the associated blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are qualified "B" if the concentration of the analyte is ≤ five times (5x) the absolute maximum blank concentration. **Table 2** summarizes the blank contamination analysis.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L or ug/kg	Action Level µg/L	B qualified samples
8/2/07	OP7785-MB	All target compounds <½MRL	NA	NA	None
8/3/07	OP7790-MB	All target compounds <½MRL	NA	NA	None
8/3/07	OP7792-MB	All target compounds <½MRL	NA	NA	None
8/3/07	072507R	All target compounds <½MRL	NA	NA	None
8/3/07	072607R	All target compounds <½MRL	NA	NA	None

072507R and 072607R are rinsate blanks.
NA = Not applicable. MRL = Method reporting limit.

V-System Monitoring Compounds (Surrogates)
Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. Spike recoveries must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Control Limit: 2,4-DCAA (34-179%)

- All samples met recovery criteria.

VI-Laboratory Control Samples
Data for laboratory control samples (LCS) are generated to determine long-term precision and accuracy of the analytical method. Percent recoveries must be within the specified control limits. DoD LCS recovery limits are specified in Tables D-8 (aqueous) and D-9 (solid matrix) of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP7785-BS was used as a solid matrix LCS during the 8/2/07 run. All herbicides were within criteria, no data qualifiers were applied. Samples F51300-1 thru -16 and -25 were analyzed in conjunction with this LCS.

- Sample OP7790-BS was used as a aqueous LCS during the 8/3/07 run. All herbicides were within criteria, no data qualifiers were applied. Sample F51300-31 was analyzed in conjunction with this LCS.

- Sample OP7792-BS was used as a solid matrix LCS during the 8/2/07 run. All herbicides were within criteria, no data qualifiers were applied. Samples F51300-17 thru -24 and -26 thru -30 were analyzed in conjunction with this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD MS/MSD recovery limits follow the LCS criteria specified in Tables D-8 (aqueous) and D-9 (solid matrix) of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Solid matrix MS/MSD analysis was performed on F51300-25. Dichloroprop (65%) had a low recovery in the MS – the dichloroprop results in associated samples have been qualified "J/UJ". 2,4,5-TP (Silvex), 2,4,5-T, and dalapon had high RPDs – no data qualification is performed on RPD data alone. All other herbicides met recovery and RPD criteria. Samples F51300-1 thru -16 and -25 were analyzed in conjunction with this MS/MSD.

- Aqueous MS/MSD analysis was performed on F51275-1 (an RFAAP sample analyzed in Accutest project F51275). Dinoseb (13%, 14%) had a low recovery in the MS & MSD, the dinoseb results in associated samples have been qualified "J/UJ". All other herbicides met recovery and RPD criteria. Sample F51300-31 was analyzed in conjunction with this LCS.

- Solid matrix MS/MSD analysis was performed on F51300-29. 2,4,5-TP (Silvex) (30%), 2,4,5-T (35%), dinoseb (0%, 0%), dalapon (0%, 0%), dichloroprop (49%), and 2,4-DB (44%) had low recoveries in the MS or both the MS & MSD – the results for these compounds in associated samples have been qualified "J/UJ". 2,4-D, 2,4,5-TP (Silvex), 2,4,5-T, dicamba, dichloroprop, and 2,4-DB had high RPDs – no data qualification is performed on RPD data alone. All other herbicides met recovery and RPD criteria. Samples F51300-17 thru -24 and -26 thru -30 were analyzed in conjunction with this MS/MSD.

VIII-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were qualified because of blank contamination (B-qualified) or were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field duplicate pairs in this data package included 59SB04C (F51300-9) & TMSB04C (F51300-10), 59SB02B (F51300-12) & TMSB02B (F51300-13), and 43SB10B (F51300-28) & TMSB10B (F51300-30). All compounds detected above the reporting limit (RL) met RPD criteria.

IX-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. Percent difference (%D) between the calculated value and the reported value must be within 10%. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL is qualified as estimated, "J." All criteria were met. No qualifiers were applied.

- The %D between the primary and secondary columns was within criteria for all detected chlorinated herbicides.

Sample: OP7785-BS, 2,4-D

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * Ps * 1000)

where:
- Ax = Area response for the compound being measured
- Vt = Total volume of extract, taking into account dilutions (uL)
- DF = Dilution factor
- CF = Calibration Factor from initial calibration (area/pg)
- Vi = Volume of extract injected (uL)
- Ws = weight of sample (g)
- Ps = percent solids/100

Conc. µg/kg = (1643574 * 10000 * 1) / (9670 * 1 * 30.11 * 1 * 1000)
= 56.5 ug/kg

Reported Conc. = 56.6 µg/kg
%D = 0.2%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

A (Dioxins) = MDL is based upon the signal-to-noise measurement.

B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics and Dioxins) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

D (Organics) = Indicates sample was analyzed at a dilution.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

E (Dioxins) = Reported value is estimated because of the presence of ether interferences.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/F ions is outside accepted ranges. The detected PCDD/F is reported as an estimated maximum possible concentration (EMPC).

I (Dioxins) = Reported value is estimated because of the incorrect isotope rations were obtained.

J (All) = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, (2) estimating a concentration <MRL and ≥ MDL, or estimating a concentration below the calibration range.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

U (All) = ND = BQL = Not detected. The associated number indicates the compound reporting limit for the sample.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36495.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.3	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	UJ
94-82-6	2,4-DB	ND	73	59	ug/kg	
93-65-2	MCPP	ND	180		ug/kg	UJ
94-74-6	MCPA	ND	180		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	90%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36496.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.5	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.5	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.5	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	UJ
94-82-6	2,4-DB	ND	75	61	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	UJ
94-74-6	MCPA	ND	190		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	104%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36497.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	UJ
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	UJ
94-74-6	MCPA	ND	190		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	105%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36498.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	
1918-00-9	Dicamba	ND	7.4	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	10	ug/kg	UJ
94-82-6	2,4-DB	ND	74	60	ug/kg	
93-65-2	MCPP	ND	180		ug/kg	UJ
94-74-6	MCPA	ND	180		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	60%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36499.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.1	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	UJ
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND	200		ug/kg	UJ
94-74-6	MCPA	ND	200		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	104%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36520.D	1	08/03/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	UJ
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	UJ
94-74-6	MCPA	ND	190		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	105%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36503.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	UJ
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	UJ
94-74-6	MCPA	ND	190		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	98%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36504.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.1	ug/kg	
75-99-0	Dalapon	ND	39	28	ug/kg	
120-36-5	Dichloroprop	ND	39	11	ug/kg	UJ
94-82-6	2,4-DB	ND	79	64	ug/kg	
93-65-2	MCPP	ND	200		ug/kg	UJ
94-74-6	MCPA	ND	200		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	77%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36505.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
94-75-7	2,4-D	ND	38	15	ug/kg		
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg		
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg		
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg		
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg		
75-99-0	Dalapon	ND	38	27	ug/kg		
120-36-5	Dichloroprop	ND	38	10	ug/kg		UJ
94-82-6	2,4-DB	ND	76	62	ug/kg		
93-65-2	MCPP	ND	190		ug/kg		UJ
94-74-6	MCPA	ND	190		ug/kg		UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36506.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.8	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.1	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	11	ug/kg	UJ
94-82-6	2,4-DB	ND	78	64	ug/kg	
93-65-2	MCPP	ND	200		ug/kg	UJ
94-74-6	MCPA	ND	200		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	103%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36507.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
94-75-7	2,4-D	ND	37	15	ug/kg		
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg		
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg		
1918-00-9	Dicamba	ND	7.4	5.6	ug/kg		
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg		
75-99-0	Dalapon	ND	37	26	ug/kg		
120-36-5	Dichloroprop	ND	37	10	ug/kg		UJ
94-82-6	2,4-DB	ND	74	61	ug/kg		
93-65-2	MCPP	ND	190		ug/kg		UJ
94-74-6	MCPA	ND	190		ug/kg		UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	103%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36508.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	8.0	4.0	ug/kg	
1918-00-9	Dicamba	ND	8.0	6.0	ug/kg	
88-85-7	Dinoseb	ND	8.0	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	UJ
94-82-6	2,4-DB	ND	80	65	ug/kg	
93-65-2	MCPP	ND	200		ug/kg	UJ
94-74-6	MCPA	ND	200		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36509.D	1	08/02/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	10	ug/kg	UJ
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	UJ
94-74-6	MCPA	ND	190		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	116%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36510.D	1	08/03/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	8.0	4.0	ug/kg	
1918-00-9	Dicamba	ND	8.0	6.0	ug/kg	
88-85-7	Dinoseb	ND	8.0	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	UJ
94-82-6	2,4-DB	ND	80	65	ug/kg	
93-65-2	MCPP	ND	200		ug/kg	UJ
94-74-6	MCPA	ND	200		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	127%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36511.D	1	08/03/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
94-75-7	2,4-D	ND	38	15	ug/kg		
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg		
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg		
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg		
88-85-7	Dinoseb	ND	7.6	5.0	ug/kg		
75-99-0	Dalapon	ND	38	27	ug/kg		
120-36-5	Dichloroprop	ND	38	10	ug/kg		UJ
94-82-6	2,4-DB	ND	76	62	ug/kg		
93-65-2	MCPP	ND	190		ug/kg		UJ
94-74-6	MCPA	ND	190		ug/kg		UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	100%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36512.D	1	08/03/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
94-75-7	2,4-D	ND	41	16	ug/kg		
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg		
93-76-5	2,4,5-T	ND	8.1	4.1	ug/kg		
1918-00-9	Dicamba	ND	8.1	6.1	ug/kg		
88-85-7	Dinoseb	ND	8.1	5.3	ug/kg		
75-99-0	Dalapon	ND	41	29	ug/kg		
120-36-5	Dichloroprop	ND	41	11	ug/kg		UJ
94-82-6	2,4-DB	ND	81	66	ug/kg		
93-65-2	MCPP	ND	200		ug/kg		UJ
94-74-6	MCPA	ND	200		ug/kg		UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	97%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36541.D	1	08/03/07	ATX	08/02/07	T:OP7792	T:GGG1141
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	UJ
1918-00-9	Dicamba	ND	7.4	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	UJ
75-99-0	Dalapon	ND	37	26	ug/kg	UJ
120-36-5	Dichloroprop	ND	37	10	ug/kg	UJ
94-82-6	2,4-DB	ND	74	61	ug/kg	UJ
93-65-2	MCPP	ND	190		ug/kg	UJ
94-74-6	MCPA	ND	190		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	99%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36544.D	1	08/04/07	ATX	08/02/07	T:OP7792	T:GGG1141
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	UJ
1918-00-9	Dicamba	ND	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	UJ
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.7	ug/kg	
94-82-6	2,4-DB	ND	72	59	ug/kg	
93-65-2	MCPP	ND	180		ug/kg	
94-74-6	MCPA	ND	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	59%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36564.D	1	08/06/07	ATX	08/02/07	T:OP7792	T:GGG1142
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	UJ
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	UJ
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	82%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36565.D	1	08/06/07	ATX	08/02/07	T:OP7792	T:GGG1142
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	UJ
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	UJ
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	78%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36566.D	1	08/06/07	ATX	08/02/07	T:OP7792	T:GGG1142
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	34	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	12	ug/kg	UJ
93-76-5	2,4,5-T	ND	6.9	3.4	ug/kg	UJ
1918-00-9	Dicamba	ND	6.9	5.1	ug/kg	
88-85-7	Dinoseb	ND	6.9	4.5	ug/kg	UJ
75-99-0	Dalapon	ND	34	24	ug/kg	
120-36-5	Dichloroprop	ND	34	9.3	ug/kg	
94-82-6	2,4-DB	ND	69	56	ug/kg	
93-65-2	MCPP	ND	170		ug/kg	
94-74-6	MCPA	ND	170		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	60%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36545.D	1	08/04/07	ATX	08/02/07	T:OP7792	T:GGG1141
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	14	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	UJ
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	UJ
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	66%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36547.D	1	08/04/07	ATX	08/02/07	T:OP7792	T:GGG1141
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	UJ
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	5.0	ug/kg	UJ
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	73%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.24

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36567.D	1	08/06/07	ATX	08/02/07	T:OP7792	T:GGG1142
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	UJ
1918-00-9	Dicamba	ND	7.4	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	UJ
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	9.9	ug/kg	
94-82-6	2,4-DB	ND	74	60	ug/kg	
93-65-2	MCPP	ND	180		ug/kg	
94-74-6	MCPA	ND	180		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	54%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36515.D	1	08/03/07	ATX	07/31/07	T:OP7785	T:GGG1140
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	UJ
94-82-6	2,4-DB	ND	77	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	UJ
94-74-6	MCPA	ND	190		ug/kg	UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	141%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36568.D	1	08/06/07	ATX	08/02/07	T:OP7792	T:GGG1142
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	UJ
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	UJ
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	94%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36569.D	1	08/06/07	ATX	08/02/07	T:OP7792	T:GGG1142
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	U
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	U
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	U
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	38%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36548.D	1	08/04/07	ATX	08/02/07	T:OP7792	T:GGG1141
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	UJ
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	5.0	ug/kg	UJ
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	72%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36549.D	1	08/04/07	ATX	08/02/07	T:OP7792	T:GGG1141
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	UJ
1918-00-9	Dicamba	ND	7.9	6.0	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.2	ug/kg	UJ
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND	200		ug/kg	
94-74-6	MCPA	ND	200		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	100%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8151 SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36550.D	1	08/04/07	ATX	08/02/07	T:OP7792	T:GGG1141
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	UJ
93-76-5	2,4,5-T	ND	7.7	3.8	ug/kg	UJ
1918-00-9	Dicamba	ND	7.7	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	UJ
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	77	62	ug/kg	
93-65-2	MCPP	ND	190		ug/kg	
94-74-6	MCPA	ND	190		ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	92%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	**Date Sampled:**	07/25/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/26/07
Method:	SW846 8151 SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36537.D	1	08/03/07	ATX	07/31/07	T:OP7790	T:GGG1141
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
94-75-7	2,4-D	ND	1.5	0.80	ug/l		
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l		
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l		
1918-00-9	Dicamba	ND	0.20	0.080	ug/l		
88-85-7	Dinoseb	ND	0.20	0.090	ug/l		UJ
75-99-0	Dalapon	ND	1.0	1.0	ug/l		
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l		
94-82-6	2,4-DB	ND	2.0	1.9	ug/l		
93-65-2	MCPP	ND	50		ug/l		UJ
94-74-6	MCPA	ND	50		ug/l		UJ
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	66%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Richard McCracken, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – TAL Metals
Accutest Laboratories, Inc., SDG F51300

DATE: January 2, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at RFAAP on July 25, 2007. The samples were analyzed for target analyte list (TAL) metals using USEPA SW-846 3010A/6010B (aqueous) and 3050B/6010B (solid matrix) for ICP metals; and SW-846 7470A (aqueous) and 7471A (solid matrix) for mercury. A total of 1 aqueous and 30 soil samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	**Field Sample ID**	Lab Sample ID
59SB06A	F51300-1	43SB06C	F51300-17
59SB06B	F51300-2	43SB07A	F51300-18
59SB06C	F51300-3	43SB07B	F51300-19
59SB05A	F51300-4	43SB07C	F51300-20
59SB05B	F51300-5	43SB08A	F51300-21
59SB05C	F51300-6	43SB08B	F51300-22
59SB04A	F51300-7	43SB08C	F51300-23
59SB04B	F51300-8	43SB09A	F51300-24
59SB04C	F51300-9	43SB09B	F51300-25
TMSB04C	F51300-10	43SB09C	F51300-26
59SB02A	F51300-11	43SB10A	F51300-27
59SB02B	F51300-12	43SB10B	F51300-28
TMSB02B	F51300-13	43SB10C	F51300-29
59SB02C	F51300-14	TMSB10B	F51300-30
43SB06A	F51300-15	072507R	F51300-31
43SB06B	F51300-16		

Data were reviewed by Richard McCracken and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial and Continuing Calibration
X		Blank Analysis
	X	ICP Interference Check Sample (ICS)
	X	Laboratory Control Sample (LCS)
X		Laboratory Sample Duplicate
X		Matrix Spike and Spike Duplicate
X		ICP Serial Dilution
	X	Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Richard McCracken, Chemist

1/2/08
Date

RFAAP VALIDATION REPORT
METALS REVIEW
SDG F51300

I-Holding Times

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. Holding time criteria: Solid samples must be cooled @4°C±2°C with a maximum holding time of 180 days for ICP metals and 28 days for mercury. Aqueous samples must be preserved to pH<2 with HNO_3 and cooled @4°C±2°C, with a maximum holding time of 180 days for ICP metals and 28 days for mercury.

- Temperature Review: A temperature blank was sent with each cooler and recorded by the laboratory upon receipt. The samples collected on 7/25/07 were sent in five coolers, and were received by the laboratory on 7/26/07 at temperatures ranging from 2.6 °C to 4.0 °C. No qualifiers were applied.

- Holding Time Review: The samples were collected 7/25/07 for metals analysis, digested for mercury on 7/27/07 and 7/28/07, analyzed for mercury on 7/27/07 and 7/28/07, digested for ICP metals on 7/27/07 and 7/30/07, and analyzed for ICP metals on 7/28/07, 7/30/07, & 7/31/07. All criteria were met. No qualifiers were applied.

II-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

ICP:	1- blank (DoD QSM <½ MRL) 3 – standards (r≥0.995) ICV/CCV (90-110%) (DoD QSM 90-110%) MRL (70-130%) (DoD QSM 80-120%) High Std. (95-105%)	Hg:	1 – blank (DoD QSM <½ MRL) 5 – standards (r≥0.995) ICV/CCV (80-120%)(DoD QSM ICV 90-110% & CCV 80-120%) MRL (80-120%) (DoD QSM 80-120%) High Std. (95-105%)

- Mercury analysis was performed on 7/27/07, with a correlation coefficient of 0.999.

- Mercury analysis was performed on 7/28/07, with a correlation coefficient of 0.999.

- The mercury ICVs and CCVs met recovery criteria.

- Sample F51300-31 was analyzed for ICP metals on 7/28/07 between CCV21 and CCV22. Both CCVs met recovery criteria.

- Samples F51300-1 thru -30 were analyzed for ICP metals between CCV6 and CCV11 during the 7/30/07 metals run. All CCVs in this interval met recovery criteria.

- Selected samples were analyzed for iron and manganese between CCV3 and CCV6 during the 7/31/07 metals run. All CCVs in this interval met recovery criteria.

- All metals met recovery criteria during the High Standard analysis.

- **Table 2** summarizes the MRL standard analysis. Samples with concentrations detected less than two times the MRL with out of criteria MRL recovery were qualified.

Table 2 MRL Analysis Summary

Analysis Date	Analysis	MRL	MRL %Recovery	Qualified samples @ <2xMRL	Validation Qualifiers
7/27/07	Hg	0.2 ug/l	150.0	F51300-17, -23	K
7/28/07	Hg	0.2 ug/l	Met criteria	None	None
7/27/07	ICP-Al	200 ug/l	79.0	F51300-31	J
7/27/07	ICP-Sb	5 ug/l	0	F51300-31	J
7/27/07	ICP-Be	5 ug/l	126.0	None	None
7/27/07	ICP-Tl	10 ug/l	139.0	None	None
7/30/07	ICP-Sb	5 ug/l	130.0	None	None
7/30/07	ICP-Be	5 ug/l	124.0	None	None
7/30/07	ICP-Pb	5 ug/l	124.0	None	None
7/30/07	ICP-Tl	10 ug/l	125.0	None	None
7/31/07	ICP metals	Various	Met criteria	None	None

III-Blanks

Blanks (preparation and calibration blanks) are assessed to determine the existence and magnitude of contamination problems. No contaminants should be detected (i.e. <MDL) in any of the associated blanks. DoD QSM limits are <½MRL for the method blank and <2*MDL for the calibration blanks. Samples are qualified "B" when they are less than 5x the absolute value of the maximum blank concentration. **Table 3** summarizes the blank contamination analysis.

Table 3 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc.	Action Level	B qualified samples
7/27/07	ICP-Sb	ICB/CCB	9.2 ug/l	46.0	None
7/27/07	ICP-Fe	ICB/CCB	25.2 ug/l	126.0	None
7/27/07	ICP-K	ICB/CCB	1780 ug/l	8900	F51300-31
7/27/07	ICP-Mg	ICB/CCB	10.6	53.0	None
7/27/07	ICP-Na	ICB/CCB	2120 ug/l	10600	F51300-31
7/27/07	ICP-Se	ICB/CCB	5.0 ug/l	25.0	None
7/27/07	ICP-Tl	ICB/CCB	8.1 ug/l	40.5	None
7/30/07	ICP-Al	ICB/CCB	0.902 mg/kg	4.51	None
7/30/07	ICP-Sb	ICB/CCB	0.264 mg/kg	1.32	F51300-2 thru -30
7/30/07	ICP-Be	ICB/CCB	0.048 mg/kg	0.24	None
7/30/07	ICP-K	ICB/CCB	9.06 mg/kg	45.3	None
7/30/07	ICP-Tl	ICB/CCB	0.288 mg/kg	1.44	None
7/30/07	ICP-Zn	ICB/CCB	0.080 mg/kg	0.40	None
7/31/07	ICP-Fe, Mn	ICB/CCB	<2*MDL	NA	None
7/27/07	Mercury	ICB/CCB	<2*MDL	NA	None
7/28/07	Mercury	ICB/CCB	<2*MDL	NA	None
7/27/07	ICP Metals	MP12593-MB	<½MRL	NA	None
7/30/07	ICP-Be	MP12608-MB	0.14 mg/kg	0.70	F51300-2, -3, -4, -5, -6, -8, -9, -10, -12, -13, -14, -16, -17
7/30/07	ICP-Be	MP12609-MB	0.14 mg/kg	0.70	F51300-2, -3, -4, -5, -6, -8, -9, -10, -12, -13, -14, -16, -17
7/28/07	Mercury	MP12585-MB	<½MRL	NA	None
7/28/07	Mercury	MP12586-MB	<½MRL	NA	None
7/28/07	Mercury	MP12598-MB	<½MRL	<2*MDL	None
7/27/07	Potassium	F51300-31	1700 ug/l	170	None
7/27/07	Sodium	F51300-31	2130 ug/l	213	F51300-1, -2, -3, -4, -6, -9, -10, -11
7/28/07	Mercury	F51300-31	<½MRL	NA	None
7/31/07	Nickel	F51353-8	1.3 ug/l	0.13	None
7/31/07	Potassium	F51353-8	1730 ug/l	173	None
7/31/07	Sodium	F51353-8	1950 ug/l	195	F51300-1, -2, -3, -9, -10, -11

F51300-31 and F51353-8 are rinsate blanks.
J = Estimated value <MRL and >MDL.

IV-ICP Interference Check Sample (ICS)
The ICP interference check sample (ICS) verifies interelement and background correction factors. ICP Interference Check is performed at the beginning and end of each sample analysis run. Control limits are 80-120% (DoD QSM limits 80-120%).

- All criteria were met. No qualifiers were applied.

V-Laboratory Control Samples (LCS)
The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. The DoD LCS recovery limits are specified in Tables D-18 (aqueous) and D-19 (solid matrix) of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample MP12593-BS was used as an aqueous LCS during ICP metals analysis. All criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed in conjunction with this LCS.

- Sample MP12608-BS was used as a solid matrix LCS during ICP metals analysis. All criteria were met. No qualifiers were applied. Samples F51300-1 thru -19 and -25 were analyzed in conjunction with this LCS.

- Sample MP12609-BS was used as a solid matrix LCS during ICP metals analysis. All criteria were met. No qualifiers were applied. Samples F51300-20 thru -24, and -26 thru -30 were analyzed in conjunction with this LCS.

- Sample MP12585-BS was used as a solid matrix LCS during mercury analysis. All criteria were met. No qualifiers were applied. Samples F51300-1 thru -12 and -25 were analyzed in conjunction with this LCS.

- Sample MP12586-BS was used as a solid matrix LCS during mercury analysis. All criteria were met. No qualifiers were applied. Samples F51300-13 thru -24 and -26 thru -30 were analyzed in conjunction with this LCS.

- Sample MP12598-BS was used as the LCS during aqueous ICP metals analysis. All criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed in conjunction with this LCS.

VI-Laboratory Duplicate Sample Analysis
Duplicate sample determinations are used to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate analyses are also performed to generate data in order to determine the long-term precision of the analytical method on various matrices. RPDs must be within established control limits. DoD QSM limits for metals are 20% RPD for ICP metals and mercury.

- Sample F51300-25 was analyzed in duplicate during solid matrix ICP metals analysis. Antimony (27.8%), arsenic (92.5%), calcium (108.9%), copper (34.1%), iron (48.0%), lead (83.5%), magnesium (65.7%), and zinc (35.4%) had RPDs above criteria – all results for these metals have been qualified "J/UJ". The other metals met RPD criteria. Samples F51300-1 thru -19 and -25 were analyzed in conjunction with this laboratory duplicate.

- Sample F51300-29 was analyzed in duplicate during solid matrix ICP metals analysis. Calcium (21.4%), cobalt (64.0%), lead (21.4%), manganese (67.0%), and selenium (40.0%) had RPDs above criteria – all results for these metals have been qualified "J/UJ". The other metals met RPD criteria. Samples F51300-20 thru -24, and -26 thru -30 were analyzed in conjunction with this laboratory duplicate.

- Sample F51289-13 was analyzed in duplicate during aqueous ICP metals analysis. The sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this laboratory duplicate.

- Sample F51300-25 was analyzed in duplicate during solid matrix mercury analysis, and met RPD criteria. Samples F51300-1 thru -12 and -25 were analyzed in conjunction with this laboratory duplicate.

- Sample F51300-29 was analyzed in duplicate during solid matrix mercury analysis, and met RPD criteria. Samples F51300-13 thru -24 and -26 thru -30 were analyzed in conjunction with this laboratory duplicate.

- Sample F51314-1 was analyzed in duplicate during aqueous mercury analysis. The sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this laboratory duplicate.

VII-Matrix Spike/Spike Duplicate

MS/MSD are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike and matrix spike duplicate samples at a frequency of one MS and MSD per 20 samples of similar matrix. MS and MSD recoveries and relative percent differences between MS and MSD recoveries should be within the specified limits. DoD MS/MSD recovery limits follow the LCS criteria specified in Tables D-18 (aqueous) and D-19 (sold matrix) of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used. Post digestion spikes limits are 75-125% for ICP metals and mercury.

- Sample F51300-25 was used as an MS/MSD during solid matrix ICP metals analysis. Antimony (19.1%, 18.3%), arsenic (55.1%, 58.9%), barium (68.0%, 73.8%), cadmium (69.3%, 71.6%), calcium (0%, 0%), cobalt (69.3%, 75.9%), copper (38.7%, 46.5%), iron (140.4%, 27.5%), lead (48.9%, 60.1%), magnesium (0%, 0%), nickel (69.3%, 77.0%), potassium (72.3%, 77.3%), selenium (56.8%, 60.9%), thallium (67.2%, 70.0%), and zinc (0%, 18.3%) had low recoveries in the MS & MSD, while chromium (70.3%), manganese (0%), silver (73.0%), and sodium (79.4%) had low recoveries in the MS or MSD. The sample concentration was >4 times the spike added for calcium, iron, magnesium, and manganese; therefore, no qualifiers were applied for these four metals. The results for the other metals listed have been qualified "L/UL". The other metals met recovery criteria, and all metals met RPD criteria. Samples F51300-1 thru -19 and -25 were analyzed in conjunction with this MS/MSD.

- Sample F51300-29 was used as an MS/MSD during solid matrix ICP metals analysis. Aluminum (0%, 49.7%), antimony (29.0%, 27.1%), arsenic (69.6%, 71.4%), barium (73.4%, 75.2%), cadmium (74.5%, 73.7%), cobalt (61.3%, 53.3%), lead (76.2%, 78.4%), magnesium (68.4%, 69.1%), manganese (0%, 0%), nickel (74.1%, 77.8%), potassium (71.1%, 77.8%), selenium (66.5%, 68.5%), and thallium (75.8%, 77.4%) had low recoveries in the MS & MSD, while chromium (77.0%), iron (6.4%), vanadium (79.1%), and zinc (78.5%) had low recoveries in the MS or MSD. The sample concentration was >4 times the spike added for aluminum, iron, and manganese; therefore, no qualifiers were applied for these three metals. The results for the other metals listed have been qualified "L/UL". The other metals met recovery criteria, and all metals met RPD criteria. Samples F51300-20 thru -24, and -26 thru -30 were analyzed in conjunction with this MS/MSD.

- Sample F51289-3 was used as an MS/MSD during aqueous ICP metals analysis. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this MS/MSD.

- Sample F51300-25 was used as an MS/MSD during solid matrix mercury analysis. Both MS and the MSD (0%, 0%) had low recoveries. The sample concentration was >4 times the spike added; therefore, no qualifiers were applied. Samples F51300-1 thru -12 and -25 were analyzed in conjunction with this laboratory duplicate.

- Sample F51300-29 was used as an MS/MSD during solid matrix mercury analysis, and met the recovery and RPD criteria. Samples F51300-13 thru -24 and -26 thru -30 were analyzed in conjunction with this MS/MSD.

- Sample F51314-1 was used as the MS/MSD during aqueous mercury analysis. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this MS/MSD.

VIII-ICP Serial Dilution

An ICP serial dilution is performed to determine whether significant physical or chemical interferences exist due to sample matrix at high concentrations. An analysis of a 5-fold dilution should agree within 10% difference of the original result when the concentration in sample is a factor of 50 above MDL.

- Sample F51300-25 was used as the serial dilution during solid matrix ICP metals analysis. Aluminum (24.4%), barium (25.0%), calcium (32.4%), chromium (29.6%), cobalt (28.2%), copper (13.4%), iron (32.3%), lead (34.2%), magnesium (38.0%), manganese (32.8%), nickel (33.8%), potassium (17.2%), vanadium (28.3%), and zinc (28.6%) had %D > 10%. All detections for these metals have been qualified "J/UJ". The other metals met criteria. Samples F51300-1 thru -19 and -25 were analyzed in conjunction with this serial dilution.

- Sample F51300-29 was used as the serial dilution during solid matrix ICP metals analysis. Aluminum (23.4%), barium (23.9%), calcium (24.5%), chromium (22.8%), cobalt (23.5%), copper (12.1%), iron (27.6%), lead (37.4%), magnesium (35.3%), manganese (27.2%), nickel (26.4%), potassium (21.5%), vanadium (22.5%), and zinc (24.4%) had %D > 10%. All detections for these metals have been qualified "J/UJ". The other metals met criteria. Samples F51300-20 thru -24, and -26 thru -30 were analyzed in conjunction with this serial dilution.

- Sample F51289-3 was used as the serial dilution during aqueous ICP metals analysis. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this serial dilution.

- Sample F51300-25 was used as the serial dilution during solid matrix mercury analysis, and met %D criteria. No data qualifiers were applied. Samples F51300-1 thru -12 and -25 were analyzed in conjunction with this laboratory duplicate.

- Sample F51300-29 was used as the serial dilution during solid matrix mercury analysis, and met %D criteria. No data qualifiers were applied. Samples F51300-13 thru -24 and -26 thru -30 were analyzed in conjunction with this laboratory duplicate.

- Sample F51314-1 was used as the serial dilution during aqueous mercury analysis. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this serial dilution.

IX-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 35% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field duplicate pairs in this data package included 59SB04C (F51300-9) & TMSB04C (F51300-10), 59SB02B (F51300-12) & TMSB02B (F51300-13), and 43SB10B (F51300-28) & TMSB10B (F51300-30). All compounds detected above the reporting limit (RL) met RPD criteria.

X-Quantitation Verification
The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." The following calculations were performed for verification.

ICP Sample: F51300-13, Chromium

Conc. (mg/kg) = (conc. μg/L) *(Final Volume L) * (DF) / (Sample weight g) * (Percent solids/100)

Conc. (mg/kg) = (275.8 μg/L)*(0.05 L)*(1) / (1.01)*(0.853) = 16.0 mg/kg

Reported concentration = 16.0 mg/kg
%D = 0.0%
Values were within 10% difference.

CVAA Sample: F51300-13, Mercury

Conc. (mg/kg) = (conc. μg/L) *(Final Volume L) * (DF) / (Sample weight g) * (Percent solids/100)

Conc. (mg/kg) = (1.20 μg/L)*(0.05 L)*(1) / (0.69)*(0.853) = 0.10 mg/kg

Reported concentration = 0.10 mg/kg
%D = 0.0%.
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

D = Indicates sample was analyzed at a dilution.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7210 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.29 U UJ	3.2	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.3 J	0.43	0.21	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	178 J	11	0.27	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.3	0.27	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.054 U UL	0.22	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	411 J	270	3.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	9.2	0.54	0.048	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	6.6	2.7	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	3.3	1.3	0.048	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	6270	5.4	0.65	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	15.1	5.4	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	295	270	0.40	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	3630	16	1.1	mg/kg	20	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.041 J J	0.088	0.0070	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	5.2 J	2.2	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	302 J J	540	5.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.70 J L	5.4	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.048 U UL	0.54	0.048	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	109 J BJ	540	44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.4 U UL	4.4	2.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	15.1 J	2.7	0.032	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	12.9 J	1.1	0.070	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result		RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12200	J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.83	J B J	3.3	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.7	J	0.44	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	56.4	J	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.45	B	0.28	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.55	U VL	1.1	0.55	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	531	J	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	33.0		0.55	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.0		2.8	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	6.3		1.4	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	13800		5.5	0.66	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	11.6		5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	563		280	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	1320		8.3	0.55	mg/kg	10	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.10		0.091	0.0073	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	6.1	J	2.2	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	607	J	550	5.5	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.39	J L	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.050	U VL	0.55	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	162	J B J	550	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6	U VL	4.4	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	34.6	J	2.8	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	19.6	J	1.1	0.072	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12900 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.87 J BJ	3.3	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 J	0.44	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	56.6 J	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.42 B	0.28	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.55 U UL	1.1	0.55	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	545 J	280	3.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	25.9	0.55	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.5	2.8	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	6.6	1.4	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	13700	5.5	0.66	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	10.6	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	503	280	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	943	8.3	0.55	mg/kg	10	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.12	0.084	0.0067	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	6.0 J	2.2	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	586 J	550	5.5	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.38 J L	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.050 U UL	0.55	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	195 J BJ	550	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	1.3 U UL	2.2	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	34.2 J	2.8	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	20.3 J	1.1	0.072	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	15500 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.0 J BJ	3.3	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.4 J	0.44	0.21	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	88.6 J	11	0.27	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.60 B	0.27	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.55 U VL	1.1	0.55	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	596 J	270	3.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	21.5	0.55	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.2	2.7	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	8.3	1.4	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	19200	5.5	0.66	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	9.7	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	609	270	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	446	4.1	0.27	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.12	0.085	0.0068	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	6.8 J	2.2	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	656 J	550	5.5	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.26 J	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.049 U VL	0.55	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	230 J BJ	550	45	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.26 U VL	1.1	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	47.2 J	2.7	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	22.9 J	1.1	0.071	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	24800 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Antimony	1.1 J BJ	3.6	0.31	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.2 J	0.48	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Barium	38.7 J	12	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.63 B	0.30	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cadmium [a]	0.60 U UL	1.2	0.60	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Calcium	245 J J	300	3.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Chromium	20.0	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	3.3	3.0	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Copper	13.6	1.5	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Iron	27800	5.9	0.71	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Lead	7.6	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	983	300	0.44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Manganese	119	0.89	0.036	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.068 J J	0.097	0.0078	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	9.8 J	2.4	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Potassium	1250 J	590	5.9	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Selenium	0.12 U UL	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.053 U UL	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Sodium	383 J L	590	49	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Thallium [b]	0.28 U UL	1.2	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	64.9 J	3.0	0.036	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Zinc	32.3 J	1.2	0.077	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Prep QC Batch: MP12585
(4) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18600 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.63 J	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	0.97 J	0.45	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	31.6 J	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.61 B	0.28	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	40.7 J J	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	22.9	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	6.2	2.8	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.3	1.4	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	14600	5.6	0.67	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	3.8 J	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	648	280	0.42	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	296	1.7	0.11	mg/kg	2	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.039 J J	0.089	0.0071	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	8.1 J	2.2	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	718 J	560	5.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.19 J L	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U UL	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	227 J B J	560	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.26 U UL	1.1	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	24.3 J	2.8	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	20.0 J	1.1	0.073	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

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Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17800 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.72 J BJ	3.3	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.6 J	0.44	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Barium	94.7 J	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	1.1	0.28	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Calcium	937 J	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Chromium	28.8	0.56	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	9.6	2.8	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Copper	12.8	1.4	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Iron	24400	5.6	0.67	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Lead	8.3	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1830	280	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Manganese	216	0.83	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.082 J	0.084	0.0067	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	11.5	2.2	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Potassium	935	560	5.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Selenium	0.11 U UL	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.050 U UL	0.56	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Sodium	370 J L	560	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Thallium [b]	0.26 U UL	1.1	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	50.6 J	2.8	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Zinc	42.8 J	1.1	0.072	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Prep QC Batch: MP12585
(4) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	25900 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.84 J B J	3.6	0.32	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.2 J	0.48	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	43.6 J	12	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.66 B	0.30	0.060	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.60 U UL	1.2	0.60	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	530 J	300	3.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	21.0 J	0.60	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	2.9 J	3.0	0.060	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.8	1.5	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	37000	12	1.7	mg/kg	2	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Lead	8.4	6.0	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	806	300	0.44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	112	0.89	0.036	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Mercury	0.087 J	0.094	0.0075	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.6	2.4	0.060	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1050	600	6.0	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.12 U UL	6.0	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.054 U UL	0.60	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	396 J L	600	49	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.28 U UL	1.2	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	74.5 J	3.0	0.036	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	32.5 J	1.2	0.077	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	17100 J	11	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.61 J BJ	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.3 J	0.46	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	44.6 J	11	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.67 B	0.29	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.57 U UL	1.2	0.57	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	184 J J	290	3.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	16.7	0.57	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	8.2	2.9	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	7.3	1.4	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	14900	5.7	0.69	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	4.7 J	5.7	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	714	290	0.42	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	452	4.3	0.29	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.030 J	0.096	0.0076	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	8.1	2.3	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	813	570	5.7	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.20 J L	5.7	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U UL	0.57	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	225 J BJ	570	47	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.26 U UL	1.1	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	27.4 J	2.9	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	18.9 J	1.1	0.074	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.10
3

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DAM VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19100 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.72 J B	3.5	0.31	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.3 J	0.47	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	41.8 J	12	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.65 B	0.29	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.58 U UL	1.2	0.58	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	209 J J	290	3.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.0	0.58	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	8.0	2.9	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.4	1.5	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	15700	5.8	0.70	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	5.4 J	5.8	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	641	290	0.43	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	388	4.4	0.29	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.050 J	0.099	0.0079	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	8.0	2.3	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	781	580	5.8	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.13 J L	5.8	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.053 U UL	0.58	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	229 J B J	580	48	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.26 U UL	1.2	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	29.1 J	2.9	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	20.3 J	1.2	0.076	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7210 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.37 J B	3.3	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	5.2 J	0.44	0.21	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	140 J	11	0.27	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.0	0.27	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.55 U UL	1.1	0.55	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	192 J J	270	3.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	11.6	0.55	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	2.9	2.7	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.9	1.4	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	10800	5.5	0.66	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	9.9	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	382	270	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	337 V	4.1	0.27	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.24	0.089	0.0071	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	5.3 J	2.2	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	365 J J	550	5.5	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.63 J L	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.049 U UL	0.55	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	187 J B J	550	45	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.26 U UL	1.1	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	20.5 J	2.7	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	22.6 J	1.1	0.071	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	22900 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.76 J	3.5	0.31	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.3	0.47	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Barium	45.5	12	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.70	0.29	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cadmium [a]	0.59 U	1.2	0.59	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Calcium	539	290	3.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Chromium	16.8	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	3.7	2.9	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Copper	12.1	1.5	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Iron	26400	5.9	0.71	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Lead	10.1	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1010	290	0.44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Manganese	167	0.88	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.10	0.097	0.0077	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	9.5	2.4	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Potassium	1080	590	5.9	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Selenium	0.12 U	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.053 U	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Sodium	366 J	590	49	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Thallium [b]	0.28 U	1.2	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	63.4	2.9	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Zinc	30.6	1.2	0.077	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Prep QC Batch: MP12585
(4) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	21600 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.80 J BJ	3.5	0.31	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	0.94 J	0.46	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Barium	42.7 J	12	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.66 B	0.29	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cadmium [a]	0.58 U UL	1.2	0.58	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Calcium	541 J	290	3.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Chromium	16.0	0.58	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	3.6	2.9	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Copper	12.1	1.5	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Iron	26300	5.8	0.70	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Lead	10.7	5.8	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1000	290	0.43	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Manganese	161 J	0.87	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.10	0.085	0.0068	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	9.1 J	2.3	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Potassium	1050 J	580	5.8	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Selenium	0.12 U UL	5.8	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.052 U UL	0.58	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Sodium	357 J L	580	48	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Thallium [b]	0.26 U UL	1.2	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	61.8 J	2.9	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Zinc	28.4 J	1.2	0.075	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Prep QC Batch: MP12586
(4) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.14

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	19800 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.86 J	3.6	0.32	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.4	0.48	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	38.6	12	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.71	0.30	0.060	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.60 U	1.2	0.60	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	323	300	3.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.3	0.60	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.8	3.0	0.060	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.7	1.5	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	20000	6.0	0.71	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.6	6.0	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	1060	300	0.44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	378	4.5	0.30	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.066 J	0.095	0.0076	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	8.6	2.4	0.060	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	948	600	6.0	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.29 J	6.0	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.054 U	0.60	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	315 J	600	49	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.28 U	1.2	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	42.3	3.0	0.036	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	24.4	1.2	0.077	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	15600 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.71 J	3.5	0.31	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.4	0.46	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	192	12	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.3	0.29	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.29 U	0.46	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	2150	290	3.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	24.3	0.58	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.9	2.9	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	14.0	1.4	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	19800	5.8	0.69	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	16.4	5.8	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3130	290	0.43	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	428	4.3	0.29	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.061 J	0.087	0.0070	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.6	2.3	0.058	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1030	580	5.8	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.12 U	5.8	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.052 U	0.58	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	369 J	580	48	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [b]	0.26 U	1.2	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	42.4	2.9	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	89.9	1.2	0.075	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	6990 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.73 J BJ	3.6	0.32	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	6.8 J	0.48	0.24	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Barium	83.9 J	12	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.77 B	0.30	0.061	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.061 U UL	0.24	0.061	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Calcium	15200 J	300	3.5	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Chromium	13.2	0.61	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	5.0	3.0	0.061	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Copper	45.1	1.5	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Iron	21000	6.1	0.73	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Lead	19.6	6.1	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	5670	300	0.45	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Manganese	238	0.91	0.036	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.40	0.096	0.0076	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	10.5 J	2.4	0.061	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Potassium	886 J	610	6.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Selenium	0.51 J L	6.1	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.18 J L	0.61	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Sodium	390 J L	610	50	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	0.28 U UL	1.2	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	17.6 J	3.0	0.036	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]
Zinc	111 J	1.2	0.079	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Prep QC Batch: MP12586
(4) Prep QC Batch: MP12608

(a) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.1.7 S

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7010 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.47 J BJ	3.3	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.5 J	0.44	0.21	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	54.7 J	11	0.27	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.77 B	0.27	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.55 U UL	1.1	0.55	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	773 J	270	3.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	13.4	0.55	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.3	2.7	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.9	1.4	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	14300	5.5	0.66	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	5.8	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2180	270	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	411 V	4.1	0.27	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.015 J K	0.089	0.0071	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.9 J	2.2	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	840 J	550	5.5	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.19 J L	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.049 U UL	0.55	0.049	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	340 J L	550	45	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	1.3 U UL	2.2	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	22.8 J	2.7	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	29.3 J	1.1	0.071	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11900 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.67 J BJ	3.2	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	17.7 J	0.43	0.21	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	142 J	11	0.27	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.1	0.27	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.054 U UL	0.22	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1840 J	270	3.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.4	0.54	0.048	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.7	2.7	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	16.8	1.3	0.048	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	19800	5.4	0.65	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	16.2	5.4	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2400	270	0.40	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	708	8.1	0.54	mg/kg	10	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.31	0.092	0.0074	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.7 J	2.2	0.054	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1090 J	540	5.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.31 J L	5.4	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.048 U UL	0.54	0.048	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	381 J L	540	44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	1.2 U UL	2.2	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	33.0 J	2.7	0.032	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	68.4 J	1.1	0.070	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8040 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.54 J B J	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.1 J	0.45	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	104 J	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.89	0.28	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.056 U UL	0.23	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	3090 J	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	14.3	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	8.1	2.8	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	8.9	1.4	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	13700	5.6	0.68	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	28.4	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2800	280	0.42	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	655	8.4	0.56	mg/kg	10	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.47	0.091	0.0073	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.6 J	2.3	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1040 J	560	5.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.27 J L	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U UL	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	356 J L	560	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U UL	4.4	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	21.3 J	2.8	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	115 J	1.1	0.073	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.20

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11500 J	11	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.59 J	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.3	0.46	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	67.6	11	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.0	0.29	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.57 U	1.2	0.57	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	765	290	3.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	16.9	0.57	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	8.2	2.9	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.4	1.4	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	17700	5.7	0.68	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	5.0 J	5.7	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2760	290	0.42	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	404	4.3	0.29	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.023 J	0.086	0.0069	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	10.6	2.3	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1310	570	5.7	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.17 J	5.7	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U	0.57	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	557 J	570	47	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U	4.4	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	33.7	2.9	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	39.3	1.1	0.074	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	8690 J	10	1.1	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.53 J BJ	3.1	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.8 L	0.42	0.20	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	98.9 J	10	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.75	0.26	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.93 L	0.21	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	15900 J	260	3.0	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	14.4	0.52	0.047	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	6.6	2.6	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.3	1.3	0.047	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	12600	5.2	0.62	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	13.5	5.2	0.10	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	8180	260	0.39	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	349	3.9	0.26	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.071 J	0.087	0.0069	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.1	2.1	0.052	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1220	520	5.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	1.3 J	5.2	0.10	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.047 U	0.52	0.047	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	348 J J	520	43	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.4 U UL	4.0	2.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	22.3 J	2.6	0.031	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	92.5 J	1.0	0.068	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.22
S

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11800 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.83 J BJ	3.5	0.31	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.9 L	0.47	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	97.1 J	12	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.99	0.29	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.059 U UL	0.23	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1910 J	290	3.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	20.4	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.8	2.9	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	20.3	1.5	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	18500	5.9	0.70	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	29.2	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3030	290	0.43	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	377	4.4	0.29	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.087	0.087	0.0070	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.3 J	2.3	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1430 J	590	5.9	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.38 J J	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.053 U	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	514 J J	590	48	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U UL	4.8	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	33.6 J	2.9	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	77.0 J	1.2	0.076	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9260 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.67 J BJ	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.5 L	0.45	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	69.1 J	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.88	0.28	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	747 J	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	15.0	0.56	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	8.9	2.8	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.3	1.4	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	16000	5.6	0.67	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	3.4 J	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2380	280	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	455	4.2	0.28	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.015 J K	0.091	0.0073	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	10.3 J	2.2	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1270 J	560	5.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.25 J J	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.050 U	0.56	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	462 J J	560	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U UL	4.8	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	28.5 J	2.8	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	34.1 J	1.1	0.073	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Report of Analysis

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11900 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.65 J BJ	3.2	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 L	0.42	0.21	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	199 J	11	0.26	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.0	0.26	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.53 U UL	1.0	0.53	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	3470 J	260	3.0	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	22.1	0.53	0.047	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	12.6	2.6	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.5	1.3	0.047	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	20100	5.3	0.63	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	12.6	5.3	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2490	260	0.39	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	1710	7.9	0.53	mg/kg	10	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.037 J	0.091	0.0073	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.8	2.1	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	856	530	5.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.70 J	5.3	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.047 U	0.53	0.047	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	313 J	530	44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.4 U UL	4.0	2.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	34.9 J	2.6	0.032	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	66.0 J	1.1	0.069	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.25 B

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11300 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.68 J	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	6.1	0.45	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	90.5	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.97	0.28	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.056 U	0.23	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	9430	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.5	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.8	2.8	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	19.2	1.4	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	17900	5.6	0.68	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	11.2	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	6490	280	0.42	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	383	1.7	0.11	mg/kg	2	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	1.9	0.52	0.042	mg/kg	6	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.4	2.3	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1630	560	5.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.11 U	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	472 J	560	47	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U	4.4	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	31.6	2.8	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	69.5	1.1	0.073	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12585
(5) Prep QC Batch: MP12608

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.26

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	10500 J	11	1.2	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.68 J BJ	3.3	0.30	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.4 L	0.45	0.22	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Barium	72.4 J	11	0.28	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.92	0.28	0.056	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Calcium	633 J	280	3.2	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Chromium	17.4	0.56	0.050	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	9.3	2.8	0.056	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Copper	12.4	1.4	0.050	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Iron	18000	5.6	0.67	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Lead	4.0 J	5.6	0.11	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	2700	280	0.41	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Manganese	169	0.84	0.033	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.029 J	0.091	0.0073	mg/kg	1	07/27/07	07/27/07 MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	12.0	2.2	0.056	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Potassium	1350	560	5.6	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Selenium	0.14 J	5.6	0.11	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.050 U	0.56	0.050	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Sodium	482 J	560	46	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Thallium [b]	0.26 U UL	1.1	0.26	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	31.3 J	2.8	0.033	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]
Zinc	39.5 J	1.1	0.072	mg/kg	1	07/30/07	07/30/07 MS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Prep QC Batch: MP12586
(4) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.
(b) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

3.27 3

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14400 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.89 J	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.2	0.45	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	121	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.2	0.28	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.056 U	0.23	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1690	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	22.2	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.9	2.8	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.9	1.4	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	19900	5.6	0.68	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.0	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3500	280	0.42	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	521	4.2	0.28	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.042 J	0.094	0.0075	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	13.6	2.3	0.056	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1440	560	5.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.11 U	5.6	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U	0.56	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	523 J	560	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U	4.8	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	39.6	2.8	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	57.1	1.1	0.073	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

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Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11100 J	11	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.89 J	3.4	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.2	0.46	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	89.5 J	11	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.99	0.29	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.28 U	0.46	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	945 J	290	3.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.4	0.57	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.4	2.9	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.0	1.4	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	17000	5.7	0.69	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	4.0 J	5.7	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2890	290	0.42	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	490	4.3	0.29	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.028 J	0.086	0.0069	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.0	2.3	0.057	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1260	570	5.7	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.22 J	5.7	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.051 U	0.57	0.051	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	495 J	570	47	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U	4.8	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	31.5 J	2.9	0.034	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	45.9 J	1.1	0.074	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
		Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10600 J	12	1.3	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.72 J BJ	3.5	0.31	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.47	0.23	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	94.3 J	12	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.97	0.30	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.30 U UL	0.48	0.30	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1880 J	300	3.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.3	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	16.5	3.0	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.5	1.5	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	15400	5.9	0.71	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	5.7 J	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3250	300	0.44	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	337	1.8	0.12	mg/kg	2	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.036 J	0.086	0.0069	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.0	2.4	0.059	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1070	590	5.9	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.24 J	5.9	0.12	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.053 U	0.59	0.053	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	399 J	590	49	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	1.4 U UL	2.4	1.4	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	26.9 J	3.0	0.035	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	43.4 J	1.2	0.077	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
		Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11100 J	11	1.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.76 J	3.3	0.29	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.1	0.44	0.22	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Barium	92.5 J	11	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.0	0.28	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.28 U UL	0.44	0.28	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Calcium	955 J	280	3.2	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.2	0.55	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.6	2.8	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.2	1.4	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Iron	17200	5.5	0.67	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Lead	4.2 J	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2990	280	0.41	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Manganese	492	4.2	0.28	mg/kg	5	07/30/07	07/31/07	NS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.024 J	0.090	0.0072	mg/kg	1	07/27/07	07/27/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.2	2.2	0.055	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1230	550	5.5	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.23 J	5.5	0.11	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.050 U	0.55	0.050	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Sodium	476 J	550	46	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	2.6 U UL	4.4	2.6	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	31.4 J	2.8	0.033	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]
Zinc	46.7 J	1.1	0.072	mg/kg	1	07/30/07	07/30/07	MS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5879
(2) Instrument QC Batch: MA5884
(3) Instrument QC Batch: MA5886
(4) Prep QC Batch: MP12586
(5) Prep QC Batch: MP12609

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

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Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis DATA VAL QUALIFIER

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	18 U UJ	200	18	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Antimony	3.4 U UJ	6.0	3.4	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Arsenic	2.8 U	10	2.8	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Barium	5.0 U	200	5.0	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Beryllium	1.0 U	4.0	1.0	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Cadmium	1.0 U	5.0	1.0	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Calcium	42 U	1000	42	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Chromium	0.60 U	10	0.60	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Cobalt	1.0 U	50	1.0	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Copper	1.0 U	25	1.0	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Iron	15 U	300	15	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Lead	1.7 U	5.0	1.7	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Magnesium	4.3 U	5000	4.3	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Manganese	1.5 U	15	1.5	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Mercury	0.10 U	1.0	0.10	ug/l	1	07/28/07	07/28/07	MS	SW846 7470A [1]	SW846 7470A [4]
Nickel	1.0 U	40	1.0	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Potassium	1770 J BJ	10000	100	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Selenium	2.8 U	10	2.8	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Silver	0.90 U	10	0.90	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Sodium	2130 J BJ	10000	500	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Thallium [a]	5.8 U	20	5.8	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Vanadium	1.1 U	50	1.1	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]
Zinc	1.6 U	20	1.6	ug/l	1	07/27/07	07/28/07	RS	SW846 6010B [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA5882
(2) Instrument QC Batch: MA5883
(3) Prep QC Batch: MP12593
(4) Prep QC Batch: MP12598

(a) Elevated RL/MDL due to negative bias of Method Blank.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Richard McCracken, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Pesticides and PCBs
Accutest Laboratories, Inc., SDG F51300

DATE: December 21, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at RFAAP on July 25, 2007. Samples were analyzed for pesticides using USEPA Methods 3550B/8081A (soils) and 3510C/8081A (waters); and for PCBs using USEPA Methods 3550B/8082 (soils) and 3510C/8082 (waters), respectively. A total of 1 aqueous and 30 soil samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
59SB06A	F51300-1	43SB06C	F51300-17
59SB06B	F51300-2	43SB07A	F51300-18
59SB06C	F51300-3	43SB07B	F51300-19
59SB05A	F51300-4	43SB07C	F51300-20
59SB05B	F51300-5	43SB08A	F51300-21
59SB05C	F51300-6	43SB08B	F51300-22
59SB04A	F51300-7	43SB08C	F51300-23
59SB04B	F51300-8	43SB09A	F51300-24
59SB04C	F51300-9	43SB09B	F51300-25
TMSB04C	F51300-10	43SB09C	F51300-26
59SB02A	F51300-11	43SB10A	F51300-27
59SB02B	F51300-12	43SB10B	F51300-28
TMSB02B	F51300-13	43SB10C	F51300-29
59SB02C	F51300-14	TMSB10B	F51300-30
43SB06A	F51300-15	072507R	F51300-31
43SB06B	F51300-16		

Data were reviewed by Richard McCracken and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
X		System Monitoring Compounds
X		Laboratory Control Samples
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Richard M. Cracken

Richard McCracken, Chemist

12/21/07

Date

RFAAP VALIDATION REPORT
PESTICIDE/PCB REVIEW
SDG F51300

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: Solid samples must be stored @4°C ± 2°C with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. Aqueous samples must be cooled @4°C ± 2°C with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: A temperature blank was sent with each cooler and recorded by the laboratory upon receipt. The samples collected on 7/25/07 were sent in five coolers, and were received by the laboratory on 7/26/07 at temperatures ranging from 2.6 °C to 4.0 °C. No qualifiers were applied.

- Holding Time Review: The samples were collected on 7/25/07. The aqueous sample was extracted for pesticides and PCBs on 7/30/07, analyzed for pesticides on 8/10/07, and analyzed for PCBs on 8/1/07. The solid samples were extracted for pesticides and PCBs on 8/2/07 & 8/3/07, analyzed for pesticides on 8/8/07, 8/9/07, 8/10/07, & 8/11/07, and analyzed for PCBs on 8/6/07, 8/7/07, 8/8/07, & 8/13/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check (Degradation Standard)
Performance checks on the gas chromatograph with electron capture detector (GC/ECD) system are performed to ensure adequate resolution and instrument sensitivity. The performance evaluation mixture (PEM) must be analyzed at the beginning of the analytical sequence. The breakdown of Endrin and 4,4'-DDT must be ≤15% on both signals.

- During the analysis beginning 8/6/07 @0925, endrin and 4,4'-DDT percent breakdowns were 11.2% and 7.1% on signal #1, and 10.7% and 5.6% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- During the analysis beginning 8/8/07 @1046, endrin and 4,4'-DDT percent breakdowns were 4.6% and 4.2% on signal #1, and 4.6% and 3.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- During the analysis beginning 8/9/07 @1538, endrin and 4,4'-DDT percent breakdowns were 3.8% and 3.5% on signal #1, and 4.0% and 2.8% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- During the analysis beginning 8/10/07 @1538, endrin and 4,4'-DDT percent breakdowns were 3.7% and 2.5% on signal #1, and 3.9% and 2.0% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- During the analysis beginning 8/11/07 @1054, endrin and 4,4'-DDT percent breakdowns were 3.4% and 2.3% on signal #1, and 3.5% and 2.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- During the analysis beginning 8/13/07 @1116, endrin and 4,4'-DDT percent breakdowns were 2.7% and 1.4% on signal #1, and 2.6% and 1.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5 point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. Calibration factors are generated for each compound. The DoD QSM specifies that the percent relative standard deviation (%RSD) for all single peak target analytes, and aroclors 1016, 1242, 1254, and 1260 must be <20% or the mean %RSD for all analytes in the standard must be ≤20%. If linear regression is used, the correlation coefficient must be ≥0.990. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits.

- During the pesticide initial calibration performed on 8/6/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples F51300-1 thru -17 were analyzed following this initial calibration.

- During the pesticide initial calibration performed on 8/9/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples F51300-18, -19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -29, and -30 were analyzed following this initial calibration.

- During the pesticide initial calibration performed on 8/10/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Sample F51300-31 analysis plus the reanalyses of samples F51300-9, -10, -11, -12, -13, -14, -15, -16, -17, and -22 were performed following this initial calibration.

- During the PCB initial calibration performed on 7/28/07 on instrument ECD3, all criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed following this initial calibration.

- During the PCB initial calibration performed on 8/6/07 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-1 thru -17 were analyzed following this initial calibration.

- During the PCB initial calibration performed on 8/7/07 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-18 thru -30 were analyzed following this initial calibration.

- During the PCB initial calibration performed on 8/13/07 on instrument ECD3, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-16, -17, and -22 were performed following this initial calibration.

IV-Continuing Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for pesticide/PCB target compounds. Continuing calibration standards containing both target compounds and surrogates are analyzed at the beginning of each 12-hour analytical shift and after every 20 samples. The DoD QSM specifies that the percent difference (%D) or the average %Ds for all analytes in the standard from the calibration should be no greater than ±20%.

- During the pesticide initial calibration verification performed on 8/6/07 @1229 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples were analyzed in conjunction with this ICV.

- During the pesticide continuing calibration performed on 8/8/07 @1131 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5 -6, -7, and -8 were analyzed following this continuing calibration.

- During the pesticide continuing calibration performed on 8/8/07 @1153 on instrument ECD6, the 4th chlordane peak (20.4%) from signal #2 had a %D outside criteria, but the average %D of all six chlordane peaks was 7.9% which met criteria. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5 -6, -7, and -8 were analyzed following this continuing calibration.

- During the pesticide continuing calibration performed on 8/8/07 @1209 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5 -6, -7, and -8 were analyzed following this continuing calibration.

- During the pesticide continuing calibration performed on 8/8/07 @1528 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5 -6, -7, and -8 were analyzed before this continuing calibration, while samples F51300-9, -10, -11, -12, -13, -14, -15, and -16 were analyzed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/8/07 @1838 on instrument ECD6, endrin aldehyde (21.3%) had a high %D on signal #1, while 4,4'-DDT (28.3%, 25.2%) and methoxychlor (25.6%, 24.4%) had a high %D on both signals. The results for these compounds have been qualified "J/UJ" in associated samples. All other compounds met criteria. Samples F51300-9, -10, -11, -12, -13, -14, -15, and -16 were analyzed before this continuing calibration, while sample F51300-17 was analyzed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/8/07 @1926 on instrument ECD6, heptachlor (24.0%, 23.1%), endrin aldehyde (21.9%, 22.4%), 4,4'-DDT(31.8%, 31.8%), and methoxychlor (31.3%, 32.5%) had a high %D on both signals. The results for these compounds have been qualified "J/UJ" in associated samples. All other compounds met criteria. Sample F51300-17 was analyzed before this continuing calibration.

- During the pesticide initial calibration verification performed on 8/9/07 @1840 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples F51300-18, -19, -20, -21, -22, -23, -24, and -25 were analyzed following this ICV.

- During the pesticide continuing calibration performed on 8/9/07 @2134 on instrument ECD6, 4,4'-DDT(26.7%) and methoxychlor (22.2%) had a high %D on signal #1. The results for these compounds have been qualified "J/UJ" in associated samples. All other compounds met criteria. Samples F51300-18, -19, -20, -21, -22, -23, -24, and -25 were analyzed before this continuing calibration, while samples F51300-26, -27, -28, -29, and -30 were analyzed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/9/07 @2356 on instrument ECD6, methoxychlor (20.6%) had a high %D on signal #1. The methoxychlor results have been qualified "J/UJ" in associated samples. All other compounds met criteria. Samples F51300-26, -27, -28, -29, and -30 were analyzed before this continuing calibration.

- During the pesticide initial calibration verification performed on 8/10/07 @1840 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples were analyzed following this ICV.

- During the pesticide continuing calibration performed on 8/10/07 @2015 on instrument ECD6, all criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed following with this continuing calibration.

- During the pesticide continuing calibration performed on 8/10/07 @2205 on instrument ECD6, all criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed before with this continuing calibration.

- During the pesticide continuing calibration performed on 8/10/07 @2309 on instrument ECD6, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-9, -10, -11, -12, -13, -14, and -15 were performed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/11/07 @ 0202 on instrument ECD6, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-9, -10, -11, -12, -13, -14, and -15 were performed before this continuing calibration.

- During the pesticide continuing calibration performed on 8/11/07 @1110 on instrument ECD6, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-14, 16, and 17 were performed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/11/07 @1132 on instrument ECD6, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-14, 16, and 17 were performed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/11/07 @1148 on instrument ECD6, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-14, 16, and 17 were performed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/11/07 @1400 on instrument ECD6, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-14, 16, and 17 were performed before this continuing calibration, while the reanalysis of F51300-22 was performed after this continuing calibration.

- During the pesticide continuing calibration performed on 8/11/07 @1447 on instrument ECD6, all criteria were met. No qualifiers were applied. The reanalysis of F51300-22 was performed before this continuing calibration.

- During the PCB 1016/1260 initial calibration verification performed on 7/28/07 @1459 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples were analyzed following this initial calibration verification.

- During the PCB 1016/1260 continuing calibration performed on 8/1/07 @1521 on instrument ECD3, all criteria were met. No qualifiers were applied. The aqueous method blank, the aqueous LCS, and the aqueous MS/MSD were analyzed following this continuing calibration.

- During the PCB 1016/1260 continuing calibration performed on 8/1/07 @1833 on instrument ECD3, all criteria were met. No qualifiers were applied. The aqueous method blank, the aqueous LCS, and the aqueous MS/MSD were analyzed before this continuing calibration, while sample F51300-31 was analyzed after this continuing calibration.

- During the PCB 1016/1260 continuing calibration performed on 8/1/07 @2015 on instrument ECD3, all criteria were met. No qualifiers were applied. Sample F51300-31 was analyzed before this continuing calibration.

- During the PCB 1016/1260 initial calibration verification performed on 8/6/07 @1556 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples were analyzed following this initial calibration verification.

- During the PCB 1016/1260 continuing calibration performed on 8/6/07 @1906 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-1 thru -3 plus a solid method blank, a solid LCS, and a solid MS/MSD were analyzed after this continuing calibration.

- During the PCB 1016/1260 continuing calibration performed on 8/6/07 @2214 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-1 thru -3 plus a solid method blank, a solid LCS, and a solid MS/MSD were analyzed before this continuing calibration, while samples F51300-4, -5, -6, -7, -8, -9, -10, -11, and -12 were analyzed after this continuing calibration.

- During the PCB 1016/1260 continuing calibration performed on 8/7/07 @0121 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-4, -5, -6, -7, -8, -9, -10, -11, and -12 were analyzed before this continuing calibration, while samples F51300-13, -14, -15, -16, and -17 were analyzed after this continuing calibration.

- During the PCB 1016/1260 continuing calibration performed on 8/7/07 @0321 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-13, -14, -15, -16, and -17 were analyzed before this continuing calibration.

- During the PCB 1016/1260 initial calibration verification performed on 8/7/07 @1923 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-18, -19, -20, -21, -22, -23, -24, and -25 were analyzed following this initial calibration verification.

- During the PCB 1016/1260 continuing calibration performed on 8/7/07 @2231 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-18, -19, -20, -21, -22, -23, -24, and -25 were analyzed before this continuing calibration, while samples F51300-26, -27, -28, -29, and -30 plus an MS/MSD were analyzed after this continuing calibration.

- During the PCB 1016/1260 continuing calibration performed on 8/8/07 @0155 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples F51300-26, -27, -28, -29, and -30 plus an MS/MSD were analyzed before this continuing calibration.

- During the PCB 1016/1260 initial calibration verification performed on 8/13/07 @1416 on instrument ECD3, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-16, -17, and -22 were performed following this initial calibration verification.

- During the PCB 1016/1260 continuing calibration performed on 8/13/07 @1719 on instrument ECD3, all criteria were met. No qualifiers were applied. The reanalyses of samples F51300-16, -17, and -22 were performed before this continuing calibration.

V-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for pesticide and PCB target compounds. **Table 2** summarizes the blank contamination analysis.

Table 2 Blank Contamination Analysis Summary

Parameter	Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
Pesticides	8/10/07	OP21657-MB	All target <½MRL	NA	NA	None
Pesticides	8/8/07	OP21716-MB	All target <½MRL	NA	NA	None
Pesticides	8/10/07	OP21716-MB	All target <½MRL	NA	NA	None
Pesticides	8/11/07	OP21716-MB	All target <½MRL	NA	NA	None
Pesticides	8/9/07	OP21730-MB	All target <½MRL	NA	NA	None
Pesticides	8/11/07	OP21730-MB	All target <½MRL	NA	NA	None
Pesticides	8/10/07	072507R	All target <½MRL	NA	NA	None
Pesticides	8/10/07	072607R	All target <½MRL	NA	NA	None
PCBs	8/1/07	OP21658-MB	All target <½MRL	NA	NA	None
PCBs	8/6/07	OP21715-MB	All target <½MRL	NA	NA	None
PCBs	8/13/07	OP21715-MB	All target <½MRL	NA	NA	None
PCBs	8/7/07	OP21731-MB	All target <½MRL	NA	NA	None
PCBs	8/13/07	OP21731-MB	All target <½MRL	NA	NA	None
PCBs	8/1/07	072507R	All target <½MRL	NA	NA	None
PCBs	8/1/07	072607R	All target <½MRL	NA	NA	None

072507R and 072607R are rinsate blanks.
NA = Not Applicable
MRL = Method Reporting Limit

VI-System Monitoring Compound (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:	Pesticides:	Tetrachloro-m-xylene: 42-127% (DoD QSM 25-140%) Decachlorobiphenyl: 27-127% (DoD QSM 30-135%)
	PCBs:	Tetrachloro-m-xylene: 38-127% (DoD QSM Not Listed) Decachlorobiphenyl: 25-137% (DoD QSM 40-135%)
Solid Criteria:	Pesticides:	Tetrachloro-m-xylene: 46-122% (DoD QSM 70-125%) Decachlorobiphenyl: 50-133% (DoD QSM 55-130%)
	PCBs:	Tetrachloro-m-xylene: 44-126% (DoD QSM Not Listed) Decachlorobiphenyl: 39-157% (DoD QSM 60-125%)

- Sample F51300-1 had low tetrachloro-m-xylene recoveries (65.26%, 66.78%) from both signals during pesticide analysis. The pesticide results in F51300-1 have been qualified "J/UJ".
- Sample F51300-16 had low tetrachloro-m-xylene recoveries (61.38%, 61.83%) from both signals during pesticide analysis. The pesticide results in F51300-16 have been qualified "J/UJ".
- Sample F51300-18 had a low tetrachloro-m-xylene recovery (68.79%) from signal #1 during pesticide analysis. No data qualification is required unless two surrogates are outside criteria.
- Sample F51300-19 had low tetrachloro-m-xylene recoveries (56.59%, 54.33%) from both signals during pesticide analysis. The pesticide results in F51300-19 have been qualified "J/UJ".
- Sample F51300-25 had low tetrachloro-m-xylene recoveries (54.02%, 53.34%) from both signals during pesticide analysis. The pesticide results in F51300-25 have been qualified "J/UJ".

- Sample F51300-26 had low tetrachloro-m-xylene recoveries (69.57%, 69.36%) from both signals during pesticide analysis. The pesticide results in F51300-26 have been qualified "J/UJ".

- Sample F51300-27 had low tetrachloro-m-xylene recoveries (68.12%, 67.60%) from both signals during pesticide analysis. The pesticide results in F51300-27 have been qualified "J/UJ".

- Sample F51300-28 had low tetrachloro-m-xylene recoveries (68.09%, 68.42%) from both signals during pesticide analysis. The pesticide results in F51300-28 have been qualified "J/UJ".

- Sample F51300-30 had low tetrachloro-m-xylene recoveries (67.97%, 68.90%) from both signals during pesticide analysis. The pesticide results in F51300-30 have been qualified "J/UJ".

- All other samples met surrogate recovery criteria during pesticide analysis.

- Sample F51300-25 had a low decachlorobiphenyl recovery (47.60%) from signal #1 during PCB analysis. No data qualification is required unless two surrogates are outside criteria.

- All samples met surrogate recovery criteria during PCB analysis.

VII-Laboratory Control Samples

Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD QSM solid matrix LCS recovery limits are specified in Tables D-15 and D-17 of the DoD QSM (DoD, 2006), while aqueous LCS recovery limits are specified in Tables D-14 and D-16 of the DoD QSM. If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21657-BS was used as the aqueous LCS during the 8/10/07 pesticide analysis. Endrin aldehyde (15%) had a low recovery, and was not detected in any field samples – the endrin aldehyde results have been qualified "UL" as estimated in associated samples. All other pesticides met recovery criteria. Sample F51300-31 was analyzed in conjunction with this LCS.

- Sample OP21716-BS was used as the solid LCS during the 8/8/07 pesticide analysis. Delta-BHC (53%) and endrin aldehyde (12%) had low recoveries, and were not detected in any field samples. The results for both compounds have been qualified "UL" as estimated in associated samples. All other pesticides met recovery criteria. Samples F51300-1 thru -17 were analyzed in conjunction with this LCS.

- Sample OP21730-BS was used as the solid LCS during the 8/9/07 pesticide analysis. Endrin aldehyde (11%) had a low recovery, and was not detected in any field samples – the endrin aldehyde results have been qualified "UL" as estimated in associated samples. All other pesticides met recovery criteria. Samples F51300-18 thru -30 were analyzed in conjunction with this LCS.

- Sample OP21658-BS was used as the aqueous LCS during the 8/1/07 PCB analysis. All criteria were met. No qualifiers were applied.

- Sample OP21715-BS was used as the solid LCS during the 8/6/07 PCB analysis. All criteria were met. No qualifiers were applied.

- Sample OP21731-BS was used as the solid LCS during the 8/7/07 PCB analysis. All criteria were met. No qualifiers were applied.

VIII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD solid matrix MS/MSD recovery limits follow the LCS criteria specified in Tables D-15 and D-17 of the DoD QSM (DoD, 2006), while aqueous MS/MSD recovery limits follow the LCS criteria specified in Tables D-14 and D-16 of the DoD QSM. If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51353-8 was used for the aqueous pesticide MS/MSD analysis. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this MS/MSD.

- Sample F51300-11 was used for the solid matrix pesticide MS/MSD analysis. Delta-BHC (51%) and endrin aldehyde (0%, 0%) had low recoveries in the MS and MSD, as well as having low recoveries in the associated LCS. All sample results have already been qualified "UL", no further qualification is required. All other pesticides met criteria. Samples F51300-1 thru -17 were analyzed in conjunction with this MS/MSD.

- Sample F51300-29 was used for the solid matrix pesticide MS/MSD analysis. Endrin aldehyde (16%, 16%) had low recoveries in the MS and MSD, as well as having low recoveries in the associated LCS. All sample results have already been qualified "UL", no further qualification is required. All other pesticides met criteria. Samples F51300-18 thru -30 were analyzed in conjunction with this MS/MSD.

- Sample F51314-1 was used for the aqueous PCB MS/MSD analysis. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this MS/MSD.

- Sample F51300-1 was used for the solid matrix PCB MS/MSD analysis. All PCBs met criteria. No data qualifiers were applied. Samples F51300-1 thru -17 were analyzed in conjunction with this MS/MSD.

- Sample F51300-29 was used for the solid matrix PCB MS/MSD analysis. All PCBs met criteria. No data qualifiers were applied. Samples F51300-1 thru -17 were analyzed in conjunction with this MS/MSD.

IX-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field duplicate pairs in this data package included 59SB04C (F51300-9) & TMSB04C (F51300-10), 59SB02B (F51300-12) & TMSB02B (F51300-13), and 43SB10B (F51300-28) & TMSB10B (F51300-30). All compounds detected above the reporting limit (RL) met RPD criteria.

X-Quantitation Verification
The accuracy of analytical results was verified through the calculation of several parameters. The difference between the calculated value and the reported value must be within 10% difference. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." All criteria were met.

- During analysis of F51300-16, dieldrin (100%) %D was outside criteria. All other target compounds were within criteria. The dieldrin results have been qualified "J" as estimated.

Sample: OP21716-BS, beta-BHC

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * Ps * 1000)

where: Ax = Area response for the compound being measured
Vt = Total volume of extract, taking into account dilutions (uL)
DF = Dilution factor
CF = Calibration Factor from initial calibration (area/pg)
Vi = Volume of extract injected (uL)
Ws = weight of sample (g)
Ps = percent solids/100

Conc. µg/kg = (705390 * 10000 * 1) / (19750 * 1 * 30 * 1 * 1000)
= 11.9 ug/kg

Reported Conc. = 11.9 µg/kg
%D = 0.0%
Values were within 10% difference

Sample: OP21715-BS, Aroclor 1260

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * Ps * 1000)

where: Ax = Area response for the compound being measured
Vt = Total volume of extract, taking into account dilutions (uL)
DF = Dilution factor
CF = Calibration Factor from initial calibration (area/pg)
Vi = Volume of extract injected (uL)
Ws = weight of sample (g)
Ps = percent solids/100

Signal #1
Conc1 µg/L = (3211932 * 10000* 1) / (8380 * 1 * 30 * 1000) = 127.76 µg/kg
Conc2 µg/L = (4273339 * 10000* 1) / (10410 * 1 * 30 * 1000) = 136.83 µg/kg
Conc3 µg/L = (4293784 * 10000* 1) / (10450 * 1 * 30 * 1000) = 136.96 µg/kg
Conc4 µg/L = (2923739 * 10000* 1) / (7516 * 1 * 30 * 1000) = 129.67 µg/kg
Conc5 µg/L = (6792273 * 10000* 1) / (17360 * 1 * 30 * 1000) = 130.42 µg/kg
Conc6 µg/L = (3912029 * 10000* 1) / (9980 * 1 * 30 * 1000) = 130.66 µg/kg
Average concentration = 132 µg/kg

Reported Value = 132 µg/kg (from signal #1)
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: TT08215.D

Accutest LabLink@72038 11:39 19-Dec-2007

Report of Analysis

3.1

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08215.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.46	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.78	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.60	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.35	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.5	0.71	ug/kg	
72-55-9	4,4'-DDE	ND	3.5	0.71	ug/kg	
50-29-3	4,4'-DDT	ND	3.5	0.82	ug/kg	
72-20-8	Endrin	ND	3.5	0.71	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.5	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.5	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.5	0.71	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.5	0.53	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.35	ug/kg	
72-43-5	Methoxychlor	ND	3.5	0.71	ug/kg	
8001-35-2	Toxaphene	ND	89	44	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	65%		46-122%
2051-24-3	Decachlorobiphenyl	62%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64548.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64548.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.9	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	79%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08216.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08216.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.86	ug/kg	
72-20-8	Endrin	ND	3.8	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg	
8001-35-2	Toxaphene	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		46-122%
2051-24-3	Decachlorobiphenyl	67%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64551.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64551.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.4	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.4	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08217.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08217.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg	
72-20-8	Endrin	ND	3.8	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg	
8001-35-2	Toxaphene	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	69%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64552.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64552.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.4	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.4	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08218.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08218.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.82	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.86	ug/kg	
72-20-8	Endrin	ND	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	93	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	70%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64555.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	86%		44-126%
2051-24-3	Decachlorobiphenyl	93%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08219.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08219.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	2.0	0.47	ug/kg		
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg		
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg		
319-86-8	delta-BHC	ND	2.0	0.86	ug/kg		UL
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg		
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg		
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg		
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg		
72-54-8	4,4'-DDD	ND	3.9	0.78	ug/kg		
72-55-9	4,4'-DDE	ND	3.9	0.78	ug/kg		
50-29-3	4,4'-DDT	ND	3.9	0.90	ug/kg		
72-20-8	Endrin	ND	3.9	0.78	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.9	1.2	ug/kg		UL
53494-70-5	Endrin ketone	ND	3.9	0.78	ug/kg		
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg		
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg		
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg		
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg		
72-43-5	Methoxychlor	ND	3.9	0.78	ug/kg		
8001-35-2	Toxaphene	ND	98	49	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		46-122%
2051-24-3	Decachlorobiphenyl	70%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64556.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.8	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.8	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.8	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.8	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	92%		44-126%
2051-24-3	Decachlorobiphenyl	93%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08220.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08220.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg	
72-20-8	Endrin	ND	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		46-122%
2051-24-3	Decachlorobiphenyl	73%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64557.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64557.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		44-126%
2051-24-3	Decachlorobiphenyl	94%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08221.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08221.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	1.9	0.45	ug/kg		
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg		
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg		
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg		UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg		
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg		
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg		
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg		
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg		
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg		
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg		
72-20-8	Endrin	ND	3.8	0.75	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg		UL
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg		
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg		
33213-65-9	Endosulfan-II	ND	3.8	0.56	ug/kg		
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg		
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg		
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg		
8001-35-2	Toxaphene	ND	94	47	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		46-122%
2051-24-3	Decachlorobiphenyl	70%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64558.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64558.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.4	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.4	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08222.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08222.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.48	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.56	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.52	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.88	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.68	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.40	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.44	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.44	ug/kg	
72-54-8	4,4'-DDD	ND	4.0	0.80	ug/kg	
72-55-9	4,4'-DDE	ND	4.0	0.80	ug/kg	
50-29-3	4,4'-DDT	ND	4.0	0.92	ug/kg	
72-20-8	Endrin	ND	4.0	0.80	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.0	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	4.0	1.2	ug/kg	UL
53494-70-5	Endrin ketone	ND	4.0	0.80	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.44	ug/kg	
33213-65-9	Endosulfan-II	ND	4.0	0.60	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.56	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.40	ug/kg	
72-43-5	Methoxychlor	ND	4.0	0.80	ug/kg	
8001-35-2	Toxaphene	ND	100	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	72%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64559.D	1	08/06/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	10	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	10	ug/kg	
12672-29-6	Aroclor 1248	ND	20	10	ug/kg	
11097-69-1	Aroclor 1254	ND	20	10	ug/kg	
11096-82-5	Aroclor 1260	ND	20	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	93%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08225.D TT08319.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08225.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2	TT08319.D	5	08/10/07	FS	08/02/07	OP21716	GTT281

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2	30.2 g	10.0 ml

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	UJ
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.9	1.2	ug/kg	UJ
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND [a]	9.6	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	UJ
8001-35-2	Toxaphene	ND	96	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%	81%	46-122%
2051-24-3	Decachlorobiphenyl	71%	96%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64560.D	1	08/07/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	91%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08226.D TT08320.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08226.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2	TT08320.D	5	08/11/07	FS	08/02/07	OP21716	GTT281

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2	30.3 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	2.0	0.47	ug/kg		
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg		
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg		
319-86-8	delta-BHC	ND	2.0	0.87	ug/kg		UL
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg		
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg		
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg		
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg		
72-54-8	4,4'-DDD	ND	3.9	0.79	ug/kg		
72-55-9	4,4'-DDE	ND	3.9	0.79	ug/kg		
50-29-3	4,4'-DDT	ND	3.9	0.90	ug/kg		UT
72-20-8	Endrin	ND	3.9	0.79	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.9	1.2	ug/kg		UJ
53494-70-5	Endrin ketone	ND	3.9	0.79	ug/kg		
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg		
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg		
76-44-8	Heptachlor	ND [a]	9.8	2.8	ug/kg		
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg		
72-43-5	Methoxychlor	ND	3.9	0.79	ug/kg		UT
8001-35-2	Toxaphene	ND	98	49	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%	72%	46-122%
2051-24-3	Decachlorobiphenyl	70%	89%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64561.D	1	08/07/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.8	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.8	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.8	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.8	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08227.D TT08321.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08227.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2	TT08321.D	5	08/11/07	FS	08/02/07	OP21716	GTT281

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2	30.2 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	1.8	0.44	ug/kg		
319-84-6	alpha-BHC	ND	1.8	0.52	ug/kg		
319-85-7	beta-BHC	ND	1.8	0.48	ug/kg		
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg		UL
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.63	ug/kg		
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg		
5103-74-2	gamma-Chlordane	ND	1.8	0.41	ug/kg		
60-57-1	Dieldrin	ND	1.8	0.41	ug/kg		
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg		
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg		
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg		UJ
72-20-8	Endrin	ND	3.7	0.74	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg		UJ
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg		
959-98-8	Endosulfan-I	ND	1.8	0.41	ug/kg		
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg		
76-44-8	Heptachlor	ND [a]	9.2	2.6	ug/kg		
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg		
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg		UJ
8001-35-2	Toxaphene	ND	92	46	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%	78%	46-122%
2051-24-3	Decachlorobiphenyl	70%	93%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64562.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64562.D	1	08/07/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	82%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08228.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2	TT08324.D	5	08/11/07	FS	08/02/07	OP21716	GTT281

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2	30.1 g	10.0 ml

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	2.0	0.48	ug/kg		
319-84-6	alpha-BHC	ND	2.0	0.56	ug/kg		
319-85-7	beta-BHC	ND	2.0	0.52	ug/kg		
319-86-8	delta-BHC	ND	2.0	0.88	ug/kg		UL
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.68	ug/kg		
5103-71-9	alpha-Chlordane	ND	2.0	0.40	ug/kg		
5103-74-2	gamma-Chlordane	ND	2.0	0.44	ug/kg		
60-57-1	Dieldrin	ND	2.0	0.44	ug/kg		
72-54-8	4,4'-DDD	ND	4.0	0.80	ug/kg		
72-55-9	4,4'-DDE	ND	4.0	0.80	ug/kg		
50-29-3	4,4'-DDT	ND	4.0	0.92	ug/kg		UJ
72-20-8	Endrin	ND	4.0	0.80	ug/kg		
1031-07-8	Endosulfan sulfate	ND	4.0	1.3	ug/kg		
7421-93-4	Endrin aldehyde	ND	4.0	1.2	ug/kg		UJ
53494-70-5	Endrin ketone	ND	4.0	0.80	ug/kg		
959-98-8	Endosulfan-I	ND	2.0	0.44	ug/kg		
33213-65-9	Endosulfan-II	ND	4.0	0.60	ug/kg		
76-44-8	Heptachlor	ND [a]	10	2.8	ug/kg		
1024-57-3	Heptachlor epoxide	ND	2.0	0.40	ug/kg		
72-43-5	Methoxychlor	ND	4.0	0.80	ug/kg		UJ
8001-35-2	Toxaphene	ND	100	50	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%	86%	46-122%
2051-24-3	Decachlorobiphenyl	72%	100%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64563.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64563.D	1	08/07/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.9	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.9	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.9	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.9	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	89%		44-126%
2051-24-3	Decachlorobiphenyl	92%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08229.D TT08325.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08229.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2	TT08325.D	5	08/11/07	FS	08/02/07	OP21716	GTT281

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2	30.6 g	10.0 ml

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	UJ
72-20-8	Endrin	ND	3.8	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg	UJ
53494-70-5	Endrin ketone	ND	3.8	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND [a]	9.6	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.77	ug/kg	UJ
8001-35-2	Toxaphene	ND	96	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%	80%	46-122%
2051-24-3	Decachlorobiphenyl	71%	93%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64566.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64566.D	1	08/07/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		44-126%
2051-24-3	Decachlorobiphenyl	93%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08230.D TT08338.D TT08326.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08230.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2	TT08338.D	5	08/11/07	FS	08/02/07	OP21716	GTT282
Run #3	TT08326.D	5	08/11/07	FS	08/02/07	OP21716	GTT281

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2	30.9 g	10.0 ml
Run #3	30.2 g	10.0 ml

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.48	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.56	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.52	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.88	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.68	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.40	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.44	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.44	ug/kg	
72-54-8	4,4'-DDD	ND	4.0	0.80	ug/kg	
72-55-9	4,4'-DDE	ND	4.0	0.80	ug/kg	
~~50-29-3~~	~~4,4'-DDT~~	~~ND~~	~~4.0~~	~~0.92~~	~~ug/kg~~	R
50-29-3	4,4'-DDT	ND [a]	19	4.5	ug/kg	
72-20-8	Endrin	ND	4.0	0.80	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.0	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	4.0	1.2	ug/kg	UJ
53494-70-5	Endrin ketone	ND	4.0	0.80	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.44	ug/kg	
33213-65-9	Endosulfan-II	ND	4.0	0.60	ug/kg	
~~76-44-8~~	~~Heptachlor~~	~~ND [b]~~	~~9.9~~	~~2.8~~	~~ug/kg~~	R
76-44-8	Heptachlor	ND [a]	9.7	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.40	ug/kg	
~~72-43-5~~	~~Methoxychlor~~	~~ND~~	~~4.0~~	~~0.80~~	~~ug/kg~~	R
72-43-5	Methoxychlor	ND [a]	19	3.9	ug/kg	
8001-35-2	Toxaphene	ND	99	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
877-09-8	Tetrachloro-m-xylene	71%	81%	78%	46-122%
2051-24-3	Decachlorobiphenyl	67%	85%	93%	50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q

(a) Result is from Run# 2
(b) Result is from Run# 3

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64567.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64567.D	1	08/07/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	16	ug/kg	
11141-16-5	Aroclor 1232	ND	19	16	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		44-126%
2051-24-3	Decachlorobiphenyl	94%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08233.D TT08318.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08233.D	1	08/08/07	FS	08/02/07	OP21716	GTT279
Run #2	TT08318.D	5	08/10/07	FS	08/02/07	OP21716	GTT281

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2	30.6 g	10.0 ml

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	UJ
72-20-8	Endrin	ND	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg	UJ
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND [a]	9.5	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	UJ
8001-35-2	Toxaphene	ND	95	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%	80%	46-122%
2051-24-3	Decachlorobiphenyl	70%	90%	50-133%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64568.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64568.D	1	08/07/07	JB	08/02/07	OP21715	GST1701
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08369.D	1	08/11/07	FS	08/02/07	OP21716	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
309-00-2	Aldrin	ND	2.0	0.49	ug/kg		UJ
319-84-6	alpha-BHC	ND	2.0	0.57	ug/kg		
319-85-7	beta-BHC	ND	2.0	0.53	ug/kg		
319-86-8	delta-BHC	ND	2.0	0.90	ug/kg		
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.69	ug/kg		
5103-71-9	alpha-Chlordane	ND	2.0	0.41	ug/kg		
5103-74-2	gamma-Chlordane	ND	2.0	0.45	ug/kg		
60-57-1	Dieldrin	0.85	2.0	0.45	ug/kg	J	J
72-54-8	4,4'-DDD	ND	4.1	0.82	ug/kg		UJ
72-55-9	4,4'-DDE	ND	4.1	0.82	ug/kg		
50-29-3	4,4'-DDT	ND	4.1	0.94	ug/kg		
72-20-8	Endrin	ND	4.1	0.82	ug/kg		
1031-07-8	Endosulfan sulfate	ND	4.1	1.3	ug/kg		
7421-93-4	Endrin aldehyde	ND	4.1	1.2	ug/kg		
53494-70-5	Endrin ketone	ND	4.1	0.82	ug/kg		
959-98-8	Endosulfan-I	ND	2.0	0.45	ug/kg		
33213-65-9	Endosulfan-II	ND	4.1	4.1	ug/kg		
76-44-8	Heptachlor	ND	2.0	0.57	ug/kg		
1024-57-3	Heptachlor epoxide	ND	2.0	0.41	ug/kg		
72-43-5	Methoxychlor	ND	4.1	0.82	ug/kg		
8001-35-2	Toxaphene	ND	100	51	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	61%		46-122%
2051-24-3	Decachlorobiphenyl	86%		50-133%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64789.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64789.D	1	08/13/07	JB	08/02/07	OP21715	GST1707
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	10	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	10	ug/kg	
12672-29-6	Aroclor 1248	ND	20	10	ug/kg	
11097-69-1	Aroclor 1254 [b]	29.9	20	10	ug/kg	J
11096-82-5	Aroclor 1260 [b]	39.8	20	10	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	53%		44-126%
2051-24-3	Decachlorobiphenyl	70%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08370.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08370.D	1	08/11/07	FS	08/02/07	OP21716	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg	UL
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	UJ
72-20-8	Endrin	ND	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	UJ
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.52	ug/kg	UJ
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	UJ
8001-35-2	Toxaphene	ND	92	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		46-122%
2051-24-3	Decachlorobiphenyl	84%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64790.D	1	08/13/07	JB	08/02/07	OP21715	GST1707
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	79%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08261.D

Accutest LabLink@72038 11:39 19-Dec-2007

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08261.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	3.7	ug/kg	UJ
72-20-8	Endrin	ND	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	UJ
8001-35-2	Toxaphene	ND	92	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		46-122%
2051-24-3	Decachlorobiphenyl	76%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64628.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	71.2	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		44-126%
2051-24-3	Decachlorobiphenyl	73%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08262.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08262.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	UJ
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.43	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	97	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	57%		46-122%
2051-24-3	Decachlorobiphenyl	72%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64629.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64629.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254 [b]	43.0	19	9.7	ug/kg	J
11096-82-5	Aroclor 1260 [b]	17.4	19	9.7	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	55%		44-126%
2051-24-3	Decachlorobiphenyl	63%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08263.D

Accutest Laboratories

Report of Analysis

3320

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08263.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.47	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.86	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.78	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.78	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.90	ug/kg	UJ
72-20-8	Endrin	ND	3.9	0.78	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.9	1.2	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.9	0.78	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.78	ug/kg	UJ
8001-35-2	Toxaphene	ND	98	49	ug/kg	

DATA VAL QUALIFIER

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		46-122%
2051-24-3	Decachlorobiphenyl	80%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64630.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64630.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.8	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.8	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.8	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.8	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08264.D

Accutest Laboratories

Report of Analysis

3.21
3

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08264.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	1.7	0.41	ug/kg		
319-84-6	alpha-BHC	ND	1.7	0.48	ug/kg		
319-85-7	beta-BHC	ND	1.7	0.45	ug/kg		
319-86-8	delta-BHC	ND	1.7	0.76	ug/kg		
58-89-9	gamma-BHC (Lindane)	ND	1.7	0.58	ug/kg		
5103-71-9	alpha-Chlordane	ND	1.7	0.34	ug/kg		
5103-74-2	gamma-Chlordane	ND	1.7	0.38	ug/kg		
60-57-1	Dieldrin	ND	1.7	0.38	ug/kg		
72-54-8	4,4'-DDD	ND	3.4	0.69	ug/kg		
72-55-9	4,4'-DDE	ND	3.4	0.69	ug/kg		
50-29-3	4,4'-DDT	ND	3.4	0.79	ug/kg		UJ
72-20-8	Endrin	ND	3.4	0.69	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.4	1.1	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.4	1.0	ug/kg		UL
53494-70-5	Endrin ketone	ND	3.4	0.69	ug/kg		
959-98-8	Endosulfan-I	ND	1.7	0.38	ug/kg		
33213-65-9	Endosulfan-II	ND	3.4	0.52	ug/kg		
76-44-8	Heptachlor	ND	1.7	0.48	ug/kg		
1024-57-3	Heptachlor epoxide	ND	1.7	0.34	ug/kg		
72-43-5	Methoxychlor	ND	3.4	0.69	ug/kg		
8001-35-2	Toxaphene	ND	86	43	ug/kg		UJ

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		46-122%
2051-24-3	Decachlorobiphenyl	75%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64631.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64631.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	17	8.6	ug/kg	
11104-28-2	Aroclor 1221	ND	17	14	ug/kg	
11141-16-5	Aroclor 1232	ND	17	14	ug/kg	
53469-21-9	Aroclor 1242	ND	17	8.6	ug/kg	
12672-29-6	Aroclor 1248	ND	17	8.6	ug/kg	
11097-69-1	Aroclor 1254	ND	17	8.6	ug/kg	
11096-82-5	Aroclor 1260	ND	17	8.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		44-126%
2051-24-3	Decachlorobiphenyl	76%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08343.D

Accutest Laboratories

Report of Analysis

3-22
3

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08343.D	1	08/11/07	FS	08/03/07	OP21730	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	2.0	0.47	ug/kg		
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg		
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg		
319-86-8	delta-BHC	ND	2.0	0.86	ug/kg		
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg		
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg		
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg		
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg		
72-54-8	4,4'-DDD	ND	3.9	0.78	ug/kg		
72-55-9	4,4'-DDE	ND	3.9	0.78	ug/kg		
50-29-3	4,4'-DDT	ND	3.9	0.90	ug/kg		UJ
72-20-8	Endrin	ND	3.9	0.78	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.9	1.2	ug/kg		UL
53494-70-5	Endrin ketone	ND	3.9	0.78	ug/kg		
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg		
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg		
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg		
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg		
72-43-5	Methoxychlor	ND	3.9	0.78	ug/kg		UJ
8001-35-2	Toxaphene	ND	98	49	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64793.D	1	08/13/07	JB	08/03/07	OP21731	GST1707
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	84.8	20	9.8	ug/kg	J
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.8	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.8	ug/kg	
11097-69-1	Aroclor 1254 [b]	220	20	9.8	ug/kg	J
11096-82-5	Aroclor 1260	ND	20	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	65%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08266.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08266.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
309-00-2	Aldrin	ND	1.9	0.45	ug/kg		
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg		
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg		
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg		
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg		
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg		
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg		
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg		
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg		
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg		
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg		UJ
72-20-8	Endrin	ND	3.8	0.76	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg		UL
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg		
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg		
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg		
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg		
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg		
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg		UJ
8001-35-2	Toxaphene	ND	95	47	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64633.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	81%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08267.D

Accutest Laboratories

Report of Analysis

3.2.4 3

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08267.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.51	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.62	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.73	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.73	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.84	ug/kg	UJ
72-20-8	Endrin	ND	3.7	0.73	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.7	0.73	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.51	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.73	ug/kg	UJ
8001-35-2	Toxaphene	ND	92	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64634.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		44-126%
2051-24-3	Decachlorobiphenyl	61%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08268.D

Accutest Laboratories

Report of Analysis

3.2.5 3

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08268.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	UJ
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.82	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	1.9	ug/kg	
72-54-8	4,4'-DDD [b]	ND	7.4	7.4	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.75	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.86	ug/kg	
72-20-8	Endrin	ND	3.7	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.75	ug/kg	
8001-35-2	Toxaphene	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	54%		46-122%
2051-24-3	Decachlorobiphenyl	66%		50-133%

(a) All hits confirmed by dual column analysis.
(b) Elevated reporting limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	ST64635.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	49.3	19	9.4	ug/kg	J
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254 [b]	112	19	9.4	ug/kg	J
11096-82-5	Aroclor 1260	ND	19	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	49%		44-126%
2051-24-3	Decachlorobiphenyl	48%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08271.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08271.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

UJ

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	
72-20-8	Endrin	ND	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		46-122%
2051-24-3	Decachlorobiphenyl	75%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64638.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64638.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		44-126%
2051-24-3	Decachlorobiphenyl	80%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08272.D

Accutest Laboratories

Report of Analysis

3.27
3

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08272.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

UJ

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.82	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.75	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.86	ug/kg	
72-20-8	Endrin	ND	3.7	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.75	ug/kg	
8001-35-2	Toxaphene	ND	93	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	71%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64639.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64639.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		44-126%
2051-24-3	Decachlorobiphenyl	80%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08273.D

Accutest Laboratories

Report of Analysis

3.2.8

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08273.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
309-00-2	Aldrin	ND	1.9	0.45	ug/kg		UJ
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg		
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg		
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg		
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg		
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg		
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg		
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg		
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg		
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg		
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg		
72-20-8	Endrin	ND	3.8	0.75	ug/kg		
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg		
7421-93-4	Endrin aldehyde	ND	3.8	1.1	ug/kg		
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg		
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg		
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg		
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg		
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg		
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg		
8001-35-2	Toxaphene	ND	94	47	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64640.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.4	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.4	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08274.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.47	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.87	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.40	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	4.0	0.79	ug/kg	
72-55-9	4,4'-DDE	ND	4.0	0.79	ug/kg	
50-29-3	4,4'-DDT	ND	4.0	0.91	ug/kg	UJ
72-20-8	Endrin	ND	4.0	0.79	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.0	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	4.0	1.2	ug/kg	UL
53494-70-5	Endrin ketone	ND	4.0	0.79	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	4.0	0.59	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.40	ug/kg	
72-43-5	Methoxychlor	ND	4.0	0.79	ug/kg	UJ
8001-35-2	Toxaphene	ND	99	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	71%		46-122%
2051-24-3	Decachlorobiphenyl	74%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64641.D	1	08/07/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.9	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.9	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.9	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.9	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		44-126%
2051-24-3	Decachlorobiphenyl	84%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08277.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08277.D	1	08/09/07	FS	08/03/07	OP21730	GTT280
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	UJ
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	96	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	74%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64644.D	1	08/08/07	JB	08/03/07	OP21731	GST1702
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	82%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08308.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08308.D	1	08/10/07	FS	07/30/07	OP21657	GTT281
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Pesticide TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.050	0.010	ug/l	
319-84-6	alpha-BHC	ND	0.050	0.010	ug/l	
319-85-7	beta-BHC	ND	0.050	0.011	ug/l	
319-86-8	delta-BHC	ND	0.050	0.010	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.050	0.010	ug/l	
5103-71-9	alpha-Chlordane	ND	0.050	0.010	ug/l	
5103-74-2	gamma-Chlordane	ND	0.050	0.010	ug/l	
60-57-1	Dieldrin	ND	0.050	0.010	ug/l	
72-54-8	4,4'-DDD	ND	0.10	0.020	ug/l	
72-55-9	4,4'-DDE	ND	0.10	0.020	ug/l	
50-29-3	4,4'-DDT	ND	0.10	0.020	ug/l	
72-20-8	Endrin	ND	0.10	0.020	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.10	0.020	ug/l	
7421-93-4	Endrin aldehyde	ND	0.10	0.030	ug/l	UL
53494-70-5	Endrin ketone	ND	0.10	0.020	ug/l	
959-98-8	Endosulfan-I	ND	0.050	0.010	ug/l	
33213-65-9	Endosulfan-II	ND	0.10	0.010	ug/l	
76-44-8	Heptachlor	ND	0.050	0.010	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.050	0.010	ug/l	
72-43-5	Methoxychlor	ND	0.10	0.020	ug/l	
8001-35-2	Toxaphene	ND	2.5	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		42-127%
2051-24-3	Decachlorobiphenyl	79%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64321.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
Method:	SW846 8082 SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64321.D	1	08/01/07	JB	07/30/07	OP21658	GST1698
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.50	0.25	ug/l	
11104-28-2	Aroclor 1221	ND	0.50	0.40	ug/l	
11141-16-5	Aroclor 1232	ND	0.50	0.40	ug/l	
53469-21-9	Aroclor 1242	ND	0.50	0.25	ug/l	
12672-29-6	Aroclor 1248	ND	0.50	0.25	ug/l	
11097-69-1	Aroclor 1254	ND	0.50	0.25	ug/l	
11096-82-5	Aroclor 1260	ND	0.50	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		38-127%
2051-24-3	Decachlorobiphenyl	84%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Richard McCracken, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Semi-Volatiles & Polynuclear Aromatic Hydrocarbons Accutest Laboratories, Inc., SDG F51300

DATE: December 20, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at RFAAP on July 25, 2007. Samples were analyzed for semivolatile organic compounds (SVOCs) using USEPA SW846 Methods 3550B/8270C (solids) and 3510C/8270C (aqueous). The polynuclear aromatic hydrocarbons (PAHs) were analyzed using selective ion monitoring (SIM) techniques. A total of 1 aqueous and 30 soil samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
59SB06A	F51300-1	43SB06C	F51300-17
59SB06B	F51300-2	43SB07A	F51300-18
59SB06C	F51300-3	43SB07B	F51300-19
59SB05A	F51300-4	43SB07C	F51300-20
59SB05B	F51300-5	43SB08A	F51300-21
59SB05C	F51300-6	43SB08B	F51300-22
59SB04A	F51300-7	43SB08C	F51300-23
59SB04B	F51300-8	43SB09A	F51300-24
59SB04C	F51300-9	43SB09B	F51300-25
TMSB04C	F51300-10	43SB09C	F51300-26
59SB02A	F51300-11	43SB10A	F51300-27
59SB02B	F51300-12	43SB10B	F51300-28
TMSB02B	F51300-13	43SB10C	F51300-29
59SB02C	F51300-14	TMSB10B	F51300-30
43SB06A	F51300-15	072507R	F51300-31
43SB06B	F51300-16		

Data were reviewed by Richard McCracken and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Surrogate Spikes
	X	Internal Standards
	X	Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Richard M. McCracken

Richard McCracken, Chemist

10/20/07

Date

RFAAP VALIDATION REPORT
SEMIVOLATILES AND PAH REVIEW
SDG F51300

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: Solid samples must be stored @4°C ± 2°C with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis. Aqueous samples must be cooled @4°C ± 2°C with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: A temperature blank was sent with each cooler and recorded by the laboratory upon receipt. The samples collected on 7/25/07 were sent in five coolers, and were received by the laboratory on 7/26/07 at temperatures ranging from 2.6 °C to 4.0 °C. No qualifiers were applied.

- Holding Time Review: The samples were collected on 7/25/07. The aqueous sample was extracted for SVOCs on 7/31/07, extracted for PAHs by SIM on 7/31/07, analyzed for SVOCs on 8/2/07, and analyzed for PAHs by SIM on 8/2/07. The solid matrix samples were extracted for SVOCs on 8/2/07 & 8/3/07; extracted for PAHs by SIM on 8/2/07 & 8/3/07; analyzed for SVOCs on 8/3/07, 8/6/07, & 8/7/07; and analyzed for PAHs by SIM on 8/7/07 & 8/8/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, decafluorotriphenylphosphine (DFTPP), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for compounds on the semivolatile target compound list (TCL). Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. The minimum relative response factor (RRF) criteria must be ≥0.05. The DoD QSM specifies that the initial calibration percent relative standard deviation (%RSD) must be ≤15% on the average for all compounds (<30% for CCCs). All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- Initial calibration for the SVOCs was performed on 7/5/07 using instrument MSBNA02 (GCMSL). Target compounds 2,4-dinitrophenol (19.68%) and 4,6-dinitro-2-methylphenol (25.87%) had %RSDs outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). The compounds with high %RSD were quantified using linear or second order regression, and had correlation coefficients ≥0.995; therefore no qualifiers were applied. Sample F51300-31 were analyzed in conjunction with this initial calibration.

- Initial calibration for the PAHs-SIM was performed on 7/18/07 using instrument MSBNA3 (GCMSR). All target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05); no qualifiers were applied. All samples were analyzed in conjunction with this initial calibration.

- Initial calibration for the SVOCs was performed on 7/13/07 using instrument MSBNA04 (GCMSU). Target compounds 2,4-dinitrophenol (42.04%) and 4,6-dinitro-2-methylphenol (24.04%) had %RSDs outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). The compounds with high %RSD were quantified using linear or second order regression, and had correlation coefficients ≥0.995; therefore no qualifiers were applied. All solid matrix samples (F51300-1 thru -30) were analyzed in conjunction with this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used was capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration standards containing both target and surrogates compounds are analyzed at the beginning of each 12-hour analysis period following the analysis of the instrument performance check and prior to the analysis of blanks and samples. The minimum relative response factors (RRF) for semivolatile target compounds and surrogates must be ≥0.05. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within ±20% for all target compounds. Grossly exceeding is defined where %D>40%. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- During the SVOC initial calibration verification performed on 7/5/07 @1527 using instrument MSBNA02 (GCMSL), 3-nitroaniline (26.0%) had %D outside criteria. All other target compounds met criteria. No samples were analyzed following this initial calibration verification, no qualifiers were applied.

- During the SVOC initial calibration verification performed on 7/5/07 @1555 using instrument MSBNA02 (GCMSL), all target compounds met criteria. No samples were analyzed following this initial calibration verification, no qualifiers were applied.

- During the SVOC continuing calibration performed on 8/1/07 @1616 using instrument MSBNA02 (GCMSL), 2,4-dinitrophenol (33.0%) and 4,6-dinitro-2-methylphenol (22.1%) had %D outside criteria. All other target compounds met criteria. The MS and MSD were the only samples analyzed following this continuing calibration. Therefore, no qualifiers were applied.

- During the SVOC continuing calibration performed on 8/2/07 @1324 using instrument MSBNA02 (GCMSL), all target compounds met criteria. No qualifiers were applied. Sample F51300-31 was analyzed following this continuing calibration.

- During the PAH-SIM initial calibration verification performed on 7/18/07 @0634 using instrument MSBNA3 (GCMSR), all criteria were met for all target compounds. No qualifiers were applied. No samples were analyzed following this initial calibration verification.

- During the PAH-SIM continuing calibration performed on 8/2/07 @1000 using instrument MSBNA3 (GCMSR), all criteria were met for all target compounds. No qualifiers were applied. Sample F51300-31 was analyzed following this continuing calibration.

- During the PAH-SIM continuing calibration performed on 8/6/07 @2107 using instrument MSBNA3 (GCMSR), all criteria were met for all target compounds. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, -15, and -16 were analyzed following this continuing calibration.

- During the PAH-SIM continuing calibration performed on 8/7/07 @1245 using instrument MSBNA3 (GCMSR), all criteria were met for all target compounds. No qualifiers were applied. Sample F51300-17 was analyzed following this continuing calibration.

- During the PAH-SIM continuing calibration performed on 8/8/07 @1443 using instrument MSBNA3 (GCMSR), all criteria were met for all target compounds. No qualifiers were applied. Samples F51300-18, -19, -20, -21, -22 -23, -24, -25, -26, -27, -28, -29 and -30 were analyzed following this continuing calibration.

- During the SVOC initial calibration verification performed on 7/13/07 @1348 using instrument MSBNA04 (GCMSU), 4-chloroaniline (38.2%) and 3-nitroaniline (39.0%) had %D outside criteria. All other target compounds met criteria. No samples were analyzed following this initial calibration verification, no qualifiers were applied.

- During the SVOC initial calibration verification performed on 7/13/07 @1419 using instrument MSBNA04 (GCMSU), all target compounds met criteria. No samples were analyzed following this initial calibration verification, no qualifiers were applied.

- During the SVOC continuing calibration performed on 8/3/07 @0952 using instrument MSBNA04 (GCMSU), all target compounds met criteria. No qualifiers were applied. Samples F51300-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, -12, and -13 were analyzed following this continuing calibration.

- During the SVOC continuing calibration performed on 8/6/07 @1128 using instrument MSBNA04 (GCMSU), all target compounds met criteria. No qualifiers were applied. Samples F51300-14, -15, -16, and -17 were analyzed following this continuing calibration.

- During the SVOC continuing calibration performed on 8/7/07 @0942 using instrument MSBNA04 (GCMSU), all target compounds met criteria. No qualifiers were applied. Samples F51300-18, -19, -20, -21, -22 -23, -24, -25, -26, -27, -28, -29 and -30 were analyzed following this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of DFTPP. No contaminants should be detected in any of the associated blanks > the MDL. DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants phthalate esters). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants phthalate esters, or 5 times (5X) the maximum amount for other semivolatile target compounds. **Table 2** summarizes the blank contamination analysis.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
8/2/07	OP21675-MB	All SVOC target <½MRL	NA	NA	None
8/3/07	OP21718-MB	All SVOC target <½MRL	NA	NA	None
8/6/07	OP21718-MB	All SVOC target <½MRL	NA	NA	None
8/7/07	OP21737-MB	All SVOC target <½MRL	NA	NA	None
8/2/07	OP21676-MB	All PAH SIM target <½MRL	NA	NA	None
8/6/07	OP21719-MB	All PAH SIM target <½MRL	NA	NA	None
8/7/07	OP21719-MB	All PAH SIM target <½MRL	NA	NA	None
8/8/07	OP21738-MB	All PAH SIM target <½MRL	NA	NA	None
8/2/07	072507R	All SVOC target <½MRL	NA	NA	None
8/2/07	072507R	All PAH SIM target <½MRL	NA	NA	None
8/2/07	072607R	All SVOC target <½MRL	NA	NA	None
8/2/07	072607R	All PAH SIM target <½MRL	NA	NA	None

072507R & 072607R are rinsate blanks.
NA = Not applicable.
MRL = Method reporting limit.

VI-Surrogate Spikes

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Tables D-2 & D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:
2-Fluorophenol (14-62%) – (DoD QSM = 20-110%)
Phenol-d5 (10-40%) – (DoD QSM = 10-115%)
2,4,6-Tribromophenol (33-118%) – (DoD QSM = 40-125%)
Nitrobenzene-d5 (42-108%) – (DoD QSM = 40-110%)
2-Fluorobiphenyl (40-106%) – (DoD QSM = 50-110%)
p-Terphenyl-d14 (39-121%) – (DoD QSM = 50-135%)

Solid Criteria:
2-Fluorophenol (40-102%) – (DoD QSM = 35-105%)
Phenol-d5 (41-100%) – (DoD QSM = 40-100%)
2,4,6-Tribromophenol (42-108%) – (DoD QSM = 35-125%)
Nitrobenzene-d5 (40-105%) – (DoD QSM = 35-100%)
2-Fluorobiphenyl (43-107%) – (DoD QSM = 45-105%)
p-Terphenyl-d14 (45-119%) – (DoD QSM = 30-125%)

- All samples met surrogate recovery criteria. No qualifiers were applied.

VII-Internal Standards

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The retention time of the internal standards in samples and blanks must not vary by more than ±30 seconds from the retention time of the associated calibration standard.

- All samples met criteria. No qualifiers were applied.

VIII-Laboratory Control Sample

Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD solid matrix LCS recovery limits are specified in Table D-7 of the DoD QSM (DoD, 2006), while aqueous recovery limits are specified in Table D-6 of the DoD QSM. If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21675-BS was used as the aqueous LCS during SVOC analysis on 8/2/07. All compounds met recovery criteria. No qualifiers were applied. Sample 072507R was analyzed in conjunction with this LCS.

- Sample OP21718-BS was used as the solid LCS during SVOC analysis on 8/3/07. All compounds met recovery criteria. No qualifiers were applied. Samples F51300-1 thru -17 were analyzed in conjunction with this LCS.

- Sample OP21737-BS was used as the solid LCS during SVOC analysis on 8/7/07. All compounds met recovery criteria. No qualifiers were applied. Samples F51300-18 thru -30 were analyzed in conjunction with this LCS.

- Sample OP21676-BS was used as the aqueous LCS for the PAH-SIM analysis on 8/2/07. All compounds met recovery criteria. No qualifiers were applied. Sample F51300-31 was analyzed in conjunction with this LCS.

- Sample OP21719-BS was used as the solid LCS for the PAH-SIM analysis on 8/6/07. All compounds met recovery criteria. No qualifiers were applied. Samples F51300-1 thru -17 were analyzed in conjunction with this LCS.

- Sample OP21738-BS was used as the solid LCS for the PAH-SIM analysis on 8/8/07. All compounds met recovery criteria. No qualifiers were applied. Samples F51300-18 thru -30 were analyzed in conjunction with this LCS.

IX-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD solid matrix MS/MSD recovery limits follow the LCS criteria specified in Table D-7 of the DoD QSM (DoD, 2006), while aqueous recovery limits follow the LCS criteria in Table D-6 of the DoD QSM. If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51272-6 was used as the aqueous MS/MSD during SVOC analysis on 8/1/07. The spiked sample was not a RFAAP site sample; therefore, it was not evaluated. Sample F51300-31 was analyzed in conjunction with this MS/MSD.

- Sample F51300-5 was used as the solid MS/MSD during SVOC analysis on 8/3/07. All target compounds met recovery criteria. No qualifiers were applied. Samples F51300-1 thru -17 were analyzed in conjunction with this MS/MSD.

- Sample F51300-25 was used as the solid MS/MSD during SVOC analysis on 8/7/07. All target compounds met recovery criteria. No qualifiers were applied. Samples F51300-18 thru -30 were analyzed in conjunction with this MS/MSD.

- Sample F53100-31 was used as the aqueous MS/MSD during PAH SIM analysis on 8/2/07. All compounds met recovery criteria. No qualifiers were applied. Sample F51300-31 was analyzed in conjunction with this MS/MSD.

- Sample F53100-7 was used as the solid MS/MSD during PAH SIM analysis on 8/7/07. Chrysene (52%, 53%) and 1-methylnaphthalene (56%, 57%) had low recoveries in the MS & MSD; all chrysene and 1-methylnaphthalene results in associated samples have been qualified "J/UJ". All other target compounds met recovery criteria. Samples F51300-1 thru -17 were analyzed in conjunction with this MS/MSD.

- Sample F53100-25 was used as the solid MS/MSD during PAH SIM analysis on 8/8/07. All target compounds met recovery criteria. Samples F51300-18 thru -30 were analyzed in conjunction with this MS/MSD.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field duplicate pairs in this data package included 59SB04C (F51300-9) & TMSB04C (F51300-10), 59SB02B (F51300-12) & TMSB02B (F51300-13), and 43SB10B (F51300-28) & TMSB10B (F51300-30). All compounds detected above the reporting limit (RL) met RPD criteria.

XI-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. Percent difference (%D) between the calculated and reported values must be ≤10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: F51300-16, di-n-butyl phthalate

Conc. (µg/kg) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_i)*(Ws)*(Ps)}

where:	Conc	=	Sample concentration in µg/kg
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	DF	=	Dilution Factor
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_i	=	Volume of extract injected (µL).
	Ws	=	weight of sample (g)
	Ps	=	percent solids/100

Conc. µg/L = (735472 * 40 * 1000 * 2) / (691959 *1.457 * 1 * 30.4 * 0.817) = 2350 ug/kg

Reported Value = 2350 µg/kg
% Difference = 0.0%
Values were within 10% difference.

Sample: F51300-11, chrysene

Conc. (µg/kg) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_i)*(Ws)*(Ps)}

where:	Conc	=	Sample concentration in µg/kg
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	DF	=	Dilution Factor
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_i	=	Volume of extract injected (µL).
	Ws	=	weight of sample (g)
	Ps	=	percent solids/100

Conc. µg/L = (6444 * 4 * 1000 * 4) / (121726 * 1.586 * 1 * 30.8 * 0.895) = 19.4 ug/kg

Reported Value = 19.4 µg/kg
% Difference = 0.1%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003745.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		40-102%
4165-62-2	Phenol-d5	67%		41-100%
118-79-6	2,4,6-Tribromophenol	61%		42-108%
4165-60-0	Nitrobenzene-d5	56%		40-105%
321-60-8	2-Fluorobiphenyl	59%		43-107%
1718-51-0	Terphenyl-d14	67%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09626.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09626.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
83-32-9	Acenaphthene	ND	290	72	ug/kg		
208-96-8	Acenaphthylene	ND	290	72	ug/kg		
120-12-7	Anthracene	ND	290	43	ug/kg		
56-55-3	Benzo(a)anthracene	ND	57	14	ug/kg		
50-32-8	Benzo(a)pyrene	ND	57	14	ug/kg		
205-99-2	Benzo(b)fluoranthene	ND	57	14	ug/kg		
191-24-2	Benzo(g,h,i)perylene	ND	57	14	ug/kg		
207-08-9	Benzo(k)fluoranthene	ND	57	14	ug/kg		
218-01-9	Chrysene	ND	57	14	ug/kg		UJ
53-70-3	Dibenzo(a,h)anthracene	ND	57	14	ug/kg		
206-44-0	Fluoranthene	ND	290	50	ug/kg		
86-73-7	Fluorene	ND	290	43	ug/kg		
193-39-5	Indeno(1,2,3-cd)pyrene	ND	57	14	ug/kg		
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg		UJ
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg		
91-20-3	Naphthalene	ND	290	43	ug/kg		
85-01-8	Phenanthrene	ND	290	43	ug/kg		
129-00-0	Pyrene	ND	290	50	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003746.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	74	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		40-102%
4165-62-2	Phenol-d5	58%		41-100%
118-79-6	2,4,6-Tribromophenol	72%		42-108%
4165-60-0	Nitrobenzene-d5	49%		40-105%
321-60-8	2-Fluorobiphenyl	51%		43-107%
1718-51-0	Terphenyl-d14	76%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09627.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
83-32-9	Acenaphthene	ND	300	74	ug/kg		
208-96-8	Acenaphthylene	ND	300	74	ug/kg		
120-12-7	Anthracene	ND	300	44	ug/kg		
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg		
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg		
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg		
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg		
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg		
218-01-9	Chrysene	ND	59	15	ug/kg		UJ
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg		
206-44-0	Fluoranthene	ND	300	52	ug/kg		
86-73-7	Fluorene	ND	300	44	ug/kg		
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg		
90-12-0	1-Methylnaphthalene	ND	300	44	ug/kg		UJ
91-57-6	2-Methylnaphthalene	ND	300	44	ug/kg		
91-20-3	Naphthalene	ND	300	44	ug/kg		
85-01-8	Phenanthrene	ND	300	44	ug/kg		
129-00-0	Pyrene	ND	300	52	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003747.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	960	380	ug/kg	
87-86-5	Pentachlorophenol	ND	960	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	96	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	77	ug/kg	
99-09-2	3-Nitroaniline	ND	380	77	ug/kg	
100-01-6	4-Nitroaniline	ND	380	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	77%		42-108%
4165-60-0	Nitrobenzene-d5	56%		40-105%
321-60-8	2-Fluorobiphenyl	58%		43-107%
1718-51-0	Terphenyl-d14	76%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09628.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09628.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003748.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	73	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	73	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	73	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	73	ug/kg	
99-09-2	3-Nitroaniline	ND	370	73	ug/kg	
100-01-6	4-Nitroaniline	ND	370	73	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%		40-102%
4165-62-2	Phenol-d5	79%		41-100%
118-79-6	2,4,6-Tribromophenol	80%		42-108%
4165-60-0	Nitrobenzene-d5	64%		40-105%
321-60-8	2-Fluorobiphenyl	67%		43-107%
1718-51-0	Terphenyl-d14	81%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09629.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
83-32-9	Acenaphthene	ND	290	73	ug/kg	
208-96-8	Acenaphthylene	ND	290	73	ug/kg	
120-12-7	Anthracene	ND	290	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg	
91-20-3	Naphthalene	ND	290	44	ug/kg	
85-01-8	Phenanthrene	ND	290	44	ug/kg	
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003749.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	960	380	ug/kg	
87-86-5	Pentachlorophenol	ND	960	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	96	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	77	ug/kg	
99-09-2	3-Nitroaniline	ND	380	77	ug/kg	
100-01-6	4-Nitroaniline	ND	380	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	67%		42-108%
4165-60-0	Nitrobenzene-d5	56%		40-105%
321-60-8	2-Fluorobiphenyl	58%		43-107%
1718-51-0	Terphenyl-d14	70%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09630.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003752.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		40-102%
4165-62-2	Phenol-d5	71%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	61%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	78%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09631.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q DATA VAL QUALIFIER
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003753.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	94	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	75	ug/kg	
99-09-2	3-Nitroaniline	ND	380	75	ug/kg	
100-01-6	4-Nitroaniline	ND	380	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		40-102%
4165-62-2	Phenol-d5	61%		41-100%
118-79-6	2,4,6-Tribromophenol	72%		42-108%
4165-60-0	Nitrobenzene-d5	51%		40-105%
321-60-8	2-Fluorobiphenyl	55%		43-107%
1718-51-0	Terphenyl-d14	72%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09632.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003754.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1000	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1000	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	80	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	1000	400	ug/kg	
87-86-5	Pentachlorophenol	ND	1000	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	80	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	80	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	100	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	100	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	100	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	80	ug/kg	
99-09-2	3-Nitroaniline	ND	400	80	ug/kg	
100-01-6	4-Nitroaniline	ND	400	80	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		40-102%
4165-62-2	Phenol-d5	78%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	66%		40-105%
321-60-8	2-Fluorobiphenyl	68%		43-107%
1718-51-0	Terphenyl-d14	78%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09635.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	80	ug/kg	
208-96-8	Acenaphthylene	ND	320	80	ug/kg	
120-12-7	Anthracene	ND	320	48	ug/kg	
56-55-3	Benzo(a)anthracene	ND	64	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	64	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	64	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	64	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	64	16	ug/kg	
218-01-9	Chrysene	ND	64	16	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	64	16	ug/kg	
206-44-0	Fluoranthene	ND	320	56	ug/kg	
86-73-7	Fluorene	ND	320	48	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	64	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	48	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	320	48	ug/kg	
91-20-3	Naphthalene	ND	320	48	ug/kg	
85-01-8	Phenanthrene	ND	320	48	ug/kg	
129-00-0	Pyrene	ND	320	56	ug/kg	

DATA VAL QUALIFIER

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003755.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	69%		40-102%
4165-62-2	Phenol-d5	74%		41-100%
118-79-6	2,4,6-Tribromophenol	82%		42-108%
4165-60-0	Nitrobenzene-d5	63%		40-105%
321-60-8	2-Fluorobiphenyl	68%		43-107%
1718-51-0	Terphenyl-d14	89%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09636.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q (DMA VAL QUALIFIER)
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003756.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	70%		42-108%
4165-60-0	Nitrobenzene-d5	57%		40-105%
321-60-8	2-Fluorobiphenyl	59%		43-107%
1718-51-0	Terphenyl-d14	74%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09637.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	79	ug/kg	
208-96-8	Acenaphthylene	ND	310	79	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

DATA VAL QUALIFIER

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003757.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	910	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	910	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	73	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	910	360	ug/kg	
87-86-5	Pentachlorophenol	ND	910	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	91	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	73	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	73	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	91	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	91	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	91	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	73	ug/kg	
99-09-2	3-Nitroaniline	ND	360	73	ug/kg	
100-01-6	4-Nitroaniline	ND	360	73	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		40-102%
4165-62-2	Phenol-d5	79%		41-100%
118-79-6	2,4,6-Tribromophenol	80%		42-108%
4165-60-0	Nitrobenzene-d5	66%		40-105%
321-60-8	2-Fluorobiphenyl	69%		43-107%
1718-51-0	Terphenyl-d14	80%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09638.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09638.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

BN PAH List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
83-32-9	Acenaphthene	ND	290	73	ug/kg		
208-96-8	Acenaphthylene	ND	290	73	ug/kg		
120-12-7	Anthracene	ND	290	44	ug/kg		
56-55-3	Benzo(a)anthracene	ND	58	15	ug/kg		
50-32-8	Benzo(a)pyrene	ND	58	15	ug/kg		
205-99-2	Benzo(b)fluoranthene	16.6	58	15	ug/kg	J	J
191-24-2	Benzo(g,h,i)perylene	ND	58	15	ug/kg		
207-08-9	Benzo(k)fluoranthene	ND	58	15	ug/kg		
218-01-9	Chrysene	19.4	58	15	ug/kg	J	J
53-70-3	Dibenzo(a,h)anthracene	ND	58	15	ug/kg		
206-44-0	Fluoranthene	ND	290	51	ug/kg		
86-73-7	Fluorene	ND	290	44	ug/kg		
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	15	ug/kg		
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg		UJ
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg		
91-20-3	Naphthalene	ND	290	44	ug/kg		
85-01-8	Phenanthrene	ND	290	44	ug/kg		
129-00-0	Pyrene	ND	290	51	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003758.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	990	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	80	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	990	400	ug/kg	
87-86-5	Pentachlorophenol	ND	990	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	80	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	80	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	99	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	80	ug/kg	
99-09-2	3-Nitroaniline	ND	400	80	ug/kg	
100-01-6	4-Nitroaniline	ND	400	80	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	62%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	70%		42-108%
4165-60-0	Nitrobenzene-d5	51%		40-105%
321-60-8	2-Fluorobiphenyl	52%		43-107%
1718-51-0	Terphenyl-d14	71%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09639.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
83-32-9	Acenaphthene	ND	320	80	ug/kg	
208-96-8	Acenaphthylene	ND	320	80	ug/kg	
120-12-7	Anthracene	ND	320	48	ug/kg	
56-55-3	Benzo(a)anthracene	ND	64	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	64	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	64	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	64	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	64	16	ug/kg	
218-01-9	Chrysene	ND	64	16	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	64	16	ug/kg	
206-44-0	Fluoranthene	ND	320	56	ug/kg	
86-73-7	Fluorene	ND	320	48	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	64	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	48	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	320	48	ug/kg	
91-20-3	Naphthalene	ND	320	48	ug/kg	
85-01-8	Phenanthrene	ND	320	48	ug/kg	
129-00-0	Pyrene	ND	320	56	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003759.D	1	08/03/07	NJ	08/02/07	OP21718	SU183
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	970	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	970	390	ug/kg	
87-86-5	Pentachlorophenol	ND	970	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	97	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	78	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	97	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	97	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	97	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	78	ug/kg	
99-09-2	3-Nitroaniline	ND	390	78	ug/kg	
100-01-6	4-Nitroaniline	ND	390	78	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		40-102%
4165-62-2	Phenol-d5	66%		41-100%
118-79-6	2,4,6-Tribromophenol	69%		42-108%
4165-60-0	Nitrobenzene-d5	53%		40-105%
321-60-8	2-Fluorobiphenyl	56%		43-107%
1718-51-0	Terphenyl-d14	71%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09640.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
83-32-9	Acenaphthene	ND	310	78	ug/kg	
208-96-8	Acenaphthylene	ND	310	78	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	62	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	62	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	62	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	62	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	16	ug/kg	
218-01-9	Chrysene	ND	62	16	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	62	16	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003782.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003782.D	1	08/06/07	NJ	08/02/07	OP21718	SU184
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	78	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	78	ug/kg	
99-09-2	3-Nitroaniline	ND	390	78	ug/kg	
100-01-6	4-Nitroaniline	ND	390	78	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		40-102%
4165-62-2	Phenol-d5	66%		41-100%
118-79-6	2,4,6-Tribromophenol	70%		42-108%
4165-60-0	Nitrobenzene-d5	57%		40-105%
321-60-8	2-Fluorobiphenyl	61%		43-107%
1718-51-0	Terphenyl-d14	71%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: R09641.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09641.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	78	ug/kg	
208-96-8	Acenaphthylene	ND	310	78	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

DANA VAL QUALIFIER

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003783.D	1	08/06/07	NJ	08/02/07	OP21718	SU184
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	970	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	970	390	ug/kg	
87-86-5	Pentachlorophenol	ND	970	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	97	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	97	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	97	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	97	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	77	ug/kg	
99-09-2	3-Nitroaniline	ND	390	77	ug/kg	
100-01-6	4-Nitroaniline	ND	390	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		40-102%
4165-62-2	Phenol-d5	62%		41-100%
118-79-6	2,4,6-Tribromophenol	71%		42-108%
4165-60-0	Nitrobenzene-d5	54%		40-105%
321-60-8	2-Fluorobiphenyl	57%		43-107%
1718-51-0	Terphenyl-d14	72%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09642.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	62	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	62	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	62	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	62	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	15	ug/kg	
218-01-9	Chrysene	ND	62	15	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	62	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

DATA VAL QUALIFIER

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	U003784.D	2	08/06/07	NJ	08/02/07	OP21718	SU184
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	2000	810	ug/kg	
95-57-8	2-Chlorophenol	ND	400	81	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	400	81	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	400	81	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	400	81	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	2000	810	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	810	160	ug/kg	
95-48-7	2-Methylphenol	ND	400	81	ug/kg	
	3&4-Methylphenol	ND	400	81	ug/kg	
88-75-5	2-Nitrophenol	ND	400	81	ug/kg	
100-02-7	4-Nitrophenol	ND	2000	810	ug/kg	
87-86-5	Pentachlorophenol	ND	2000	810	ug/kg	
108-95-2	Phenol	ND	400	81	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	400	81	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	400	81	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	400	81	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	810	200	ug/kg	
100-51-6	Benzyl Alcohol	ND	400	81	ug/kg	
91-58-7	2-Chloronaphthalene	ND	400	81	ug/kg	
106-47-8	4-Chloroaniline	ND	400	160	ug/kg	
86-74-8	Carbazole	ND	400	81	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	400	81	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	400	81	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	400	81	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	400	81	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	400	81	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	400	81	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	400	81	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	400	81	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	400	81	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	810	160	ug/kg	
132-64-9	Dibenzofuran	ND	400	81	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	2350	810	200	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	810	200	ug/kg	
84-66-2	Diethyl phthalate	ND	810	400	ug/kg	
131-11-3	Dimethyl phthalate	ND	810	200	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	810	400	ug/kg	
118-74-1	Hexachlorobenzene	ND	400	81	ug/kg	
87-68-3	Hexachlorobutadiene	ND	400	81	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	81	ug/kg	
67-72-1	Hexachloroethane	ND	400	81	ug/kg	
78-59-1	Isophorone	ND	400	81	ug/kg	
88-74-4	2-Nitroaniline	ND	810	160	ug/kg	
99-09-2	3-Nitroaniline	ND	810	160	ug/kg	
100-01-6	4-Nitroaniline	ND	810	160	ug/kg	
98-95-3	Nitrobenzene	ND	400	81	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	400	81	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	400	81	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	400	81	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		40-102%
4165-62-2	Phenol-d5	70%		41-100%
118-79-6	2,4,6-Tribromophenol	73%		42-108%
4165-60-0	Nitrobenzene-d5	58%		40-105%
321-60-8	2-Fluorobiphenyl	63%		43-107%
1718-51-0	Terphenyl-d14	63%		45-119%

(a) Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.15

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09643.D	4	08/07/07	NJ	08/02/07	OP21719	SR455
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	81	ug/kg	
208-96-8	Acenaphthylene	ND	320	81	ug/kg	
120-12-7	Anthracene	ND	320	48	ug/kg	
56-55-3	Benzo(a)anthracene	ND	64	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	64	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	64	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	64	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	64	16	ug/kg	
218-01-9	Chrysene	ND	64	16	ug/kg	UJ
53-70-3	Dibenzo(a,h)anthracene	ND	64	16	ug/kg	
206-44-0	Fluoranthene	ND	320	56	ug/kg	
86-73-7	Fluorene	ND	320	48	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	64	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	48	ug/kg	UJ
91-57-6	2-Methylnaphthalene	ND	320	48	ug/kg	
91-20-3	Naphthalene	ND	320	48	ug/kg	
85-01-8	Phenanthrene	ND	320	48	ug/kg	
129-00-0	Pyrene	ND	320	56	ug/kg	

DATA VAL QUALIFIER

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003785.D	1	08/06/07	NJ	08/02/07	OP21718	SU184
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	73	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	73	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	73	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	73	ug/kg	
99-09-2	3-Nitroaniline	ND	370	73	ug/kg	
100-01-6	4-Nitroaniline	ND	370	73	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		40-102%
4165-62-2	Phenol-d5	64%		41-100%
118-79-6	2,4,6-Tribromophenol	67%		42-108%
4165-60-0	Nitrobenzene-d5	54%		40-105%
321-60-8	2-Fluorobiphenyl	57%		43-107%
1718-51-0	Terphenyl-d14	67%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09667.D	4	08/07/07	NJ	08/02/07	OP21719	SR456
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
83-32-9	Acenaphthene	ND	290	73	ug/kg		
208-96-8	Acenaphthylene	ND	290	73	ug/kg		
120-12-7	Anthracene	ND	290	44	ug/kg		
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg		
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg		
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg		
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg		
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg		
218-01-9	Chrysene	ND	59	15	ug/kg		UJ
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg		
206-44-0	Fluoranthene	ND	290	51	ug/kg		
86-73-7	Fluorene	ND	290	44	ug/kg		
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg		
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg		UJ
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg		
91-20-3	Naphthalene	ND	290	44	ug/kg		
85-01-8	Phenanthrene	ND	290	44	ug/kg		
129-00-0	Pyrene	ND	290	51	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003799.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	74	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%		40-102%
4165-62-2	Phenol-d5	66%		41-100%
118-79-6	2,4,6-Tribromophenol	66%		42-108%
4165-60-0	Nitrobenzene-d5	54%		40-105%
321-60-8	2-Fluorobiphenyl	61%		43-107%
1718-51-0	Terphenyl-d14	71%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09700.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	44	ug/kg	
91-20-3	Naphthalene	ND	300	44	ug/kg	
85-01-8	Phenanthrene	ND	300	44	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003800.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	29.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	78	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.19

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg		
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg		
84-66-2	Diethyl phthalate	ND	390	200	ug/kg		
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg		
117-81-7	bis(2-Ethylhexyl)phthalate	373	390	200	ug/kg	J	J
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg		
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg		
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg		
67-72-1	Hexachloroethane	ND	200	39	ug/kg		
78-59-1	Isophorone	ND	200	39	ug/kg		
88-74-4	2-Nitroaniline	ND	390	78	ug/kg		
99-09-2	3-Nitroaniline	ND	390	78	ug/kg		
100-01-6	4-Nitroaniline	ND	390	78	ug/kg		
98-95-3	Nitrobenzene	ND	200	39	ug/kg		
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg		
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg		
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	60%		40-102%
4165-62-2	Phenol-d5	77%		41-100%
118-79-6	2,4,6-Tribromophenol	84%		42-108%
4165-60-0	Nitrobenzene-d5	57%		40-105%
321-60-8	2-Fluorobiphenyl	72%		43-107%
1718-51-0	Terphenyl-d14	87%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09701.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	29.7 g	1.0 ml
Run #2		

BN PAH List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
83-32-9	Acenaphthene	ND	310	78	ug/kg		
208-96-8	Acenaphthylene	ND	310	78	ug/kg		
120-12-7	Anthracene	ND	310	47	ug/kg		
56-55-3	Benzo(a)anthracene	ND	62	16	ug/kg		
50-32-8	Benzo(a)pyrene	ND	62	16	ug/kg		
205-99-2	Benzo(b)fluoranthene	ND	62	16	ug/kg		
191-24-2	Benzo(g,h,i)perylene	ND	62	16	ug/kg		
207-08-9	Benzo(k)fluoranthene	ND	62	16	ug/kg		
218-01-9	Chrysene	ND	62	16	ug/kg		
53-70-3	Dibenzo(a,h)anthracene	ND	62	16	ug/kg		
206-44-0	Fluoranthene	ND	310	55	ug/kg		
86-73-7	Fluorene	ND	310	47	ug/kg		
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	16	ug/kg		
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg		
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg		
91-20-3	Naphthalene	65.8	310	47	ug/kg	J	J
85-01-8	Phenanthrene	ND	310	47	ug/kg		
129-00-0	Pyrene	ND	310	55	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003801.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	78	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	78	ug/kg	
99-09-2	3-Nitroaniline	ND	390	78	ug/kg	
100-01-6	4-Nitroaniline	ND	390	78	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		40-102%
4165-62-2	Phenol-d5	60%		41-100%
118-79-6	2,4,6-Tribromophenol	59%		42-108%
4165-60-0	Nitrobenzene-d5	53%		40-105%
321-60-8	2-Fluorobiphenyl	55%		43-107%
1718-51-0	Terphenyl-d14	61%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09702.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	78	ug/kg	
208-96-8	Acenaphthylene	ND	310	78	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003802.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	850	340	ug/kg	
95-57-8	2-Chlorophenol	ND	170	34	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	34	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	34	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	850	340	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	340	68	ug/kg	
95-48-7	2-Methylphenol	ND	170	34	ug/kg	
	3&4-Methylphenol	ND	170	34	ug/kg	
88-75-5	2-Nitrophenol	ND	170	34	ug/kg	
100-02-7	4-Nitrophenol	ND	850	340	ug/kg	
87-86-5	Pentachlorophenol	ND	850	340	ug/kg	
108-95-2	Phenol	ND	170	34	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	34	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	34	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	170	34	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	340	85	ug/kg	
100-51-6	Benzyl Alcohol	ND	170	34	ug/kg	
91-58-7	2-Chloronaphthalene	ND	170	34	ug/kg	
106-47-8	4-Chloroaniline	ND	170	68	ug/kg	
86-74-8	Carbazole	ND	170	34	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	170	34	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	170	34	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	170	34	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	170	34	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	170	34	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	170	34	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	170	34	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	170	34	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	34	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	340	68	ug/kg	
132-64-9	Dibenzofuran	ND	170	34	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	340	85	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	340	85	ug/kg	
84-66-2	Diethyl phthalate	ND	340	170	ug/kg	
131-11-3	Dimethyl phthalate	ND	340	85	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	340	170	ug/kg	
118-74-1	Hexachlorobenzene	ND	170	34	ug/kg	
87-68-3	Hexachlorobutadiene	ND	170	34	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	170	34	ug/kg	
67-72-1	Hexachloroethane	ND	170	34	ug/kg	
78-59-1	Isophorone	ND	170	34	ug/kg	
88-74-4	2-Nitroaniline	ND	340	68	ug/kg	
99-09-2	3-Nitroaniline	ND	340	68	ug/kg	
100-01-6	4-Nitroaniline	ND	340	68	ug/kg	
98-95-3	Nitrobenzene	ND	170	34	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	170	34	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	34	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	170	34	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%		40-102%
4165-62-2	Phenol-d5	75%		41-100%
118-79-6	2,4,6-Tribromophenol	77%		42-108%
4165-60-0	Nitrobenzene-d5	65%		40-105%
321-60-8	2-Fluorobiphenyl	70%		43-107%
1718-51-0	Terphenyl-d14	82%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09703.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	270	68	ug/kg	
208-96-8	Acenaphthylene	ND	270	68	ug/kg	
120-12-7	Anthracene	ND	270	41	ug/kg	
56-55-3	Benzo(a)anthracene	ND	55	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	55	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	55	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	55	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	55	14	ug/kg	
218-01-9	Chrysene	ND	55	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	55	14	ug/kg	
206-44-0	Fluoranthene	ND	270	48	ug/kg	
86-73-7	Fluorene	ND	270	41	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	55	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	270	41	ug/kg	
91-57-6	2-Methylnaphthalene	ND	270	41	ug/kg	
91-20-3	Naphthalene	ND	270	41	ug/kg	
85-01-8	Phenanthrene	ND	270	41	ug/kg	
129-00-0	Pyrene	ND	270	48	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003803.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	960	380	ug/kg	
87-86-5	Pentachlorophenol	ND	960	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	96	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	77	ug/kg	
99-09-2	3-Nitroaniline	ND	380	77	ug/kg	
100-01-6	4-Nitroaniline	ND	380	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%		40-102%
4165-62-2	Phenol-d5	76%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	65%		40-105%
321-60-8	2-Fluorobiphenyl	69%		43-107%
1718-51-0	Terphenyl-d14	75%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09704.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003804.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	74	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	55%		40-102%
4165-62-2	Phenol-d5	58%		41-100%
118-79-6	2,4,6-Tribromophenol	59%		42-108%
4165-60-0	Nitrobenzene-d5	50%		40-105%
321-60-8	2-Fluorobiphenyl	53%		43-107%
1718-51-0	Terphenyl-d14	60%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09705.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003805.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	74	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	81%		40-102%
4165-62-2	Phenol-d5	87%		41-100%
118-79-6	2,4,6-Tribromophenol	83%		42-108%
4165-60-0	Nitrobenzene-d5	77%		40-105%
321-60-8	2-Fluorobiphenyl	81%		43-107%
1718-51-0	Terphenyl-d14	85%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.2.4 B

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09706.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
83-32-9	Acenaphthene	ND	290	74	ug/kg		
208-96-8	Acenaphthylene	ND	290	74	ug/kg		
120-12-7	Anthracene	ND	290	44	ug/kg		
56-55-3	Benzo(a)anthracene	88.8	59	15	ug/kg		
50-32-8	Benzo(a)pyrene	140	59	15	ug/kg		
205-99-2	Benzo(b)fluoranthene	80.1	59	15	ug/kg		
191-24-2	Benzo(g,h,i)perylene	65.5	59	15	ug/kg		
207-08-9	Benzo(k)fluoranthene	93.5	59	15	ug/kg		
218-01-9	Chrysene	81.8	59	15	ug/kg		
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg		
206-44-0	Fluoranthene	69.4	290	52	ug/kg	J	J
86-73-7	Fluorene	ND	290	44	ug/kg		
193-39-5	Indeno(1,2,3-cd)pyrene	72.8	59	15	ug/kg		
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg		
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg		
91-20-3	Naphthalene	ND	290	44	ug/kg		
85-01-8	Phenanthrene	ND	290	44	ug/kg		
129-00-0	Pyrene	118	290	52	ug/kg	J	J

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003806.D

Accutest Laboratories

Report of Analysis

3.2.5

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003806.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
65-85-0	Benzoic acid	ND	960	380	ug/kg		
95-57-8	2-Chlorophenol	ND	190	38	ug/kg		
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg		
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg		
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg		
51-28-5	2,4-Dinitrophenol	ND	960	380	ug/kg		
534-52-1	4,6-Dinitro-o-cresol	ND	380	77	ug/kg		
95-48-7	2-Methylphenol	ND	190	38	ug/kg		
	3&4-Methylphenol	ND	190	38	ug/kg		
88-75-5	2-Nitrophenol	ND	190	38	ug/kg		
100-02-7	4-Nitrophenol	ND	960	380	ug/kg		
87-86-5	Pentachlorophenol	ND	960	380	ug/kg		
108-95-2	Phenol	ND	190	38	ug/kg		
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg		
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg		
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg		
85-68-7	Butyl benzyl phthalate	ND	380	96	ug/kg		
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg		
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg		
106-47-8	4-Chloroaniline	ND	190	77	ug/kg		
86-74-8	Carbazole	ND	190	38	ug/kg		
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg		
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg		
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg		
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg		
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg		
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg		
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg		
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg		
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg		
91-94-1	3,3'-Dichlorobenzidine	ND	380	77	ug/kg		
132-64-9	Dibenzofuran	105	190	38	ug/kg	J	J

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
84-74-2	Di-n-butyl phthalate	96.4	380	96	ug/kg	J	J
117-84-0	Di-n-octyl phthalate	ND	380	96	ug/kg		
84-66-2	Diethyl phthalate	210	380	190	ug/kg	J	J
131-11-3	Dimethyl phthalate	ND	380	96	ug/kg		
117-81-7	bis(2-Ethylhexyl)phthalate	707	380	190	ug/kg		
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg		
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg		
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg		
67-72-1	Hexachloroethane	ND	190	38	ug/kg		
78-59-1	Isophorone	ND	190	38	ug/kg		
88-74-4	2-Nitroaniline	ND	380	77	ug/kg		
99-09-2	3-Nitroaniline	ND	380	77	ug/kg		
100-01-6	4-Nitroaniline	ND	380	77	ug/kg		
98-95-3	Nitrobenzene	ND	190	38	ug/kg		
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg		
86-30-6	N-Nitrosodiphenylamine	280	190	38	ug/kg		
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		40-102%
4165-62-2	Phenol-d5	72%		41-100%
118-79-6	2,4,6-Tribromophenol	74%		42-108%
4165-60-0	Nitrobenzene-d5	61%		40-105%
321-60-8	2-Fluorobiphenyl	68%		43-107%
1718-51-0	Terphenyl-d14	77%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09707.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
83-32-9	Acenaphthene	152	310	77	ug/kg	J	J
208-96-8	Acenaphthylene	ND	310	77	ug/kg		
120-12-7	Anthracene	ND	310	46	ug/kg		
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg		
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg		
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg		
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg		
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg		
218-01-9	Chrysene	ND	61	15	ug/kg		
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg		
206-44-0	Fluoranthene	77.7	310	54	ug/kg	J	J
86-73-7	Fluorene	160	310	46	ug/kg	J	J
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg		
90-12-0	1-Methylnaphthalene	95.9	310	46	ug/kg	J	J
91-57-6	2-Methylnaphthalene	152	310	46	ug/kg	J	J
91-20-3	Naphthalene	92.1	310	46	ug/kg	J	J
85-01-8	Phenanthrene	347	310	46	ug/kg		
129-00-0	Pyrene	ND	310	54	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003814.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	74	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

3.26
B

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg		
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg		
84-66-2	Diethyl phthalate	ND	370	190	ug/kg		
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg		
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg		
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg		
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg		
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg		
67-72-1	Hexachloroethane	ND	190	37	ug/kg		
78-59-1	Isophorone	ND	190	37	ug/kg		
88-74-4	2-Nitroaniline	ND	370	74	ug/kg		
99-09-2	3-Nitroaniline	ND	370	74	ug/kg		
100-01-6	4-Nitroaniline	ND	370	74	ug/kg		
98-95-3	Nitrobenzene	ND	190	37	ug/kg		
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg		
86-30-6	N-Nitrosodiphenylamine	124	190	37	ug/kg	J	J
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg		

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		40-102%
4165-62-2	Phenol-d5	61%		41-100%
118-79-6	2,4,6-Tribromophenol	57%		42-108%
4165-60-0	Nitrobenzene-d5	56%		40-105%
321-60-8	2-Fluorobiphenyl	53%		43-107%
1718-51-0	Terphenyl-d14	59%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09710.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: U003815.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003815.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		40-102%
4165-62-2	Phenol-d5	74%		41-100%
118-79-6	2,4,6-Tribromophenol	63%		42-108%
4165-60-0	Nitrobenzene-d5	62%		40-105%
321-60-8	2-Fluorobiphenyl	60%		43-107%
1718-51-0	Terphenyl-d14	67%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09711.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003816.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	75	ug/kg	
99-09-2	3-Nitroaniline	ND	370	75	ug/kg	
100-01-6	4-Nitroaniline	ND	370	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	65%		40-102%
4165-62-2	Phenol-d5	73%		41-100%
118-79-6	2,4,6-Tribromophenol	68%		42-108%
4165-60-0	Nitrobenzene-d5	68%		40-105%
321-60-8	2-Fluorobiphenyl	65%		43-107%
1718-51-0	Terphenyl-d14	73%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09712.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003817.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	990	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	80	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	990	400	ug/kg	
87-86-5	Pentachlorophenol	ND	990	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	80	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	80	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	99	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	80	ug/kg	
99-09-2	3-Nitroaniline	ND	400	80	ug/kg	
100-01-6	4-Nitroaniline	ND	400	80	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		40-102%
4165-62-2	Phenol-d5	71%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	77%		40-105%
321-60-8	2-Fluorobiphenyl	68%		43-107%
1718-51-0	Terphenyl-d14	78%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09713.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	80	ug/kg	
208-96-8	Acenaphthylene	ND	320	80	ug/kg	
120-12-7	Anthracene	ND	320	48	ug/kg	
56-55-3	Benzo(a)anthracene	ND	64	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	64	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	64	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	64	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	64	16	ug/kg	
218-01-9	Chrysene	ND	64	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	64	16	ug/kg	
206-44-0	Fluoranthene	ND	320	56	ug/kg	
86-73-7	Fluorene	ND	320	48	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	64	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	48	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	48	ug/kg	
91-20-3	Naphthalene	ND	320	48	ug/kg	
85-01-8	Phenanthrene	ND	320	48	ug/kg	
129-00-0	Pyrene	ND	320	56	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003818.D	1	08/07/07	NJ	08/03/07	OP21737	SU185
Run #2							

	Initial Weight	Final Volume
Run #1	29.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	990	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	990	390	ug/kg	
87-86-5	Pentachlorophenol	ND	990	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	99	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	66%		41-100%
118-79-6	2,4,6-Tribromophenol	60%		42-108%
4165-60-0	Nitrobenzene-d5	57%		40-105%
321-60-8	2-Fluorobiphenyl	57%		43-107%
1718-51-0	Terphenyl-d14	62%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8270C BY SIM SW846 3550B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09714.D	4	08/08/07	NJ	08/03/07	OP21738	SR458
Run #2							

	Initial Weight	Final Volume
Run #1	29.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	79	ug/kg	
208-96-8	Acenaphthylene	ND	320	79	ug/kg	
120-12-7	Anthracene	ND	320	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	320	55	ug/kg	
86-73-7	Fluorene	ND	320	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	47	ug/kg	
91-20-3	Naphthalene	ND	320	47	ug/kg	
85-01-8	Phenanthrene	ND	320	47	ug/kg	
129-00-0	Pyrene	ND	320	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037578.D	1	08/02/07	RB	07/31/07	OP21675	SL1922
Run #2							

	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	28	11	ug/l	
95-57-8	2-Chlorophenol	ND	5.6	1.1	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	2.2	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.6	1.1	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.2	ug/l	
51-28-5	2,4-Dinitrophenol	ND	28	11	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	11	2.2	ug/l	
95-48-7	2-Methylphenol	ND	5.6	1.1	ug/l	
	3&4-Methylphenol	ND	5.6	1.5	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	28	11	ug/l	
87-86-5	Pentachlorophenol	ND	28	11	ug/l	
108-95-2	Phenol	ND	5.6	2.2	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.1	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.1	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.6	1.3	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.6	2.2	ug/l	
100-51-6	Benzyl Alcohol	ND	5.6	1.1	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.6	1.5	ug/l	
106-47-8	4-Chloroaniline	ND	5.6	2.2	ug/l	
86-74-8	Carbazole	ND	5.6	1.1	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.6	1.1	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.6	1.1	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.6	1.1	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.6	1.5	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.6	1.7	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.6	1.8	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.6	1.7	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.6	1.1	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.6	1.1	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	11	2.2	ug/l	
132-64-9	Dibenzofuran	ND	5.6	1.1	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.6	2.2	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.6	2.2	ug/l	
84-66-2	Diethyl phthalate	ND	5.6	2.2	ug/l	
131-11-3	Dimethyl phthalate	ND	5.6	2.2	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.6	2.2	ug/l	
118-74-1	Hexachlorobenzene	ND	5.6	1.3	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.6	1.9	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.6	1.7	ug/l	
67-72-1	Hexachloroethane	ND	5.6	2.1	ug/l	
78-59-1	Isophorone	ND	5.6	1.1	ug/l	
88-74-4	2-Nitroaniline	ND	11	2.2	ug/l	
99-09-2	3-Nitroaniline	ND	11	2.2	ug/l	
100-01-6	4-Nitroaniline	ND	11	2.2	ug/l	
98-95-3	Nitrobenzene	ND	5.6	1.1	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.6	1.1	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	1.1	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.6	1.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	44%		14-62%
4165-62-2	Phenol-d5	30%		10-40%
118-79-6	2,4,6-Tribromophenol	90%		33-118%
4165-60-0	Nitrobenzene-d5	81%		42-108%
321-60-8	2-Fluorobiphenyl	80%		40-106%
1718-51-0	Terphenyl-d14	84%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	**Date Sampled:**	07/25/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/26/07
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09531.D	1	08/02/07	NJ	07/31/07	OP21676	SR451
Run #2							

	Initial Volume	Final Volume
Run #1	890 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1.1	0.56	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.56	ug/l	
120-12-7	Anthracene	ND	1.1	0.56	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.22	0.056	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.22	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.22	0.056	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.22	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.22	0.11	ug/l	
218-01-9	Chrysene	ND	0.22	0.11	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.22	0.056	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.28	ug/l	
86-73-7	Fluorene	ND	1.1	0.28	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.22	0.056	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.28	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.28	ug/l	
91-20-3	Naphthalene	ND	1.1	0.28	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.56	ug/l	
129-00-0	Pyrene	ND	1.1	0.28	ug/l	

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
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2790 Mosside Blvd
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412-858-3335
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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Richard McCracken, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation - Volatiles
Accutest Laboratories, Inc., SDG F51300

DATE: December 19, 2007

The purpose of this memorandum is to present the data validation report for the samples collected at RFAAP on July 25, 2007. The samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW846 Method 5030B/8260B for aqueous samples and 5035A/8260B for soil samples. A total of 3 aqueous and 30 soil samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
59SB06A	F51300-1	43SB07A	F51300-18
59SB06B	F51300-2	43SB07B	F51300-19
59SB06C	F51300-3	43SB07C	F51300-20
59SB05A	F51300-4	43SB08A	F51300-21
59SB05B	F51300-5	43SB08B	F51300-22
59SB05C	F51300-6	43SB08C	F51300-23
59SB04A	F51300-7	43SB09A	F51300-24
59SB04B	F51300-8	43SB09B	F51300-25
59SB04C	F51300-9	43SB09C	F51300-26
TMSB04C	F51300-10	43SB10A	F51300-27
59SB02A	F51300-11	43SB10B	F51300-28
59SB02B	F51300-12	43SB10C	F51300-29
TMSB02B	F51300-13	TMSB10B	F51300-30
59SB02C	F51300-14	072507R	F51300-31
43SB06A	F51300-15	TB072507S	F51300-32
43SB06B	F51300-16	TB072507W	F51300-33
43SB06C	F51300-17		

Data were reviewed by Richard McCracken and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Results
X		Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
	X	Laboratory Control Sample
X		Matrix Spike / Spike Duplicate Sample
	X	System Monitoring Compounds
X		Internal Standards
	X	Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Richard M. Cracken

Richard McCracken, Chemist

12/19/07

Date

RFAAP VALIDATION REPORT
VOLATILES REVIEW
SDG F51300

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of analysis. Holding time criteria: Aqueous samples must be cooled @ 4°C±2°C and acidified to pH<2 with HCl, with a maximum holding time of 14 days (7 days if no HCl added) from sample collection to analysis. Soil samples must be cooled @ 4°C±2°C, with a maximum holding time of 14 days from sample collection to analysis.

- Temperature Review: A temperature blank was sent with each cooler and recorded by the laboratory upon receipt. The samples collected on 7/25/07 were sent in five coolers, and were received by the laboratory on 7/26/07 at temperatures ranging from 2.6 °C to 4.0 °C. No qualifiers were applied.

- Holding Time Review: All samples were collected for VOCs on 7/25/07, and were analyzed on 7/31/07, 8/1/07, and 8/2/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check
The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, bromofluorobenzene (BFB), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent relative standard deviation (%RSD) must be ≤15% for each target compound and must be ≤30% for each calibration check compound. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. All detects are qualified as estimated "J" for exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For compounds with low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- During the initial calibration performed on 07/25/07 on instrument MSVOA9 (GCMSF), target compounds methylene chloride (49.21%) and acetone (21.26%) were outside %RSD criteria. All other target compounds met %RSD criteria, and all compounds met RRF criteria. The compounds with high %RSD were quantified using linear or second order regression, and had correlation coefficients >0.995; therefore, no qualifiers were applied. Samples F51300-1 and F51300-2 were analyzed in conjunction with this initial calibration.

- During the initial calibration performed on 07/31/07 on instrument MSVOA1 (GCMSG), target compounds chloromethane (19.70%), vinyl chloride (16.26%), bromomethane (33.30%), chloroethane (18.67%), acetone (17.23%), and methylene chloride (41.28%) were outside %RSD criteria. All other target compounds met %RSD criteria, and all compounds met RRF criteria. The compounds with high %RSD (except chloromethane) were quantified using linear or second order regression, and had correlation coefficients >0.995 (except bromomethane which had a correlation coefficient of 0.994). No chloromethane (listed on Form I as methyl chloride) was detected in the associated samples so qualifiers were applied to the chloromethane data. Bromomethane (listed on Form I as methyl bromide) results in associated samples have been qualified "J/UJ". Samples F51300-15, -16, -17, -18, -19, -20, -21, -22, -23, -24, -25, -26, -27, -28, -30, and -32 were analyzed in conjunction with this initial calibration.

- During the initial calibration performed on 07/16/07 on instrument MSVOA3 (GCMSH), target compounds acetone (18.53%), methylene chloride (32.02%), trichloroethene (24.48%), ethylbenzene (15.12%), m,p-xylene (16.56%), and o-xylene (15.44%) were outside %RSD criteria. All other target compounds met %RSD criteria, and all compounds met RRF criteria. The compounds with high %RSD were quantified using linear or second order regression, and had correlation coefficients >0.995; therefore, no qualifiers were applied. Samples F51300-3, -4, -5, -6, -7, -8, -9, -10, -11, -12, -13, -14, and -29 were analyzed in conjunction with this initial calibration.

- During the initial calibration performed on 07/31/07 on instrument MSVOA6 (GCMSJ), target compounds bromomethane (22.0%), chloroethane (21.95%), methylene chloride (123.02%), and trans-1,3-dichloropropene (21.19%) were outside %RSD criteria. All other target compounds met %RSD criteria, and all compounds met RRF criteria. The compounds with high %RSD were quantified using linear or second order regression, and had correlation coefficients >0.995; therefore, no qualifiers were applied. Samples F51300-31 & -33 were analyzed in conjunction with this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Continuing calibration establishes the 12-hour relative response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within 20% for all target compounds. All detects are qualified as estimated "J" for exceeding %Ds, and all non-detects are qualified as estimated "UJ" for grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- During the initial calibration verification performed on 7/25/07 @1534 on instrument MSVOA9 (GCMSF), bromomethane (28.8%) had a %D outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No samples were analyzed following this initial calibration verification.

- During the continuing calibration performed on 7/31/07 @1226 on instrument MSVOA9 (GCMSF), all target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Samples F51300-1 and F51300-2 were analyzed following this continuing calibration.

- During the initial calibration verification performed on 7/31/07 @1408 on instrument MSVOA1 (GCMSG), vinyl chloride (23.5%), bromomethane (29.6%), chloroethane (24.1%), acetone (25.2%) had %D outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No samples were analyzed following this initial calibration verification.

- During the continuing calibration performed on 7/31/07 @1532 on instrument MSVOA1 (GCMSG), all target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No qualifiers were applied. Samples F51300-15, -16, -17, -18, -19, -21, -22, -24, -25, -26, -27, -28, -30, and -32 were analyzed following this initial calibration.

- During the continuing calibration performed on 8/1/07 @0917 on instrument MSVOA1 (GCMSG), acetone (23.8%) and carbon tetrachloride (32.1%) had %D/%drift outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Detections of these volatiles in the associated samples have been qualified "J", non-detects were not qualified. Samples F51300-20 and -23 were analyzed following this continuing calibration.

- During the initial calibration verification performed on 7/16/07 @1820 on instrument MSVOA3 (GCMSH), bromomethane (36.1%) had a %D outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No samples were analyzed following this initial calibration verification.

- During the continuing calibration performed on 7/31/07 @1112 on instrument MSVOA3 (GCMSH), bromomethane (27.9%), chloroethane (25.4%), acetone (75.0%), 2-butanone (22.9%), and trichloroethene (20.7%) had %D/%drift outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Detections of these volatiles in the associated samples have been qualified "J", acetone non-detects have been qualified "UJ", all other non-detects were not qualified. Samples F51300-3, -4, -5, -6, -8, -9, -10, -14, and -29 were analyzed following this continuing calibration.

- During the continuing calibration performed on 8/1/07 @1018 on instrument MSVOA3 (GCMSH), acetone (81.3%), 2-butanone (27.8%), and carbon tetrachloride (21.5%) had %D/%drift outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Detections of these volatiles in the associated samples have been qualified "J", acetone non-detects have been qualified "UJ", all other non-detects were not qualified. Samples F51300-7, -11, -12, and -13 were analyzed following this continuing calibration.

- During the initial calibration verification performed on 7/31/07 @1339 on instrument MSVOA6 (GCMSJ), bromomethane (21.8%), acetone (22.5%), trans-1,3-dichloropropene (20.5%), had a %D outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No samples were analyzed following this initial calibration verification.

- During the continuing calibration performed on 8/2/07 @0947 on instrument MSVOA6 (GCMSJ), all target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Samples F51300-31 & -33 were analyzed following this initial calibration verification.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of BFB. No contaminants should be detected in any of the associated blanks > the MDL. The DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants methylene chloride, acetone, and 2-butanone). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants methylene chloride, acetone, and 2-butanone (MEK), or 5 times (5X) the maximum amount for other volatile target compounds. **Table 2** summarizes the blank contamination analysis.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
7/31/07	VH1665-MB	All target <½MRL	NA	NA	None
7/31/07	VF416-MB	All target <½MRL	NA	NA	None
7/31/07	VG1720-MB	All target <½MRL	NA	NA	None
8/1/07	VG1721-MB	All target <½MRL	NA	NA	None
8/1/07	VH1666-MB	All target <½MRL	NA	NA	None
8/2/07	VJ2193-MB	All target <½MRL	NA	NA	None
8/2/07	072507R	All target <½MRL	NA	NA	None
8/6/07	072607R	All target <½MRL	NA	NA	None
7/31/07	TB072507S	All target <½MRL	NA	NA	None
8/2/07	TB072507W	All target <½MRL	NA	NA	None

072507R and 072607R are rinsate blanks.
NA = Not Applicable
MRL = Method Reporting Limit

VI-Laboratory Control Sample

Data for laboratory control samples (LCS) are evaluated to determine long-term accuracy of the analytical method on various matrices. Percent recoveries (%Rs) should be within the specified control limits. The aqueous LCS recovery limits are specified in Table D-4 of the DoD QSM (DoD, 2006), while the solid matrix LCS recovery limits are specified in Table D-5 of the DoD QSM. If the compound is not listed, then the laboratory criteria shall be used.

- Sample VH1665-BS was the solid LCS for the VOC analysis using instrument H on 7/31/07. All target compound recoveries were within criteria, no data qualification was required. Samples F51300-3, -4, -5, -6, -8, -9, -10, -14, and -29 were analyzed in conjunction with this LCS.

- Sample VF416-BS was the solid LCS for the VOC analysis using instrument F on 7/31/07. All target compound recoveries were within criteria, no data qualification was required. Samples F51300-1 and -2 were analyzed in conjunction with this LCS.

- Sample VG1720-BS was the solid LCS for the VOC analysis using instrument G on 7/31/07. All target compound recoveries were within criteria, no data qualification was required. Samples F51300-15, -16, -17, -18, -19, -21, -22, -24, -25, -26, -27, -28, -30, and -32 were analyzed in conjunction with this LCS.

- Sample VG1721-BS was the solid LCS for the VOC analysis using instrument G on 8/1/07. Vinyl chloride (126%) had a high recovery, but no vinyl chloride was detected in the associated samples so no data qualification was required. All other target compound recoveries were within criteria. Samples F51300-20 and -23 were analyzed in conjunction with this LCS.

- Sample VH1666-BS was the solid LCS for the VOC analysis using instrument H on 8/1/07. All target compound recoveries were within criteria, no data qualification was required. Samples F51300-7, -11, -12, and -13 were analyzed in conjunction with this LCS.

- Sample VJ2193-BS was the aqueous LCS for the VOC analysis using instrument J on 8/2/07. All target compound recoveries were within criteria, no data qualification was required. Samples F51300-31 and -33 were analyzed in conjunction with this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. The MS/MSD aqueous recovery limits follow the LCS criteria specified in Table D-4 of the DoD QSM (DoD, 2006), while the solid matrix recovery limits follow the LCS criteria specified in Table D-5 of the DoD QSM. If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51300-29 was used for solid matrix MS/MSD analysis on 7/31/07. Carbon tetrachloride (139%, 141%), toluene (133%), and trichloroethene (130%) were outside DoD QSM recovery criteria. Detections of these compounds have been qualified "J" in the associated samples; non-detects were not qualified. All other target compounds met recovery criteria. All samples were analyzed in conjunction with this MS/MSD.

- Sample F51300-25 was used for the solid MS/MSD analysis on 07/31/07. Ethylbenzene (0%) 1,1,2,2-tetrachloroethane (187%), 1,1,2-trichloroethane (162%), and vinyl chloride (129%), were outside DoD QSM recovery criteria. All ethylbenzene results (detections and non-detects) have been qualified "J/UJ" in the associated samples. Detections of the other compounds with high recoveries have been qualified "J" in the associated samples. The other target compounds met recovery criteria. All samples were analyzed in conjunction with this MS/MSD.

VIII-System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Recoveries for system monitoring compounds in volatile samples and blanks must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous criteria:	Dibromofluoromethane (87-116%) (DoD QSM = 85-115%) 1,2-Dichloroethane-d4 (76-127%) (DoD QSM = 70-120%) Toluene-d8 (86-112%) (DoD QSM = 85-120%) 4-Bromofluorobenzene (84-120%) (DoD QSM = 75-120%)
Solid matrix criteria:	Dibromofluoromethane (80-121%) (DoD QSM = none) 1,2-Dichloroethane-d4 (77-123%) (DoD QSM = none) Toluene-d8 (71-130%) (DoD QSM = 85-115%) 4-Bromofluorobenzene (59-148%) (DoD QSM = 85-120%)

- All solid matrix samples and all aqueous samples met surrogate recovery criteria. No qualifiers were applied.

IX-Internal Standards (IS)

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: area counts (-50% to +100%) of the associated calibration standard, and retention time (± 30 seconds) from that of the associated calibration standard.

- Sample F51300-25 had a low 1,4-dichlorobenzene-d4 area count. All volatiles quantitated from this internal standard have been qualified "J/UJ".

- All other solid matrix samples and all aqueous samples met criteria. No qualifiers were applied.

X-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous and solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field duplicate pairs in this data package included 59SB04C (F51300-9) & TMSB04C (F51300-10), 59SB02B (F51300-12) & TMSB02B (F51300-13), and 43SB10B (F51300-28) & TMSB10B (F51300-30). All compounds detected above the reporting limit (RL) met RPD criteria.

XI-Quantitation Verification
The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: 43SB09B (F51300-25), ethylbenzene

Conc. (µg/kg) = (Ax * Is * DF)/(Ais * RRF * Ws * Ps)

where:	Conc	=	sample concentration in µg/kg
	Ax	=	area of characteristic ion for compound being measured
	Is	=	amount of internal standard added (ng)
	DF	=	dilution factor
	Ais	=	Area of characteristic ion for the internal standard
	RRF	=	average relative response factor
	Ws	=	weight of sample (g)
	Ps	=	percent solids/100

Conc. µg/L = (1215748 * 250 ng * 1) / (551729 * 1.977 * 5.19 * 0.869) = 61.8 µg/kg

Reported Conc. = 61.8 µg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022553.D	1	07/31/07	WJ	n/a	n/a	VF416
Run #2							

	Initial Weight
Run #1	4.61 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1	Acetone	46.3	59	30	ug/kg	J	J
71-43-2	Benzene	ND	5.9	1.2	ug/kg		
75-27-4	Bromodichloromethane	ND	5.9	1.2	ug/kg		
75-25-2	Bromoform	ND	5.9	1.2	ug/kg		
108-90-7	Chlorobenzene	ND	5.9	1.2	ug/kg		
75-00-3	Chloroethane	ND	5.9	3.1	ug/kg		
67-66-3	Chloroform	ND	5.9	1.2	ug/kg		
75-15-0	Carbon disulfide	ND	5.9	1.2	ug/kg		
56-23-5	Carbon tetrachloride	ND	5.9	1.5	ug/kg		
75-34-3	1,1-Dichloroethane	ND	5.9	1.3	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	5.9	1.2	ug/kg		
107-06-2	1,2-Dichloroethane	ND	5.9	1.2	ug/kg		
78-87-5	1,2-Dichloropropane	ND	5.9	1.5	ug/kg		
124-48-1	Dibromochloromethane	ND	5.9	1.2	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	5.9	1.2	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	5.9	1.2	ug/kg		
100-41-4	Ethylbenzene	ND	5.9	1.2	ug/kg		WJ
591-78-6	2-Hexanone	ND	30	12	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	30	12	ug/kg		
74-83-9	Methyl bromide	ND	5.9	2.1	ug/kg		
74-87-3	Methyl chloride	ND	5.9	2.4	ug/kg		
75-09-2	Methylene chloride	ND	12	5.9	ug/kg		
78-93-3	Methyl ethyl ketone	ND	30	12	ug/kg		
100-42-5	Styrene	ND	5.9	1.2	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	5.9	1.2	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.9	1.5	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	5.9	1.2	ug/kg		
127-18-4	Tetrachloroethylene	ND	5.9	1.2	ug/kg		
108-88-3	Toluene	ND	5.9	1.2	ug/kg		
79-01-6	Trichloroethylene	ND	5.9	1.2	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB06A		
Lab Sample ID:	F51300-1	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.9	1.7	ug/kg	
	m,p-Xylene	ND	12	1.3	ug/kg	
95-47-6	o-Xylene	ND	5.9	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	102%		71-130%
460-00-4	4-Bromofluorobenzene	112%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022554.D	1	07/31/07	WJ	n/a	n/a	VF416
Run #2							

	Initial Weight
Run #1	6.00 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	47	24	ug/kg	
71-43-2	Benzene	ND	4.7	0.94	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	0.94	ug/kg	
75-25-2	Bromoform	ND	4.7	0.94	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	0.94	ug/kg	
75-00-3	Chloroethane	ND	4.7	2.4	ug/kg	
67-66-3	Chloroform	ND	4.7	0.94	ug/kg	
75-15-0	Carbon disulfide	ND	4.7	0.94	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.7	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.7	0.94	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.7	0.94	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.7	0.94	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.7	0.94	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.94	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.7	0.94	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.94	ug/kg	
100-41-4	Ethylbenzene	ND	4.7	0.94	ug/kg	WJ
591-78-6	2-Hexanone	ND	24	9.4	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.4	ug/kg	
74-83-9	Methyl bromide	ND	4.7	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.7	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.4	4.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.4	ug/kg	
100-42-5	Styrene	ND	4.7	0.94	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	0.94	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.94	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.7	0.94	ug/kg	
108-88-3	Toluene	ND	4.7	0.94	ug/kg	
79-01-6	Trichloroethylene	ND	4.7	0.94	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB06B		
Lab Sample ID:	F51300-2	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	88.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.7	1.3	ug/kg	
	m,p-Xylene	ND	9.4	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.7	0.94	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		80-121%
2037-26-5	Toluene-D8	93%		71-130%
460-00-4	4-Bromofluorobenzene	100%		59-148%
17060-07-0	1,2-Dichloroethane-D4	114%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044767.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	6.23 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	47	23	ug/kg	UJ
71-43-2	Benzene	ND	4.7	0.93	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	0.93	ug/kg	
75-25-2	Bromoform	ND	4.7	0.93	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	0.93	ug/kg	
75-00-3	Chloroethane	ND	4.7	2.4	ug/kg	
67-66-3	Chloroform	ND	4.7	0.93	ug/kg	
75-15-0	Carbon disulfide	ND	4.7	0.93	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.7	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.7	0.93	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.7	0.93	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.7	0.93	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.7	0.93	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.93	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.7	0.93	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.93	ug/kg	
100-41-4	Ethylbenzene	ND	4.7	0.93	ug/kg	UJ
591-78-6	2-Hexanone	ND	23	9.3	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	23	9.3	ug/kg	
74-83-9	Methyl bromide	ND	4.7	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.7	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.3	4.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	23	9.3	ug/kg	
100-42-5	Styrene	ND	4.7	0.93	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	0.93	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.93	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.7	0.93	ug/kg	
108-88-3	Toluene	ND	4.7	0.93	ug/kg	
79-01-6	Trichloroethylene	ND	4.7	0.93	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB06C		
Lab Sample ID:	F51300-3	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.7	1.3	ug/kg	
	m,p-Xylene	ND	9.3	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.7	0.93	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	116%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044768.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	4.98 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	56	28	ug/kg	UJ
71-43-2	Benzene	ND	5.6	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.6	1.1	ug/kg	
75-25-2	Bromoform	ND	5.6	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.6	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.6	2.9	ug/kg	
67-66-3	Chloroform	ND	5.6	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.6	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.6	1.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.6	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.6	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.6	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.6	1.1	ug/kg	UJ
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.6	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.6	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.6	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.6	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.6	1.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.6	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.6	1.1	ug/kg	
108-88-3	Toluene	ND	5.6	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.6	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB05A		
Lab Sample ID:	F51300-4	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.6	1.6	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.6	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	112%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044769.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	5.04 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	59	29	ug/kg	UJ
71-43-2	Benzene	ND	5.9	1.2	ug/kg	
75-27-4	Bromodichloromethane	ND	5.9	1.2	ug/kg	
75-25-2	Bromoform	ND	5.9	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	5.9	1.2	ug/kg	
75-00-3	Chloroethane	ND	5.9	3.1	ug/kg	
67-66-3	Chloroform	ND	5.9	1.2	ug/kg	
75-15-0	Carbon disulfide	ND	5.9	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.9	1.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.9	1.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.9	1.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.9	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.9	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.9	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.9	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.9	1.2	ug/kg	
100-41-4	Ethylbenzene	ND	5.9	1.2	ug/kg	UJ
591-78-6	2-Hexanone	ND	29	12	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	29	12	ug/kg	
74-83-9	Methyl bromide	ND	5.9	2.1	ug/kg	
74-87-3	Methyl chloride	ND	5.9	2.4	ug/kg	
75-09-2	Methylene chloride	ND	12	5.9	ug/kg	
78-93-3	Methyl ethyl ketone	ND	29	12	ug/kg	
100-42-5	Styrene	ND	5.9	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.9	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.9	1.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.9	1.2	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.9	1.2	ug/kg	
108-88-3	Toluene	ND	5.9	1.2	ug/kg	
79-01-6	Trichloroethylene	ND	5.9	1.2	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB05B		
Lab Sample ID:	F51300-5	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	84.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.9	1.6	ug/kg	
	m,p-Xylene	ND	12	1.3	ug/kg	
95-47-6	o-Xylene	ND	5.9	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	111%		59-148%
17060-07-0	1,2-Dichloroethane-D4	116%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044770.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	5.48 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1	Acetone [a]	51.3	53	26	ug/kg	J	J
71-43-2	Benzene	ND	5.3	1.1	ug/kg		
75-27-4	Bromodichloromethane	ND	5.3	1.1	ug/kg		
75-25-2	Bromoform	ND	5.3	1.1	ug/kg		
108-90-7	Chlorobenzene	ND	5.3	1.1	ug/kg		
75-00-3	Chloroethane	ND	5.3	2.7	ug/kg		
67-66-3	Chloroform	ND	5.3	1.1	ug/kg		
75-15-0	Carbon disulfide	ND	5.3	1.1	ug/kg		
56-23-5	Carbon tetrachloride	ND	5.3	1.4	ug/kg		
75-34-3	1,1-Dichloroethane	ND	5.3	1.2	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	5.3	1.1	ug/kg		
107-06-2	1,2-Dichloroethane	ND	5.3	1.1	ug/kg		
78-87-5	1,2-Dichloropropane	ND	5.3	1.4	ug/kg		
124-48-1	Dibromochloromethane	ND	5.3	1.1	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	5.3	1.1	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	5.3	1.1	ug/kg		
100-41-4	Ethylbenzene	ND	5.3	1.1	ug/kg		UJ
591-78-6	2-Hexanone	ND	26	11	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	26	11	ug/kg		
74-83-9	Methyl bromide	ND	5.3	1.9	ug/kg		
74-87-3	Methyl chloride	ND	5.3	2.1	ug/kg		
75-09-2	Methylene chloride	ND	11	5.3	ug/kg		
78-93-3	Methyl ethyl ketone	ND	26	11	ug/kg		
100-42-5	Styrene	ND	5.3	1.1	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	5.3	1.1	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.3	1.4	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	5.3	1.1	ug/kg		
127-18-4	Tetrachloroethylene	ND	5.3	1.1	ug/kg		
108-88-3	Toluene	ND	5.3	1.1	ug/kg		
79-01-6	Trichloroethylene	ND	5.3	1.1	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB05C		
Lab Sample ID:	F51300-6	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.3	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.3	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	115%		59-148%
17060-07-0	1,2-Dichloroethane-D4	120%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044788.D	1	08/01/07	SH	n/a	n/a	VH1666
Run #2							

	Initial Weight
Run #1	5.05 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	57	29	ug/kg	UJ
71-43-2	Benzene	ND	5.7	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.7	1.1	ug/kg	
75-25-2	Bromoform	ND	5.7	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.7	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.7	3.0	ug/kg	
67-66-3	Chloroform	ND	5.7	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.7	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.7	1.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.7	1.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.7	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.7	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.7	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.7	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.7	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.7	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.7	1.1	ug/kg	UJ
591-78-6	2-Hexanone	ND	29	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	29	11	ug/kg	
74-83-9	Methyl bromide	ND	5.7	2.1	ug/kg	
74-87-3	Methyl chloride	ND	5.7	2.3	ug/kg	
75-09-2	Methylene chloride	ND	11	5.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	29	11	ug/kg	
100-42-5	Styrene	ND	5.7	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.7	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.7	1.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.7	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.7	1.1	ug/kg	
108-88-3	Toluene	ND	5.7	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.7	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB04A		
Lab Sample ID:	F51300-7	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.7	1.6	ug/kg	
	m,p-Xylene	ND	11	1.3	ug/kg	
95-47-6	o-Xylene	ND	5.7	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	114%		59-148%
17060-07-0	1,2-Dichloroethane-D4	99%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: H044772.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044772.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	5.75 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	52	26	ug/kg	UJ
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	UJ
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB04B		
Lab Sample ID:	F51300-8	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	110%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044773.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	6.00 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
67-64-1	Acetone	ND	49	24	ug/kg	UJ
71-43-2	Benzene	ND	4.9	0.97	ug/kg	
75-27-4	Bromodichloromethane	ND	4.9	0.97	ug/kg	
75-25-2	Bromoform	ND	4.9	0.97	ug/kg	
108-90-7	Chlorobenzene	ND	4.9	0.97	ug/kg	
75-00-3	Chloroethane	ND	4.9	2.5	ug/kg	
67-66-3	Chloroform	ND	4.9	0.97	ug/kg	
75-15-0	Carbon disulfide	ND	4.9	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.9	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.9	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.9	0.97	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.9	0.97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.9	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	4.9	0.97	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.9	0.97	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.9	0.97	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.9	0.97	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.9	0.97	ug/kg	
100-41-4	Ethylbenzene	ND	4.9	0.97	ug/kg	UJ
591-78-6	2-Hexanone	ND	24	9.7	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.7	ug/kg	
74-83-9	Methyl bromide	ND	4.9	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.9	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.7	4.9	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.7	ug/kg	
100-42-5	Styrene	ND	4.9	0.97	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.9	0.97	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.9	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.9	0.97	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.9	0.97	ug/kg	
108-88-3	Toluene	ND	4.9	0.97	ug/kg	
79-01-6	Trichloroethylene	ND	4.9	0.97	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB04C		
Lab Sample ID:	F51300-9	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.9	1.4	ug/kg	
	m,p-Xylene	ND	9.7	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.9	0.97	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	114%		59-148%
17060-07-0	1,2-Dichloroethane-D4	121%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8260B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044774.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	4.96 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone [a]	56.6	60	30	ug/kg	J	J
71-43-2	Benzene	ND	6.0	1.2	ug/kg		
75-27-4	Bromodichloromethane	ND	6.0	1.2	ug/kg		
75-25-2	Bromoform	ND	6.0	1.2	ug/kg		
108-90-7	Chlorobenzene	ND	6.0	1.2	ug/kg		
75-00-3	Chloroethane	ND	6.0	3.1	ug/kg		
67-66-3	Chloroform	ND	6.0	1.2	ug/kg		
75-15-0	Carbon disulfide	ND	6.0	1.2	ug/kg		
56-23-5	Carbon tetrachloride	ND	6.0	1.6	ug/kg		
75-34-3	1,1-Dichloroethane	ND	6.0	1.3	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	6.0	1.2	ug/kg		
107-06-2	1,2-Dichloroethane	ND	6.0	1.2	ug/kg		
78-87-5	1,2-Dichloropropane	ND	6.0	1.6	ug/kg		
124-48-1	Dibromochloromethane	ND	6.0	1.2	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	6.0	1.2	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	6.0	1.2	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	6.0	1.2	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	6.0	1.2	ug/kg		
100-41-4	Ethylbenzene	ND	6.0	1.2	ug/kg		UJ
591-78-6	2-Hexanone	ND	30	12	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	30	12	ug/kg		
74-83-9	Methyl bromide	ND	6.0	2.2	ug/kg		
74-87-3	Methyl chloride	ND	6.0	2.4	ug/kg		
75-09-2	Methylene chloride	ND	12	6.0	ug/kg		
78-93-3	Methyl ethyl ketone	ND	30	12	ug/kg		
100-42-5	Styrene	ND	6.0	1.2	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	6.0	1.2	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.0	1.6	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	6.0	1.2	ug/kg		
127-18-4	Tetrachloroethylene	ND	6.0	1.2	ug/kg		
108-88-3	Toluene	ND	6.0	1.2	ug/kg		
79-01-6	Trichloroethylene	ND	6.0	1.2	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TMSB04C		
Lab Sample ID:	F51300-10	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.0	1.7	ug/kg	
	m,p-Xylene	ND	12	1.3	ug/kg	
95-47-6	o-Xylene	ND	6.0	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	114%		59-148%
17060-07-0	1,2-Dichloroethane-D4	120%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	**Date Sampled:**	07/25/07
Matrix:	SO - Soil	**Date Received:**	07/26/07
Method:	SW846 8260B	**Percent Solids:**	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044789.D	1	08/01/07	SH	n/a	n/a	VH1666
Run #2							

	Initial Weight
Run #1	5.00 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1	Acetone	ND	56	28	ug/kg		UJ
71-43-2	Benzene	ND	5.6	1.1	ug/kg		
75-27-4	Bromodichloromethane	ND	5.6	1.1	ug/kg		
75-25-2	Bromoform	ND	5.6	1.1	ug/kg		
108-90-7	Chlorobenzene	ND	5.6	1.1	ug/kg		
75-00-3	Chloroethane	ND	5.6	2.9	ug/kg		
67-66-3	Chloroform	ND	5.6	1.1	ug/kg		
75-15-0	Carbon disulfide	ND	5.6	1.1	ug/kg		
56-23-5	Carbon tetrachloride	ND	5.6	1.5	ug/kg		
75-34-3	1,1-Dichloroethane	ND	5.6	1.2	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	5.6	1.1	ug/kg		
107-06-2	1,2-Dichloroethane	ND	5.6	1.1	ug/kg		
78-87-5	1,2-Dichloropropane	ND	5.6	1.5	ug/kg		
124-48-1	Dibromochloromethane	ND	5.6	1.1	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	5.6	1.1	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	5.6	1.1	ug/kg		
100-41-4	Ethylbenzene	ND	5.6	1.1	ug/kg		UJ
591-78-6	2-Hexanone	ND	28	11	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg		
74-83-9	Methyl bromide	ND	5.6	2.0	ug/kg		
74-87-3	Methyl chloride	ND	5.6	2.2	ug/kg		
75-09-2	Methylene chloride	ND	11	5.6	ug/kg		
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg		
100-42-5	Styrene	ND	5.6	1.1	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	5.6	1.1	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.6	1.5	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	5.6	1.1	ug/kg		
127-18-4	Tetrachloroethylene	ND	5.6	1.1	ug/kg		
108-88-3	Toluene	ND	5.6	1.1	ug/kg		
79-01-6	Trichloroethylene	ND	5.6	1.1	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB02A		
Lab Sample ID:	F51300-11	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	89.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.6	1.6	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.6	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-121%
2037-26-5	Toluene-D8	102%		71-130%
460-00-4	4-Bromofluorobenzene	125%		59-148%
17060-07-0	1,2-Dichloroethane-D4	107%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044790.D	1	08/01/07	SH	n/a	n/a	VH1666
Run #2							

	Initial Weight
Run #1	5.76 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
67-64-1	Acetone	ND	52	26	ug/kg	UJ
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	UJ
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB02B		
Lab Sample ID:	F51300-12	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	115%		59-148%
17060-07-0	1,2-Dichloroethane-D4	109%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044791.D	1	08/01/07	SH	n/a	n/a	VH1666
Run #2							

	Initial Weight
Run #1	5.51 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAC QUALIFIER)
67-64-1	Acetone	ND	53	27	ug/kg	UJ
71-43-2	Benzene	ND	5.3	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.3	1.1	ug/kg	
75-25-2	Bromoform	ND	5.3	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.3	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.3	2.8	ug/kg	
67-66-3	Chloroform	ND	5.3	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.3	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.3	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.3	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.3	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.3	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.3	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.3	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.3	1.1	ug/kg	UJ
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.3	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.3	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.3	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.3	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.3	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.3	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.3	1.1	ug/kg	
108-88-3	Toluene	ND	5.3	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.3	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51300-13	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.3	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.3	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	112%		59-148%
17060-07-0	1,2-Dichloroethane-D4	113%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044778.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	4.90 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone	ND	61	31	ug/kg		UJ
71-43-2	Benzene	ND	6.1	1.2	ug/kg		
75-27-4	Bromodichloromethane	ND	6.1	1.2	ug/kg		
75-25-2	Bromoform	ND	6.1	1.2	ug/kg		
108-90-7	Chlorobenzene	ND	6.1	1.2	ug/kg		
75-00-3	Chloroethane	ND	6.1	3.2	ug/kg		
67-66-3	Chloroform	ND	6.1	1.2	ug/kg		
75-15-0	Carbon disulfide	ND	6.1	1.2	ug/kg		
56-23-5	Carbon tetrachloride	ND	6.1	1.6	ug/kg		
75-34-3	1,1-Dichloroethane	ND	6.1	1.3	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	6.1	1.2	ug/kg		
107-06-2	1,2-Dichloroethane	ND	6.1	1.2	ug/kg		
78-87-5	1,2-Dichloropropane	ND	6.1	1.6	ug/kg		
124-48-1	Dibromochloromethane	ND	6.1	1.2	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	6.1	1.2	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	6.1	1.2	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	6.1	1.2	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	6.1	1.2	ug/kg		
100-41-4	Ethylbenzene	ND	6.1	1.2	ug/kg		UJ
591-78-6	2-Hexanone	ND	31	12	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	31	12	ug/kg		
74-83-9	Methyl bromide	ND	6.1	2.2	ug/kg		
74-87-3	Methyl chloride	ND	6.1	2.5	ug/kg		
75-09-2	Methylene chloride	ND	12	6.1	ug/kg		
78-93-3	Methyl ethyl ketone	ND	31	12	ug/kg		
100-42-5	Styrene	ND	6.1	1.2	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	6.1	1.2	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.1	1.6	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	6.1	1.2	ug/kg		
127-18-4	Tetrachloroethylene	ND	6.1	1.2	ug/kg		
108-88-3	Toluene	ND	6.1	1.2	ug/kg		
79-01-6	Trichloroethylene	ND	6.1	1.2	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	59SB02C		
Lab Sample ID:	F51300-14	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.1	1.7	ug/kg	
	m,p-Xylene	ND	12	1.3	ug/kg	
95-47-6	o-Xylene	ND	6.1	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	116%		59-148%
17060-07-0	1,2-Dichloroethane-D4	123%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045271.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	6.30 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone	29.1	46	23	ug/kg	J	J
71-43-2	Benzene	ND	4.6	0.93	ug/kg		
75-27-4	Bromodichloromethane	ND	4.6	0.93	ug/kg		
75-25-2	Bromoform	ND	4.6	0.93	ug/kg		
108-90-7	Chlorobenzene	ND	4.6	0.93	ug/kg		
75-00-3	Chloroethane	ND	4.6	2.4	ug/kg		
67-66-3	Chloroform	ND	4.6	0.93	ug/kg		
75-15-0	Carbon disulfide	ND	4.6	0.93	ug/kg		
56-23-5	Carbon tetrachloride	ND	4.6	1.2	ug/kg		
75-34-3	1,1-Dichloroethane	ND	4.6	1.0	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	4.6	0.93	ug/kg		
107-06-2	1,2-Dichloroethane	ND	4.6	0.93	ug/kg		
78-87-5	1,2-Dichloropropane	ND	4.6	1.2	ug/kg		
124-48-1	Dibromochloromethane	ND	4.6	0.93	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	4.6	0.93	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	4.6	0.93	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	4.6	0.93	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	4.6	0.93	ug/kg		
100-41-4	Ethylbenzene	ND	4.6	0.93	ug/kg		UJ
591-78-6	2-Hexanone	ND	23	9.3	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	23	9.3	ug/kg		
74-83-9	Methyl bromide	ND	4.6	1.7	ug/kg		UJ
74-87-3	Methyl chloride	ND	4.6	1.9	ug/kg		
75-09-2	Methylene chloride	ND	9.3	4.6	ug/kg		
78-93-3	Methyl ethyl ketone	ND	23	9.3	ug/kg		
100-42-5	Styrene	ND	4.6	0.93	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	4.6	0.93	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.6	1.2	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	4.6	0.93	ug/kg		
127-18-4	Tetrachloroethylene	ND	4.6	0.93	ug/kg		
108-88-3	Toluene	ND	4.6	0.93	ug/kg		
79-01-6	Trichloroethylene	ND	4.6	0.93	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB06A		
Lab Sample ID:	F51300-15	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.6	1.3	ug/kg	
	m,p-Xylene	ND	9.3	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.6	0.93	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	107%		59-148%
17060-07-0	1,2-Dichloroethane-D4	103%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: G0045272.D

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045272.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	4.30 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	94.0	71	36	ug/kg	
71-43-2	Benzene	ND	7.1	1.4	ug/kg	
75-27-4	Bromodichloromethane	ND	7.1	1.4	ug/kg	
75-25-2	Bromoform	ND	7.1	1.4	ug/kg	
108-90-7	Chlorobenzene	ND	7.1	1.4	ug/kg	
75-00-3	Chloroethane	ND	7.1	3.7	ug/kg	
67-66-3	Chloroform	ND	7.1	1.4	ug/kg	
75-15-0	Carbon disulfide	ND	7.1	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.1	1.9	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.1	1.6	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.1	1.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.1	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.1	1.9	ug/kg	
124-48-1	Dibromochloromethane	ND	7.1	1.4	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.1	1.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.1	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.1	1.4	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.1	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	7.1	1.4	ug/kg	UJ
591-78-6	2-Hexanone	ND	36	14	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	36	14	ug/kg	
74-83-9	Methyl bromide	ND	7.1	2.6	ug/kg	UJ
74-87-3	Methyl chloride	ND	7.1	2.8	ug/kg	
75-09-2	Methylene chloride	ND	14	7.1	ug/kg	
78-93-3	Methyl ethyl ketone	ND	36	14	ug/kg	
100-42-5	Styrene	ND	7.1	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.1	1.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.1	1.9	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.1	1.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.1	1.4	ug/kg	
108-88-3	Toluene	ND	7.1	1.4	ug/kg	
79-01-6	Trichloroethylene	ND	7.1	1.4	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB06B		
Lab Sample ID:	F51300-16	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	81.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	7.1	2.0	ug/kg	
	m,p-Xylene	ND	14	1.6	ug/kg	
95-47-6	o-Xylene	ND	7.1	1.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	105%		59-148%
17060-07-0	1,2-Dichloroethane-D4	97%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.17 3

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045273.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	5.99 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1	Acetone	43.5	47	23	ug/kg	J	J
71-43-2	Benzene	ND	4.7	0.93	ug/kg		
75-27-4	Bromodichloromethane	ND	4.7	0.93	ug/kg		
75-25-2	Bromoform	ND	4.7	0.93	ug/kg		
108-90-7	Chlorobenzene	ND	4.7	0.93	ug/kg		
75-00-3	Chloroethane	ND	4.7	2.4	ug/kg		
67-66-3	Chloroform	ND	4.7	0.93	ug/kg		
75-15-0	Carbon disulfide	ND	4.7	0.93	ug/kg		
56-23-5	Carbon tetrachloride	ND	4.7	1.2	ug/kg		
75-34-3	1,1-Dichloroethane	ND	4.7	1.0	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	4.7	0.93	ug/kg		
107-06-2	1,2-Dichloroethane	ND	4.7	0.93	ug/kg		
78-87-5	1,2-Dichloropropane	ND	4.7	1.2	ug/kg		
124-48-1	Dibromochloromethane	ND	4.7	0.93	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	4.7	0.93	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.93	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	4.7	0.93	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.93	ug/kg		
100-41-4	Ethylbenzene	ND	4.7	0.93	ug/kg		UJ
591-78-6	2-Hexanone	ND	23	9.3	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	23	9.3	ug/kg		
74-83-9	Methyl bromide	ND	4.7	1.7	ug/kg		UJ
74-87-3	Methyl chloride	ND	4.7	1.9	ug/kg		
75-09-2	Methylene chloride	ND	9.3	4.7	ug/kg		
78-93-3	Methyl ethyl ketone	ND	23	9.3	ug/kg		
100-42-5	Styrene	ND	4.7	0.93	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	4.7	0.93	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.2	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.93	ug/kg		
127-18-4	Tetrachloroethylene	ND	4.7	0.93	ug/kg		
108-88-3	Toluene	ND	4.7	0.93	ug/kg		
79-01-6	Trichloroethylene	ND	4.7	0.93	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB06C		
Lab Sample ID:	F51300-17	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	89.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.7	1.3	ug/kg	
	m,p-Xylene	ND	9.3	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.7	0.93	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-121%
2037-26-5	Toluene-D8	92%		71-130%
460-00-4	4-Bromofluorobenzene	104%		59-148%
17060-07-0	1,2-Dichloroethane-D4	100%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045274.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	3.85 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone	ND	72	36	ug/kg		
71-43-2	Benzene	ND	7.2	1.4	ug/kg		
75-27-4	Bromodichloromethane	ND	7.2	1.4	ug/kg		
75-25-2	Bromoform	ND	7.2	1.4	ug/kg		
108-90-7	Chlorobenzene	ND	7.2	1.4	ug/kg		
75-00-3	Chloroethane	ND	7.2	3.7	ug/kg		
67-66-3	Chloroform	ND	7.2	1.4	ug/kg		
75-15-0	Carbon disulfide	ND	7.2	1.4	ug/kg		
56-23-5	Carbon tetrachloride	ND	7.2	1.9	ug/kg		
75-34-3	1,1-Dichloroethane	ND	7.2	1.6	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	7.2	1.4	ug/kg		
107-06-2	1,2-Dichloroethane	ND	7.2	1.4	ug/kg		
78-87-5	1,2-Dichloropropane	ND	7.2	1.9	ug/kg		
124-48-1	Dibromochloromethane	ND	7.2	1.4	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	7.2	1.4	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	7.2	1.4	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	7.2	1.4	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	7.2	1.4	ug/kg		
100-41-4	Ethylbenzene	ND	7.2	1.4	ug/kg		UJ
591-78-6	2-Hexanone	ND	36	14	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	36	14	ug/kg		
74-83-9	Methyl bromide	ND	7.2	2.6	ug/kg		UJ
74-87-3	Methyl chloride	ND	7.2	2.9	ug/kg		
75-09-2	Methylene chloride	ND	14	7.2	ug/kg		
78-93-3	Methyl ethyl ketone	ND	36	14	ug/kg		
100-42-5	Styrene	ND	7.2	1.4	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	7.2	1.4	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.2	1.9	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	7.2	1.4	ug/kg		
127-18-4	Tetrachloroethylene	ND	7.2	1.4	ug/kg		
108-88-3	Toluene	ND	7.2	1.4	ug/kg		
79-01-6	Trichloroethylene	ND	7.2	1.4	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB07A		
Lab Sample ID:	F51300-18	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	7.2	2.0	ug/kg	
	m,p-Xylene	ND	14	1.6	ug/kg	
95-47-6	o-Xylene	ND	7.2	1.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	118%		59-148%
17060-07-0	1,2-Dichloroethane-D4	99%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045275.D	1	08/01/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	5.35 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q	
67-64-1	Acetone	44.8	54	27	ug/kg	J	J
71-43-2	Benzene	ND	5.4	1.1	ug/kg		
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg		
75-25-2	Bromoform	ND	5.4	1.1	ug/kg		
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg		
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg		
67-66-3	Chloroform	ND	5.4	1.1	ug/kg		
75-15-0	Carbon disulfide	ND	5.4	1.1	ug/kg		
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg		
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg		
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg		
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg		
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg		
100-41-4	Ethylbenzene	ND	5.4	1.1	ug/kg		UJ
591-78-6	2-Hexanone	ND	27	11	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg		
74-83-9	Methyl bromide	ND	5.4	2.0	ug/kg		UJ
74-87-3	Methyl chloride	ND	5.4	2.2	ug/kg		
75-09-2	Methylene chloride	ND	11	5.4	ug/kg		
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg		
100-42-5	Styrene	ND	5.4	1.1	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg		
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg		
108-88-3	Toluene	ND	5.4	1.1	ug/kg		
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB07B		
Lab Sample ID:	F51300-19	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	9.8	11	1.2	ug/kg	J
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

DATA VAL QUALIFIER J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-121%
2037-26-5	Toluene-D8	89%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	95%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045297.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.27 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	56	28	ug/kg	
71-43-2	Benzene	ND	5.6	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.6	1.1	ug/kg	
75-25-2	Bromoform	ND	5.6	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.6	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.6	2.9	ug/kg	
67-66-3	Chloroform	ND	5.6	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.6	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.6	1.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.6	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.6	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.6	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.6	1.1	ug/kg	UJ
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.6	2.0	ug/kg	UJ
74-87-3	Methyl chloride	ND	5.6	2.3	ug/kg	
75-09-2	Methylene chloride	ND	11	5.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.6	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.6	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.6	1.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.6	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.6	1.1	ug/kg	
108-88-3	Toluene	ND	5.6	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.6	1.1	ug/kg	

DATA VAL QUALIFIER

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB07C		
Lab Sample ID:	F51300-20	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.6	1.6	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.6	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-121%
2037-26-5	Toluene-D8	99%		71-130%
460-00-4	4-Bromofluorobenzene	99%		59-148%
17060-07-0	1,2-Dichloroethane-D4	99%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045262.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	5.45 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	48	24	ug/kg	
71-43-2	Benzene	ND	4.8	0.95	ug/kg	
75-27-4	Bromodichloromethane	ND	4.8	0.95	ug/kg	
75-25-2	Bromoform	ND	4.8	0.95	ug/kg	
108-90-7	Chlorobenzene	ND	4.8	0.95	ug/kg	
75-00-3	Chloroethane	ND	4.8	2.5	ug/kg	
67-66-3	Chloroform	ND	4.8	0.95	ug/kg	
75-15-0	Carbon disulfide	ND	4.8	0.95	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.8	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.8	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.8	0.95	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.8	0.95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.8	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.8	0.95	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.8	0.95	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	0.95	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.8	0.95	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	0.95	ug/kg	
100-41-4	Ethylbenzene	ND	4.8	0.95	ug/kg	UJ
591-78-6	2-Hexanone	ND	24	9.5	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.5	ug/kg	
74-83-9	Methyl bromide	ND	4.8	1.7	ug/kg	UJ
74-87-3	Methyl chloride	ND	4.8	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.8	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.5	ug/kg	
100-42-5	Styrene	ND	4.8	0.95	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.8	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.8	0.95	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.8	0.95	ug/kg	
108-88-3	Toluene	ND	4.8	0.95	ug/kg	
79-01-6	Trichloroethylene	ND	4.8	0.95	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08A		
Lab Sample ID:	F51300-21	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	96.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.8	1.3	ug/kg	
	m,p-Xylene	ND	9.5	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.8	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		80-121%
2037-26-5	Toluene-D8	102%		71-130%
460-00-4	4-Bromofluorobenzene	110%		59-148%
17060-07-0	1,2-Dichloroethane-D4	101%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.22 3

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045263.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	5.80 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	95.2	51	26	ug/kg	
71-43-2	Benzene	ND	5.1	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.1	1.0	ug/kg	
75-25-2	Bromoform	ND	5.1	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.1	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.1	2.7	ug/kg	
67-66-3	Chloroform	ND	5.1	1.0	ug/kg	
75-15-0	Carbon disulfide	2.1	5.1	1.0	ug/kg	J
56-23-5	Carbon tetrachloride	ND	5.1	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.1	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.1	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.1	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.1	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.1	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.1	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.1	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.1	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.1	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.1	1.0	ug/kg	UJ
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.1	1.8	ug/kg	UJ
74-87-3	Methyl chloride	ND	5.1	2.0	ug/kg	
75-09-2	Methylene chloride	ND	10	5.1	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.1	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.1	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.1	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.1	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.1	1.0	ug/kg	
108-88-3	Toluene	ND	5.1	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.1	1.0	ug/kg	

DATA VAL QUALIFIER

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB08B		
Lab Sample ID:	F51300-22	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	84.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.1	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.1	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	94%		59-148%
17060-07-0	1,2-Dichloroethane-D4	107%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045298.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	4.85 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone [a]	33.5	59	29	ug/kg	J	J
71-43-2	Benzene	ND	5.9	1.2	ug/kg		
75-27-4	Bromodichloromethane	ND	5.9	1.2	ug/kg		
75-25-2	Bromoform	ND	5.9	1.2	ug/kg		
108-90-7	Chlorobenzene	ND	5.9	1.2	ug/kg		
75-00-3	Chloroethane	ND	5.9	3.1	ug/kg		
67-66-3	Chloroform	ND	5.9	1.2	ug/kg		
75-15-0	Carbon disulfide	ND	5.9	1.2	ug/kg		
56-23-5	Carbon tetrachloride	ND	5.9	1.5	ug/kg		
75-34-3	1,1-Dichloroethane	ND	5.9	1.3	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	5.9	1.2	ug/kg		
107-06-2	1,2-Dichloroethane	ND	5.9	1.2	ug/kg		
78-87-5	1,2-Dichloropropane	ND	5.9	1.5	ug/kg		
124-48-1	Dibromochloromethane	ND	5.9	1.2	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	5.9	1.2	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	5.9	1.2	ug/kg		
100-41-4	Ethylbenzene	ND	5.9	1.2	ug/kg		UJ
591-78-6	2-Hexanone	ND	29	12	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	29	12	ug/kg		
74-83-9	Methyl bromide	ND	5.9	2.1	ug/kg		UJ
74-87-3	Methyl chloride	ND	5.9	2.4	ug/kg		
75-09-2	Methylene chloride	ND	12	5.9	ug/kg		
78-93-3	Methyl ethyl ketone	ND	29	12	ug/kg		
100-42-5	Styrene	ND	5.9	1.2	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	5.9	1.2	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.9	1.5	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	5.9	1.2	ug/kg		
127-18-4	Tetrachloroethylene	ND	5.9	1.2	ug/kg		
108-88-3	Toluene	ND	5.9	1.2	ug/kg		
79-01-6	Trichloroethylene	ND	5.9	1.2	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB08C		
Lab Sample ID:	F51300-23	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.9	1.6	ug/kg	
	m,p-Xylene	ND	12	1.3	ug/kg	
95-47-6	o-Xylene	ND	5.9	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	101%		59-148%
17060-07-0	1,2-Dichloroethane-D4	103%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.24 B

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045265.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	3.88 g
Run #2	

VOA TCL List

DATA VAL QUALIFIER

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	71	36	ug/kg	
71-43-2	Benzene	ND	7.1	1.4	ug/kg	
75-27-4	Bromodichloromethane	ND	7.1	1.4	ug/kg	
75-25-2	Bromoform	ND	7.1	1.4	ug/kg	
108-90-7	Chlorobenzene	ND	7.1	1.4	ug/kg	
75-00-3	Chloroethane	ND	7.1	3.7	ug/kg	
67-66-3	Chloroform	ND	7.1	1.4	ug/kg	
75-15-0	Carbon disulfide	ND	7.1	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.1	1.9	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.1	1.6	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.1	1.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.1	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.1	1.9	ug/kg	
124-48-1	Dibromochloromethane	ND	7.1	1.4	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.1	1.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.1	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.1	1.4	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.1	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	7.1	1.4	ug/kg	UJ
591-78-6	2-Hexanone	ND	36	14	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	36	14	ug/kg	
74-83-9	Methyl bromide	ND	7.1	2.6	ug/kg	UJ
74-87-3	Methyl chloride	ND	7.1	2.9	ug/kg	
75-09-2	Methylene chloride	ND	14	7.1	ug/kg	
78-93-3	Methyl ethyl ketone	ND	36	14	ug/kg	
100-42-5	Styrene	ND	7.1	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.1	1.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.1	1.9	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.1	1.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.1	1.4	ug/kg	
108-88-3	Toluene	ND	7.1	1.4	ug/kg	
79-01-6	Trichloroethylene	ND	7.1	1.4	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB09A		
Lab Sample ID:	F51300-24	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	90.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	7.1	2.0	ug/kg	
	m,p-Xylene	ND	14	1.6	ug/kg	
95-47-6	o-Xylene	ND	7.1	1.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	105%		59-148%
17060-07-0	1,2-Dichloroethane-D4	100%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.25

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045259.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2 [a]	G0045299.D	1	08/01/07	SH	n/a	n/a	VG1721

	Initial Weight
Run #1	5.19 g
Run #2	5.86 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
67-64-1	Acetone	61.2	55	28	ug/kg	
71-43-2	Benzene	ND	5.5	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	1.1	ug/kg	
75-25-2	Bromoform	ND	5.5	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.5	2.9	ug/kg	
67-66-3	Chloroform	ND	5.5	1.1	ug/kg	
75-15-0	Carbon disulfide	7.3	5.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
100-41-4	Ethylbenzene	61.8	5.5	1.1	ug/kg	J
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	2.0	ug/kg	UJ
74-87-3	Methyl chloride	ND	5.5	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.5	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	1.4	ug/kg	UJ
79-00-5	1,1,2-Trichloroethane	ND	5.5	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	1.1	ug/kg	
108-88-3	Toluene	2.7	5.5	1.1	ug/kg	J J
79-01-6	Trichloroethylene	ND	5.5	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB09B		
Lab Sample ID:	F51300-25	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.5	1.6	ug/kg	
	m,p-Xylene	12.4	11	1.2	ug/kg	
95-47-6	o-Xylene	8.9	5.5	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%	103%	80-121%
2037-26-5	Toluene-D8	106%	97%	71-130%
460-00-4	4-Bromofluorobenzene	116%	104%	59-148%
17060-07-0	1,2-Dichloroethane-D4	98%	97%	77-123%

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045266.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	4.34 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone	33.6	66	33	ug/kg	J	J
71-43-2	Benzene	ND	6.6	1.3	ug/kg		
75-27-4	Bromodichloromethane	ND	6.6	1.3	ug/kg		
75-25-2	Bromoform	ND	6.6	1.3	ug/kg		
108-90-7	Chlorobenzene	ND	6.6	1.3	ug/kg		
75-00-3	Chloroethane	ND	6.6	3.4	ug/kg		
67-66-3	Chloroform	ND	6.6	1.3	ug/kg		
75-15-0	Carbon disulfide	ND	6.6	1.3	ug/kg		
56-23-5	Carbon tetrachloride	ND	6.6	1.7	ug/kg		
75-34-3	1,1-Dichloroethane	ND	6.6	1.5	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	6.6	1.3	ug/kg		
107-06-2	1,2-Dichloroethane	ND	6.6	1.3	ug/kg		
78-87-5	1,2-Dichloropropane	ND	6.6	1.7	ug/kg		
124-48-1	Dibromochloromethane	ND	6.6	1.3	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	6.6	1.3	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	6.6	1.3	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	6.6	1.3	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	6.6	1.3	ug/kg		
100-41-4	Ethylbenzene	ND	6.6	1.3	ug/kg		UJ
591-78-6	2-Hexanone	ND	33	13	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	33	13	ug/kg		
74-83-9	Methyl bromide	ND	6.6	2.4	ug/kg		UJ
74-87-3	Methyl chloride	ND	6.6	2.6	ug/kg		
75-09-2	Methylene chloride	ND	13	6.6	ug/kg		
78-93-3	Methyl ethyl ketone	ND	33	13	ug/kg		
100-42-5	Styrene	ND	6.6	1.3	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	6.6	1.3	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.6	1.7	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	6.6	1.3	ug/kg		
127-18-4	Tetrachloroethylene	ND	6.6	1.3	ug/kg		
108-88-3	Toluene	ND	6.6	1.3	ug/kg		
79-01-6	Trichloroethylene	ND	6.6	1.3	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB09C		
Lab Sample ID:	F51300-26	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.6	1.9	ug/kg	
	m,p-Xylene	ND	13	1.5	ug/kg	
95-47-6	o-Xylene	ND	6.6	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	100%		59-148%
17060-07-0	1,2-Dichloroethane-D4	102%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.27 3

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045267.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	4.09 g
Run #2	

VOA TCL List

DATA VAL QUALIFIED

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	70	35	ug/kg	
71-43-2	Benzene	ND	7.0	1.4	ug/kg	
75-27-4	Bromodichloromethane	ND	7.0	1.4	ug/kg	
75-25-2	Bromoform	ND	7.0	1.4	ug/kg	
108-90-7	Chlorobenzene	ND	7.0	1.4	ug/kg	
75-00-3	Chloroethane	ND	7.0	3.6	ug/kg	
67-66-3	Chloroform	ND	7.0	1.4	ug/kg	
75-15-0	Carbon disulfide	ND	7.0	1.4	ug/kg	
56-23-5	Carbon tetrachloride	ND	7.0	1.8	ug/kg	
75-34-3	1,1-Dichloroethane	ND	7.0	1.5	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	7.0	1.4	ug/kg	
107-06-2	1,2-Dichloroethane	ND	7.0	1.4	ug/kg	
78-87-5	1,2-Dichloropropane	ND	7.0	1.8	ug/kg	
124-48-1	Dibromochloromethane	ND	7.0	1.4	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	7.0	1.4	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	7.0	1.4	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	7.0	1.4	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	7.0	1.4	ug/kg	
100-41-4	Ethylbenzene	ND	7.0	1.4	ug/kg	UJ
591-78-6	2-Hexanone	ND	35	14	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	35	14	ug/kg	
74-83-9	Methyl bromide	ND	7.0	2.5	ug/kg	UJ
74-87-3	Methyl chloride	ND	7.0	2.8	ug/kg	
75-09-2	Methylene chloride	ND	14	7.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	35	14	ug/kg	
100-42-5	Styrene	ND	7.0	1.4	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	7.0	1.4	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	7.0	1.8	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	7.0	1.4	ug/kg	
127-18-4	Tetrachloroethylene	ND	7.0	1.4	ug/kg	
108-88-3	Toluene	ND	7.0	1.4	ug/kg	
79-01-6	Trichloroethylene	ND	7.0	1.4	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB10A		
Lab Sample ID:	F51300-27	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	7.0	2.0	ug/kg	
	m,p-Xylene	ND	14	1.5	ug/kg	
95-47-6	o-Xylene	ND	7.0	1.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	96%		59-148%
17060-07-0	1,2-Dichloroethane-D4	97%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3-28
3

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045268.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	4.92 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone	ND	59	29	ug/kg		
71-43-2	Benzene	ND	5.9	1.2	ug/kg		
75-27-4	Bromodichloromethane	ND	5.9	1.2	ug/kg		
75-25-2	Bromoform	ND	5.9	1.2	ug/kg		
108-90-7	Chlorobenzene	ND	5.9	1.2	ug/kg		
75-00-3	Chloroethane	ND	5.9	3.1	ug/kg		
67-66-3	Chloroform	ND	5.9	1.2	ug/kg		
75-15-0	Carbon disulfide	ND	5.9	1.2	ug/kg		
56-23-5	Carbon tetrachloride	ND	5.9	1.5	ug/kg		
75-34-3	1,1-Dichloroethane	ND	5.9	1.3	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	5.9	1.2	ug/kg		
107-06-2	1,2-Dichloroethane	ND	5.9	1.2	ug/kg		
78-87-5	1,2-Dichloropropane	ND	5.9	1.5	ug/kg		
124-48-1	Dibromochloromethane	ND	5.9	1.2	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	5.9	1.2	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	5.9	1.2	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	5.9	1.2	ug/kg		
100-41-4	Ethylbenzene	ND	5.9	1.2	ug/kg		UJ
591-78-6	2-Hexanone	ND	29	12	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	29	12	ug/kg		
74-83-9	Methyl bromide	ND	5.9	2.1	ug/kg		UJ
74-87-3	Methyl chloride	ND	5.9	2.3	ug/kg		
75-09-2	Methylene chloride	ND	12	5.9	ug/kg		
78-93-3	Methyl ethyl ketone	ND	29	12	ug/kg		
100-42-5	Styrene	ND	5.9	1.2	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	5.9	1.2	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.9	1.5	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	5.9	1.2	ug/kg		
127-18-4	Tetrachloroethylene	ND	5.9	1.2	ug/kg		
108-88-3	Toluene	ND	5.9	1.2	ug/kg		
79-01-6	Trichloroethylene	ND	5.9	1.2	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB10B		
Lab Sample ID:	F51300-28	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	86.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.9	1.6	ug/kg	
	m,p-Xylene	ND	12	1.3	ug/kg	
95-47-6	o-Xylene	ND	5.9	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-121%
2037-26-5	Toluene-D8	92%		71-130%
460-00-4	4-Bromofluorobenzene	93%		59-148%
17060-07-0	1,2-Dichloroethane-D4	103%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

3.2.6 C3

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044779.D	1	07/31/07	SH	n/a	n/a	VH1665
Run #2							

	Initial Weight
Run #1	6.77 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
67-64-1	Acetone	ND	44	22	ug/kg	UJ
71-43-2	Benzene	ND	4.4	0.88	ug/kg	
75-27-4	Bromodichloromethane	ND	4.4	0.88	ug/kg	
75-25-2	Bromoform	ND	4.4	0.88	ug/kg	
108-90-7	Chlorobenzene	ND	4.4	0.88	ug/kg	
75-00-3	Chloroethane	ND	4.4	2.3	ug/kg	
67-66-3	Chloroform	ND	4.4	0.88	ug/kg	
75-15-0	Carbon disulfide	ND	4.4	0.88	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.4	1.1	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.4	0.97	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.4	0.88	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.4	0.88	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.4	1.1	ug/kg	
124-48-1	Dibromochloromethane	ND	4.4	0.88	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.4	0.88	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.4	0.88	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.4	0.88	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.4	0.88	ug/kg	
100-41-4	Ethylbenzene	ND	4.4	0.88	ug/kg	UJ
591-78-6	2-Hexanone	ND	22	8.8	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	22	8.8	ug/kg	
74-83-9	Methyl bromide	ND	4.4	1.6	ug/kg	
74-87-3	Methyl chloride	ND	4.4	1.8	ug/kg	
75-09-2	Methylene chloride	ND	8.8	4.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	22	8.8	ug/kg	
100-42-5	Styrene	ND	4.4	0.88	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.4	0.88	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.4	1.1	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.4	0.88	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.4	0.88	ug/kg	
108-88-3	Toluene	ND	4.4	0.88	ug/kg	
79-01-6	Trichloroethylene	ND	4.4	0.88	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	43SB10C		
Lab Sample ID:	F51300-29	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	83.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.4	1.2	ug/kg	
	m,p-Xylene	ND	8.8	0.97	ug/kg	
95-47-6	o-Xylene	ND	4.4	0.88	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		80-121%
2037-26-5	Toluene-D8	101%		71-130%
460-00-4	4-Bromofluorobenzene	119%		59-148%
17060-07-0	1,2-Dichloroethane-D4	122%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045269.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	5.31 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q (DATA VAL QUALIFIER)
67-64-1	Acetone	ND	55	27	ug/kg	
71-43-2	Benzene	ND	5.5	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	1.1	ug/kg	
75-25-2	Bromoform	ND	5.5	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.5	2.9	ug/kg	
67-66-3	Chloroform	ND	5.5	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.5	1.1	ug/kg	UJ
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	2.0	ug/kg	UJ
74-87-3	Methyl chloride	ND	5.5	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.5	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	1.1	ug/kg	
108-88-3	Toluene	ND	5.5	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.5	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TMSB10B		
Lab Sample ID:	F51300-30	Date Sampled:	07/25/07
Matrix:	SO - Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	85.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.5	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.5	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-121%
2037-26-5	Toluene-D8	91%		71-130%
460-00-4	4-Bromofluorobenzene	94%		59-148%
17060-07-0	1,2-Dichloroethane-D4	102%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031592.D	1	08/02/07	LD	n/a	n/a	VJ2193
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.20	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.29	ug/l	
75-25-2	Bromoform	ND	1.0	0.28	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.46	ug/l	
67-66-3	Chloroform	ND	1.0	0.21	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.20	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.29	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.25	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.23	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.25	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.24	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.20	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
591-78-6	2-Hexanone	ND	10	2.9	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.2	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.54	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.38	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.0	ug/l	
100-42-5	Styrene	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.27	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.38	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	072507R		
Lab Sample ID:	F51300-31	Date Sampled:	07/25/07
Matrix:	AQ - Equipment Blank	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.34	ug/l	
	m,p-Xylene	ND	2.0	0.36	ug/l	
95-47-6	o-Xylene	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	99%		76-127%
2037-26-5	Toluene-D8	96%		86-112%
460-00-4	4-Bromofluorobenzene	102%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072507S		
Lab Sample ID:	F51300-32	**Date Sampled:**	07/25/07
Matrix:	SO - Trip Blank Soil	**Date Received:**	07/26/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045270.D	1	07/31/07	SH	n/a	n/a	VG1720
Run #2							

	Initial Weight
Run #1	5.00 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q	DATA VAL QUALIFIER
67-64-1	Acetone	ND	50	25	ug/kg		
71-43-2	Benzene	ND	5.0	1.0	ug/kg		
75-27-4	Bromodichloromethane	ND	5.0	1.0	ug/kg		
75-25-2	Bromoform	ND	5.0	1.0	ug/kg		
108-90-7	Chlorobenzene	ND	5.0	1.0	ug/kg		
75-00-3	Chloroethane	ND	5.0	2.6	ug/kg		
67-66-3	Chloroform	ND	5.0	1.0	ug/kg		
75-15-0	Carbon disulfide	ND	5.0	1.0	ug/kg		
56-23-5	Carbon tetrachloride	ND	5.0	1.3	ug/kg		
75-34-3	1,1-Dichloroethane	ND	5.0	1.1	ug/kg		
75-35-4	1,1-Dichloroethylene	ND	5.0	1.0	ug/kg		
107-06-2	1,2-Dichloroethane	ND	5.0	1.0	ug/kg		
78-87-5	1,2-Dichloropropane	ND	5.0	1.3	ug/kg		
124-48-1	Dibromochloromethane	ND	5.0	1.0	ug/kg		
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg		
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.0	ug/kg		
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg		
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.0	ug/kg		
100-41-4	Ethylbenzene	ND	5.0	1.0	ug/kg		
591-78-6	2-Hexanone	ND	25	10	ug/kg		
108-10-1	4-Methyl-2-pentanone	ND	25	10	ug/kg		
74-83-9	Methyl bromide	ND	5.0	1.8	ug/kg		UJ
74-87-3	Methyl chloride	ND	5.0	2.0	ug/kg		
75-09-2	Methylene chloride	ND	10	5.0	ug/kg		
78-93-3	Methyl ethyl ketone	ND	25	10	ug/kg		
100-42-5	Styrene	ND	5.0	1.0	ug/kg		
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.0	ug/kg		
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.3	ug/kg		
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.0	ug/kg		
127-18-4	Tetrachloroethylene	ND	5.0	1.0	ug/kg		
108-88-3	Toluene	ND	5.0	1.0	ug/kg		
79-01-6	Trichloroethylene	ND	5.0	1.0	ug/kg		

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB072507S		
Lab Sample ID:	F51300-32	Date Sampled:	07/25/07
Matrix:	SO - Trip Blank Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.0	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.0	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-121%
2037-26-5	Toluene-D8	92%		71-130%
460-00-4	4-Bromofluorobenzene	99%		59-148%
17060-07-0	1,2-Dichloroethane-D4	98%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072507W		
Lab Sample ID:	F51300-33	Date Sampled:	07/25/07
Matrix:	AQ - Trip Blank Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	J031593.D	1	08/02/07	LD	n/a	n/a	VJ2193
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.20	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.29	ug/l	
75-25-2	Bromoform	ND	1.0	0.28	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.46	ug/l	
67-66-3	Chloroform	ND	1.0	0.21	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.20	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.29	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.25	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.23	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.25	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.24	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.20	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
591-78-6	2-Hexanone	ND	10	2.9	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.2	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.54	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.38	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.0	ug/l	
100-42-5	Styrene	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.27	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.38	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TB072507W		
Lab Sample ID:	F51300-33	Date Sampled:	07/25/07
Matrix:	AQ - Trip Blank Soil	Date Received:	07/26/07
Method:	SW846 8260B	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.34	ug/l	
	m,p-Xylene	ND	2.0	0.36	ug/l	
95-47-6	o-Xylene	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		87-116%
17060-07-0	1,2-Dichloroethane-D4	100%		76-127%
2037-26-5	Toluene-D8	95%		86-112%
460-00-4	4-Bromofluorobenzene	104%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Dioxin Furans
SGS Paradigm Analytical Laboratories, Inc. SDGs G383-586
(Accutest SDG F51353)

DATE: February 20, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. The samples were analyzed for Dioxin Furan compounds using USEPA SW-846 Method 8290 High Resolution Gas Chromatography/High Resolution Mass Spectroscopy (HRGC/HRMS). A total of three solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB03A	F51353-20	43SB03C	F51353-22
43SB03B	F51353-21		

Data were reviewed and validated using a combination of project QAPP, *DOD Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *USEPA Region III Dioxin/Furan Data Validation Guidance* (March, 1999). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
X		Blank Analysis
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Internal Standards (IS) Recovery Standard Solutions
	X	Cleanup Standards
	X	Laboratory Control Standard or Ongoing Precision Result (OPR)
	X	Matrix Spike and Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/20/08
Date

RFAAP VALIDATION REPORT
DIOXIN FURAN REVIEW
SDG G383-586
(Accutest SDG F51353)

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For solid samples, dioxin and furans are shipped cooled (@4°C ± 2°C) with a maximum holding time of 30 days from sample collection to preparative extraction and 45 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The soil samples were collected on 07/26/07. The dioxins and furans were extracted on 08/07/07 and analyzed on 08/09/07. Sample collection dates may be found on the attached form 1s. All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory (or field) blank analyses is to determine the existence and magnitude of contamination problems resulting from field and laboratory activities. No contamination should be found in any of the blanks >EDL (estimated detection limit). The DoD QSM criteria specifies all concentrations should be less than ½ MRL (<MRL for common laboratory contaminants OCDD and OCDF) and <2EDL for the calibration blanks. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants OCDD or OCDF, or 5 times (5X) the maximum amount for other target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 100) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. pg/g	Action Level pg/g	B qualified samples
08/09/07	LMB14402	OCDD	2.84J	28.4	None
08/09/07	LMB14402	1,2,3,4,7,8-HxCDF	0.258J	1.29	43SB03A, 43SB03C
08/09/07	LMB14402	1,2,3,6,7,8-HxCDF	0.126J	0.630	43SB03A, 43SB03C
08/09/07	LMB14402	1,2,3,4,6,7,8-HpCDD	0.446J, EMPC	2.23	None
08/09/07	LMB14402	1,2,3,4,6,7,8-HpCDF	1.23J	6.15	43SB03C
08/09/07	LMB14402	OCDF	1.95J	19.5	43SB03C
08/09/07	LMB14402	Total HpCDDs	1.01 EMPC	5.05	None
08/09/07	LMB14402	Total HxCDFs	0.516	2.58	43SB03C
08/09/07	LMB14402	Total HpCDFs	1.23	6.15	43SB03C
08/03/07	072607R	1,2,3,4,6,7,8-HpCDF	1.37J	6.85	43SB03C
08/03/07	072507R	OCDF	2.54J	25.4	43SB03C
08/03/07	072507R	Total HpCDFs	1.37J	6.85	43SB03C

J = Estimated value <MRL and >EDL.
EMPC = Estimated Maximum Possible Concentration.

III-Instrument Performance Check
Instrument must be tuned with perfluorokerosene (PFK) to achieve a static resolving power of at least 10,000 (10% valley) and lock-mass ion between lowest and highest masses for each descriptor and level of reference compound ≤10%. Documentation of the mass spectrometer resolving power is accomplished by recording the peak profile of the high-mass reference signal (typically m/z 330.9792) obtained during a peak examination by using the low-mass PFK ion at m/z 292.9825 or lower in mass as reference. At the beginning of the each 12-hour period, the chromatographic resolution is verified in the same fashion as in the initial calibration through the analysis of HRCC solution on the DB-5 (or equivalent) column or through the analysis of the column performance solution on the SP-2331 or SP-225 (or equivalent) column. A 25% valley must be achieved between the close eluters.

- All PFK forms were verified and found to be in compliance with method specification. No qualifiers were applied.

IV-Initial Calibration
Once the window defining mix has been analyzed and the descriptor switching times have been verified, the five point calibration solutions can be analyzed prior to sample analysis. Per method and DoD QSM, the initial calibration criteria are as follows:

  - The percent relative standard deviations for the mean response factors RRF(n) from the 17 unlabeled standards must not exceed ±20%, and those for the labeled reference compounds must not exceed ±30%;
  - The signal to noise ratio ≥10% for all target ions;
  - Ion abundance ratios must be within the specified control limits in Table 8 (SW846 Method 8290).

- For initial calibration performed on 11/02/07 for all target compounds on instrument HRMS3, all criteria were met. No qualifiers were applied. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), and 43SB03C (F51353-22) apply to this initial calibration.

V-Continuing Calibration
The continuing calibration consists of two parts: evaluation of the mass resolution and retention time check. Per method and DoD QSM, the following stipulates the continuing calibration criteria.

  - The signal signal-to-noise ratio (S/N) must be at least 10:1 for each selected ion current profile (SICP) and for each GC signal representing the elution of a target analyte or labeled standard for each analyte.
  - The relative response factor of each analyte for the unlabeled standard must be within ±20% of the average RF obtained from the initial calibration, and the RRF of each labeled standard must be within ±30% of the average RRF established during initial calibration. This is expressed in term of percent difference %D.
  - Ion abundance ratios must be within the specified control limits in Table 8 (SW846 Method 8290).

- For continuing calibration performed on 08/08/07 @09:47 on instrument HRMS3, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/08/07 @14:36 on instrument HRMS3, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @01:59 on instrument HRMS3, all criteria were met. No qualifiers were applied. Sample 43SB03B (F51353-21) applies to this continuing calibration.

- For continuing calibration performed on 08/09/07 @13:23 on instrument HRMS3, all criteria were met. No qualifiers were applied. Samples 43SB03A (F51353-20) and 43SB03C (F51353-22) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @22:34 on instrument HRMS3, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 08/10/07 @05:55 on instrument HRMS3, all criteria were met. No qualifiers were applied. No samples reported apply to this continuing calibration.

VI-Internal Standards (IS) Recovery Standard Solutions
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: Recoveries of the isotopically-labeled recovery standards to fall within the 40 to 135 percent range for the tetra- through octachlorinated congeners, or as stated in the data package (DoD QSM limits 40-135%).

- All criteria were met. No qualifiers were applied.

VII-Cleanup Standards
Cleanup standards are added to every sample, blank, quality control sample, and calibration solution. This compound is added to the samples after extraction but prior to cleanup and is used to verify the percent recovery obtained using the isotope dilution technique. The control limits are 40 to 135 percent (DoD QSM limits 40-135%).

- All criteria were met. No qualifiers were applied.

VIII-Laboratory Control Standard (LCS) or Ongoing Precision Result (OPR)
LCSs are used to monitor laboratory accuracy and precision by calculating the percent recoveries of the spiked compounds. Per DOD QSM and method criteria, acceptable performance is determined by:

1. Recoveries of the isotopically-labeled extraction standards to fall within 40-135% control limits for the tetra- through octachlorinated congeners, or as stated in the data package;

2. Recoveries (accuracy) of the unlabeled compounds should be within $\pm$35% when spiked at the method quantitation limit and within $\pm$30% when spiked above 20 times the method quantitation limit, or as stated in the data package;

3. When duplicate OPR are required, the relative percent difference (RPD) of the unlabeled analytes concentrations should be within 30% when spiked at the method quantitation limit and within $\pm$20% when spiked above 20 times the method quantitation limit.

- Sample OPR14402 was used as LCS and LCSD on 08/09/07 analytical run. All criteria were met. No qualifiers were applied. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), and 43SB03C (F51353-22) apply to this LCS.

IX-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. Per DoD QSM, MS/MSD recoveries must be within in-house laboratory limits (75-125%) and RPD ≤20%.

- No project specific solid matrix MS/MSD was performed; therefore, it was not evaluated.

X-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- No project specific solid field duplicate was analyzed with this SDG; therefore, it was not evaluated.

XI-Quantitation Verification
The accuracy of analytical results was verified through the calculation of at least one the several parameters such as the %D, %RSD, % recovery, and/or compound concentration. Values were found to be within 10%. Any value reported by the laboratory as estimated "A" based on an analyte to internal standard ratio below the calibration curve was qualified as estimated "J". The signal signal-to-noise ratio (S/N) must be greater than 2.5 for each selected ion current profile (SICP) and for each GC signal representing the elution of a target analyte or labeled standard. Any detected value with ether interference (I-lab flag) was qualified as estimated "J". For where the ion ratio failed the 25% criteria (*-lab flag), the estimated maximum possible concentration (EMPC) was reported and flagged estimated "J". For where presence of quantitation interference (Q-lab flag), the date was flagged estimated "J" for detects and "UJ" for non-detects.

- For sample 43SB03B (F51353-21), 1,2,3,7,8-PeCDF, 2,3,4,7,8-PeCDF, Total PeCDFs, Total TCDDs, and Total TCDFs were qualified estimated "J" based upon the presence of quantitation interference.

- OCDD exceeded upper calibration limit for samples 43SB03A (F51353-20) and 43SB03B (F51353-21). OCDD was qualified estimated "J" for all associated samples based upon these outliers.

Sample: 43SB03A (F51353-20), OCDD

A(x) = sum of the integrated ion abundances of the quantitation ions for the unlabeled ions;

A(is) = sum of the integrated ion abundances of the quantitation ions for the labeled ions;

Q(is) = quantity, in pg, of the internal standard added to the sample before extraction; Here need to multiply concentration (pg/uL) by final extract volume (uL).

W = weight, in g, of the sample (solid or organic liquid) as dry weight, or volume in mL of an aqueous sample; and

Avg. RRF(n) = calculated mean relative response factor for the unlabeled analyte.

$$\text{Conc. (ng/kg)} = \frac{(A(x)) * Q(is)}{A(is) * W * \text{Avg. RRF}} = \frac{(4380000+4820000)*4.0*1000}{(388000+422000) * (11.01 * 0.8290) * 1.126} =$$

= 4420 ng/kg = 4420 pg/g

Reported Value = 4420 pg/g
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ EDL and <MRL or <3*EDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥EDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ EDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Method 8290
F51353-20
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	EMPC	~~0.282~~	0.263 J	31.05	0.65	*	A
1,2,3,7,8-PeCDD	0.946 J			34.01	1.61		A
1,2,3,4,7,8-HxCDD	1.51 J			36.58	1.12		A
1,2,3,6,7,8-HxCDD	4.82 J			36.67	1.33		A
1,2,3,7,8,9-HxCDD	3.77 J			36.91	1.35		A
1,2,3,4,6,7,8-HpCDD	162			39.90	1.06		
OCDD	4420 J			44.02	0.91		E
2,3,7,8-TCDF	0.423 J			30.25	0.87		A
1,2,3,7,8-PeCDF	EMPC	~~0.548~~	0.239 J	33.20	1.07	*	A
2,3,4,7,8-PeCDF	0.372 J			33.83	1.32		A
1,2,3,4,7,8-HxCDF	1.26 B			35.88	1.22		A
1,2,3,6,7,8-HxCDF	EMPC	~~0.548~~	0.600 B	35.98	0.89	*	A
2,3,4,6,7,8-HxCDF	0.863 J			36.45	1.25		A
1,2,3,7,8,9-HxCDF	0.412 J			37.24	1.27		A
1,2,3,4,6,7,8-HpCDF	24.8			38.67	1.04		
1,2,3,4,7,8,9-HpCDF	1.94 J			40.56	1.01		A
OCDF	79.7			44.31	0.89		
Total TCDDs	~~2.80~~		3.48 J				
Total PeCDDs	~~5.89~~		9.21 J				
Total HxCDDs	~~31.0~~		32.0 J				
Total HpCDDs	352						
Total TCDFs	~~0.780~~		1.71 J				
Total PeCDFs	~~0.497~~		2.66 J				
Total HxCDFs	~~18.8~~		19.7 J				
Total HpCDFs	~~98.3~~		98.9 J				
WHO-2005 TEQ (ND=0)	5.60		5.93				
WHO-2005 TEQ (ND=½)	5.78		5.93				

Client Information			**Sample Information**	
Project Name:	F51353		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51353-20		Weight / Volume:	11.01 g
			Solids / Lipids:	82.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-586		Instrument:	HRMS3
Sample ID:	G383-586-1B		Filename:	c08aug07a_4-3
Collection Date/Time:	07/26/07	8:50	Retchk:	c08aug07a_3-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_3-14
Extraction Date:	08/07/07		End ConCal:	c08aug07a_4-10
Analysis Date/Time:	08/09/07	16:55	Initial Cal:	m8290-c110206a

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Method 8290
F51353-20
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.43	71.4	31.02	0.81	
13C12-1,2,3,7,8-PeCDD	2.0	1.45	72.5	34.00	1.61	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.53	76.7	36.66	1.27	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.78	88.9	39.89	1.05	
13C12-OCDD	4.0	3.54	88.5	44.02	0.92	
13C12-2,3,7,8-TCDF	2.0	1.90	94.8	30.19	0.78	
13C12-1,2,3,7,8-PeCDF	2.0	1.51	75.3	33.20	1.54	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.49	74.7	35.96	0.53	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.61	80.5	38.67	0.47	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.326	81.6	31.05	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.305	76.1	33.81	1.53	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.275	68.7	36.57	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.308	76.9	35.87	0.56	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.321	80.3	40.53	0.45	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	30.42	0.81	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	36.90	1.26	

Client Information			**Sample Information**	
Project Name:	F51353		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51353-20		Weight / Volume:	11.01 g
			Solids / Lipids:	82.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-586		Instrument:	HRMS3
Sample ID:	G383-586-1B		Filename:	c08aug07a_4-3
Collection Date/Time:	07/26/07	8:50	Retchk:	c08aug07a_3-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_3-14
Extraction Date:	08/07/07		End ConCal:	c08aug07a_4-10
Analysis Date/Time:	08/09/07	16:55	Initial Cal:	m8290-c110206a

Form Version:[8290_DB_2.14]|Report

Analyzed by: JWP
Date: 081307

Reviewed by: MB
Date: 8/13/07

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SGS Environmental Services

Method 8290
F51353-21
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	0.510 J			31.20	0.74		A
1,2,3,7,8-PeCDD	EMPC	~~0.567~~	0.506 J	34.12	1.81	*	A
1,2,3,4,7,8-HxCDD	1.47 J			36.69	1.26		A
1,2,3,6,7,8-HxCDD	7.84			36.77	1.30		
1,2,3,7,8,9-HxCDD	3.80 J			37.01	1.20		A
1,2,3,4,6,7,8-HpCDD	342			40.01	1.06		
OCDD	5830 J			44.18	0.91		E
2,3,7,8-TCDF	EMPC	~~0.433~~	1.57 J	30.46	0.89	*	
1,2,3,7,8-PeCDF	1.33 J			33.31	1.36		Q A
2,3,4,7,8-PeCDF	2.62 J			33.93	1.43		Q A
1,2,3,4,7,8-HxCDF	8.87			35.97	1.22		
1,2,3,6,7,8-HxCDF	3.11 J			36.07	1.35		A
2,3,4,6,7,8-HxCDF	2.73 J			36.56	1.32		A
1,2,3,7,8,9-HxCDF	1.43 J			37.32	1.14		A
1,2,3,4,6,7,8-HpCDF	50.4			38.79	1.01		
1,2,3,4,7,8,9-HpCDF	4.24 J			40.65	1.04		A
OCDF	142			44.46	0.88		
Total TCDDs	~~6.02~~		7.63 J				Q
Total PeCDDs	~~8.69~~		12.0 J				
Total HxCDDs	68.8						
Total HpCDDs	865						
Total TCDFs	~~15.1~~		18.1 J				Q
Total PeCDFs	~~14.9~~		17.3 J				Q
Total HxCDFs	~~47.9~~		48.4 J				
Total HpCDFs	174						
WHO-2005 TEQ (ND=0)	10.0		10.7				
WHO-2005 TEQ (ND=½)	10.3		10.7				

Client Information			**Sample Information**		
Project Name:	F51353		Report Basis:	Dry	
			Matrix:	Soil	
Sample ID:	F51353-21		Weight / Volume:	10.49 g	
			Solids / Lipids:	84.1	%
			Original pH :	NA	
Laboratory Information			Batch ID:	WG14402	
Project ID:	G383-586		Instrument:	HRMS3	
Sample ID:	G383-586-2B		Filename:	c08aug07a_3-13	
Collection Date/Time:	07/26/07	9:00	Retchk:	c08aug07a_2-14	
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_2-14	
Extraction Date:	08/07/07		End ConCal:	c08aug07a_3-14	
Analysis Date/Time:	08/09/07	12:34	Initial Cal:	m8290-c110206a	

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Method 8290
F51353-21
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.40	69.8	31.19	0.79	
13C12-1,2,3,7,8-PeCDD	2.0	1.66	83.0	34.10	1.56	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.51	75.5	36.76	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	2.02	101	39.99	1.06	
13C12-OCDD	4.0	3.86	96.4	44.17	0.91	
13C12-2,3,7,8-TCDF	2.0	2.23	112	30.44	0.79	
13C12-1,2,3,7,8-PeCDF	2.0	1.63	81.5	33.30	1.60	Q
13C12-1,2,3,6,7,8-HxCDF	2.0	1.48	73.8	36.06	0.53	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.71	85.6	38.78	0.46	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.306	76.6	31.20	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.296	74.0	33.92	1.59	Q
13C12-1,2,3,4,7,8-HxCDD	0.4	0.401	100	36.67	1.24	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.383	95.8	35.97	0.53	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.358	89.4	40.63	0.45	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	30.63	0.80	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37.00	1.26	

Client Information			**Sample Information**	
Project Name:	F51353		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51353-21		Weight / Volume:	10.49 g
			Solids / Lipids:	84.1 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-586		Instrument:	HRMS3
Sample ID:	G383-586-2B		Filename:	c08aug07a_3-13
Collection Date/Time:	07/26/07	9:00	Retchk:	c08aug07a_2-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_2-14
Extraction Date:	08/07/07		End ConCal:	c08aug07a_3-14
Analysis Date/Time:	08/09/07	12:34	Initial Cal:	m8290-c110206a

Form Version:[8290_DB_2.14]Report

Analyzed by: JWP
Date: 08/10/07

Reviewed by:
Date: 8/10/07

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SGS Environmental Services

Method 8290
F51353-22
Accutest

Analytical Data Summary Sheet

Analyte	Amount (pg/g)	EDL (pg/g)	EMPC (pg/g)	RT (min.)	Ratio		Qualifier
2,3,7,8-TCDD	ND	0.197					
1,2,3,7,8-PeCDD	ND	0.507					
1,2,3,4,7,8-HxCDD	0.225 J			36.66	1.11		A
1,2,3,6,7,8-HxCDD	ND	0.507					
1,2,3,7,8,9-HxCDD	EMPC	~~0.507~~	0.264 J	36.91	1.65	*	A
1,2,3,4,6,7,8-HpCDD	5.39			39.90	1.06		
OCDD	99.1			44.03	0.91		
2,3,7,8-TCDF	ND	0.184					
1,2,3,7,8-PeCDF	EMPC	~~0.507~~	0.112 J	33.21	1.21	*	A
2,3,4,7,8-PeCDF	EMPC	~~0.507~~	0.172 J	33.81	2.05	*	A
1,2,3,4,7,8-HxCDF	0.170 B			35.87	1.24		A
1,2,3,6,7,8-HxCDF	EMPC	~~0.507~~	0.185 B	35.97	1.03	*	A
2,3,4,6,7,8-HxCDF	EMPC	~~0.507~~	0.101 J	36.46	0.88	*	A
1,2,3,7,8,9-HxCDF	0.0892 J			37.22	1.42		A
1,2,3,4,6,7,8-HpCDF	1.25 B			38.65	1.08		A
1,2,3,4,7,8,9-HpCDF	0.105 J			40.55	1.15		A
OCDF	3.58 B			44.30	0.87		A
Total TCDDs	ND	~~0.197~~	0.329 J				
Total PeCDDs	~~0.468~~		0.746 J				
Total HxCDDs	2.28						
Total HpCDDs	12.5						
Total TCDFs	~~0.223~~		0.310 J				
Total PeCDFs	~~0.223~~		0.495 J				
Total HxCDFs	~~0.949~~		1.23 B				
Total HpCDFs	~~3.66~~		3.79 B				
WHO-2005 TEQ (ND=0)	0.147		0.257				
WHO-2005 TEQ (ND=½)	0.693		0.643				

Client Information			**Sample Information**	
Project Name:	F51353		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51353-22		Weight / Volume:	11.48 g
			Solids / Lipids:	85.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-586		Instrument:	HRMS3
Sample ID:	G383-586-3B		Filename:	c08aug07a_4-6
Collection Date/Time:	07/26/07	9:10	Retchk:	c08aug07a_3-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_3-14
Extraction Date:	08/07/07		End ConCal:	c08aug07a_4-10
Analysis Date/Time:	08/09/07	19:20	Initial Cal:	m8290-c110206a

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SGS Environmental Services

Method 8290
F51353-22
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.47	73.5	31.02	0.81	
13C12-1,2,3,7,8-PeCDD	2.0	1.65	82.4	34.00	1.57	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.57	78.4	36.65	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.78	89.1	39.88	1.05	
13C12-OCDD	4.0	3.01	75.1	44.01	0.92	
13C12-2,3,7,8-TCDF	2.0	2.02	101	30.18	0.80	
13C12-1,2,3,7,8-PeCDF	2.0	1.71	85.5	33.19	1.56	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.51	75.7	35.96	0.54	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.66	83.0	38.65	0.45	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.335	83.7	31.03	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.343	85.9	33.81	1.57	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.258	64.5	36.56	1.24	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.320	80.0	35.86	0.52	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.314	78.5	40.53	0.46	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	30.40	0.80	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	36.88	1.21	

Client Information			**Sample Information**	
Project Name:	F51353		Report Basis:	Dry
			Matrix:	Soil
Sample ID:	F51353-22		Weight / Volume:	11.48 g
			Solids / Lipids:	85.9 %
			Original pH :	NA
Laboratory Information			Batch ID:	WG14402
Project ID:	G383-586		Instrument:	HRMS3
Sample ID:	G383-586-3B		Filename:	c08aug07a_4-6
Collection Date/Time:	07/26/07	9:10	Retchk:	c08aug07a_3-14
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	c08aug07a_3-14
Extraction Date:	08/07/07		End ConCal:	c08aug07a_4-10
Analysis Date/Time:	08/09/07	19:20	Initial Cal:	m8290-c110206a

Form Version:[8290_DB_2.14]Report

Analyzed by: JWP
Date: 081307

Reviewed by: [signature]
Date: 8/13/07

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SGS Environmental Services

Method 8290
F51353-8
Accutest

Analytical Data Summary Sheet

Analyte	Amount ng/L	EDL ng/L	EMPC ng/L	RT (min.)	Ratio	Qualifier
2,3,7,8-TCDD	ND	0.00597				
1,2,3,7,8-PeCDD	ND	0.00549				
1,2,3,4,7,8-HxCDD	ND	0.00738				
1,2,3,6,7,8-HxCDD	ND	0.00751				
1,2,3,7,8,9-HxCDD	ND	0.00762				
1,2,3,4,6,7,8-HpCDD	ND	0.00922				
OCDD	ND	0.0178				
2,3,7,8-TCDF	ND	0.00431				
1,2,3,7,8-PeCDF	ND	0.00549				
2,3,4,7,8-PeCDF	ND	0.00549				
1,2,3,4,7,8-HxCDF	ND	0.00549				
1,2,3,6,7,8-HxCDF	ND	0.00549				
2,3,4,6,7,8-HxCDF	ND	0.00549				
1,2,3,7,8,9-HxCDF	ND	0.00549				
1,2,3,4,6,7,8-HpCDF	0.0137 J			39:19	1.08	A
1,2,3,4,7,8,9-HpCDF	ND	0.00773				
OCDF	0.0254 J			45:25	0.93	A
Total TCDDs	ND	0.00597				
Total PeCDDs	ND	0.00549				
Total HxCDDs	ND	0.00762				
Total HpCDDs	ND	0.00922				
Total TCDFs	ND	0.00431				
Total PeCDFs	ND	0.00549				
Total HxCDFs	ND	0.00549				
Total HpCDFs	0.0137					
WHO-2005 TEQ (ND=0)	0.000145		0.000145			
WHO-2005 TEQ (ND=½)	0.00931		0.00931			

Client Information			**Sample Information**	
Project Name:	F51353		Report Basis:	Wet
			Matrix:	Water
Sample ID:	F51353-8		Weight / Volume:	910 mL
			Solids / Lipids:	NA %
			Original pH :	7
Laboratory Information			Batch ID:	WG14393
Project ID:	G383-586		Instrument:	HRMS1
Sample ID:	G383-586-4C		Filename:	a30jul07a_9-11
Collection Date/Time:	07/26/07	10:45	Retchk:	a30jul07a_8-4
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	a30jul07a_8-4
Extraction Date:	08/01/07		End ConCal:	a30jul07a_9-14
Analysis Date/Time:	08/03/07	0:59	Initial Cal:	m8290-071007a

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Method 8290
F51353-8
Accutest

Labeled Standard	Expected Amount (ng)	Measured Amount (ng)	Percent Recovery (%)	RT (min.)	Ratio	Qualifier
Extraction Standards						
13C12-2,3,7,8-TCDD	2.0	1.44	71.8	31:37	0.77	
13C12-1,2,3,7,8-PeCDD	2.0	1.47	73.6	34:25	1.60	
13C12-1,2,3,6,7,8-HxCDD	2.0	1.69	84.7	37:10	1.26	
13C12-1,2,3,4,6,7,8-HpCDD	2.0	1.76	87.8	40:37	1.05	
13C12-OCDD	4.0	3.84	96.0	45:06	0.90	
13C12-2,3,7,8-TCDF	2.0	1.61	80.7	31:04	0.78	
13C12-1,2,3,7,8-PeCDF	2.0	1.41	70.5	33:37	1.58	
13C12-1,2,3,6,7,8-HxCDF	2.0	1.58	78.8	36:28	0.52	
13C12-1,2,3,4,6,7,8-HpCDF	2.0	1.65	82.3	39:19	0.44	
Cleanup Standards						
37Cl4-2,3,7,8-TCDD	0.4	0.346	86.5	31:39	-	
13C12-2,3,4,7,8-PeCDF	0.4	0.304	76.0	34:13	1.62	
13C12-1,2,3,4,7,8-HxCDD	0.4	0.322	80.4	37:04	1.27	
13C12-1,2,3,4,7,8-HxCDF	0.4	0.335	83.8	36:21	0.50	
13C12-1,2,3,4,7,8,9-HpCDF	0.4	0.310	77.6	41:19	0.44	
Injection Standards						
13C12-1,2,3,4-TCDD	2.0	-	-	31:13	0.79	
13C12-1,2,3,7,8,9-HxCDD	2.0	-	-	37:25	1.24	

Client Information			**Sample Information**	
Project Name:	F51353		Report Basis:	Wet
			Matrix:	Water
Sample ID:	F51353-8		Weight / Volume:	910 mL
			Solids / Lipids:	NA %
			Original pH :	7
Laboratory Information			Batch ID:	WG14393
Project ID:	G383-586		Instrument:	HRMS1
Sample ID:	G383-586-4C		Filename:	a30jul07a_9-11
Collection Date/Time:	07/26/07	10:45	Retchk:	a30jul07a_8-4
Receipt Date/Time:	07/31/07	10:20	Begin ConCal:	a30jul07a_8-4
Extraction Date:	08/01/07		End ConCal:	a30jul07a_9-14
Analysis Date/Time:	08/03/07	0:59	Initial Cal:	m8290-071007a

Form Version:[8290_DB_2.15]Report

Analyzed by: JWP
Date: 8-14-07

Reviewed by: QA
Date: 8/14/07

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Explosives, PETN, & Nitroglycerine
Accutest Laboratories, Inc., SDG F51353

DATE: February 22, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for explosives, nitroglycerine, and PETN using USEPA SW-846 8330A. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Blank Analysis
	X	Initial Calibration
	X	Continuing Calibration
	X	System Monitoring Compounds
	X	Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/22/08

Date

RFAAP VALIDATION REPORT
EXPLOSIVES REVIEW
SDG F51353

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For solid samples, explosive compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The solid samples were collected on 07/26/07. For the solid samples, the explosives were extracted on 08/08/07 and analyzed on 08/09/07, 08/10/07, and 08/13/07 (confirmation for sample 43SB03B (F51353-21). All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be present in the blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5x) the maximum amount for explosive target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 10) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/10/07	OP21797-MB	All target explosives <½MRL	NA	NA	None
08/10/07	OP21798-MB	All target explosives <½MRL	NA	NA	None
08/13/07	OP21797-MB	All target explosives <½MRL	NA	NA	None
08/09/07	OP21797-MB	PETN & NG <½MRL	NA	NA	None
08/09/07	OP21798-MB	PETN & NG <½MRL	NA	NA	None
08/01/07	072607R	All target explosives <½MRL	NA	NA	None
08/01/07	072607R	PETN & NG <½MRL	NA	NA	None

MRL = Method Reporting Limit
NA = Not Applicable

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5-point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. The DoD QSM specifies that the correlation coefficient must be ≥0.995 and/or the percent relative standard deviation (%RSD) must be ≤20%. All detects were qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For the explosives initial calibration performed on 10/18/06 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

- For the explosives initial calibration performed on 01/19/07 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Confirmation for sample 43SB03B (F51353-21) applies to this initial calibration.

- For the PETN and nitroglycerinee initial calibration performed on 03/15/07 on instrument G1315B, all criteria were met for target compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. Continuing calibration standards are analyzed after every 10 injections, and at the end of the analysis sequence. The DoD QSM specifies that the percent difference (%D) from initial calibration should be no greater than ±20%. All detects were qualified as estimated "J" for where there were exceeding %Ds, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For explosives initial calibration verification performed on 10/18/06 @17:39 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 10/19/06 @13:44 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/09/07 @21:23 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB03C (F51353-22) and APSB07A (F51353-23) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @02:54 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @08:25 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @10:38 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), and 43SB03B (F51353-21) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @15:41 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), and TMSB01C (F51353-16) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/10/07 @21:12 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this continuing calibration.

- For explosives continuing calibration performed on 08/11/07 @02:43 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives initial calibration verification performed on 01/19/07 @14:58 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/13/07 @12:21 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Confirmation for sample 43SB03B (F51353-21) applies to this continuing calibration.

- For explosives continuing calibration performed on 08/13/07 @15:01 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerine initial calibration verification performed on 03/15/07 @12:35 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @16:57 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), and APSB08B (F51353-27) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @18:21 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @20:03 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB05A (F51353-4), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), and 43SB01B (F51353-13) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @21:46 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this continuing calibration.

- For PETN and nitroglycerine continuing calibration performed on 08/09/07 @23:12 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

V-System Monitoring Compound (Surrogates)
Laboratory performance on individual samples is established by means of spiking activities. The percent recovery (%R) for all samples and blanks must be within the laboratory control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria: 3,4-dinitrotoluene (72-145%)

- All criteria were met for explosives, PETN, and nitroglycerine. No qualifiers were applied.

VI-Laboratory Control Sample

Laboratory control samples (LCS) are used to monitor long-term accuracy of the analytical method. The analysis is performed at a frequency of 1 per analytical batch. The percent recoveries (%Rs) must be within the laboratory control limits. DoD QSM solid LCS recovery limits are specified in Table D-2 and Table D-13 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21797-BS was used as solid LCS for explosives analyzed on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21798-BS was used as solid LCS for explosives analyzed on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21797-BS was used as solid LCS for explosives analyzed on 08/13/07. HMX (138%) was outside DoD QSM criteria and within laboratory criteria. HMX was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Confirmation for sample 43SB03B (F51353-21) applies to this LCS.

- Sample OP21797-BS2 was used as solid LCS for PETN and nitroglycerine analyzed on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21798-BS2 was used as solid LCS for PETN and nitroglycerine analyzed on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the laboratory control limits. DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-13 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB03B (F51353-21) was used as the solid MS/MSD for the explosive analysis on 08/10/07. 2,6-Dinitrotoluene (RPD=19%), 4-amino-2,6-dinitrotoluene (RPD=20%), 4-nitrotoluene (RPD=22%), tetryl (RPD=25%), and 2,4,6-trinitrotoluene (26%, -38%; RPD=46%) were outside DoD QSM criteria and/or laboratory criteria. The sample was re-run for confirmation on dissimilar column. All recoveries were outside QC limits due to matrix interferences. The LCS was within criteria (Section VI) for all explosives. For the spiked sample, 2,4,6-trinitrotoluene was qualified estimated "J" based upon these outliers. Compounds 2,6-dinitrotoluene, 4-amino-2,6-dinitrotoluene, 4-nitrotoluene, and tetryl had recoveries within criteria and/or were non-detect in the spiked sample; therefore, no qualifiers were applied based upon these outliers. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as the solid MS/MSD for the explosive analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB05A (F51353-4) was used as the solid MS/MSD for the PETN and nitroglycerine analysis on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB07B (F51353-24) was used as the solid MS/MSD for the PETN and nitroglycerine analysis on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for explosives, PETN, and nitroglycerine. All explosive, PETN, and nitroglycerine target compounds were non-detect. All criteria were met. No qualifiers were applied.

IX-Quantitation Verification
The accuracy of analytical results was verified through the calculation of several parameters. The calculation was based calibration factors. The absolute percent difference (%D) between the calculated and the reported value must be within 10% difference. All values >MDL and <MRL or <3*MDL (whichever was greater) were qualified as estimated "J".

- The %D between the primary and secondary columns was within criteria for all detected explosives, PETN, and nitroglycerine.

Sample: 43SB03B (F51353-21), 2,4,6-trinitrotoluene

Conc. µg/kg = (Ax * Vt * DF) / (CF * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
W(s) = Weight of sample in kilograms.
D = Percent dry weight (100 - % moisture in sample)/100 (Air dried =1)
DF = Dilution factor

Conc. µg/kg = (4962528 * 20 * 1) / (7320 * 2.13 * 1) = 6370 µg/kg (Signal #1)
Reported Value = 6370 µg/kg
% Difference = 0.0%
Values were within 10% difference

Sample: 43SB05AMS (F51353-4MS), nitroglycerine

Conc. µg/kg = (Ax * Vt * DF) / (CF * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
W(s) = Weight of sample in kilograms.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. µg/kg = (3406253 * 20 * 1) / (1228 * 2.41 * 1) = 23000 µg/kg (Signal #1)
Reported Value = 23000 µg/kg
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: GG023307.D PP022188.D

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023307.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022188.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.13 g	20.0 ml
Run #2	2.13 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	51	ug/kg	
98-95-3	Nitrobenzene	ND	230	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	116%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023308.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022189.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.39 g	20.0 ml
Run #2	2.39 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	74	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	45	ug/kg	
98-95-3	Nitrobenzene	ND	210	59	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	64	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	86	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	49	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	105%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023309.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022190.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.45 g	20.0 ml
Run #2	2.45 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	73	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	58	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	63	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	84	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	410	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	102%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023310.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022194.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.64 g	20.0 ml
Run #2	2.64 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	39	ug/kg	
121-82-4	RDX	ND	190	38	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	67	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	38	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	41	ug/kg	
98-95-3	Nitrobenzene	ND	190	54	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	58	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	78	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	52	ug/kg	
479-45-8	Tetryl	ND	380	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	45	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	38	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	570	ug/kg	
78-11-5	PETN	ND [a]	1500	570	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	112%	113%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023311.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022191.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.52 g	20.0 ml
Run #2	2.52 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	41	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	71	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	43	ug/kg	
98-95-3	Nitrobenzene	ND	200	56	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	61	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	82	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	55	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	47	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023314.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022197.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.48 g	20.0 ml
Run #2	2.48 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	83	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	101%	103%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023315.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022198.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.57 g	20.0 ml
Run #2	2.57 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	40	ug/kg	
121-82-4	RDX	ND	190	39	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	69	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	39	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	42	ug/kg	
98-95-3	Nitrobenzene	ND	190	55	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	60	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	80	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	54	ug/kg	
479-45-8	Tetryl	ND	390	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	46	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	39	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	580	ug/kg	
78-11-5	PETN	ND [a]	1600	580	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	103%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG023316.D PP022199.D

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8330A SW846 8330A	Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023316.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022199.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.27 g	20.0 ml
Run #2	2.27 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	78	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	91	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	660	ug/kg	
78-11-5	PETN	ND [a]	1800	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	100%	101%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023317.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022200.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.48 g	20.0 ml
Run #2	2.48 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	83	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	114%	114%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023318.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022201.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.21 g	20.0 ml
Run #2	2.21 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	81	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	64	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	70	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	93	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023319.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022202.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.38 g	20.0 ml
Run #2	2.38 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	42	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	42	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	75	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	42	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	42	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	45	ug/kg	
98-95-3	Nitrobenzene	ND	210	60	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	65	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	87	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	58	ug/kg	
479-45-8	Tetryl	ND	420	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	50	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	42	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	630	ug/kg	
78-11-5	PETN	ND [a]	1700	630	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	109%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023320.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022203.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.75 g	20.0 ml
Run #2	2.75 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	180	38	ug/kg	
121-82-4	RDX	ND	180	36	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	65	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	180	36	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	180	39	ug/kg	
98-95-3	Nitrobenzene	ND	180	52	ug/kg	
88-72-2	o-Nitrotoluene	ND	180	56	ug/kg	
99-08-1	m-Nitrotoluene	ND	180	75	ug/kg	
99-99-0	p-Nitrotoluene	ND	180	50	ug/kg	
479-45-8	Tetryl	ND	360	100	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	180	43	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	180	36	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	550	ug/kg	
78-11-5	PETN	ND [a]	1500	550	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023321.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022206.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.75 g	20.0 ml
Run #2	2.75 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	180	38	ug/kg	
121-82-4	RDX	ND	180	36	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	65	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	180	36	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	180	39	ug/kg	
98-95-3	Nitrobenzene	ND	180	52	ug/kg	
88-72-2	o-Nitrotoluene	ND	180	56	ug/kg	
99-08-1	m-Nitrotoluene	ND	180	75	ug/kg	
99-99-0	p-Nitrotoluene	ND	180	50	ug/kg	
479-45-8	Tetryl	ND	360	100	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	180	43	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	180	36	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	550	ug/kg	
78-11-5	PETN	ND [a]	1500	550	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	104%	107%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023322.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022207.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.56 g	20.0 ml
Run #2	2.56 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	41	ug/kg	
121-82-4	RDX	ND	200	39	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	70	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	39	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	42	ug/kg	
98-95-3	Nitrobenzene	ND	200	55	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	60	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	80	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	54	ug/kg	
479-45-8	Tetryl	ND	390	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	46	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	39	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	590	ug/kg	
78-11-5	PETN	ND [a]	1600	590	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	100%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023323.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022208.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.80 g	20.0 ml
Run #2	2.80 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	180	37	ug/kg	
121-82-4	RDX	ND	180	36	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	64	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	180	36	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	180	39	ug/kg	
98-95-3	Nitrobenzene	ND	180	51	ug/kg	
88-72-2	o-Nitrotoluene	ND	180	55	ug/kg	
99-08-1	m-Nitrotoluene	ND	180	74	ug/kg	
99-99-0	p-Nitrotoluene	ND	180	49	ug/kg	
479-45-8	Tetryl	ND	360	100	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	180	42	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	180	36	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1400	540	ug/kg	
78-11-5	PETN	ND [a]	1400	540	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	102%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023326.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022209.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.56 g	20.0 ml
Run #2	2.56 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	41	ug/kg	
121-82-4	RDX	ND	200	39	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	70	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	39	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	42	ug/kg	
98-95-3	Nitrobenzene	ND	200	55	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	60	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	80	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	54	ug/kg	
479-45-8	Tetryl	ND	390	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	46	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	39	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	590	ug/kg	
78-11-5	PETN	ND [a]	1600	590	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023327.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022210.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.47 g	20.0 ml
Run #2	2.47 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	72	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	83	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023328.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022211.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.66 g	20.0 ml
Run #2	2.66 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	190	39	ug/kg	
121-82-4	RDX	ND	190	38	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	67	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	190	38	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	190	41	ug/kg	
98-95-3	Nitrobenzene	ND	190	53	ug/kg	
88-72-2	o-Nitrotoluene	ND	190	58	ug/kg	
99-08-1	m-Nitrotoluene	ND	190	77	ug/kg	
99-99-0	p-Nitrotoluene	ND	190	52	ug/kg	
479-45-8	Tetryl	ND	380	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	190	44	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	190	38	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1500	560	ug/kg	
78-11-5	PETN	ND [a]	1500	560	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	103%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023329.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022212.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768

	Initial Weight	Final Volume
Run #1	2.45 g	20.0 ml
Run #2	2.45 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	41	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	41	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	73	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	41	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	41	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	44	ug/kg	
98-95-3	Nitrobenzene	ND	200	58	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	63	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	84	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	56	ug/kg	
479-45-8	Tetryl	ND	410	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	48	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	41	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	610	ug/kg	
78-11-5	PETN	ND [a]	1600	610	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	100%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG023304.D	1	08/10/07	NAF	08/08/07	OP21797	GGG997
Run #2	PP022213.D	1	08/09/07	NAF	08/08/07	OP21797	GPP768
Run #3 [b]	PP022237.D	1	08/13/07	NAF	08/08/07	OP21797	GPP771

	Initial Weight	Final Volume
Run #1	2.13 g	20.0 ml
Run #2	2.13 g	20.0 ml
Run #3	2.13 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
~~DNX~~	~~DNX~~	~~ND~~	~~230~~	~~53~~	~~ug/kg~~	
~~MNX~~	~~MNX~~	~~ND~~	~~230~~	~~47~~	~~ug/kg~~	EQ 2/22/08
~~TNX~~	~~TNX~~	~~ND~~	~~230~~	~~49~~	~~ug/kg~~	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	84	ug/kg	
121-14-2	2,4-Dinitrotoluene	727	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	136 J	230	47	ug/kg	J
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	51	ug/kg	
98-95-3	Nitrobenzene	ND	230	67	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	97	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	65	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	6370 J	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [c]	1900	700	ug/kg	
78-11-5	PETN	ND [c]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Run# 3	Limits
610-39-9	3,4-Dinitrotoluene	97%	96%	107%	72-145%

(a) All hits confirmed by reanalysis on a dissimilar column.
(b) Confirmation run.
(c) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023285.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022172.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.35 g	20.0 ml
Run #2	2.35 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	210	44	ug/kg	
121-82-4	RDX	ND	210	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	210	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	210	76	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	210	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	210	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	210	46	ug/kg	
98-95-3	Nitrobenzene	ND	210	60	ug/kg	
88-72-2	o-Nitrotoluene	ND	210	66	ug/kg	
99-08-1	m-Nitrotoluene	ND	210	88	ug/kg	
99-99-0	p-Nitrotoluene	ND	210	59	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	210	50	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	210	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	640	ug/kg	
78-11-5	PETN	ND [a]	1700	640	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023286.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022173.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.24 g	20.0 ml
Run #2	2.24 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	45	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	45	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	79	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	45	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	45	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	69	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	92	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	62	ug/kg	
479-45-8	Tetryl	ND	450	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	53	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	45	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	670	ug/kg	
78-11-5	PETN	ND [a]	1800	670	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	106%	107%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023289.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022174.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.14 g	20.0 ml
Run #2	2.14 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	49	ug/kg	
121-82-4	RDX	ND	230	47	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	47	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	83	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	47	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	47	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	50	ug/kg	
98-95-3	Nitrobenzene	ND	230	66	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	72	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	96	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	64	ug/kg	
479-45-8	Tetryl	ND	470	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	55	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	47	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1900	700	ug/kg	
78-11-5	PETN	ND [a]	1900	700	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	104%	99%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023290.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022177.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.19 g	20.0 ml
Run #2	2.19 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	230	47	ug/kg	
121-82-4	RDX	ND	230	46	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	230	46	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	230	81	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	230	46	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	230	46	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	230	49	ug/kg	
98-95-3	Nitrobenzene	ND	230	65	ug/kg	
88-72-2	o-Nitrotoluene	ND	230	70	ug/kg	
99-08-1	m-Nitrotoluene	ND	230	94	ug/kg	
99-99-0	p-Nitrotoluene	ND	230	63	ug/kg	
479-45-8	Tetryl	ND	460	130	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	230	54	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	230	46	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	680	ug/kg	
78-11-5	PETN	ND [a]	1800	680	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	115%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023291.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022178.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.28 g	20.0 ml
Run #2	2.28 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	78	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	62	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	90	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	660	ug/kg	
78-11-5	PETN	ND [a]	1800	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	108%	108%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023292.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022179.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.29 g	20.0 ml
Run #2	2.29 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	45	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	78	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	62	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	67	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	90	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	60	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	660	ug/kg	
78-11-5	PETN	ND [a]	1700	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	105%	101%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023295.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022182.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.31 g	20.0 ml
Run #2	2.31 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	45	ug/kg	
121-82-4	RDX	ND	220	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	77	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	61	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	67	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	89	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	60	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	51	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	650	ug/kg	
78-11-5	PETN	ND [a]	1700	650	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	111%	115%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023296.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022183.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.26 g	20.0 ml
Run #2	2.26 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	46	ug/kg	
121-82-4	RDX	ND	220	44	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	44	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	79	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	44	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	44	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	48	ug/kg	
98-95-3	Nitrobenzene	ND	220	63	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	68	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	91	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	61	ug/kg	
479-45-8	Tetryl	ND	440	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	52	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	44	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1800	660	ug/kg	
78-11-5	PETN	ND [a]	1800	660	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	107%	112%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023297.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022184.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.30 g	20.0 ml
Run #2	2.30 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	220	45	ug/kg	
121-82-4	RDX	ND	220	43	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	220	43	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	220	77	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	220	43	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	220	43	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	220	47	ug/kg	
98-95-3	Nitrobenzene	ND	220	62	ug/kg	
88-72-2	o-Nitrotoluene	ND	220	67	ug/kg	
99-08-1	m-Nitrotoluene	ND	220	90	ug/kg	
99-99-0	p-Nitrotoluene	ND	220	60	ug/kg	
479-45-8	Tetryl	ND	430	120	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	220	51	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	220	43	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1700	650	ug/kg	
78-11-5	PETN	ND [a]	1700	650	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	112%	116%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 8330A	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023298.D	1	08/10/07	NAF	08/08/07	OP21798	GGG996
Run #2	PP022185.D	1	08/09/07	NAF	08/08/07	OP21798	GPP768

	Initial Weight	Final Volume
Run #1	2.50 g	20.0 ml
Run #2	2.50 g	20.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	200	42	ug/kg	
121-82-4	RDX	ND	200	40	ug/kg	
99-65-0	1,3-Dinitrobenzene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	71	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	200	40	ug/kg	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	200	43	ug/kg	
98-95-3	Nitrobenzene	ND	200	57	ug/kg	
88-72-2	o-Nitrotoluene	ND	200	62	ug/kg	
99-08-1	m-Nitrotoluene	ND	200	82	ug/kg	
99-99-0	p-Nitrotoluene	ND	200	55	ug/kg	
479-45-8	Tetryl	ND	400	110	ug/kg	
99-35-4	1,3,5-Trinitrobenzene	ND	200	47	ug/kg	
118-96-7	2,4,6-Trinitrotoluene	ND	200	40	ug/kg	
55-63-0	Nitroglycerine	ND [a]	1600	600	ug/kg	
78-11-5	PETN	ND [a]	1600	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	109%	106%	72-145%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8330A SW846 3535A	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GG023036.D	1	08/01/07	NAF	07/31/07	OP21682	GGG990
Run #2	PP021894.D	1	08/01/07	NAF	07/31/07	OP21682	GPP756

	Initial Volume	Final Volume
Run #1	890 ml	10.0 ml
Run #2	890 ml	10.0 ml

CAS No.	Compound	Result	RL	MDL	Units	Q
2691-41-0	HMX	ND	0.22	0.057	ug/l	
121-82-4	RDX	ND	0.22	0.067	ug/l	
99-65-0	1,3-Dinitrobenzene	ND	0.22	0.063	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	0.22	0.080	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	0.22	0.11	ug/l	
35572-78-2	2-amino-4,6-Dinitrotoluene	ND	0.22	0.073	ug/l	
19406-51-0	4-amino-2,6-Dinitrotoluene	ND	0.22	0.063	ug/l	
98-95-3	Nitrobenzene	ND	0.22	0.082	ug/l	
88-72-2	o-Nitrotoluene	ND	0.22	0.13	ug/l	
99-08-1	m-Nitrotoluene	ND	0.22	0.088	ug/l	
99-99-0	p-Nitrotoluene	ND	0.22	0.11	ug/l	
479-45-8	Tetryl	ND	0.22	0.076	ug/l	
99-35-4	1,3,5-Trinitrobenzene	ND	0.22	0.073	ug/l	
118-96-7	2,4,6-Trinitrotoluene	ND	0.22	0.056	ug/l	
55-63-0	Nitroglycerine	ND [a]	2.2	0.56	ug/l	
78-11-5	PETN	ND [a]	2.2	0.56	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
610-39-9	3,4-Dinitrotoluene	101%	93%	70-136%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I RFAAP Project Manager

FROM: Eric Malarek, Shaw E&I RFAAP Project Chemist

SUBJECT: Radford Army Ammunition Plant (RFAAP) Data Validation – Herbicides
Accutest Laboratories, Inc., SDG F51353

DATE: February 22, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for chlorinated herbicides using USEPA SW846 Method 3550B/8151A. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
X		Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications, except for the following. Compound dalapon was qualified "R" rejected for the spiked sample 43SB03B (F51353-21) based upon no recoveries in the MS/MSD samples. The LCS was within criteria limits. See Sections VI and VII for further details.

Eric Malarek, Chemist

2/22/08

Date

RFAAP VALIDATION REPORT
CHLORINATED HERBICIDES REVIEW
SDG F51353

I-Holding Times

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For solid samples, chlorinated herbicides compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The solid samples were collected on 07/26/07. For solid samples, the herbicides were extracted on 08/06/07 and analyzed on 08/08/07 and 08/09/07. All criteria were met. No qualifiers were applied.

II-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The DoD QSM specifies that the percent relative standard deviation (%RSD) for a 5-point standard calibration should be ≤20% for each target compound.

- No initial calibration was provided for MCPP and MCPA on instrument GC-GG. During discussions with the laboratory, they indicated that they perform a daily single point calibration rather than a five point calibration. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this single point calibration.

- For initial calibration performed on 08/08/07 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

III-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration establishes the response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The DoD QSM specifies that the percent difference (%D) between the initial calibration CF and the continuing calibration CF must be ≤20%.

- A single point calibration was provided for MCPP and MCPA on instrument GC-GG for 08/08/07 and 08/09/07 runs. The calibration standard indicated adequate response for MCPP and MCPA. However, since a five point calibration was not performed, %D calculation could not be verified. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this single point calibration.

- For initial calibration standard performed on 08/08/07 @18:06 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. See Section II for initial calibration discussion. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), and TMSB05B (F51353-6) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @01:21 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), and 43SB02C (F51353-19) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @06:46 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), and APSB07A (F51353-23) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @12:11 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For continuing calibration performed on 08/09/07 @17:40 on instrument GC-GG, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

IV-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field or laboratory activities. No contaminants should be detected in any of the associated blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are qualified "B" if the concentration of the analyte is ≤ five times (5x) the absolute maximum blank concentration. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/08/07	OP7805-MB	All target compounds <½MRL	NA	NA	None
08/09/07	OP7806-MB	All target compounds <½MRL	NA	NA	None
08/03/07	072607R	All target compounds <½MRL	NA	NA	None

MRL = Method Reporting Limit.
NA = Not Applicable.

V-System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. Spike recoveries must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Control Limit: 2,4-DCAA (34-179%)

- For samples 43SB05A (F51353-4) and 43SB01B (F51353-13), the surrogate was adjusted due to double spiking. All criteria were met. No qualifiers were applied.

- For all other samples, all criteria were met. No qualifiers were applied.

VI-Laboratory Control Samples

Data for laboratory control samples (LCS) are generated to determine long-term precision and accuracy of the analytical method. Percent recoveries must be within the specified control limits. DoD QSM solid LCS recovery limits are specified in Table D-2 and Table D-9 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP7805-BS was used as the solid LCS for the 08/08/07 run. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02C (F51353-19), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP7806-BS was used as the solid LCS for the 08/09/07 run. Dicamba (50%) and dichloroprop (71%) were outside DoD QSM criteria and within laboratory criteria. Dicamba and dichloroprop were non-detect for all associated samples and were qualified bias low "UL" based upon the low recoveries. For all other target compounds, all criteria were met. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-9 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB03B (F51353-21) was used as the solid MS/MSD for the 08/08/07 run. 2,4-D (701%, RPD=176%), 2,4,5-TP (14029%, 3893%; RPD=113%), 2,4,5-T (50%, 0%; RPD=200%), dicamba (485%, 267%; RPD=58%), dinoseb (53%, 140%; RPD=90%), dalapon (0%, 0%), dichloroprop (198%; RPD=72%), and 2,4-DB (182%; RPD=53%) were outside DoD QSM criteria and/or laboratory criteria. The sample was re-run for confirmation. All recoveries were outside QC limits due to matrix interferences. The LCS was within criteria (Section VI) for all herbicides. The spiked sample was non-detect for 2,4-D, 2,4,5-TP, 2,4,5-T, dicamba, dinoseb, dichloroprop, 2,4-DB, MCPP, and MCPA and were qualified estimated "UJ" based upon these outliers and indicative matrix interferences. Dalapon was qualified "R" rejected for the spiked sample based upon no recoveries. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02C (F51353-19), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as the solid MS/MSD for the 08/09/07 run. All criteria were met. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for herbicides. All herbicide target compounds were non-detect. All criteria were met. No qualifiers were applied.

IX-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. Percent difference (%D) between the calculated value and the reported value must be within 10%. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

- The %D between the primary and secondary columns was within criteria for all detected chlorinated herbicides.

Sample: 43SB01A (F51353-12), dicamba

Conc. µg/kg = (Amt * Ve * DF) / (CF * Ws * D)

where: Amt = the response on column (µg/mL) of the sample
CF = Calibration Factor (from initial calibration)
Ve = Final Volume of extract (mL)
DF = Dilution factor
W(s) = Weight of sample in grams.
D = Percent dry weight (100 - % moisture in sample)/100

Conc. µg/kg = (540538 * 10 * 1) / (30560* 30.1 * 0.8800) = 6.7 µg/kg

Reported value = 6.7 µg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

A (Dioxins) = MDL is based upon the signal-to-noise measurement.

B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics and Dioxins) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

D (Organics) = Indicates sample was analyzed at a dilution.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

E (Dioxins) = Reported value is estimated because of the presence of ether interferences.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/F ions is outside accepted ranges. The detected PCDD/F is reported as an estimated maximum possible concentration (EMPC).

I (Dioxins) = Reported value is estimated because of the incorrect isotope rations were obtained.

J (All) = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, (2) estimating a concentration <MRL and ≥ MDL, or estimating a concentration below the calibration range.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

U (All) = ND = BQL = Not detected. The associated number indicates the compound reporting limit for the sample.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: GG36619.D

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36619.D	1	08/08/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	35	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	12	ug/kg	
93-76-5	2,4,5-T	ND	7.1	3.5	ug/kg	
1918-00-9	Dicamba	ND	7.1	5.3	ug/kg	
88-85-7	Dinoseb	ND	7.1	4.6	ug/kg	
75-99-0	Dalapon	ND	35	25	ug/kg	
120-36-5	Dichloroprop	ND	35	9.6	ug/kg	
94-82-6	2,4-DB	ND	71	58	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	87%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36620.D

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36620.D	1	08/08/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND VJ	200		ug/kg	
94-74-6	MCPA	ND VJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	84%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36621.D

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36621.D	1	08/08/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.8	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.1	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	11	ug/kg	
94-82-6	2,4-DB	ND	78	64	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	63%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36622.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	72	59	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	134% [b]		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.
(b) Surrogate was adjusted due to double spiking.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36623.D

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36623.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	90%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36624.D

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36624.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	4.0	ug/kg	
1918-00-9	Dicamba	ND	7.9	6.0	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	79	65	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	76%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GC36627.D

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36627.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	8.1	4.0	ug/kg	
1918-00-9	Dicamba	ND	8.1	6.0	ug/kg	
88-85-7	Dinoseb	ND	8.1	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND	40	11	ug/kg	
94-82-6	2,4-DB	ND	81	66	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	87%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36628.D

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36628.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	105%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36629.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	
1918-00-9	Dicamba	ND	7.4	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	10	ug/kg	
94-82-6	2,4-DB	ND	74	61	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	78%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36630.D

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36630.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	124%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36631.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	6.7 J	7.6	5.7	ug/kg	J
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	89%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36632.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	14	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	136% [b]		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.
(b) Surrogate was adjusted due to double spiking.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36633.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.8	ug/kg	
1918-00-9	Dicamba	ND	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	38	27	ug/kg	
120-36-5	Dichloroprop	ND	38	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	77%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36634.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.6	ug/kg	
1918-00-9	Dicamba	ND	7.3	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	73	59	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	75%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36635.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.7	ug/kg	
1918-00-9	Dicamba	ND	7.3	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND	37	9.9	ug/kg	
94-82-6	2,4-DB	ND	73	60	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	69%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36644.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	40	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	8.0	4.0	ug/kg	
1918-00-9	Dicamba	ND VL	8.0	6.0	ug/kg	
88-85-7	Dinoseb	ND	8.0	5.2	ug/kg	
75-99-0	Dalapon	ND	40	28	ug/kg	
120-36-5	Dichloroprop	ND VL	40	11	ug/kg	
94-82-6	2,4-DB	ND	80	65	ug/kg	
93-65-2	MCPP	ND VJ	200		ug/kg	
94-74-6	MCPA	ND VJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	100%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36645.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND UL	7.8	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND UL	39	10	ug/kg	
94-82-6	2,4-DB	ND	78	63	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	80%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36636.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	3.9	ug/kg	
1918-00-9	Dicamba	ND	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.1	ug/kg	
75-99-0	Dalapon	ND	39	28	ug/kg	
120-36-5	Dichloroprop	ND	39	11	ug/kg	
94-82-6	2,4-DB	ND	79	64	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	82%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36646.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND VL	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND VL	38	10	ug/kg	
94-82-6	2,4-DB	ND	76	62	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	56%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36639.D	1	08/09/07	ATX	08/06/07	T:OP7805	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND UJ	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND UJ	15	13	ug/kg	
93-76-5	2,4,5-T	ND UJ	7.6	3.8	ug/kg	
1918-00-9	Dicamba	ND UJ	7.6	5.7	ug/kg	
88-85-7	Dinoseb	ND UJ	7.6	4.9	ug/kg	
75-99-0	Dalapon	ND R	38	27	ug/kg	
120-36-5	Dichloroprop	ND UJ	38	10	ug/kg	
94-82-6	2,4-DB	ND UJ	76	62	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	101%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36647.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND VL	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND VL	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	72	59	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	54%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36648.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	38	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.5	3.8	ug/kg	
1918-00-9	Dicamba	ND VL	7.5	5.6	ug/kg	
88-85-7	Dinoseb	ND	7.5	4.9	ug/kg	
75-99-0	Dalapon	ND	38	26	ug/kg	
120-36-5	Dichloroprop	ND VL	38	10	ug/kg	
94-82-6	2,4-DB	ND	75	61	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	114%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36651.D

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36651.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	14	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	
1918-00-9	Dicamba	ND VL	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND VL	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND UJ	190		ug/kg	
94-74-6	MCPA	ND UJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36652.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.8	3.9	ug/kg	
1918-00-9	Dicamba	ND VL	7.8	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.8	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND VL	39	10	ug/kg	
94-82-6	2,4-DB	ND	78	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	84%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36653.D

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36653.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	16	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	16	14	ug/kg	
93-76-5	2,4,5-T	ND	7.9	3.9	ug/kg	
1918-00-9	Dicamba	ND UL	7.9	5.9	ug/kg	
88-85-7	Dinoseb	ND	7.9	5.1	ug/kg	
75-99-0	Dalapon	ND	39	28	ug/kg	
120-36-5	Dichloroprop	ND UL	39	11	ug/kg	
94-82-6	2,4-DB	ND	79	64	ug/kg	
93-65-2	MCPP	ND UJ	200		ug/kg	
94-74-6	MCPA	ND UJ	200		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	140%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GG36654.D

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36654.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	39	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	14	ug/kg	
93-76-5	2,4,5-T	ND	7.7	3.9	ug/kg	
1918-00-9	Dicamba	ND VL	7.7	5.8	ug/kg	
88-85-7	Dinoseb	ND	7.7	5.0	ug/kg	
75-99-0	Dalapon	ND	39	27	ug/kg	
120-36-5	Dichloroprop	ND VL	39	10	ug/kg	
94-82-6	2,4-DB	ND	77	63	ug/kg	
93-65-2	MCPP	ND VJ	190		ug/kg	
94-74-6	MCPA	ND VJ	190		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36655.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	13	ug/kg	
93-76-5	2,4,5-T	ND	7.2	3.6	ug/kg	
1918-00-9	Dicamba	ND UL	7.2	5.4	ug/kg	
88-85-7	Dinoseb	ND	7.2	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND UL	36	9.7	ug/kg	
94-82-6	2,4-DB	ND	72	58	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	84%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36656.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.3	3.6	ug/kg	
1918-00-9	Dicamba	ND UL	7.3	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.3	4.7	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND UL	36	9.8	ug/kg	
94-82-6	2,4-DB	ND	73	59	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	85%		34-179%
19719-28-9	2,4-DCAA	79%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36657.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	36	14	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	14	12	ug/kg	
93-76-5	2,4,5-T	ND	7.1	3.6	ug/kg	
1918-00-9	Dicamba	ND VL	7.1	5.3	ug/kg	
88-85-7	Dinoseb	ND	7.1	4.6	ug/kg	
75-99-0	Dalapon	ND	36	25	ug/kg	
120-36-5	Dichloroprop	ND VL	36	9.6	ug/kg	
94-82-6	2,4-DB	ND	71	58	ug/kg	
93-65-2	MCPP	ND VJ	180		ug/kg	
94-74-6	MCPA	ND VJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	83%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36658.D	1	08/09/07	ATX	08/06/07	T:OP7806	T:GGG1144
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	37	15	ug/kg	
93-72-1	2,4,5-TP (Silvex)	ND	15	13	ug/kg	
93-76-5	2,4,5-T	ND	7.4	3.7	ug/kg	
1918-00-9	Dicamba	ND UL	7.4	5.5	ug/kg	
88-85-7	Dinoseb	ND	7.4	4.8	ug/kg	
75-99-0	Dalapon	ND	37	26	ug/kg	
120-36-5	Dichloroprop	ND UL	37	9.9	ug/kg	
94-82-6	2,4-DB	ND	74	60	ug/kg	
93-65-2	MCPP	ND UJ	180		ug/kg	
94-74-6	MCPA	ND UJ	180		ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	95%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8151 SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	GG36538.D	1	08/03/07	ATX	07/31/07	T:OP7790	T:GGG1141
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	10.0 ml
Run #2		

Herbicide List

CAS No.	Compound	Result	RL	MDL	Units	Q
94-75-7	2,4-D	ND	1.5	0.80	ug/l	
93-72-1	2,4,5-TP (Silvex)	ND	0.20	0.15	ug/l	
93-76-5	2,4,5-T	ND	0.20	0.12	ug/l	
1918-00-9	Dicamba	ND	0.20	0.080	ug/l	
88-85-7	Dinoseb	ND	0.20	0.090	ug/l	
75-99-0	Dalapon	ND	1.0	1.0	ug/l	
120-36-5	Dichloroprop	ND	1.0	0.51	ug/l	
94-82-6	2,4-DB	ND	2.0	1.9	ug/l	
93-65-2	MCPP	ND	50		ug/l	
94-74-6	MCPA	ND	50		ug/l	
87-86-5	Pentachlorophenol	ND	0.050	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
19719-28-9	2,4-DCAA	80%		34-179%

(a) Analysis performed at Accutest Laboratories, Houston, TX.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – TAL Metals
Accutest Laboratories, Inc., SDG F51353

DATE: February 26, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for target analyte list (TAL) metals using USEPA SW-846 3050B/6010B for ICP metals and SW-846 7471A for mercury. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial and Continuing Calibration
X		Blank Analysis
	X	ICP Interference Check Sample (ICS)
	X	Laboratory Control Sample (LCS)
X		Laboratory Sample Duplicate
X		Matrix Spike and Spike Duplicate
X		ICP Serial Dilution
X		Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/26/08
Date

RFAAP VALIDATION REPORT
METALS REVIEW
SDG F51353

I-Holding Times

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. Holding time criteria: For solid matrices, the samples are shipped cool @4°C±2°C with a maximum holding time is 180 days for ICP metals and 28 days for mercury.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: Samples were collected 07/26/07 for metals analysis. For solid samples, they were digested on 08/01/07 and analyzed on 08/01/07 for ICP metals, 08/02/07 for Mg, Ca, Mn, and Zn for select samples, and 08/03/07 for Mn for select sample. Mercury was digested on 08/01/07 and analyzed on 08/01/07. All criteria were met. No qualifiers were applied.

II-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

ICP:	1- blank (DoD QSM <½ MRL) 3 – standards (r≥0.995) ICV/CCV (90-110%) (DoD QSM 90-110%) MRL (70-130%) (DoD QSM 80-120%) High Std. (95-105%)	Hg:	1 – blank (DoD QSM <½ MRL) 5 – standards (r≥0.995) ICV/CCV (80-120%)(DoD QSM ICV 90-110% & CCV 80-120%) MRL (80-120%) (DoD QSM 80-120%) High Std. (95-105%)

- The solid samples were analyzed on 08/01/07 for ICP metals, 08/02/07 for Mg, Ca, Mn, and Zn for select samples, and 08/03/07 for Mn for select sample. Mercury was analyzed for the solid samples on 08/01/07 with a correlation coefficient of 0.9999. All ICV/CCV/High Standard criteria were met for all metals and runs. **Table 2** summarizes the MRL standard analysis. Samples with concentrations detected less than two times the MRL with out of criteria MRL recovery were qualified.

Table 2 MRL Analysis Summary

Analysis Date	Analysis	MRL (mg/kg)	MRL %Recovery	Qualified samples @ <2xMRL	Validation Qualifiers
08/01/07	ICP-Pb	5.0	124%; 138%	43SB01B, 43SB01C, 43SB02C, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06B, APSB07B, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B	K
08/01/07	ICP-Se	5.0	130%	43SB01A, 43SB01B, 43SB01C, 43SB02A, 43SB02B, 43SB03A, 43SB03B, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06A, APSB06B, APSB07A, APSB07B, APSB08A, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B	K
08/01/07	ICP-Tl	20	77.0%	43SB01A, 43SB01B, 43SB01C, 43SB02A, 43SB02B, 43SB02C, 43SB03A, 43SB03B, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06A, APSB06B, APSB07A, APSB07B, APSB08A, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B	L, UL
08/01/07	ICP-Zn	1.0	125%	None	K
08/02/07	ICP-Zn	1.0	122%; 237%	None	K
08/02/07	ICP-Mn	3.5	All within criteria	None	None
08/01/07	Hg	0.083	All within criteria	None	None

III-Blanks

Blanks (preparation and calibration blanks) are assessed to determine the existence and magnitude of contamination problems. No contaminants should be detected (i.e. <MDL) in any of the associated blanks. DoD QSM limits are <½MRL for the method blank and <2*MDL for the calibration blanks. Samples are qualified "B" when they are less than 5x the absolute value of the maximum blank concentration. **Table 3** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 10 for ICP and Hg = 12) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 3 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc. mg/kg	Action Level mg/kg	B qualified samples
08/01/07	Antimony	ICB/CCBs	1.34	6.70	43SB01A, 43SB01B, 43SB01C, 43SB02A, 43SB02B, 43SB02C, 43SB03A, 43SB03B, 43SB03C, 43SB04A, 43SB04B, 43SB04C, 43SB05A, 43SB05B, 43SB05C, APSB06A, APSB06B, APSB07A, APSB07B, APSB08A, APSB08B, APSB09A, APSB09B, APSB10A, APSB10B, TMSB01C, TMSB02B, TMSB05B, TMSB06B, TMSB07B
08/01/07	Potassium	ICB/CCBs	171J	855	43SB01A, 43SB02A, 43SB03A, APSB09A, APSB09B, APSB10A, APSB10B, TMSB02B
08/01/07	Sodium	ICB/CCBs	195J	975	43SB02A, 43SB02C, 43SB03B, 43SB03C, APSB07A, APSB08A, TMSB02B
08/02/07	Mn, Ca, Mg, & Zn	ICB/CCBs	<2*MDL	NA	None
08/03/07	Manganese	ICB/CCBs	<2*MDL	NA	None
08/01/07	Mercury	ICB/CCBs	<2*MDL	NA	None
08/01/07	Potassium	MP12628-MB	86.3J	432	None
08/01/07	Sodium	MP12628-MB	111J	555	43SB02A, 43SB02C, TMSB02B
08/01/07	Potassium	MP12629-MB	82.0J	410	None
08/01/07	Sodium	MP12629-MB	105J	525	43SB03B, 43SB03C, APSB07A, APSB08A
08/01/07	Potassium	MP12630-MB	84.4J	422	None
08/01/07	Sodium	MP12630-MB	109J	545	None
08/01/07	Mercury	MP12624-MB	<2*MDL	NA	None
08/01/07	Mercury	MP12625-MB	<2*MDL	NA	None
07/31/07	Nickel	072607R	0.13J	0.65	None
07/31/07	Potassium	072607R	173J	865	43SB01A, 43SB02A, 43SB03A, APSB09A, APSB09B, APSB10A, APSB10B, TMSB02B
07/31/07	Sodium	072607R	195J	975	43SB02A, 43SB02C, 43SB03B, 43SB03C, APSB07A, APSB08A, TMSB02B
08/01/07	Mercury	072607R	<2*MDL	NA	None

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".
NA = Not Applicable
MDL = Method Detection Limit.

IV-ICP Interference Check Sample (ICS)
The ICP interference check sample (ICS) verifies interelement and background correction factors. ICP Interference Check is performed at the beginning and end of each sample analysis run. Control limits are 80-120% (DoD QSM limits 80-120%).

- All criteria were met. No qualifiers were applied.

V-Laboratory Control Samples (LCS)
The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS results must fall within the control limits. The DoD QSM solid LCS recovery limits are specified in Table D-19 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample MP12628-BS was used as solid LCS for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this LCS.

- Sample MP12629-BS was used as solid LCS for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this LCS.

- Sample MP12630-BS was used as solid LCS for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample MP12624-BS was used as solid LCS for mercury analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this LCS.

- Sample MP12625-BS was used as solid LCS for mercury analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VI-Laboratory Duplicate Sample Analysis

Duplicate sample determinations are used to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate analyses are also performed to generate data in order to determine the long-term precision of the analytical method on various matrices. RPDs must be within established control limits. DoD QSM limits for metals are 20% RPD for ICP metals and mercury.

- Sample 43SB04A (F51353-1) was used as solid laboratory duplicate for ICP metals analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this laboratory duplicate.

- Sample 43SB03B (F51353-21) was used as solid laboratory duplicate for ICP metals analysis on 08/01/07. Aluminum (30.9%), antimony (24.0%), calcium (43.3%), chromium (27.8%), copper (84.2%), iron (33.1%), lead (103%), potassium (27.3%), selenium (25.2%), silver (51.0%), sodium (45.3%), and vanadium (41.5%) were above criteria. All other metals were within criteria. Antimony, potassium, selenium, silver, and sodium were outside due to low sample concentrations (i.e. <MRL); therefore, no qualifiers were applied based upon these outliers. Aluminum, calcium, chromium, copper, iron, lead, and vanadium were qualified estimated "J" based upon the high RPDs. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this laboratory duplicate.

- Sample APSB08B (F51353-27) was used as solid laboratory duplicate for ICP metals analysis on 08/01/07. Calcium (52.7%), lead (42.3%), magnesium (55.8%), and zinc (20.9%) were above criteria. All other metals were within criteria. Lead was outside due to low sample concentrations (i.e. <MRL); therefore, no qualifiers were applied based upon this outlier. Calcium, magnesium, and zinc were qualified estimated "J" based upon the high RPDs. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this laboratory duplicate.

- Sample 43SB03B (F51353-21) was used as solid laboratory duplicate for mercury analysis on 08/01/07. Mercury (RPD=86.8%) was outside criteria. All detects were qualified estimated "J" and non-detects no qualifier based upon the high RPD. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this laboratory duplicate.

- Sample APSB08B (F51353-27) was used as soil laboratory duplicate for mercury analysis on 07/26/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this laboratory duplicate.

VII-Matrix Spike/Spike Duplicate

MS/MSD are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike and matrix spike duplicate samples at a frequency of one MS and MSD per 20 samples of similar matrix. MS and MSD recoveries and relative percent differences between MS and MSD recoveries should be within the specified limits. DoD QSM solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-19 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used. Post digestion spikes limits are 75-125% for ICP metals and mercury.

- Sample 43SB04A (F51353-1) was used as solid laboratory MS/MSD for ICP metals analysis on 08/01/07. Antimony (9.6%, 9.2%), arsenic (59.2%, 61.6%), barium (76.2%, 76.3%), beryllium (76.8%, 76.8%), cadmium (57.9%, 58.8%), calcium (75.7%, 75.7%), chromium (72.4%, 76.3%), cobalt (69.9%, 72.4%), copper (74.9%, 78.7%), lead (69.1%, 71.3%), magnesium (71.8%, 73.5%), manganese (42.5%, 29.4%), nickel (71.0%, 72.8%), potassium (73.3%, 75.7%), selenium (60.2%, 57.6%), silver (69.8%, 69.5%), thallium (61.4%, 60.0%), vanadium (73.7%, 76.8%), and zinc (77.6%, 76.1%) were outside criteria. The sample concentration was >4 times the spike added for manganese; therefore, no qualifiers were applied based upon this outlier. Antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, lead, magnesium, nickel, potassium, silver, thallium, vanadium, and zinc were qualified bias low "L" for detects and "UL" for non-detects based upon the low recoveries. Since selenium was qualified bias high "K" for a high MRL standard (Section II) and has a low "L" spike recovery, selenium was qualified estimated "J" for detects and "UL" for non-detects based upon these combined outliers. All other metals were within criteria. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as solid laboratory MS/MSD for ICP metals analysis on 08/01/07. Aluminum (267%), antimony (26.3%, 14.1%; RPD=48.9%), arsenic (198%; RPD=62.4%), barium (79.8%), beryllium (76.1%), cadmium (57.7%, 67.2%), calcium (146%; RPD=28.4%), cobalt (74.3%, 73.2%), copper (-129%, -165%), iron (4513%, 659%; RPD=103%), lead (-170%, -73.5%; RPD=42.7%), magnesium (13.7%, 34.6%), manganese (382%, -110%; RPD=49.0%), nickel (75.6%), potassium (77.9%, 70.0%), selenium (69.5%; RPD=33.9%), sodium (76.2%), thallium (78.7%, 67.7%), vanadium (121%), and zinc (-20.9%, 35.0%; RPD=23.6%) were outside criteria. The sample concentration was >4 times the spike added for aluminum, copper, iron, and manganese; therefore, no qualifiers were applied based upon these outliers. Antimony, barium, beryllium, cadmium, cobalt, lead, magnesium, nickel, potassium, sodium, thallium, and zinc were qualified bias low "L" for detects and "UL" for non-detects based upon the low recoveries. Arsenic, calcium, and vanadium were qualified bias high "K" for detects and no qualifier for non-detects based upon the high recoveries. Since selenium was qualified bias high "K" for a high MRL standard (Section II) and has a low "L" spike recovery, selenium was qualified estimated "J" for detects and "UL" for non-detects based upon these combined outliers. All other metals were within criteria. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as solid laboratory MS/MSD for ICP metals analysis on 08/01/07. Aluminum (70.9%), antimony (18.0%, 15.0%), arsenic (68.8%, 72.6%), cadmium (72.2%, 75.7%), calcium (-312%; -124%; RPD=39.0%), cobalt (77.7%), magnesium (-142%, -124%), nickel (76.9%), potassium (75.1%), selenium (69.8%, 73.5%), silver (79.5%), thallium (70.8%, 73.9%), vanadium (78.4%), and zinc (130%) were outside criteria. The sample concentration was >4 times the spike added for aluminum, calcium, and magnesium; therefore, no qualifiers were applied based upon these outliers. Antimony, arsenic, cadmium, cobalt, nickel, potassium, silver, thallium, and vanadium were qualified bias low "L" for detects and "UL" for non-detects based upon the low recoveries. Zinc was qualified bias high "K" for detects and no qualifier for non-detects based upon the high recovery. Since selenium was qualified bias high "K" for a high MRL standard (Section II) and has a low "L" spike recovery, selenium was qualified estimated "J" for detects and "UL" for non-detects based upon these combined outliers. All other metals were within criteria. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as solid MS/MSD for mercury analysis on 08/01/07. Mercury (398%, 662%; RPD=23.7%) was outside criteria. The sample concentration was >4 times the spike added for mercury; therefore, no qualifiers were applied based upon these outliers. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used as solid MS/MSD for mercury analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-ICP Serial Dilution

An ICP serial dilution is performed to determine whether significant physical or chemical interferences exist due to sample matrix at high concentrations. An analysis of a 5-fold dilution should agree within 10% difference of the original result when the concentration in sample is a factor of 50 above MDL.

- The serial dilution for ICP metals was analyzed on 08/01/07 using solid sample 43SB04A (F51353-1). Aluminum (32.5%), antimony (21.3%), arsenic (53.8%), barium (29.3%), beryllium (40.8%), calcium (42.5%), chromium (40.1%), cobalt (41.7%), copper (26.4%), iron (40.9%), lead (42.0%), magnesium (39.0%), manganese (44.0%), nickel (44.5%), potassium (45.2%), selenium (58.8%), vanadium (36.9%), and zinc (50.4%) were outside of criteria limits. Sample concentrations were <50 times MDL for antimony, arsenic, beryllium, and selenium; therefore, no qualifiers were applied based upon these outliers. For aluminum, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc, all detects were qualified estimated "J" and non-detects no qualifier based upon these outliers. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03A (F51353-20) apply to this serial dilution.

- The serial dilution for ICP metals was analyzed on 08/01/07 using solid sample 43SB03B (F51353-21). Aluminum (16.5%), antimony (10.6%), arsenic (39.3%), barium (12.7%), beryllium (31.0%), calcium (23.0%), chromium (20.2%), cobalt (20.9%), iron (21.9%), lead (25.7%), magnesium (23.6%), manganese (22.8%), nickel (26.5%), potassium (37.6%), selenium (35.8%), silver (100%), sodium (433%), vanadium (18.0%), and zinc (27.8%) were outside of criteria limits. Sample concentrations were <50 times MDL for antimony, arsenic, beryllium, selenium, silver, and sodium; therefore, no qualifiers were applied based upon these outliers. For aluminum, barium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc, all detects were qualified estimated "J" and non-detects no qualifier based upon these outliers. Samples 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), and APSB08A (F51353-26) apply to this serial dilution.

- The serial dilution for ICP metals was analyzed on 08/01/07 using solid sample APSB08B (F51353-27). Aluminum (14.7%), antimony (100%), arsenic (19.7%), barium (14.5%), beryllium (15.7%), calcium (30.8%), chromium (27.0%), cobalt (27.7%), copper (13.2%), iron (27.6%), lead (30.3%), magnesium (22.4%), manganese (28.5%), nickel (31.8%), potassium (38.5%), selenium (71.1%), vanadium (23.9%), and zinc (38.8%) were outside of criteria limits. Sample concentrations were <50 times MDL for antimony, arsenic, beryllium, and selenium; therefore, no qualifiers were applied based upon these outliers. For aluminum, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, vanadium, and zinc, all detects were qualified estimated "J" and non-detects no qualifier based upon these outliers. Samples APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this serial dilution.

- The serial dilution for mercury was analyzed using solid sample 43SB03B (F51353-21) on 08/01/07. Mercury (27.8%) was above criteria. Sample concentration was <50 times MDL for mercury; therefore, no qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), and 43SB03B (F51353-21) apply to this serial dilution.

- The serial dilution for mercury was analyzed using solid sample APSB08B (F51353-27) on 08/01/07. Mercury (100%) was above criteria. Sample concentration was <50 times MDL for mercury; therefore, no qualifiers were applied based upon this outlier. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this serial dilution.

IX-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 35% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 4**. All other target metals were non-detect. All criteria were met. No qualifiers were applied.

Table 4 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair 43SB05B (F51353-5) and TMSB05B (F51353-6)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	14700	14300	2.8
Antimony	1.4J	1.5J	6.9
Arsenic	2.1	1.9	10.0
Barium	96.1	94.8	1.4
Beryllium	0.93	0.95	2.1
Calcium	982	924	6.1
Chromium	22.3	20.6	7.9
Cobalt	10.6	10.9	2.8
Copper	12.1	11.8	2.5
Iron	22100	21300	3.7
Lead	8.0	7.9	1.3
Magnesium	3840	3840	0.0
Manganese	505	448	12.0
Nickel	13.1	12.8	2.3
Potassium	1640	1590	3.1
Selenium	6.9	6.8	1.5
Vanadium	39.8	38.6	3.1
Zinc	56.7	57.0	0.5
Mercury	0.039J	0.041J	5.0

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 5**. All other target metals were non-detect. All criteria were met. No qualifiers were applied.

Table 5 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair APSB06B (F51353-10) and TMSB06B (F51353-11)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	12300	13000	5.5
Antimony	1.1J	1.2J	8.7
Arsenic	1.8	1.7	5.7
Barium	106	114	7.3
Beryllium	0.91	0.93	2.2
Calcium	1120	1070	4.6
Chromium	18.9	18.8	0.5
Cobalt	9.4	11.7	21.8
Copper	9.2	9.8	6.3
Iron	18800	19200	2.1
Lead	7.5	8.0	6.5
Magnesium	3070	3250	5.7
Manganese	580	728	22.6
Nickel	11.4	12.3	7.6
Potassium	1270	1370	7.6
Selenium	6.1	6.0	1.7
Vanadium	30.4	31.4	3.2
Zinc	47.3	49.3	4.1
Mercury	0.027J	0.026J	3.8

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 6**. All other target metals were non-detect. Antimony (40.0%) was qualified estimated "J" for detects for the duplicate pair based upon the high %RPD. The high %RPD for antimony was due to the low concentration (i.e. <MRL) detected for the duplicate pair. For all other metals, all criteria were met.

Table 6 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair 43SB01C (F51353-14) and TMSB01C (F51353-16)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	15000	13800	8.3
Antimony	1.0J	1.5J	40.0
Arsenic	1.9	2.3	19.1
Barium	125	120	4.1
Beryllium	1.0	0.95	5.1
Calcium	1240	1320	6.3
Chromium	21.8	20.4	6.6
Cobalt	10.8	11.0	1.8
Copper	13.4	11.9	11.9
Iron	21600	20700	4.3
Lead	8.5	8.8	3.5
Magnesium	3670	3580	2.5
Manganese	534	545	2.0
Nickel	13.2	12.5	5.5
Potassium	1720	1510	13.0
Selenium	6.6	6.5	1.5
Vanadium	36.6	32.8	11.0
Zinc	54.6	54.1	0.9
Mercury	0.036J	0.040J	10.5

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 7**. All other target metals were non-detect. Arsenic (80.0%), beryllium (45.2%), calcium (53.6%), chromium (35.3%), copper (72.0%), lead (174%), manganese (38.1%), potassium (73.7%), vanadium (39.2%), zinc (95.0%), and mercury (136%) were qualified estimated "J" for detects for the duplicate pair based upon the high %RPDs. The high %RPDs were due to sample inhomogeneity for the duplicate pair. For all other metals, all criteria were met.

Table 7 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	11200	12300	9.4
Antimony	1.3J	1.3J	0.0
Arsenic	4.9	2.1	80.0
Barium	91.8	120	26.6
Beryllium	0.76	0.48	45.2
Calcium	2530	1460	53.6
Chromium	19.0	13.3	35.3
Cobalt	10.8	12.1	11.4
Copper	24.1	51.2	72.0
Iron	20700	18400	11.8
Lead	34.4	2.4J	174
Magnesium	3580	3820	6.5
Manganese	625	425	38.1
Nickel	12.2	9.1	29.1
Potassium	1470	678	73.7
Selenium	6.2	5.7J	8.4
Sodium	<29	33.5J	NA
Vanadium	29.7	44.2	39.2
Zinc	75.0	26.7	95.0
Mercury	0.63	0.12	136

J = Estimated value <MRL and >MDL.
NA = Not applicable.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for TAL metals. All detected metals found in the original sample and its duplicate pair and associated %RPD are noted in **Table 8**. All other target metals were non-detect. All criteria were met. No qualifiers were applied.

Table 8 Field Precision Hits Analysis Summary for TAL metals for Duplicate Pair APSB07B (F51353-24) and TMSB07B (F51353-25)

Compound	Original Sample (mg/kg)	Duplicate Pair (mg/kg)	%RPD
Aluminum	13400	13200	1.5
Antimony	1.0J	1.2J	18.2
Arsenic	1.8	1.9	5.4
Barium	108	105	2.8
Beryllium	0.81	0.82	1.2
Calcium	1350	1600	17.0
Chromium	19.5	19.8	1.5
Cobalt	9.4	9.7	3.1
Copper	10.0	9.9	1.0
Iron	17700	18100	2.2
Lead	6.3	6.2	1.6
Magnesium	3200	3380	5.5
Manganese	471	458	2.8
Nickel	12.4	12.7	2.4
Potassium	1350	1330	1.5
Selenium	5.6	5.6J	0.0
Vanadium	32.7	33.2	1.5
Zinc	47.4	49.6	4.5
Mercury	0.029J	0.023J	23.1

J = Estimated value <MRL and >MDL.

X-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." The following calculations were performed for verification.

ICP Sample: 43SB04A (F51353-1), Barium

Conc. (mg/kg) = {(conc. μg/L)*(Final Volume L)*(DF)} / {(Weight Sample g)*(Fraction Solids)}

Conc. (mg/kg) = {(2070 μg/L)*(0.050 L)*(1)} / {(1.04 g)*(0.9190)} = 108 μg/g = 108 mg/kg

Reported concentration = 108 mg/kg
%D = 0.0%
Values were within 10% difference.

Hg Sample: 43SB04A (F51353-1), Mercury

Conc. (mg/kg) = {(conc. μg/L)*(Final Volume L)*(DF)} / {(Weight Sample g)*(Fraction Solids)}

Conc. (mg/kg) = {(0.784 μg/L)*(0.050 L)*(1)} / {(0.67 g)*(0.9190)} = 0.064 μg/g = 0.064 mg/kg

Reported concentration = 0.064 mg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

D = Indicates sample was analyzed at a dilution.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
		Percent Solids:	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11900 J	10	2.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.1	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 L	0.42	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	108 J	10	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.81 L	0.26	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.52 U UL	1.1	0.52	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1330 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.1 J	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.7 J	2.6	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.3 J	1.3	0.099	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18500 J	5.2	0.73	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	9.6 J	5.2	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3310 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	570 J	3.9	0.26	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.064 J J	0.081	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.4 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1420 J	520	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.7 J	5.2	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.073 U UL	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	26 U	520	26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	31.1 J	2.6	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	50.7 J	1.0	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14100 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.5 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	91.1 J	11	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.83 L	0.29	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.57 U VL	1.2	0.57	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1040 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.2 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.4 J	2.9	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.8 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21600 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.6 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3830 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	540 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.031 J J	0.089	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.0 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1640 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.7 J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U VL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	570	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	16 U VL	23	16	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	36.8 J	2.9	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	48.3 J	1.1	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12700 J	12	2.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.0 L	0.48	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	103 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.85 L	0.30	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.60 U VL	1.2	0.60	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	846 J	300	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	22.1 J	0.60	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.9 J	3.0	0.066	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.5 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21200 J	6.0	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.4 J	6.0	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3830 J	300	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	530 J	4.5	0.30	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.018 J J	0.088	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.9 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1560 J	600	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.8 J	6.0	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U VL	0.60	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	30 U	600	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U VL	24	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	35.1 J	3.0	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	47.8 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11100 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.2 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	110 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.80 L	0.27	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.53 U VL	1.1	0.53	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1300 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.5 J	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.4 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.5 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	17800 J	5.3	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.8 J	5.3	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3140 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	472 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.20 J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.2 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1290 J	530	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.8 J	5.3	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U VL	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	27 U	530	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	29.5 J	2.7	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	48.7 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14700 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.5	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 L	0.46	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	96.1 J	12	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.93 L	0.29	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.58 U VL	1.2	0.58	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	982 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	22.3 J	0.58	0.081	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.6 J	2.9	0.064	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	12.1 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	22100 J	5.8	0.81	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.0 J	5.8	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3840 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	505 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.039 J J	0.094	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	13.1 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1640 J	580	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.9 J	5.8	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.081 U VL	0.58	0.081	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	580	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	16 U VL	23	16	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	39.8 J	2.9	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	56.7 J	1.2	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14300 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.5 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	94.8 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.95 L	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.59 U VL	1.2	0.59	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	924 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	20.6 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.9 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.8 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21300 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.9 J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3840 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	448 J	4.4	0.30	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.041 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.8 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1590 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.8 J	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U VL	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	30 U	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U VL	24	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	38.6 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	57.0 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	7000 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.85 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.6 L	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	50.6 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.49 L	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.059 U UL	0.24	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	830 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	13.9 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	7.2 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	7.9 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	10600 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	5.1 J J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	2310 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	84.2 J	0.89	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.012 U	0.098	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	8.6 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	1130 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	3.5 J J	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.083 U UL	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	30 U	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	13 U UL	24	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	21.3 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	30.7 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12624
(4) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10200 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.94 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 L	0.45	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	170 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.97 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.056 U VL	0.22	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	3190 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	16.6 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	8.1 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	10.9 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	14400 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	17.8 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2910 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	838 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.082 J J	0.088	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.7 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1220 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	4.2 J J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U VL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	21.9 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	103 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12300 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 L	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	106 J	11	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.91 L	0.29	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.57 U VL	1.2	0.57	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1120 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.9 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.4 J	2.9	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.2 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18800 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.5 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3070 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	580 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.027 J J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.4 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1270 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.1 J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U VL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	570	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U VL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	30.4 J	2.9	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	47.3 J	1.1	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13000 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.4	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.7 L	0.45	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	114 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.93 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1070 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.8 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.7 J	2.8	0.062	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.8 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	19200 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.0 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3250 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	728 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.026 J J	0.090	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.3 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1370 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.0 J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U UL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	31.4 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	49.3 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10100 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.78 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	3.1 L	0.44	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	165 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.93 L	0.27	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.055 U UL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1060 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	16.0 J	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.6 J	2.7	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.2 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	13100 J	5.5	0.76	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	36.2 J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2130 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	488 J	4.1	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.035 J J	0.089	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.8 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	922 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	4.4 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.076 U UL	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	27 U	550	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.2 U UL	11	6.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	20.4 J	2.7	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	105 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	14000 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.4 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	134 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.97 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U VL	1.1	0.56	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1170 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.8 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	12.0 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20200 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	7.8 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3570 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	779 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.035 J J	0.094	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	13.5 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	2120 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.2 J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U VL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	36.2 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	55.9 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	15000 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.0 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	125 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	1.0 L	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.56 U UL	1.1	0.56	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1240 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	21.8 J	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.8 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	13.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	21600 J	5.6	0.78	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.5 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3670 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	534 J	4.2	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.036 J J	0.097	0.012	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	13.2 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1720 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.6 J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.078 U UL	0.56	0.078	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	36.6 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	54.6 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12400 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.4 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	120 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.78 L	0.27	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.54 U UL	1.1	0.54	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1860 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	18.8 J	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.2 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.3 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18300 J	5.4	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	13.7 J	5.4	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2260 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	708 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.043 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.2 J	2.2	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	757 B	540	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.7 J	5.4	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U UL	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	30.6 J B	540	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.0 U UL	11	6.0	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	34.3 J	2.7	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	55.7 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13800 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.5 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.3 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	120 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.95 L	0.27	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.54 U VL	1.1	0.54	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1320 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	20.4 J	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.0 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.9 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20700 J	5.4	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.8 J	5.4	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3580 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	545 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.040 J J	0.083	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.5 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1510 J	540	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.5 J	5.4	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U VL	0.54	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	27 U	540	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	32.8 J	2.7	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	54.1 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11200 J	11	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.3 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	4.9 J	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	91.8 J	11	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.76 J	0.29	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.057 U UL	0.23	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	2530 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.0 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	10.8 J	2.9	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	24.1 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20700 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	34.4 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3580 J	290	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	625 J	4.3	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.63 J	0.17	0.022	mg/kg	2	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.2 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1470 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.2 J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U UL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U	570	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	29.7 J	2.9	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	75.0 J	1.1	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12300 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.3 J B	3.5	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 J	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	120 J	12	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.48 J	0.29	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.58 U UL	1.2	0.58	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1460 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	13.3 J	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	12.1 J	2.9	0.064	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	51.2 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18400 J	5.8	0.82	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	2.4 J J	5.8	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3820 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	425 J	4.4	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.12 J	0.085	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.1 J	2.3	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	678 B	580	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.7 J J	5.8	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.082 U UL	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	33.5 J B	580	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	44.2 J	2.9	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	26.7 J	1.2	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4620 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.36 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 L	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	21.1 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.33 L	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.059 U VL	0.24	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	95900 J	5900	120	mg/kg	20	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Chromium	8.7 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	3.8 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	4.0 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	9750 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	2.2 J J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	58700 J	5900	120	mg/kg	20	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Manganese	227 J	0.89	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Mercury	0.011 U	0.088	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	6.4 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1200 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	0.27 U VL	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U VL	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	377 J B	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	3.3 U VL	5.9	3.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	11.1 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	12.3 J	1.2	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	12400 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.9 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	127 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.88 L	0.28	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.55 U UL	1.1	0.55	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1440 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.5 J	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.5 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	11.7 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	17600 J	5.5	0.77	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	13.6 J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2520 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	582 J	4.1	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.053 J J	0.086	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	10.6 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	930 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.4 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.077 U UL	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	550	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	32.8 J	2.8	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	78.3 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12628

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10400 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.1 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	7.2 K	0.44	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	93.7 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.69 L	0.27	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium [a]	0.27 U VL	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1030 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	15.7 J	0.54	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.0 J	2.7	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	71.9 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	16400 J	5.4	0.76	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	95.6 J	5.4	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2470 J	270	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	363 J	4.1	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	1.5 J	0.58	0.071	mg/kg	7	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.9 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1170 J	540	5.4	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.9 J	5.4	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.076 U	0.54	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	92.1 J B	540	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	23.7 J	2.7	0.054	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	64.4 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12624
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9410 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.3 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.4 K	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	90.6 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.59 L	0.27	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.053 U UL	0.21	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	809 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	14.6 J	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	11.6 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	35.5 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	20800 J	5.3	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	4.0 J J	5.3	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2560 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	733 J	4.0	0.27	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.049 J J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	16.3 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1120 J	530	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	6.7 J	5.3	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.075 U	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	414 J B	530	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	20.6 J	2.7	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	37.7 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	10300 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.72 J B	3.4	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	2.1 J	0.45	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	190 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.74	0.28	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.18 J	0.22	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	12900 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	13.9 J	0.56	0.079	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.3 J	2.8	0.062	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	15700 J	5.6	0.79	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	53.3 J	5.6	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	9060 J	280	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	1150 J	8.4	0.56	mg/kg	10	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.037 J J	0.090	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.7 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1350 J	560	5.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	2.8 J J	5.6	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.079 U	0.56	0.079	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	52.0 J B	560	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.2 U UL	11	6.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	21.1 J	2.8	0.056	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	160 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13400 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.0 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.8 K	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	108 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.81 L	0.28	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.055 U UL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1350 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.5 J	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.4 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	10 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	17700 J	5.5	0.77	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.3 J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3200 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	471 J	4.1	0.28	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.029 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.4 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1350 J	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.6 J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.077 U	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U UL	550	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	32.7 J	2.8	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	47.4 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	13200 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.5	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.9 K	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	105 J	12	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.82 L	0.29	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.058 U UL	0.23	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	1600 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	19.8 J	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	9.7 J	2.9	0.064	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	9.9 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	18100 J	5.8	0.82	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	6.2 J	5.8	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	3380 J	290	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	458 J	4.4	0.29	mg/kg	5	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.023 J J	0.093	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	12.7 J	2.3	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1330 J	580	5.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.6 J J	5.8	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.082 U	0.58	0.082	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	29 U UL	580	29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	33.2 J	2.9	0.058	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	49.6 J	1.2	0.29	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	11400 J	12	2.8	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	1.2 J B	3.6	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	4.3 K	0.47	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	159 J	12	0.30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.83 J	0.30	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.39 J	0.24	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	3380 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	17.2 J	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	7.9 J	3.0	0.065	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	108 J	1.5	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	19300 J	5.9	0.83	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	141 J	5.9	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	2940 J	300	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	1240 J	8.9	0.59	mg/kg	10	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.091	0.090	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	11.6 J	2.4	0.15	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1270 J	590	5.9	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	5.6 J J	5.9	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.083 U	0.59	0.083	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	232 J B	590	30	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	6.6 U UL	12	6.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	21.3 J	3.0	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	1060 J	12	3.0	mg/kg	10	08/01/07	08/02/07	RS	SW846 6010B [3]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5891
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12629

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	9040 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Antimony	0.83 J B	3.4	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Arsenic	1.6	0.46	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Barium	86.5 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Beryllium	0.66	0.28	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cadmium	0.057 U UL	0.23	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Calcium	9520 J	280	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Chromium	12.8 J	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Cobalt	6.6 J	2.8	0.063	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Copper	8.8 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Iron	12200 J	5.7	0.80	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Lead	8.2 J	5.7	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Magnesium	5980 J	280	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Manganese	401 J	17	1.1	mg/kg	20	08/01/07	08/03/07	RS	SW846 6010B [3]	SW846 3050B [5]
Mercury	0.020 J J	0.087	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [4]
Nickel	9.2 J	2.3	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Potassium	1040 J	570	5.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Selenium	2.6 J J	5.7	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Silver	0.080 U UL	0.57	0.080	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Sodium	28 U	570	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Thallium [a]	13 U UL	23	13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Vanadium	18.2 J	2.8	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]
Zinc	50.9 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Instrument QC Batch: MA5894
(4) Prep QC Batch: MP12625
(5) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5440 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.51 J B	3.2	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	1.1 L	0.43	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	52.7 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.43	0.27	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.053 U VL	0.21	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	2800 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	9.4 J	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.5 J	2.7	0.059	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	6.1 J	1.3	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	7920 J	5.3	0.75	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	8.2 J	5.3	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	2190 J	270	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	176 J	0.80	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.010 J J	0.079	0.0097	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	6.6 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	853 B	530	5.3	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.4 J J	5.3	0.24	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.075 U VL	0.53	0.075	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	27 U	530	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U VL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	11.5 J	2.7	0.053	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	52.8 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4720 J	11	2.6	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.46 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	0.77 L	0.44	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	44.6 J	11	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.37	0.27	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.055 U VL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	1380 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	8.9 J	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.2 J	2.7	0.060	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	3.1 J	1.4	0.10	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	6900 J	5.5	0.76	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	3.7 J J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1560 J	270	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	132 J	0.82	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.011 U	0.086	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	5.7 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	725 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.0 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.076 U VL	0.55	0.076	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	27 U	550	27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U VL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	10.8 J	2.7	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	25.9 J	1.1	0.27	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	5370 J	10	2.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.59 J B	3.1	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	0.93 L	0.42	0.20	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	54.2 J	10	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.44	0.26	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.052 U UL	0.21	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	1180 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	10.9 J	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.8 J	2.6	0.057	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	5.0 J	1.3	0.099	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	7860 J	5.2	0.73	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	4.9 J J	5.2	0.12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1620 J	260	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	171 J	0.78	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.010 J J	0.084	0.010	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	6.8 J	2.1	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	796 B	520	5.2	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.5 J J	5.2	0.23	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.073 U UL	0.52	0.073	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	26 U	520	26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U UL	21	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	12.4 J	2.6	0.052	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	36.5 J	1.0	0.26	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
		Percent Solids:	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	4920 J	11	2.7	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Antimony	0.50 J B	3.3	0.21	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Arsenic	0.70 L	0.44	0.22	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Barium	49.1 J	11	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Beryllium	0.41	0.28	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cadmium	0.055 U UL	0.22	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Calcium	927 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Chromium	12.2 J	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Cobalt	4.3 J	2.8	0.061	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Copper	3.4 J	1.4	0.11	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Iron	7450 J	5.5	0.77	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Lead	2.7 J J	5.5	0.13	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Magnesium	1390 J	280	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Manganese	150 J	0.83	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Mercury	0.012 J J	0.091	0.011	mg/kg	1	08/01/07	08/01/07	MS	SW846 7471A [1]	SW846 7471A [3]
Nickel	6.2 J	2.2	0.14	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Potassium	697 B	550	5.5	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Selenium	2.4 J J	5.5	0.25	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Silver	0.077 U UL	0.55	0.077	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Sodium	28 U	550	28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Thallium [a]	12 U UL	22	12	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Vanadium	11.5 J	2.8	0.055	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]
Zinc	26.2 J	1.1	0.28	mg/kg	1	08/01/07	08/01/07	RS	SW846 6010B [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA5889
(2) Instrument QC Batch: MA5890
(3) Prep QC Batch: MP12625
(4) Prep QC Batch: MP12630

(a) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

Analyte	Result		RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Aluminum	79 U		200	79	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Antimony	3.3 U		6.0	3.3	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Arsenic	3.7 U		10	3.7	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Barium	5.0 U		200	5.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Beryllium	1.0 U		4.0	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Cadmium	1.0 U		5.0	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Calcium	100 U		1000	100	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Chromium	0.92 U		10	0.92	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Cobalt	1.0 U		50	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Copper	1.2 U		25	1.2	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Iron	15 U		300	15	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Lead	2.1 U		5.0	2.1	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Magnesium	100 U		5000	100	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Manganese	1.0 U		15	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Mercury	0.11 U		1.0	0.11	ug/l	1	08/01/07	08/01/07	MS	SW846 7470A [2]	SW846 7470A [4]
Nickel	1.3 J	J	40	1.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Potassium	1730 J	J	10000	100	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Selenium	4.0 U		10	4.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Silver	0.77 U		10	0.77	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Sodium	1950 J	J	10000	500	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Thallium	6.5 U		10	6.5	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Vanadium	1.1 U		50	1.1	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]
Zinc	5.0 U		20	5.0	ug/l	1	07/31/07	07/31/07	NS	SW846 6010B [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA5886
(2) Instrument QC Batch: MA5888
(3) Prep QC Batch: MP12618
(4) Prep QC Batch: MP12623

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Pesticides and PCBs
Accutest Laboratories, Inc., SDG F51353

DATE: February 22, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Solid samples were analyzed for pesticides and PCBs using USEPA Method 3550B/8081A and 3550B/8082, respectively. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
X		Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
X		Laboratory Control Samples
X		Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications, except for the following. Compound endrin aldehyde was qualified "R" rejected for the spiked sample 43SB03B (F51353-21) based upon no recoveries in the MS/MSD samples. The LCS had recoveries below criteria limits. See Sections VII and VIII for further details.

Eric Malarek, Chemist

2/22/08

Date

RFAAP VALIDATION REPORT
PESTICIDE/PCB REVIEW
SDG F51353

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For solid samples, pesticide and PCB compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The solid samples were collected on 07/26/07. The pesticides were extracted on 08/06/07 and 08/07/07 and analyzed on 08/11/07, 08/13/07, 08/14/08, and 08/15/07. The PCBs were extracted on 08/06/07 and 08/07/07 and analyzed on 08/09/07, 08/10/07, 08/11/07, and 08/14/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check (Degradation Standard)
Performance checks on the gas chromatograph with electron capture detector (GC/ECD) system are performed to ensure adequate resolution and instrument sensitivity. The performance evaluation mixture (PEM) must be analyzed at the beginning of the analytical sequence. The breakdown of Endrin and 4,4'-DDT must be ≤15% on both signals.

- For analysis performed on 08/13/07 @10:00, endrin and 4,4'-DDT percent breakdowns were 14.6% and 6.3% on signal #1 and 12.8% and 5.6% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/10/07 @15:38, endrin and 4,4'-DDT percent breakdowns were 3.7% and 2.5% on signal #1 and 3.9% and 2.0% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/11/07 @10:54, endrin and 4,4'-DDT percent breakdowns were 3.4% and 2.3% on signal #1 and 3.5% and 2.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/13/07 @11:16, endrin and 4,4'-DDT percent breakdowns were 2.7% and 1.4% on signal #1 and 2.6% and 1.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/14/07 @11:52, endrin and 4,4'-DDT percent breakdowns were 2.7% and 1.9% on signal #1 and 2.6% and 1.8% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 08/15/07 @11:54, endrin and 4,4'-DDT percent breakdowns were 5.4% and 7.2% on signal #1 and 5.2% and 6.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5 point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. Calibration factors are generated for each compound. The DoD QSM specifies that the percent relative standard deviation (%RSD) for all single peak target analytes, and aroclors 1016, 1242, 1254, and 1260 must be <20% or the mean %RSD for all analytes in the standard must be ≤20%. If linear regression is used, the correlation coefficient must be ≥0.995. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits.

- For the pesticide initial calibration performed on 08/14/07 on instrument ECD5, target compound endrin (19.6%) was outside criteria for signal #1. All other target compounds were within criteria (%RSD≤20%). Endrin (r=0.9796) was quantified using linear regression with a correlation coefficients <0.995, therefore, all non-detects were qualified estimated "UJ" based upon the low correlation coefficient. Samples 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/10/07 on instrument ECD6, all criteria were met. No qualifiers were applied. 4,4'-DDE (r=0.9981) and 4,4'-DDD (r=0.9985) were quantified using linear regression with a correlation coefficients >0.995. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), and TMSB01C (F51353-16) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/13/07 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 08/14/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), and 43SB03B (F51353-21) were analyzed using this initial calibration.

- For the PCB initial calibration performed on 08/02/07 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for pesticide/PCB target compounds. Continuing calibration standards containing both target compounds and surrogates are analyzed at the beginning of each 12-hour analytical shift and after every 20 samples. The DoD QSM specifies that the percent difference (%D) or the average %Ds for all analytes in the standard from the initial calibration should be no greater than ±20%.

- Samples 43SB03A (F51353-20), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28) were analyzed directly after the 08/13/07 initial calibration. See Section III for further discussion.

- For pesticide continuing calibration performed on 08/13/07 @16:36 on instrument ECD5, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/13/07 @17:56 on instrument ECD5, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/10/07 @18:40 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/10/07 @20:15 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/10/07 @22:05 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @14:47 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), and 43SB05A (F51353-4) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @17:40 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), and TMSB01C (F51353-16) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @20:49 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @21:52 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Sample 43SB02A (F51353-15) was analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/11/07 @23:27 on instrument ECD6, 4,4'-DDD (20.6%) and 4,4'-DDT (26.3%) were outside criteria for the signal #1. 4,4'-DDD (37.9%) and 4,4'-DDT (21.0%) were outside criteria for the signal #2. No samples reported was analyzed using this continuing calibration; therefore, no qualifiers were applied based upon these outliers.

- For pesticide initial calibration verification performed on 08/13/07 @17:36 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/13/07 @19:27 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 08/14/07 @14:58 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 08/14/07 @19:50 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/14/07 @21:09 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Samples 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/14/07 @22:44 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/15/07 @19:55 on instrument ECD6, all criteria were met for signal #1 and for the signal #2. No qualifiers were applied. Sample 43SB03B (F51353-21) was analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 08/15/07 @21:14 on instrument ECD6, 4,4'-DDT (23.6%) and methoxychlor (21.3%) were outside criteria for the signal #1. All criteria were met for signal #2. No samples reported was analyzed using this continuing calibration; therefore, no qualifiers were applied based upon these outliers.

- For PCB 1016/1260 initial calibration verification performed on 08/02/07 @13:41 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For PCB 1016/1260 continuing calibration performed on 08/09/07 @17:04 on instrument ECD7, all criteria were met. No qualifiers were applied. Sample 43SB03A (F51353-20) was analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/09/07 @20:28 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/09/07 @23:51 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @09:37 on instrument ECD7, all criteria were met. No qualifiers were applied. Sample 43SB03B (F51353-21) was analyzed using this continuing calibration.

- For PCB 1248 continuing calibration performed on 08/10/07 @09:54 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1242 continuing calibration performed on 08/10/07 @10:10 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1232/1268 continuing calibration performed on 08/10/07 @10:27 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1221/1254 continuing calibration performed on 08/10/07 @10:44 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @13:17 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @18:57 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), and 43SB05A (F51353-4) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/10/07 @22:04 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01B (F51353-13), 43SB01C (F51353-14), and 43SB02A (F51353-15) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/11/07 @01:28 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples TMSB01C (F51353-16) and 43SB02C (F51353-19) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/11/07 @03:09 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/14/07 @03:27 on instrument ECD7, all criteria were met. No qualifiers were applied. Samples APSB06A (F51353-9), 43SB01A (F51353-12), 43SB02B (F51353-17), and TMSB02B (F51353-18) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 08/14/07 @06:00 on instrument ECD7, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

V-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for pesticide and PCB target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Parameter	Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
Pesticides	08/11/07	OP21762-MB	All target <½MRL	NA	NA	None
Pesticides	08/14/07	OP21762-MB	All target <½MRL	NA	NA	None
Pesticides	08/13/07	OP21766-MB	All target <½MRL	NA	NA	None
Pesticides	08/15/07	OP21766-MB	All target <½MRL	NA	NA	None
Pesticides	08/10/07	072607R	All target <½MRL	NA	NA	None
PCBs	08/10/07	OP21761-MB	All target <½MRL	NA	NA	None
PCBs	08/14/07	OP21761-MB	All target <½MRL	NA	NA	None
PCBs	08/09/07	OP21765-MB	All target <½MRL	NA	NA	None
PCBs	08/10/07	OP21765-MB	All target <½MRL	NA	NA	None
PCBs	08/01/07	072607R	All target <½MRL	NA	NA	None

NA = Not Applicable
MRL = Method Reporting Limit

VI-System Monitoring Compound (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria:	Tetrachloro-m-xylene:	Pesticides: 46-122% (DoD QSM 70-125%)
	Decachlorobiphenyl:	Pesticides: 50-133% (DoD QSM 55-130%)
Solid Criteria:	Tetrachloro-m-xylene:	PCBs: 44-126% (DoD QSM Not Listed)
	Decachlorobiphenyl:	PCBs: 39-157% (DoD QSM 60-125%)

- For pesticides sample 43SB03C (F51353-22), tetrachloro-m-xylene (68.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB07B (F51353-24), tetrachloro-m-xylene (68.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB08A (F51353-26), tetrachloro-m-xylene (69.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB10B (F51353-29), tetrachloro-m-xylene (64.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB09A (F51353-30), tetrachloro-m-xylene (68.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For pesticides sample APSB09B (F51353-31), tetrachloro-m-xylene (65.0%) was below DoD QSM criteria and within laboratory criteria. Decachlorobiphenyl was within criteria. Since only one surrogate was outside criteria, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met for pesticides and PCBs analysis.

VII-Laboratory Control Samples

Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD QSM solid LCS recovery limits are specified in Table D-15 and Table D-17 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21762-BS was used as the solid LCS for the pesticide analysis on 08/11/07. Compound endrin aldehyde (11%) was outside DoD QSM criteria; however, within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon very low recovery. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this LCS.

- Sample OP21766-BS was used as the solid LCS for the pesticide analysis on 08/13/07. Compounds beta-BHC (64%), endrin (158%), and endrin aldehyde (14%) were outside DoD QSM and/or laboratory criteria. Compounds endrin aldehyde and beta-BHC were non-detect for all associated samples; therefore, these compounds were qualified estimated bias "UL" for non-detects based upon the low recoveries. Compound endrin was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21761-BS was used as the solid LCS for the PCB analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this LCS.

- Sample OP21765-BS was used as the solid LCS for the PCB analysis on 08/09/07. All criteria were met. No qualifiers were applied. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VIII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-15 and Table D-17 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB04A (F51353-1) was used as the MS/MSD for the pesticide analysis on 08/11/07. Compound endrin aldehyde (22%, 20%) was outside DoD QSM criteria; however, within laboratory criteria. Compound endrin aldehyde was non-detect for the spiked sample and was qualified estimated bias "UL" for non-detect based upon low recoveries. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as the MS/MSD for the pesticide analysis on 08/15/07. Compounds aldrin (60%; 60%), alpha-BHC (65%), gamma chlordane (72%), 4,4'-DDD (180%), 4,4'-DDE (183%; RPD=46%), endrin (307%, 216%; RPD=35%), endrin aldehyde (0%; 0%), endosulfan I (69%, 65%), endosulfan II (62%, 63%), heptachlor (64%), heptachlor epoxide (215%, 155%; RPD=32%), and methoxychlor (63%, 61%) were outside DoD QSM criteria and/or laboratory criteria. The LCS was also low in recovery (See Section VII), except for endrin aldehyde. Compound endrin aldehyde was qualified "R" rejected for the spiked sample based upon no recoveries. Compounds aldrin, alpha-BHC, gamma chlordane, endosulfan I, endosulfan II, heptachlor, and methoxychlor were non-detect for the spiked sample and qualified estimated bias low "UL" for non-detects based upon low recoveries. Compounds 4,4'-DDD, 4,4'-DDE, endrin, and heptachlor epoxide were qualified bias high "K" for detects and no qualifier for non-detects based upon the high recoveries. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB05A (F51353-4) was used as the MS/MSD for the PCB analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), and 43SB02C (F51353-19) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used as the MS/MSD for the PCB analysis on 08/10/07. PCB 1016 (-257%, -293%) and PCB 1260 (184%, 182%) were outside DoD QSM and laboratory criteria. PCB 1016 was outside criteria due to high level (>4x) in sample relative to the spiked amount. PCB 1260 was non-detect for the spiked sample. No qualifiers were applied based upon these outliers. Samples 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

IX-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for pesticides and PCBs. All detected compounds found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. Aroclor 1254 and aroclor 1016 were detected in the original sample and in the duplicate pair. All other target compounds were non-detect. All criteria were met. No qualifiers were applied.

Table 3 Field Precision Hits Analysis Summary for Pesticides and PCBs for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
Aroclor 1254	451J	418J	7.6
Aroclor 1016	104J	137J	27.4

J = Estimated value <MRL and >MDL.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for pesticides and PCBs. All pesticide and PCB target compounds were non-detect. All criteria were met. No qualifiers were applied.

X-Quantitation Verification
The accuracy of analytical results was verified through the calculation of several parameters. The difference between the calculated value and the reported value must be within 10% difference. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." All criteria were met.

- For sample 43SB03B (F51353-21), 4,4'-DDD (69.1%) was outside confirmation criterion and was qualified estimated "J" based upon this outlier. All other chlorinated pesticides were non-detect. No confirmations were required.

- For all detected PCBs, the %Ds (average %D for multi-peak compounds) between the primary and secondary columns were within criteria. No qualifiers were applied.

Sample: 43SB03B (F51353-21), 4,4'-DDD

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (mL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100 = 1.0 for Wet Weight
DF = Dilution factor

Conc. µg/kg = (153205Area*10000µL*10) / (19280Area/pg*(1000pg/ng)*1 µL*31.3g*0.8750)
= 29.0 µg/kg (signal #1)

Conc. µg/kg = (51804Area*10000µL*10) / (13460Area/pg*(1000pg/ng)*1 µL*31.3g*0.8750)
= 14.1 µg/kg (signal #2)

Reported Value = 14.1 µg/kg (signal #2)
% Difference = 0.0%
Values were within 10% difference

Sample: 43SB03B (F51353-21), Aroclor 1254

Conc. µg/kg = (Ax * Vt * DF) / (CF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (µL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100 = 1.0 for Wet Weight
DF = Dilution factor

Signal #1
Conc1 µg/kg = (414977*10000*10) / (2985*(1000)*1*31.3*0.8750) = 507.61 µg/kg
Conc2 µg/kg = (612440*10000*10) / (4371*(1000)*1*31.3*0.8750) = 511.60 µg/kg
Conc3 µg/kg = (597791*10000*10) / (4505*(1000)*1*31.3*0.8750) = 484.51 µg/kg
Conc4 µg/kg = (431859*10000*10) / (3007*(1000)*1*31.3*0.8750) = 524.39 µg/kg
Conc5 µg/kg = (181562*10000*10) / (1914*(1000)*1*31.3*0.8750) = 346.36 µg/kg
Conc6 µg/kg = (420994*10000*10) / (3859*(1000)*1*31.3*0.8750) = 398.34 µg/kg
Average concentration = 462 µg/kg

Signal #2
Conc1 µg/kg = (255236*10000*10) / (2061*(1000)*1*31.3*0.8750) = 452.18 µg/kg
Conc2 µg/kg = (281714*10000*10) / (2197*(1000)*1*31.3*0.8750) = 468.19 µg/kg
Conc3 µg/kg = (393653*10000*10) / (2975*(1000)*1*31.3*0.8750) = 483.14 µg/kg
Conc4 µg/kg = (284051*10000*10) / (2003*(1000)*1*31.3*0.8750) = 517.80 µg/kg
Conc5 µg/kg = (103409*10000*10) / (1097*(1000)*1*31.3*0.8750) = 344.19 µg/kg
Conc6 µg/kg = (299358*10000*10) / (2775*(1000)*1*31.3*0.8750) = 393.89 µg/kg
Average concentration = 443 µg/kg

Reported Value = 462 µg/kg (signal #1)
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: TT08349.D

Form I Copy

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08349.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	89	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023018.D

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023018.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.9	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08352.D

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08352.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	97	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	76%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023019.D

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023019.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08353.D

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08353.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.47	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.43	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.78	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.78	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.78	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.78	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.78	ug/kg	
8001-35-2	Toxaphene	ND	97	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023020.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	16	ug/kg	
11141-16-5	Aroclor 1232	ND	19	16	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		44-126%
2051-24-3	Decachlorobiphenyl	92%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08354.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.51	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.80	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.62	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.73	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.73	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.84	ug/kg	
72-20-8	Endrin	ND	3.7	0.73	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.73	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.51	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.73	ug/kg	
8001-35-2	Toxaphene	ND	91	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023021.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.1	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.1	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.1	ug/kg	
11097-69-1	Aroclor 1254	9.4 J	18	9.1	ug/kg	J
11096-82-5	Aroclor 1260	ND	18	9.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

(a) All hits confirmed by dual column analysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08357.D

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08357.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.47	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.87	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.79	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.79	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.91	ug/kg	
72-20-8	Endrin	ND	3.9	0.79	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.79	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.79	ug/kg	
8001-35-2	Toxaphene	ND	99	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023026.D

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023026.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.9	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.9	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.9	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.9	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08358.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.43	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	97	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	74%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023027.D

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023027.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08359.D

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08359.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.48	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.56	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.52	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.88	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.68	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.40	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.44	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.44	ug/kg	
72-54-8	4,4'-DDD	ND	4.0	0.80	ug/kg	
72-55-9	4,4'-DDE	ND	4.0	0.80	ug/kg	
50-29-3	4,4'-DDT	ND	4.0	0.93	ug/kg	
72-20-8	Endrin	ND	4.0	0.80	ug/kg	
1031-07-8	Endosulfan sulfate	ND	4.0	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	4.0	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	4.0	0.80	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.44	ug/kg	
33213-65-9	Endosulfan-II	ND	4.0	0.60	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.56	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.40	ug/kg	
72-43-5	Methoxychlor	ND	4.0	0.80	ug/kg	
8001-35-2	Toxaphene	ND	100	50	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023028.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	10	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	10	ug/kg	
12672-29-6	Aroclor 1248	ND	20	10	ug/kg	
11097-69-1	Aroclor 1254	ND	20	10	ug/kg	
11096-82-5	Aroclor 1260	ND	20	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	82%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08360.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	1.9	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg	
50-29-3	4,4'-DDT [a]	ND	7.6	7.6	ug/kg	
72-20-8	Endrin	ND	3.8	3.8	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.8	3.8	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg	
8001-35-2	Toxaphene	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	73%		50-133%

(a) Elevated reporting limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023112.D	5	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	94	47	ug/kg	
11104-28-2	Aroclor 1221	ND	94	75	ug/kg	
11141-16-5	Aroclor 1232	ND	94	75	ug/kg	
53469-21-9	Aroclor 1242	ND	94	47	ug/kg	
12672-29-6	Aroclor 1248	ND	94	47	ug/kg	
11097-69-1	Aroclor 1254 [b]	403	94	47	ug/kg	
11096-82-5	Aroclor 1260	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	78%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Aroclor pattern appears to be weathered.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08361.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg	
72-20-8	Endrin	ND	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023030.D	1	08/10/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08362.D

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08362.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	
72-20-8	Endrin	ND	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	83%		46-122%
2051-24-3	Decachlorobiphenyl	82%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023031.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	91%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08363.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	93	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023113.D	1	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08364.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	
72-20-8	Endrin	ND	3.8	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.8	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.77	ug/kg	
8001-35-2	Toxaphene	ND	96	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	75%		46-122%
2051-24-3	Decachlorobiphenyl	77%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023033.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08365.D

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08365.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.77	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.77	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND	3.9	0.77	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.77	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.77	ug/kg	
8001-35-2	Toxaphene	ND	96	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023034.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.6	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.6	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.6	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.6	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08373.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.46	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.78	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.71	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.71	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND	3.6	0.71	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.71	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.71	ug/kg	
8001-35-2	Toxaphene	ND	89	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		46-122%
2051-24-3	Decachlorobiphenyl	68%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023035.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.9	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		44-126%
2051-24-3	Decachlorobiphenyl	73%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08366.D	1	08/11/07	FS	08/06/07	OP21762	GTT282
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	93	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX023038.D

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8082 SW846 3550B	Percent Solids:	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023038.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	84%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08446.D

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08446.D	5	08/14/07	FS	08/06/07	OP21762	GTT284
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.8	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.8	2.7	ug/kg	
319-85-7	beta-BHC	ND	9.8	2.5	ug/kg	
319-86-8	delta-BHC	ND	9.8	4.3	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.8	3.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.8	2.0	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.8	2.2	ug/kg	
60-57-1	Dieldrin	ND	9.8	2.2	ug/kg	
72-54-8	4,4'-DDD	ND	20	3.9	ug/kg	
72-55-9	4,4'-DDE	ND	20	3.9	ug/kg	
50-29-3	4,4'-DDT	ND	20	4.5	ug/kg	
72-20-8	Endrin	ND	20	3.9	ug/kg	
1031-07-8	Endosulfan sulfate	ND	20	6.5	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	20	5.9	ug/kg	
53494-70-5	Endrin ketone	ND	20	3.9	ug/kg	
959-98-8	Endosulfan-I	ND	9.8	2.2	ug/kg	
33213-65-9	Endosulfan-II	ND	20	2.9	ug/kg	
76-44-8	Heptachlor	ND	9.8	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.8	2.0	ug/kg	
72-43-5	Methoxychlor	ND	20	3.9	ug/kg	
8001-35-2	Toxaphene	ND	490	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		46-122%
2051-24-3	Decachlorobiphenyl	67%		50-133%

(a) Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023114.D	5	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	104 J	98	49	ug/kg	J
11104-28-2	Aroclor 1221	ND	98	78	ug/kg	
11141-16-5	Aroclor 1232	ND	98	78	ug/kg	
53469-21-9	Aroclor 1242	ND	98	49	ug/kg	
12672-29-6	Aroclor 1248	ND	98	49	ug/kg	
11097-69-1	Aroclor 1254 [b]	451 J	98	49	ug/kg	J
11096-82-5	Aroclor 1260	ND	98	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		44-126%
2051-24-3	Decachlorobiphenyl	74%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08447.D	5	08/14/07	FS	08/06/07	OP21762	GTT284
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	9.7	2.3	ug/kg	
319-84-6	alpha-BHC	ND	9.7	2.7	ug/kg	
319-85-7	beta-BHC	ND	9.7	2.5	ug/kg	
319-86-8	delta-BHC	ND	9.7	4.3	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	9.7	3.3	ug/kg	
5103-71-9	alpha-Chlordane	ND	9.7	1.9	ug/kg	
5103-74-2	gamma-Chlordane	ND	9.7	2.1	ug/kg	
60-57-1	Dieldrin	ND	9.7	2.1	ug/kg	
72-54-8	4,4'-DDD	ND	19	3.9	ug/kg	
72-55-9	4,4'-DDE	ND	19	3.9	ug/kg	
50-29-3	4,4'-DDT	ND	19	4.5	ug/kg	
72-20-8	Endrin	ND	19	3.9	ug/kg	
1031-07-8	Endosulfan sulfate	ND	19	6.4	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	19	5.8	ug/kg	
53494-70-5	Endrin ketone	ND	19	3.9	ug/kg	
959-98-8	Endosulfan-I	ND	9.7	2.1	ug/kg	
33213-65-9	Endosulfan-II	ND	19	2.9	ug/kg	
76-44-8	Heptachlor	ND	9.7	2.7	ug/kg	
1024-57-3	Heptachlor epoxide	ND	9.7	1.9	ug/kg	
72-43-5	Methoxychlor	ND	19	3.9	ug/kg	
8001-35-2	Toxaphene	ND	490	240	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	88%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

(a) Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX023115.D	5	08/14/07	AC	08/06/07	OP21761	GXX196
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	137 J	97	49	ug/kg	J
11104-28-2	Aroclor 1221	ND	97	78	ug/kg	
11141-16-5	Aroclor 1232	ND	97	78	ug/kg	
53469-21-9	Aroclor 1242	ND	97	49	ug/kg	
12672-29-6	Aroclor 1248	ND	97	49	ug/kg	
11097-69-1	Aroclor 1254 [b]	418 J	97	49	ug/kg	J
11096-82-5	Aroclor 1260	ND	97	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	87%		44-126%
2051-24-3	Decachlorobiphenyl	84%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08448.D

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08448.D	1	08/14/07	FS	08/06/07	OP21762	GTT284
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	2.0	0.47	ug/kg	
319-84-6	alpha-BHC	ND	2.0	0.55	ug/kg	
319-85-7	beta-BHC	ND	2.0	0.51	ug/kg	
319-86-8	delta-BHC	ND	2.0	0.86	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	2.0	0.67	ug/kg	
5103-71-9	alpha-Chlordane	ND	2.0	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	2.0	0.43	ug/kg	
60-57-1	Dieldrin	ND	2.0	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.79	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.79	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.90	ug/kg	
72-20-8	Endrin	ND	3.9	0.79	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.79	ug/kg	
959-98-8	Endosulfan-I	ND	2.0	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.59	ug/kg	
76-44-8	Heptachlor	ND	2.0	0.55	ug/kg	
1024-57-3	Heptachlor epoxide	ND	2.0	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.79	ug/kg	
8001-35-2	Toxaphene	ND	98	49	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX023041.D	1	08/11/07	AC	08/06/07	OP21761	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	9.8	ug/kg	
11104-28-2	Aroclor 1221	ND	20	16	ug/kg	
11141-16-5	Aroclor 1232	ND	20	16	ug/kg	
53469-21-9	Aroclor 1242	ND	20	9.8	ug/kg	
12672-29-6	Aroclor 1248	ND	20	9.8	ug/kg	
11097-69-1	Aroclor 1254	ND	20	9.8	ug/kg	
11096-82-5	Aroclor 1260	ND	20	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		44-126%
2051-24-3	Decachlorobiphenyl	83%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8081A SW846 3550B	Percent Solids:	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20850.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.51	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND UJ	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.51	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	92	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		46-122%
2051-24-3	Decachlorobiphenyl	76%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022960.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	87%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: TT08481.D

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	TT08481.D	10	08/15/07	FS	08/07/07	OP21766	GTT285
Run #2							

	Initial Weight	Final Volume
Run #1	31.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND VL	18	4.4	ug/kg	
319-84-6	alpha-BHC	ND VL	18	5.1	ug/kg	
319-85-7	beta-BHC	ND VL	18	4.7	ug/kg	
319-86-8	delta-BHC	ND	18	8.0	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	18	6.2	ug/kg	
5103-71-9	alpha-Chlordane	ND	18	3.7	ug/kg	
5103-74-2	gamma-Chlordane	ND VL	18	4.0	ug/kg	
60-57-1	Dieldrin	ND	18	4.0	ug/kg	
72-54-8	4,4'-DDD	14.1 J	37	7.3	ug/kg	J
72-55-9	4,4'-DDE	ND	37	7.3	ug/kg	
50-29-3	4,4'-DDT	ND	37	8.4	ug/kg	
72-20-8	Endrin	ND	37	7.3	ug/kg	
1031-07-8	Endosulfan sulfate	ND	37	12	ug/kg	
7421-93-4	Endrin aldehyde	ND R	37	11	ug/kg	
53494-70-5	Endrin ketone	ND	37	7.3	ug/kg	
959-98-8	Endosulfan-I	ND VL	18	4.0	ug/kg	
33213-65-9	Endosulfan-II	ND VL	37	5.5	ug/kg	
76-44-8	Heptachlor	ND VL	18	5.1	ug/kg	
1024-57-3	Heptachlor epoxide	ND	18	3.7	ug/kg	
72-43-5	Methoxychlor	ND VL	37	7.3	ug/kg	
8001-35-2	Toxaphene	ND	910	460	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	90%		46-122%
2051-24-3	Decachlorobiphenyl	85%		50-133%

(a) All hits confirmed by dual column analysis. Dilution required due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX022987.D	10	08/10/07	AC	08/07/07	OP21765	GXX195
Run #2							

	Initial Weight	Final Volume
Run #1	31.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016 [b]	694 J	180	91	ug/kg	J
11104-28-2	Aroclor 1221	ND	180	150	ug/kg	
11141-16-5	Aroclor 1232	ND	180	150	ug/kg	
53469-21-9	Aroclor 1242	ND	180	91	ug/kg	
12672-29-6	Aroclor 1248	ND	180	91	ug/kg	
11097-69-1	Aroclor 1254 [b]	462 J	180	91	ug/kg	J
11096-82-5	Aroclor 1260	ND	180	91	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Estimated value due to the presence of multiple overlapping Aroclor patterns.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20851.D

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20851.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND UL	1.8	0.46	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	89	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	79%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022966.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.9	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.9	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.9	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.9	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20852.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.83	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	90	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	72%		46-122%
2051-24-3	Decachlorobiphenyl	75%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022967.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.0	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.0	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.0	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.0	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		44-126%
2051-24-3	Decachlorobiphenyl	84%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20853.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.46	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND VL	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.84	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.65	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.42	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.42	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.76	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.76	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.88	ug/kg	
72-20-8	Endrin	ND VJ	3.8	0.76	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.76	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.42	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.57	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.76	ug/kg	
8001-35-2	Toxaphene	ND	95	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	84%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022968.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.5	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.5	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.5	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.5	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.5	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20854.D

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20854.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.52	ug/kg	
319-85-7	beta-BHC	ND	1.9	0.48	ug/kg	UL
319-86-8	delta-BHC	ND	1.9	0.82	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.63	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND	3.7	0.74	ug/kg	UJ
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.7	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.52	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	93	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	87%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022969.D

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022969.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.3	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.3	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.3	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		44-126%
2051-24-3	Decachlorobiphenyl	89%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20855.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.47	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.54	ug/kg	
319-85-7	beta-BHC	ND UL	1.9	0.50	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.85	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.66	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.39	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.43	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.43	ug/kg	
72-54-8	4,4'-DDD	ND	3.9	0.78	ug/kg	
72-55-9	4,4'-DDE	ND	3.9	0.78	ug/kg	
50-29-3	4,4'-DDT	ND	3.9	0.89	ug/kg	
72-20-8	Endrin	ND UJ	3.9	0.78	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.9	1.3	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.9	1.2	ug/kg	
53494-70-5	Endrin ketone	ND	3.9	0.78	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.43	ug/kg	
33213-65-9	Endosulfan-II	ND	3.9	0.58	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.54	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.39	ug/kg	
72-43-5	Methoxychlor	ND	3.9	0.78	ug/kg	
8001-35-2	Toxaphene	ND	97	48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	XX022970.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.7	ug/kg	
11104-28-2	Aroclor 1221	ND	19	16	ug/kg	
11141-16-5	Aroclor 1232	ND	19	16	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.7	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.7	ug/kg	
11097-69-1	Aroclor 1254 [b]	40.2	19	9.7	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	78%		44-126%
2051-24-3	Decachlorobiphenyl	85%		39-157%

(a) All hits confirmed by dual column analysis.
(b) Aroclor pattern appears to be weathered.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: KK20856.D

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20856.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.9	0.45	ug/kg	
319-84-6	alpha-BHC	ND	1.9	0.53	ug/kg	
319-85-7	beta-BHC	ND UL	1.9	0.49	ug/kg	
319-86-8	delta-BHC	ND	1.9	0.83	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.9	0.64	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.9	0.38	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.9	0.41	ug/kg	
60-57-1	Dieldrin	ND	1.9	0.41	ug/kg	
72-54-8	4,4'-DDD	ND	3.8	0.75	ug/kg	
72-55-9	4,4'-DDE	ND	3.8	0.75	ug/kg	
50-29-3	4,4'-DDT	ND	3.8	0.87	ug/kg	
72-20-8	Endrin	ND UJ	3.8	0.75	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.8	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.8	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.8	0.75	ug/kg	
959-98-8	Endosulfan-I	ND	1.9	0.41	ug/kg	
33213-65-9	Endosulfan-II	ND	3.8	0.56	ug/kg	
76-44-8	Heptachlor	ND	1.9	0.53	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.9	0.38	ug/kg	
72-43-5	Methoxychlor	ND	3.8	0.75	ug/kg	
8001-35-2	Toxaphene	ND	94	47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	74%		46-122%
2051-24-3	Decachlorobiphenyl	83%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022971.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	9.4	ug/kg	
11104-28-2	Aroclor 1221	ND	19	15	ug/kg	
11141-16-5	Aroclor 1232	ND	19	15	ug/kg	
53469-21-9	Aroclor 1242	ND	19	9.4	ug/kg	
12672-29-6	Aroclor 1248	ND	19	9.4	ug/kg	
11097-69-1	Aroclor 1254	ND	19	9.4	ug/kg	
11096-82-5	Aroclor 1260	ND	19	9.4	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		44-126%
2051-24-3	Decachlorobiphenyl	88%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20857.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.82	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	90	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		46-122%
2051-24-3	Decachlorobiphenyl	82%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022972.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.0	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.0	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.0	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.0	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	76%		44-126%
2051-24-3	Decachlorobiphenyl	86%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20860.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.44	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.51	ug/kg	
319-85-7	beta-BHC	ND VL	1.8	0.48	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.81	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.62	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.37	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.7	0.74	ug/kg	
72-55-9	4,4'-DDE	ND	3.7	0.74	ug/kg	
50-29-3	4,4'-DDT	ND	3.7	0.85	ug/kg	
72-20-8	Endrin	ND UJ	3.7	0.74	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.7	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND VL	3.7	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.7	0.74	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.7	0.55	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.51	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.37	ug/kg	
72-43-5	Methoxychlor	ND	3.7	0.74	ug/kg	
8001-35-2	Toxaphene	ND	92	46	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	64%		46-122%
2051-24-3	Decachlorobiphenyl	81%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: XX022973.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022973.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.2	ug/kg	
11104-28-2	Aroclor 1221	ND	18	15	ug/kg	
11141-16-5	Aroclor 1232	ND	18	15	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.2	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.2	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.2	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		44-126%
2051-24-3	Decachlorobiphenyl	82%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20861.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.43	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.50	ug/kg	
319-85-7	beta-BHC	ND UL	1.8	0.47	ug/kg	
319-86-8	delta-BHC	ND	1.8	0.79	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.61	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.36	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.40	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.40	ug/kg	
72-54-8	4,4'-DDD	ND	3.6	0.72	ug/kg	
72-55-9	4,4'-DDE	ND	3.6	0.72	ug/kg	
50-29-3	4,4'-DDT	ND	3.6	0.83	ug/kg	
72-20-8	Endrin	ND UJ	3.6	0.72	ug/kg	
1031-07-8	Endosulfan sulfate	ND	3.6	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND UL	3.6	1.1	ug/kg	
53494-70-5	Endrin ketone	ND	3.6	0.72	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.40	ug/kg	
33213-65-9	Endosulfan-II	ND	3.6	0.54	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.50	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.36	ug/kg	
72-43-5	Methoxychlor	ND	3.6	0.72	ug/kg	
8001-35-2	Toxaphene	ND	90	45	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		46-122%
2051-24-3	Decachlorobiphenyl	78%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022974.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	9.0	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	9.0	ug/kg	
12672-29-6	Aroclor 1248	ND	18	9.0	ug/kg	
11097-69-1	Aroclor 1254	ND	18	9.0	ug/kg	
11096-82-5	Aroclor 1260	ND	18	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	68%		44-126%
2051-24-3	Decachlorobiphenyl	78%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8081A SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK20862.D	1	08/13/07	FS	08/07/07	OP21766	GKK764
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	1.8	0.42	ug/kg	
319-84-6	alpha-BHC	ND	1.8	0.49	ug/kg	
319-85-7	beta-BHC	ND	1.8	0.46	ug/kg	UL
319-86-8	delta-BHC	ND	1.8	0.78	ug/kg	
58-89-9	gamma-BHC (Lindane)	ND	1.8	0.60	ug/kg	
5103-71-9	alpha-Chlordane	ND	1.8	0.35	ug/kg	
5103-74-2	gamma-Chlordane	ND	1.8	0.39	ug/kg	
60-57-1	Dieldrin	ND	1.8	0.39	ug/kg	
72-54-8	4,4'-DDD	ND	3.5	0.70	ug/kg	
72-55-9	4,4'-DDE	ND	3.5	0.70	ug/kg	
50-29-3	4,4'-DDT	ND	3.5	0.81	ug/kg	
72-20-8	Endrin	ND	3.5	0.70	ug/kg	UJ
1031-07-8	Endosulfan sulfate	ND	3.5	1.2	ug/kg	
7421-93-4	Endrin aldehyde	ND	3.5	1.1	ug/kg	UL
53494-70-5	Endrin ketone	ND	3.5	0.70	ug/kg	
959-98-8	Endosulfan-I	ND	1.8	0.39	ug/kg	
33213-65-9	Endosulfan-II	ND	3.5	0.53	ug/kg	
76-44-8	Heptachlor	ND	1.8	0.49	ug/kg	
1024-57-3	Heptachlor epoxide	ND	1.8	0.35	ug/kg	
72-43-5	Methoxychlor	ND	3.5	0.70	ug/kg	
8001-35-2	Toxaphene	ND	88	44	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	65%		46-122%
2051-24-3	Decachlorobiphenyl	84%		50-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	XX022975.D	1	08/09/07	AC	08/07/07	OP21765	GXX194
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	18	8.8	ug/kg	
11104-28-2	Aroclor 1221	ND	18	14	ug/kg	
11141-16-5	Aroclor 1232	ND	18	14	ug/kg	
53469-21-9	Aroclor 1242	ND	18	8.8	ug/kg	
12672-29-6	Aroclor 1248	ND	18	8.8	ug/kg	
11097-69-1	Aroclor 1254	ND	18	8.8	ug/kg	
11096-82-5	Aroclor 1260	ND	18	8.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		44-126%
2051-24-3	Decachlorobiphenyl	82%		39-157%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	Date Sampled:	07/26/07
Matrix:	AQ - Equipment Blank	Date Received:	07/27/07
Method:	SW846 8081A SW846 3510C	Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	TT08309.D	1	08/10/07	FS	07/30/07	OP21657	GTT281
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	10.0 ml
Run #2		

Pesticide TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
309-00-2	Aldrin	ND	0.051	0.010	ug/l	
319-84-6	alpha-BHC	ND	0.051	0.010	ug/l	
319-85-7	beta-BHC	ND	0.051	0.011	ug/l	
319-86-8	delta-BHC	ND	0.051	0.010	ug/l	
58-89-9	gamma-BHC (Lindane)	ND	0.051	0.010	ug/l	
5103-71-9	alpha-Chlordane	ND	0.051	0.010	ug/l	
5103-74-2	gamma-Chlordane	ND	0.051	0.010	ug/l	
60-57-1	Dieldrin	ND	0.051	0.010	ug/l	
72-54-8	4,4'-DDD	ND	0.10	0.020	ug/l	
72-55-9	4,4'-DDE	ND	0.10	0.020	ug/l	
50-29-3	4,4'-DDT	ND	0.10	0.020	ug/l	
72-20-8	Endrin	ND	0.10	0.020	ug/l	
1031-07-8	Endosulfan sulfate	ND	0.10	0.020	ug/l	
7421-93-4	Endrin aldehyde	ND	0.10	0.030	ug/l	
53494-70-5	Endrin ketone	ND	0.10	0.020	ug/l	
959-98-8	Endosulfan-I	ND	0.051	0.010	ug/l	
33213-65-9	Endosulfan-II	ND	0.10	0.010	ug/l	
76-44-8	Heptachlor	ND	0.051	0.010	ug/l	
1024-57-3	Heptachlor epoxide	ND	0.051	0.010	ug/l	
72-43-5	Methoxychlor	ND	0.10	0.020	ug/l	
8001-35-2	Toxaphene	ND	2.5	1.3	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	69%		42-127%
2051-24-3	Decachlorobiphenyl	72%		27-127%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: ST64322.D

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8082 SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	ST64322.D	1	08/01/07	JB	07/30/07	OP21658	GST1698
Run #2							

	Initial Volume	Final Volume
Run #1	990 ml	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.51	0.25	ug/l	
11104-28-2	Aroclor 1221	ND	0.51	0.40	ug/l	
11141-16-5	Aroclor 1232	ND	0.51	0.40	ug/l	
53469-21-9	Aroclor 1242	ND	0.51	0.25	ug/l	
12672-29-6	Aroclor 1248	ND	0.51	0.25	ug/l	
11097-69-1	Aroclor 1254	ND	0.51	0.25	ug/l	
11096-82-5	Aroclor 1260	ND	0.51	0.25	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	73%		38-127%
2051-24-3	Decachlorobiphenyl	77%		25-137%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Semi-Volatiles & Polynuclear Aromatic Hydrocarbons Accutest Laboratories, Inc., SDG F51353

DATE: February 21, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. Samples were analyzed for semivolatile organic compounds (SVOCs) using USEPA SW846 Methods 3550B/8270C for solid matrices. The polynuclear aromatic hydrocarbons (PAHs) were analyzed using selective ion monitoring (SIM) techniques. A total of thirty solid samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Surrogate Spikes
	X	Internal Standards
X		Laboratory Control Sample
X		Matrix Spike/Spike Duplicate
X		Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/21/08
Date

RFAAP VALIDATION REPORT
SEMIVOLATILES AND PAH REVIEW
SDG F51353

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For semivolatile (SVOC) and polynuclear aromatic hydrocarbons (PAH) compounds in solid matrices, the samples are cooled @4°C±2°C with a maximum holding time of 14 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: The soil samples were collected 07/26/07. The SVOCs were extracted on 08/06/07 and 08/07/07 and analyzed on 08/08/07, 08/10/07, and 08/13/07. The PAHs by SIM were extracted on 08/07/07 and analyzed on 08/11/07, 08/13/07 and 08/15/07. Sample collection dates may be found on the attached form 1s. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, decafluorotriphenylphosphine (DFTPP), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for compounds on the semivolatile target compound list (TCL). Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. The minimum relative response factor (RRF) criteria must be ≥0.05. The DoD QSM specifies that the initial calibration percent relative standard deviation (%RSD) must be ≤15% on the average for all compounds (<30% for CCCs). All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- Initial calibration for the SVOCs was performed on 07/05/07 on instrument MSBNA02. Target compounds 2,4-dinitrophenol (19.7%) and 4,6-dinitro-2-methylphenol (25.9%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9950) and 4,6-dinitro-2-methylphenol (r=0.9975) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

- Initial calibration for the SVOCs was performed on 07/13/07 on instrument MSBNA04. Target compounds 2,4-dinitrophenol (42.0%; grossly exceeding) and 4,6-dinitro-2-methylphenol (24.0%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9988) and 4,6-dinitro-2-methylphenol (r=0.9995) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB03B (F51353-21), and 43SB03C (F51353-22) were analyzed using this initial calibration.

- Initial calibration for the PAHs by SIM was performed on 08/07/07 on instrument MSBNA01, all target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) were analyzed using this initial calibration.

- Initial calibration for the PAHs by SIM was performed on 08/15/07 on instrument MSBNA01, all target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used was capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration standards containing both target and surrogates compounds are analyzed at the beginning of each 12-hour analysis period following the analysis of the instrument performance check and prior to the analysis of blanks and samples. The minimum relative response factors (RRF) for semivolatile target compounds and surrogates must be ≥0.05. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within ±20% for all target compounds. Grossly exceeding is defined where %D>40%. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For SVOC initial calibration verification performed on 07/05/07 @15:27 on instrument MSBNA02, 3-nitroaniline (26.0%) was outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 3-nitroaniline. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC initial calibration verification performed on 07/05/07 @15:55 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 08/01/07 @16:16 on instrument MSBNA02, 2,4-dinitrophenol (33.0%) and 4,6-dinitro-2-methylphenol (22.1%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for these compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/02/07 @13:24 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/03/07 @19:46 on instrument MSBNA02, benzoic acid (34.8%) was outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for these compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/08/07 @10:46 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/13/07 @00:13 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/13/07 @19:50 on instrument MSBNA02, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC initial calibration verification performed on 07/13/07 @13:48 on instrument MSBNA04, 4-chloroaniline (38.2%) and 3-nitroaniline (39.0%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No samples reported apply to this initial calibration verification. No qualifiers were applied.

- For SVOC initial calibration verification performed on 07/13/07 @14:19 on instrument MSBNA04, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For SVOC continuing calibration performed on 08/08/07 @09:42 on instrument MSBNA04, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), and 43SB03B (F51353-21) apply to this continuing calibration.

- For SVOC continuing calibration performed on 08/10/07 @10:24 on instrument MSBNA04, 2,4-dinitrophenol (20.8%) was outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 2,4-dinitrophenol. Sample 43SB03C (F51353-22) applies to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 08/07/07 @18:49 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For PAH by SIM initial calibration verification performed on 08/07/07 @19:17 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For PAH by SIM continuing calibration performed on 07/30/07 @11:52 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/10/07 @15:52 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), and APSB08B (F51353-27) apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/13/07 @10:12 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 08/15/07 @13:54 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this initial calibration verification.

- For PAH by SIM initial calibration verification performed on 08/15/07 @14:21 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this initial calibration verification.

- For PAH by SIM continuing calibration performed on 08/15/07 @16:26 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PAH by SIM continuing calibration performed on 08/17/07 @00:39 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of DFTPP. No contaminants should be detected in any of the associated blanks > the MDL. DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants phthalate esters). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants phthalate esters, or 5 times (5X) the maximum amount for other semivolatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 33) if needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/08/07	OP21763-MB	All SVOC target <½MRL	NA	NA	None
08/13/07	OP21763-MB	All SVOC target <½MRL	NA	NA	None
08/08/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/10/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/13/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/13/07	OP21773-MB	All SVOC target <½MRL	NA	NA	None
08/10/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/13/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/15/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/17/07	OP21772-MB	All PAH SIM target <½MRL	NA	NA	None
08/13/07	OP21767-MB	All PAH SIM target <½MRL	NA	NA	None
08/15/07	OP21767-MB	All PAH SIM target <½MRL	NA	NA	None
08/17/07	OP21767-MB	All PAH SIM target <½MRL	NA	NA	None
08/02/07	072607R	All SVOC target <½MRL	NA	NA	None
08/02/07	072607R	All PAH SIM target <½MRL	NA	NA	None

NA = Not applicable.
MRL = Method reporting limit.

VI-Surrogate Spikes
Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-2 and Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria:
2-Fluorophenol (40-102%) – (DoD QSM = 35-105%)
Phenol – d5 (41-100%) – (DoD QSM = 40-100%)
2,4,6-Tribromophenol (42-108%) – (DoD QSM = 35-125%)
Nitrobenzene-d5 (40-105%) – (DoD QSM = 35-100%)
2-Fluorobiphenyl (43-107%) – (DoD QSM = 45-105%)
p-Terphenyl – d14 (45-119%) – (DoD QSM = 30-125%)

- All criteria were met. No qualifiers were applied.

VII-Internal Standards
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The retention time of the internal standards in samples and blanks must not vary by more than ±30 seconds from the retention time of the associated calibration standard.

- All criteria were met. No qualifiers were applied.

VIII-Laboratory Control Sample
Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD LCS solid recovery limits are specified in Table D-2 and Table D-7 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP21763-BS was used as the solid LCS for the SVOC analysis on 08/06/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21773-BS was used as the solid LCS for the SVOC analysis on 08/08/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21773-BS was used as the solid LCS for the SVOC analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21773-BS was used as the solid LCS for the SVOC analysis on 08/13/07. 2,4-Dinitrophenol (35%) and 4,6-dinitro-2-methylphenol (52%) were below laboratory criteria. The associated samples were non-detect for these compounds and was qualified bias low "UL" based upon the low recoveries. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21772-BS was used as the solid LCS for the PAH SIM analysis on 08/10/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21772-BS was used as the solid LCS for the PAH SIM analysis on 08/13/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

- Sample OP21767-BS was used as the solid LCS for the PAH SIM analysis on 08/13/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

- Sample OP21767-BS was used as the solid LCS for the PAH SIM analysis on 08/15/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this LCS.

IX-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD solid MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-7 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SB03B (F51353-21) was used for the solid MS/MSD for SVOC analysis on 08/08/07. 4-Chloroaniline (RPD=35%) was within DoD QSM and outside laboratory criteria. All other target compounds were within criteria. The associated solid LCS was within criteria and all solid samples were non-detect for this compound. No qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used for the solid MS/MSD for SVOC analysis on 07/30/07. 2,4-Dimethylphenol (36%, 30%), 4,6-dinitro-2-methylphenol (52%, 49%), 1,2-dichlorobenzene (44%), 1,3-dichlorobenzene (39%), 1,4-dichlorobenzene (40%), and hexachloroethane (39%) were below laboratory and/or DoD QSM accuracy criteria. All other target compounds were within criteria. The associated solid LCS was within criteria and all solid samples were non-detect for these compounds. 2,4-Dimethylphenol, 4,6-dinitro-2-methylphenol, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and hexachloroethane were non-detect for the spiked sample and qualified "UL" based upon the low recoveries. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used for the solid MS/MSD for PAH SIM analysis on 08/15/07. All criteria were met. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), APSB06B (F51353-10), TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), and 43SB03B (F51353-21) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used for the aqueous MS/MSD for PAH SIM analysis on 08/13/07. All criteria were met. No qualifiers were applied. Samples 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), TMSB07B (F51353-25), APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for TCL SVOCs and PAHs. All detected compounds found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. Bis(2-ethylhexyl)phthalate, n-nitrosodiphenylamine, chrysene, benzo(a)anthracene, naphthalene, and 2-methylnaphthalene were detected in the original sample and bis(2-ethylhexyl)phthalate, 2,4-dinitrotoluene, 4-chloro-3-methyl phenol, 2,6-dinitrotoluene, di-n-butyl phthalate, n-nitrosodiphenylamine, benzo(b)fluoranthene, chrysene, benzo(a)pyrene, benzo(a)anthracene, phenanthrene, 1-methylnaphthalene, naphthalene, and 2-methylnaphthalene were detected in the duplicate pair. All other target compounds were non-detect. Compounds bis(2-ethylhexyl)phthalate and n-nitrosodiphenylamine were qualified estimated "J" for detects for the duplicate pair based upon the high %RPDs. Compounds 2,4-dinitrotoluene and di-n-butyl phthalate were qualified estimated "J" for detects and "UJ" for non-detects based upon detections found above the MRL in one sample and non-detect in the second duplicate sample. For all other compounds, all criteria were met.

Table 3 Field Precision Hits Analysis Summary for TCL SVOCs and PAHs for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
bis(2-ethylhexyl)phthalate	366J	781	72.4
2,4-dinitrotoluene	<200	720	NA
4-chloro-3-methyl phenol	<200	52.1J	NA
2,6-dinitrotoluene	<200	62.0J	NA
di-n-butyl phthalate	<400	3000	NA
n-nitrosodiphenylamine	442	922	70.4
benzo(b)fluoranthene	<64	24.5J	NA
chrysene	20.0J	27.6J	31.9
benzo(a)pyrene	<64	19.1J	NA
benzo(a)anthracene	16.4J	25.1J	41.9
phenanthrene	<320	52.6J	NA
1-methylnaphthalene	<320	46.3J	NA
naphthalene	77.9J	119J	41.8
2-methylnaphthalene	52.1J	82.6J	45.3

J = Estimated value <MRL and >MDL.
NA = Not applicable.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for TCL SVOCs and PAHs. All TCL SVOC and PAH target compounds were non-detect. All criteria were met. No qualifiers were applied.

XI-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. Percent difference (%D) between the calculated and reported values must be ≤10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: 43SB02B (F51353-17), bis(2-ethylhexyl)phthalate

Conc. µg/kg = (Ax * Is * Vt * DF) / (Ais * RRF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Is = Amount of internal standard injected (ng).
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 uL.
Ais = Area of characteristic ion for the internal standard.
RRF = Average relative response factor for compound being measured (from ICAL)
Vi = Volume of extract injected (uL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. µg/kg = (74976 * 40 * 1000 * 1) / (323176 * 1.019 * 1 * 30.0 * 0.8290) = 366 µg/kg
Reported Value = 366 µg/kg
% Difference = 0.0%
Values were within 10% difference

Sample: 43SB02B (F51353-17), chrysene

Conc. µg/kg = (Ax * Is * Vt * DF) / (Ais * RRF * Vi * Ws * D)

where: Conc. = Sample concentration in µg/kg
Ax = Area of characteristic ion for compound being measured.
Is = Amount of internal standard injected (ng).
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 uL.
Ais = Area of characteristic ion for the internal standard.
RRF = Average relative response factor for compound being measured (from ICAL)
Vi = Volume of extract injected (uL).
W(s) = Weight of sample extracted or diluted in grams.
D = Percent dry weight (100 - % moisture in sample)/100
DF = Dilution factor

Conc. µg/kg = (5197 * 4.0 * 1000 * 4) / (107081 * 1.564 * 1 * 30.0 * 0.8290) = 20.0 µg/kg
Reported Value = 20.0 µg/kg
% Difference = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003836.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	80%		40-102%
4165-62-2	Phenol-d5	87%		41-100%
118-79-6	2,4,6-Tribromophenol	87%		42-108%
4165-60-0	Nitrobenzene-d5	75%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	92%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036214.D

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036214.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	58	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	58	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	58	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	58	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	58	14	ug/kg	
218-01-9	Chrysene	ND	58	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003837.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	990	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	990	400	ug/kg	
87-86-5	Pentachlorophenol	ND	990	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	99	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	79	ug/kg	
99-09-2	3-Nitroaniline	ND	400	79	ug/kg	
100-01-6	4-Nitroaniline	ND	400	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%		40-102%
4165-62-2	Phenol-d5	77%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	67%		40-105%
321-60-8	2-Fluorobiphenyl	70%		43-107%
1718-51-0	Terphenyl-d14	86%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036215.D

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036215.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	79	ug/kg	
208-96-8	Acenaphthylene	ND	320	79	ug/kg	
120-12-7	Anthracene	ND	320	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	320	55	ug/kg	
86-73-7	Fluorene	ND	320	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	47	ug/kg	
91-20-3	Naphthalene	ND	320	47	ug/kg	
85-01-8	Phenanthrene	ND	320	47	ug/kg	
129-00-0	Pyrene	ND	320	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003839.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	970	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	970	390	ug/kg	
87-86-5	Pentachlorophenol	ND	970	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	97	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	78	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	97	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	97	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	97	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	78	ug/kg	
99-09-2	3-Nitroaniline	ND	390	78	ug/kg	
100-01-6	4-Nitroaniline	ND	390	78	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	90%		40-102%
4165-62-2	Phenol-d5	98%		41-100%
118-79-6	2,4,6-Tribromophenol	89%		42-108%
4165-60-0	Nitrobenzene-d5	80%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	100%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036216.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	78	ug/kg	
208-96-8	Acenaphthylene	ND	310	78	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	62	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	62	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	62	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	62	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	16	ug/kg	
218-01-9	Chrysene	ND	62	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	62	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003840.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	77%		40-102%
4165-62-2	Phenol-d5	82%		41-100%
118-79-6	2,4,6-Tribromophenol	84%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	76%		43-107%
1718-51-0	Terphenyl-d14	91%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036217.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	57	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	57	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	57	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	57	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	57	14	ug/kg	
218-01-9	Chrysene	ND	57	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	57	14	ug/kg	
206-44-0	Fluoranthene	ND	290	50	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	57	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003841.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	86%		40-102%
4165-62-2	Phenol-d5	91%		41-100%
118-79-6	2,4,6-Tribromophenol	87%		42-108%
4165-60-0	Nitrobenzene-d5	80%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	91%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036218.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	79	ug/kg	
208-96-8	Acenaphthylene	ND	310	79	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003842.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	78	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	78	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	78	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	78	ug/kg	
99-09-2	3-Nitroaniline	ND	390	78	ug/kg	
100-01-6	4-Nitroaniline	ND	390	78	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	76%		40-102%
4165-62-2	Phenol-d5	81%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	69%		40-105%
321-60-8	2-Fluorobiphenyl	75%		43-107%
1718-51-0	Terphenyl-d14	84%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036219.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	78	ug/kg	
208-96-8	Acenaphthylene	ND	310	78	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003843.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	980	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	980	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	980	390	ug/kg	
87-86-5	Pentachlorophenol	ND	980	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	98	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	98	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	98	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	98	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	83%		40-102%
4165-62-2	Phenol-d5	89%		41-100%
118-79-6	2,4,6-Tribromophenol	92%		42-108%
4165-60-0	Nitrobenzene-d5	77%		40-105%
321-60-8	2-Fluorobiphenyl	83%		43-107%
1718-51-0	Terphenyl-d14	96%		45-119%

ND = Not detected MDL - Method Detection Limit
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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036220.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	79	ug/kg	
208-96-8	Acenaphthylene	ND	310	79	ug/kg	
120-12-7	Anthracene	ND	310	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	310	55	ug/kg	
86-73-7	Fluorene	ND	310	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	47	ug/kg	
91-20-3	Naphthalene	ND	310	47	ug/kg	
85-01-8	Phenanthrene	ND	310	47	ug/kg	
129-00-0	Pyrene	ND	310	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003844.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	94	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	75	ug/kg	
99-09-2	3-Nitroaniline	ND	380	75	ug/kg	
100-01-6	4-Nitroaniline	ND	380	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	85%		40-102%
4165-62-2	Phenol-d5	91%		41-100%
118-79-6	2,4,6-Tribromophenol	85%		42-108%
4165-60-0	Nitrobenzene-d5	79%		40-105%
321-60-8	2-Fluorobiphenyl	85%		43-107%
1718-51-0	Terphenyl-d14	90%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036221.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003845.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	82%		40-102%
4165-62-2	Phenol-d5	88%		41-100%
118-79-6	2,4,6-Tribromophenol	96%		42-108%
4165-60-0	Nitrobenzene-d5	76%		40-105%
321-60-8	2-Fluorobiphenyl	80%		43-107%
1718-51-0	Terphenyl-d14	106%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036222.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003846.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	75	ug/kg	
99-09-2	3-Nitroaniline	ND	370	75	ug/kg	
100-01-6	4-Nitroaniline	ND	370	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	66%		40-102%
4165-62-2	Phenol-d5	73%		41-100%
118-79-6	2,4,6-Tribromophenol	73%		42-108%
4165-60-0	Nitrobenzene-d5	60%		40-105%
321-60-8	2-Fluorobiphenyl	68%		43-107%
1718-51-0	Terphenyl-d14	79%		45-119%

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036223.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003847.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	74	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	77%		40-102%
4165-62-2	Phenol-d5	82%		41-100%
118-79-6	2,4,6-Tribromophenol	80%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	74%		43-107%
1718-51-0	Terphenyl-d14	82%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036224.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003848.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	960	390	ug/kg	
87-86-5	Pentachlorophenol	ND	960	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	96	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	77	ug/kg	
99-09-2	3-Nitroaniline	ND	390	77	ug/kg	
100-01-6	4-Nitroaniline	ND	390	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		40-102%
4165-62-2	Phenol-d5	84%		41-100%
118-79-6	2,4,6-Tribromophenol	87%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	77%		43-107%
1718-51-0	Terphenyl-d14	93%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036225.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	62	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	62	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	62	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	62	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	15	ug/kg	
218-01-9	Chrysene	ND	62	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	62	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003852.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	84%		40-102%
4165-62-2	Phenol-d5	89%		41-100%
118-79-6	2,4,6-Tribromophenol	88%		42-108%
4165-60-0	Nitrobenzene-d5	78%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	92%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036226.D	4	08/13/07	RB	08/07/07	OP21767	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037767.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	890	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	890	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	360	71	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	890	360	ug/kg	
87-86-5	Pentachlorophenol	ND	890	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	89	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	71	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	71	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	89	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	89	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	89	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	71	ug/kg	
99-09-2	3-Nitroaniline	ND	360	71	ug/kg	
100-01-6	4-Nitroaniline	ND	360	71	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	57%		40-102%
4165-62-2	Phenol-d5	66%		41-100%
118-79-6	2,4,6-Tribromophenol	68%		42-108%
4165-60-0	Nitrobenzene-d5	55%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	59%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036241.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.8 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	71	ug/kg	
208-96-8	Acenaphthylene	ND	290	71	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	23.2 J	57	14	ug/kg	J
50-32-8	Benzo(a)pyrene	31.4 J	57	14	ug/kg	J
205-99-2	Benzo(b)fluoranthene	29.9 J	57	14	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	20.6 J	57	14	ug/kg	J
207-08-9	Benzo(k)fluoranthene	21.9 J	57	14	ug/kg	J
218-01-9	Chrysene	29.7 J	57	14	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	57	14	ug/kg	
206-44-0	Fluoranthene	ND	290	50	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	18.4 J	57	14	ug/kg	J
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037768.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	74	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%		40-102%
4165-62-2	Phenol-d5	79%		41-100%
118-79-6	2,4,6-Tribromophenol	91%		42-108%
4165-60-0	Nitrobenzene-d5	71%		40-105%
321-60-8	2-Fluorobiphenyl	72%		43-107%
1718-51-0	Terphenyl-d14	84%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036242.D

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036242.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	44	ug/kg	
91-20-3	Naphthalene	ND	300	44	ug/kg	
85-01-8	Phenanthrene	ND	300	44	ug/kg	
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037769.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	1000	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	1000	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	80	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	1000	400	ug/kg	
87-86-5	Pentachlorophenol	ND	1000	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	100	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	80	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND UJ	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	80	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND UJ	400	100	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	100	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	100	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	366 J	400	200	ug/kg	J
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	80	ug/kg	
99-09-2	3-Nitroaniline	ND	400	80	ug/kg	
100-01-6	4-Nitroaniline	ND	400	80	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	442 J	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%		40-102%
4165-62-2	Phenol-d5	80%		41-100%
118-79-6	2,4,6-Tribromophenol	89%		42-108%
4165-60-0	Nitrobenzene-d5	72%		40-105%
321-60-8	2-Fluorobiphenyl	78%		43-107%
1718-51-0	Terphenyl-d14	82%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036243.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	80	ug/kg	
208-96-8	Acenaphthylene	ND	320	80	ug/kg	
120-12-7	Anthracene	ND	320	48	ug/kg	
56-55-3	Benzo(a)anthracene	16.4 J	64	16	ug/kg	J
50-32-8	Benzo(a)pyrene	ND	64	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	64	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	64	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	64	16	ug/kg	
218-01-9	Chrysene	20.0 J	64	16	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	64	16	ug/kg	
206-44-0	Fluoranthene	ND	320	56	ug/kg	
86-73-7	Fluorene	ND	320	48	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	64	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	48	ug/kg	
91-57-6	2-Methylnaphthalene	52.1 J	320	48	ug/kg	J
91-20-3	Naphthalene	77.9 J	320	48	ug/kg	J
85-01-8	Phenanthrene	ND	320	48	ug/kg	
129-00-0	Pyrene	ND	320	56	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037770.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	960	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	52.1 J	190	38	ug/kg	J
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	960	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	380	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	960	380	ug/kg	
87-86-5	Pentachlorophenol	ND	960	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	96	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	720 J	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	62.0 J	190	38	ug/kg	J
91-94-1	3,3'-Dichlorobenzidine	ND	380	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	3000 J	380	96	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	96	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	96	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	781 J	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	77	ug/kg	
99-09-2	3-Nitroaniline	ND	380	77	ug/kg	
100-01-6	4-Nitroaniline	ND	380	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	922 J	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	85%		40-102%
4165-62-2	Phenol-d5	94%		41-100%
118-79-6	2,4,6-Tribromophenol	94%		42-108%
4165-60-0	Nitrobenzene-d5	86%		40-105%
321-60-8	2-Fluorobiphenyl	88%		43-107%
1718-51-0	Terphenyl-d14	89%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036244.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	25.1 J	62	15	ug/kg	J
50-32-8	Benzo(a)pyrene	19.1 J	62	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	24.5 J	62	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	62	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	15	ug/kg	
218-01-9	Chrysene	27.6 J	62	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	62	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	15	ug/kg	
90-12-0	1-Methylnaphthalene	46.3 J	310	46	ug/kg	J
91-57-6	2-Methylnaphthalene	82.6 J	310	46	ug/kg	J
91-20-3	Naphthalene	119 J	310	46	ug/kg	J
85-01-8	Phenanthrene	52.6 J	310	46	ug/kg	J
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037771.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	400	ug/kg	
95-57-8	2-Chlorophenol	ND	200	40	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	40	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	40	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	40	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	990	400	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	400	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	40	ug/kg	
	3&4-Methylphenol	ND	200	40	ug/kg	
88-75-5	2-Nitrophenol	ND	200	40	ug/kg	
100-02-7	4-Nitrophenol	ND	990	400	ug/kg	
87-86-5	Pentachlorophenol	ND	990	400	ug/kg	
108-95-2	Phenol	ND	200	40	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	40	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	40	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	40	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	400	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	40	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	40	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	40	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	40	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	40	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	40	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	40	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	40	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	40	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	40	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	400	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	40	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	400	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	400	99	ug/kg	
84-66-2	Diethyl phthalate	ND	400	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	400	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	400	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	40	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	40	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	40	ug/kg	
67-72-1	Hexachloroethane	ND	200	40	ug/kg	
78-59-1	Isophorone	ND	200	40	ug/kg	
88-74-4	2-Nitroaniline	ND	400	79	ug/kg	
99-09-2	3-Nitroaniline	ND	400	79	ug/kg	
100-01-6	4-Nitroaniline	ND	400	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	40	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	40	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	40	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	40	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	79%		40-102%
4165-62-2	Phenol-d5	87%		41-100%
118-79-6	2,4,6-Tribromophenol	91%		42-108%
4165-60-0	Nitrobenzene-d5	81%		40-105%
321-60-8	2-Fluorobiphenyl	79%		43-107%
1718-51-0	Terphenyl-d14	84%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036245.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	79	ug/kg	
208-96-8	Acenaphthylene	ND	320	79	ug/kg	
120-12-7	Anthracene	ND	320	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	320	55	ug/kg	
86-73-7	Fluorene	ND	320	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	47	ug/kg	
91-20-3	Naphthalene	ND	320	47	ug/kg	
85-01-8	Phenanthrene	ND	320	47	ug/kg	
129-00-0	Pyrene	ND	320	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037772.D	1	08/13/07	RB	08/06/07	OP21763	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	970	390	ug/kg	
95-57-8	2-Chlorophenol	ND	190	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	970	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	390	77	ug/kg	
95-48-7	2-Methylphenol	ND	190	39	ug/kg	
	3&4-Methylphenol	ND	190	39	ug/kg	
88-75-5	2-Nitrophenol	ND	190	39	ug/kg	
100-02-7	4-Nitrophenol	ND	970	390	ug/kg	
87-86-5	Pentachlorophenol	ND	970	390	ug/kg	
108-95-2	Phenol	ND	190	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	97	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	39	ug/kg	
106-47-8	4-Chloroaniline	ND	190	77	ug/kg	
86-74-8	Carbazole	ND	190	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	77	ug/kg	
132-64-9	Dibenzofuran	ND	190	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	97	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	97	ug/kg	
84-66-2	Diethyl phthalate	ND	390	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	97	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	39	ug/kg	
67-72-1	Hexachloroethane	ND	190	39	ug/kg	
78-59-1	Isophorone	ND	190	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	77	ug/kg	
99-09-2	3-Nitroaniline	ND	390	77	ug/kg	
100-01-6	4-Nitroaniline	ND	390	77	ug/kg	
98-95-3	Nitrobenzene	ND	190	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	74%		40-102%
4165-62-2	Phenol-d5	85%		41-100%
118-79-6	2,4,6-Tribromophenol	91%		42-108%
4165-60-0	Nitrobenzene-d5	78%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	81%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036246.D

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036246.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	310	77	ug/kg	
208-96-8	Acenaphthylene	ND	310	77	ug/kg	
120-12-7	Anthracene	ND	310	46	ug/kg	
56-55-3	Benzo(a)anthracene	17.9 J	62	15	ug/kg	J
50-32-8	Benzo(a)pyrene	18.9 J	62	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	17.1 J	62	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	62	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	62	15	ug/kg	
218-01-9	Chrysene	16.9 J	62	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	62	15	ug/kg	
206-44-0	Fluoranthene	ND	310	54	ug/kg	
86-73-7	Fluorene	ND	310	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	62	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	310	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	310	46	ug/kg	
91-20-3	Naphthalene	ND	310	46	ug/kg	
85-01-8	Phenanthrene	ND	310	46	ug/kg	
129-00-0	Pyrene	ND	310	54	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003849.D	1	08/08/07	NJ	08/06/07	OP21763	SU186
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	930	370	ug/kg	
95-57-8	2-Chlorophenol	ND	190	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	930	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	190	37	ug/kg	
	3&4-Methylphenol	ND	190	37	ug/kg	
88-75-5	2-Nitrophenol	ND	190	37	ug/kg	
100-02-7	4-Nitrophenol	ND	930	370	ug/kg	
87-86-5	Pentachlorophenol	ND	930	370	ug/kg	
108-95-2	Phenol	ND	190	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	93	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	37	ug/kg	
106-47-8	4-Chloroaniline	ND	190	74	ug/kg	
86-74-8	Carbazole	ND	190	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	190	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	512	370	93	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	93	ug/kg	
84-66-2	Diethyl phthalate	ND	370	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	93	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	418	370	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	37	ug/kg	
67-72-1	Hexachloroethane	ND	190	37	ug/kg	
78-59-1	Isophorone	ND	190	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	190	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	856	190	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	84%		40-102%
4165-62-2	Phenol-d5	88%		41-100%
118-79-6	2,4,6-Tribromophenol	86%		42-108%
4165-60-0	Nitrobenzene-d5	78%		40-105%
321-60-8	2-Fluorobiphenyl	82%		43-107%
1718-51-0	Terphenyl-d14	86%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036247.D

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036247.D	4	08/15/07	RB	08/07/07	OP21767	SW1874
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	74	ug/kg	
208-96-8	Acenaphthylene	ND	300	74	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	15.2 J	60	15	ug/kg	J
205-99-2	Benzo(b)fluoranthene	25.7 J	60	15	ug/kg	J
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	20.6 J	60	15	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	52	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	64.5 J	300	45	ug/kg	J
129-00-0	Pyrene	ND	300	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U003879.D	1	08/10/07	RB	08/07/07	OP21773	SU187
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	910	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	910	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	370	73	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	910	370	ug/kg	
87-86-5	Pentachlorophenol	ND	910	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	91	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	73	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	73	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	91	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	91	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	91	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	73	ug/kg	
99-09-2	3-Nitroaniline	ND	370	73	ug/kg	
100-01-6	4-Nitroaniline	ND	370	73	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	77%		42-108%
4165-60-0	Nitrobenzene-d5	58%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	77%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: W036192.D

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036192.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	73	ug/kg	
208-96-8	Acenaphthylene	ND	290	73	ug/kg	
120-12-7	Anthracene	ND	290	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg	
91-20-3	Naphthalene	ND	290	44	ug/kg	
85-01-8	Phenanthrene	ND	290	44	ug/kg	
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037775.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	75	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	75	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	75	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	94	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	75	ug/kg	
99-09-2	3-Nitroaniline	ND	380	75	ug/kg	
100-01-6	4-Nitroaniline	ND	380	75	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	72%		40-102%
4165-62-2	Phenol-d5	78%		41-100%
118-79-6	2,4,6-Tribromophenol	78%		42-108%
4165-60-0	Nitrobenzene-d5	73%		40-105%
321-60-8	2-Fluorobiphenyl	72%		43-107%
1718-51-0	Terphenyl-d14	70%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036193.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	75	ug/kg	
208-96-8	Acenaphthylene	ND	300	75	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: L037776.D

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037776.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	68%		40-102%
4165-62-2	Phenol-d5	75%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	69%		40-105%
321-60-8	2-Fluorobiphenyl	66%		43-107%
1718-51-0	Terphenyl-d14	70%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036194.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.5 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	46	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	46	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	46	ug/kg	
91-20-3	Naphthalene	ND	300	46	ug/kg	
85-01-8	Phenanthrene	ND	300	46	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: L037777.D

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037777.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	940	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	940	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	940	380	ug/kg	
87-86-5	Pentachlorophenol	ND	940	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	94	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	94	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	94	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	94	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		40-102%
4165-62-2	Phenol-d5	70%		41-100%
118-79-6	2,4,6-Tribromophenol	69%		42-108%
4165-60-0	Nitrobenzene-d5	64%		40-105%
321-60-8	2-Fluorobiphenyl	64%		43-107%
1718-51-0	Terphenyl-d14	63%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration rang

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036195.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.9 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	60	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	60	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	60	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	60	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	60	15	ug/kg	
218-01-9	Chrysene	ND	60	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	60	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	60	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037778.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	990	390	ug/kg	
95-57-8	2-Chlorophenol	ND	200	39	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	39	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	39	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	39	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	990	390	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	390	79	ug/kg	
95-48-7	2-Methylphenol	ND	200	39	ug/kg	
	3&4-Methylphenol	ND	200	39	ug/kg	
88-75-5	2-Nitrophenol	ND	200	39	ug/kg	
100-02-7	4-Nitrophenol	ND	990	390	ug/kg	
87-86-5	Pentachlorophenol	ND	990	390	ug/kg	
108-95-2	Phenol	ND	200	39	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	39	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	39	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	200	39	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	390	99	ug/kg	
100-51-6	Benzyl Alcohol	ND	200	39	ug/kg	
91-58-7	2-Chloronaphthalene	ND	200	39	ug/kg	
106-47-8	4-Chloroaniline	ND	200	79	ug/kg	
86-74-8	Carbazole	ND	200	39	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	200	39	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	200	39	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	200	39	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	200	39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	200	39	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	200	39	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	200	39	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	200	39	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	200	39	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	390	79	ug/kg	
132-64-9	Dibenzofuran	ND	200	39	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	390	99	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	390	99	ug/kg	
84-66-2	Diethyl phthalate	ND	390	200	ug/kg	
131-11-3	Dimethyl phthalate	ND	390	99	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	390	200	ug/kg	
118-74-1	Hexachlorobenzene	ND	200	39	ug/kg	
87-68-3	Hexachlorobutadiene	ND	200	39	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	200	39	ug/kg	
67-72-1	Hexachloroethane	ND	200	39	ug/kg	
78-59-1	Isophorone	ND	200	39	ug/kg	
88-74-4	2-Nitroaniline	ND	390	79	ug/kg	
99-09-2	3-Nitroaniline	ND	390	79	ug/kg	
100-01-6	4-Nitroaniline	ND	390	79	ug/kg	
98-95-3	Nitrobenzene	ND	200	39	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	200	39	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	39	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	200	39	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	64%		40-102%
4165-62-2	Phenol-d5	71%		41-100%
118-79-6	2,4,6-Tribromophenol	76%		42-108%
4165-60-0	Nitrobenzene-d5	66%		40-105%
321-60-8	2-Fluorobiphenyl	65%		43-107%
1718-51-0	Terphenyl-d14	67%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036196.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	320	79	ug/kg	
208-96-8	Acenaphthylene	ND	320	79	ug/kg	
120-12-7	Anthracene	ND	320	47	ug/kg	
56-55-3	Benzo(a)anthracene	ND	63	16	ug/kg	
50-32-8	Benzo(a)pyrene	ND	63	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	63	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	63	16	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	63	16	ug/kg	
218-01-9	Chrysene	ND	63	16	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	63	16	ug/kg	
206-44-0	Fluoranthene	ND	320	55	ug/kg	
86-73-7	Fluorene	ND	320	47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	63	16	ug/kg	
90-12-0	1-Methylnaphthalene	ND	320	47	ug/kg	
91-57-6	2-Methylnaphthalene	ND	320	47	ug/kg	
91-20-3	Naphthalene	ND	320	47	ug/kg	
85-01-8	Phenanthrene	ND	320	47	ug/kg	
129-00-0	Pyrene	ND	320	55	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037779.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	950	380	ug/kg	
95-57-8	2-Chlorophenol	ND	190	38	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	38	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	38	ug/kg	
105-67-9	2,4-Dimethylphenol	ND VL	190	38	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	950	380	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	380	76	ug/kg	
95-48-7	2-Methylphenol	ND	190	38	ug/kg	
	3&4-Methylphenol	ND	190	38	ug/kg	
88-75-5	2-Nitrophenol	ND	190	38	ug/kg	
100-02-7	4-Nitrophenol	ND	950	380	ug/kg	
87-86-5	Pentachlorophenol	ND	950	380	ug/kg	
108-95-2	Phenol	ND	190	38	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	38	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	38	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	190	38	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	380	95	ug/kg	
100-51-6	Benzyl Alcohol	ND	190	38	ug/kg	
91-58-7	2-Chloronaphthalene	ND	190	38	ug/kg	
106-47-8	4-Chloroaniline	ND	190	76	ug/kg	
86-74-8	Carbazole	ND	190	38	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	190	38	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	190	38	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	190	38	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	190	38	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND VL	190	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND VL	190	38	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND VL	190	38	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	190	38	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	190	38	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	380	76	ug/kg	
132-64-9	Dibenzofuran	ND	190	38	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	380	95	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	380	95	ug/kg	
84-66-2	Diethyl phthalate	ND	380	190	ug/kg	
131-11-3	Dimethyl phthalate	ND	380	95	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	380	190	ug/kg	
118-74-1	Hexachlorobenzene	ND	190	38	ug/kg	
87-68-3	Hexachlorobutadiene	ND	190	38	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	190	38	ug/kg	
67-72-1	Hexachloroethane	ND VL	190	38	ug/kg	
78-59-1	Isophorone	ND	190	38	ug/kg	
88-74-4	2-Nitroaniline	ND	380	76	ug/kg	
99-09-2	3-Nitroaniline	ND	380	76	ug/kg	
100-01-6	4-Nitroaniline	ND	380	76	ug/kg	
98-95-3	Nitrobenzene	ND	190	38	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	190	38	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	38	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	190	38	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	69%		41-100%
118-79-6	2,4,6-Tribromophenol	72%		42-108%
4165-60-0	Nitrobenzene-d5	62%		40-105%
321-60-8	2-Fluorobiphenyl	63%		43-107%
1718-51-0	Terphenyl-d14	64%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036197.D	4	08/11/07	RB	08/07/07	OP21772	SW1872
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	300	76	ug/kg	
208-96-8	Acenaphthylene	ND	300	76	ug/kg	
120-12-7	Anthracene	ND	300	45	ug/kg	
56-55-3	Benzo(a)anthracene	ND	61	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	61	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	61	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	61	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	61	15	ug/kg	
218-01-9	Chrysene	ND	61	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	61	15	ug/kg	
206-44-0	Fluoranthene	ND	300	53	ug/kg	
86-73-7	Fluorene	ND	300	45	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	61	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	300	45	ug/kg	
91-57-6	2-Methylnaphthalene	ND	300	45	ug/kg	
91-20-3	Naphthalene	ND	300	45	ug/kg	
85-01-8	Phenanthrene	ND	300	45	ug/kg	
129-00-0	Pyrene	ND	300	53	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8270C SW846 3550B	Percent Solids:	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037782.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	880	350	ug/kg	
95-57-8	2-Chlorophenol	ND	180	35	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	35	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	35	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	35	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	880	350	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	350	70	ug/kg	
95-48-7	2-Methylphenol	ND	180	35	ug/kg	
	3&4-Methylphenol	ND	180	35	ug/kg	
88-75-5	2-Nitrophenol	ND	180	35	ug/kg	
100-02-7	4-Nitrophenol	ND	880	350	ug/kg	
87-86-5	Pentachlorophenol	ND	880	350	ug/kg	
108-95-2	Phenol	ND	180	35	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	35	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	35	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	35	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	350	88	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	35	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	35	ug/kg	
106-47-8	4-Chloroaniline	ND	180	70	ug/kg	
86-74-8	Carbazole	ND	180	35	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	35	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	35	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	35	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	35	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	35	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	35	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	35	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	35	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	35	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	350	70	ug/kg	
132-64-9	Dibenzofuran	ND	180	35	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	350	88	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	350	88	ug/kg	
84-66-2	Diethyl phthalate	ND	350	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	350	88	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	350	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	35	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	35	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	35	ug/kg	
67-72-1	Hexachloroethane	ND	180	35	ug/kg	
78-59-1	Isophorone	ND	180	35	ug/kg	
88-74-4	2-Nitroaniline	ND	350	70	ug/kg	
99-09-2	3-Nitroaniline	ND	350	70	ug/kg	
100-01-6	4-Nitroaniline	ND	350	70	ug/kg	
98-95-3	Nitrobenzene	ND	180	35	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	35	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	35	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	35	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	63%		40-102%
4165-62-2	Phenol-d5	70%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	63%		40-105%
321-60-8	2-Fluorobiphenyl	64%		43-107%
1718-51-0	Terphenyl-d14	71%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036208.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	31.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	280	70	ug/kg	
208-96-8	Acenaphthylene	ND	280	70	ug/kg	
120-12-7	Anthracene	ND	280	42	ug/kg	
56-55-3	Benzo(a)anthracene	ND	56	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	56	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	56	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	56	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	56	14	ug/kg	
218-01-9	Chrysene	ND	56	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	56	14	ug/kg	
206-44-0	Fluoranthene	ND	280	49	ug/kg	
86-73-7	Fluorene	ND	280	42	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	56	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	280	42	ug/kg	
91-57-6	2-Methylnaphthalene	ND	280	42	ug/kg	
91-20-3	Naphthalene	ND	280	42	ug/kg	
85-01-8	Phenanthrene	ND	280	42	ug/kg	
129-00-0	Pyrene	ND	280	49	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037783.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	70%		40-102%
4165-62-2	Phenol-d5	75%		41-100%
118-79-6	2,4,6-Tribromophenol	81%		42-108%
4165-60-0	Nitrobenzene-d5	67%		40-105%
321-60-8	2-Fluorobiphenyl	69%		43-107%
1718-51-0	Terphenyl-d14	73%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036209.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	58	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	58	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	58	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	58	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	58	14	ug/kg	
218-01-9	Chrysene	ND	58	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	ND	290	50	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	50	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037784.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	900	360	ug/kg	
95-57-8	2-Chlorophenol	ND	180	36	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	36	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	36	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	36	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	900	360	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	360	72	ug/kg	
95-48-7	2-Methylphenol	ND	180	36	ug/kg	
	3&4-Methylphenol	ND	180	36	ug/kg	
88-75-5	2-Nitrophenol	ND	180	36	ug/kg	
100-02-7	4-Nitrophenol	ND	900	360	ug/kg	
87-86-5	Pentachlorophenol	ND	900	360	ug/kg	
108-95-2	Phenol	ND	180	36	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	36	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	36	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	36	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	360	90	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	36	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	36	ug/kg	
106-47-8	4-Chloroaniline	ND	180	72	ug/kg	
86-74-8	Carbazole	ND	180	36	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	36	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	36	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	36	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	36	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	36	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	36	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	36	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	36	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	36	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	360	72	ug/kg	
132-64-9	Dibenzofuran	ND	180	36	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	360	90	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	360	90	ug/kg	
84-66-2	Diethyl phthalate	ND	360	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	360	90	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	360	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	36	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	36	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	36	ug/kg	
67-72-1	Hexachloroethane	ND	180	36	ug/kg	
78-59-1	Isophorone	ND	180	36	ug/kg	
88-74-4	2-Nitroaniline	ND	360	72	ug/kg	
99-09-2	3-Nitroaniline	ND	360	72	ug/kg	
100-01-6	4-Nitroaniline	ND	360	72	ug/kg	
98-95-3	Nitrobenzene	ND	180	36	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	36	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	36	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	36	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		40-102%
4165-62-2	Phenol-d5	68%		41-100%
118-79-6	2,4,6-Tribromophenol	79%		42-108%
4165-60-0	Nitrobenzene-d5	61%		40-105%
321-60-8	2-Fluorobiphenyl	62%		43-107%
1718-51-0	Terphenyl-d14	69%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036210.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	72	ug/kg	
208-96-8	Acenaphthylene	ND	290	72	ug/kg	
120-12-7	Anthracene	ND	290	43	ug/kg	
56-55-3	Benzo(a)anthracene	ND	58	14	ug/kg	
50-32-8	Benzo(a)pyrene	ND	58	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	58	14	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	58	14	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	58	14	ug/kg	
218-01-9	Chrysene	ND	58	14	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	58	14	ug/kg	
206-44-0	Fluoranthene	ND	290	51	ug/kg	
86-73-7	Fluorene	ND	290	43	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	58	14	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	43	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	43	ug/kg	
91-20-3	Naphthalene	ND	290	43	ug/kg	
85-01-8	Phenanthrene	ND	290	43	ug/kg	
129-00-0	Pyrene	ND	290	51	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037785.D	1	08/13/07	RB	08/07/07	OP21773	SL1930
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	920	370	ug/kg	
95-57-8	2-Chlorophenol	ND	180	37	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	180	37	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	180	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	180	37	ug/kg	
51-28-5	2,4-Dinitrophenol	ND VL	920	370	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND VL	370	74	ug/kg	
95-48-7	2-Methylphenol	ND	180	37	ug/kg	
	3&4-Methylphenol	ND	180	37	ug/kg	
88-75-5	2-Nitrophenol	ND	180	37	ug/kg	
100-02-7	4-Nitrophenol	ND	920	370	ug/kg	
87-86-5	Pentachlorophenol	ND	920	370	ug/kg	
108-95-2	Phenol	ND	180	37	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	180	37	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	180	37	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	180	37	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	370	92	ug/kg	
100-51-6	Benzyl Alcohol	ND	180	37	ug/kg	
91-58-7	2-Chloronaphthalene	ND	180	37	ug/kg	
106-47-8	4-Chloroaniline	ND	180	74	ug/kg	
86-74-8	Carbazole	ND	180	37	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	180	37	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	180	37	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	180	37	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	180	37	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	180	37	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	180	37	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	180	37	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	180	37	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	180	37	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	370	74	ug/kg	
132-64-9	Dibenzofuran	ND	180	37	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	370	92	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	370	92	ug/kg	
84-66-2	Diethyl phthalate	ND	370	180	ug/kg	
131-11-3	Dimethyl phthalate	ND	370	92	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	370	180	ug/kg	
118-74-1	Hexachlorobenzene	ND	180	37	ug/kg	
87-68-3	Hexachlorobutadiene	ND	180	37	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	180	37	ug/kg	
67-72-1	Hexachloroethane	ND	180	37	ug/kg	
78-59-1	Isophorone	ND	180	37	ug/kg	
88-74-4	2-Nitroaniline	ND	370	74	ug/kg	
99-09-2	3-Nitroaniline	ND	370	74	ug/kg	
100-01-6	4-Nitroaniline	ND	370	74	ug/kg	
98-95-3	Nitrobenzene	ND	180	37	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	180	37	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	180	37	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	180	37	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	59%		40-102%
4165-62-2	Phenol-d5	65%		41-100%
118-79-6	2,4,6-Tribromophenol	73%		42-108%
4165-60-0	Nitrobenzene-d5	57%		40-105%
321-60-8	2-Fluorobiphenyl	60%		43-107%
1718-51-0	Terphenyl-d14	64%		45-119%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3550B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W036211.D	4	08/13/07	RB	08/07/07	OP21772	SW1873
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	290	74	ug/kg	
208-96-8	Acenaphthylene	ND	290	74	ug/kg	
120-12-7	Anthracene	ND	290	44	ug/kg	
56-55-3	Benzo(a)anthracene	ND	59	15	ug/kg	
50-32-8	Benzo(a)pyrene	ND	59	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	59	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	59	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	59	15	ug/kg	
218-01-9	Chrysene	ND	59	15	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	59	15	ug/kg	
206-44-0	Fluoranthene	ND	290	52	ug/kg	
86-73-7	Fluorene	ND	290	44	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	59	15	ug/kg	
90-12-0	1-Methylnaphthalene	ND	290	44	ug/kg	
91-57-6	2-Methylnaphthalene	ND	290	44	ug/kg	
91-20-3	Naphthalene	ND	290	44	ug/kg	
85-01-8	Phenanthrene	ND	290	44	ug/kg	
129-00-0	Pyrene	ND	290	52	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: L037579.D

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L037579.D	1	08/02/07	RB	07/31/07	OP21675	SL1922
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	25	10	ug/l	
95-57-8	2-Chlorophenol	ND	5.0	1.0	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.0	2.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	5.0	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	25	10	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	10	2.0	ug/l	
95-48-7	2-Methylphenol	ND	5.0	1.0	ug/l	
	3&4-Methylphenol	ND	5.0	1.3	ug/l	
88-75-5	2-Nitrophenol	ND	5.0	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	25	10	ug/l	
87-86-5	Pentachlorophenol	ND	25	10	ug/l	
108-95-2	Phenol	ND	5.0	2.0	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.0	1.0	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.0	1.0	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	5.0	1.2	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	2.0	ug/l	
100-51-6	Benzyl Alcohol	ND	5.0	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	5.0	1.3	ug/l	
106-47-8	4-Chloroaniline	ND	5.0	2.0	ug/l	
86-74-8	Carbazole	ND	5.0	1.0	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	5.0	1.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	1.0	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	5.0	1.0	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	5.0	1.3	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	5.0	1.5	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	5.0	1.6	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	5.0	1.5	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	5.0	1.0	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	5.0	1.0	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	10	2.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	1.0	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8270C SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

ABN TCL List w/o PAHs

CAS No.	Compound	Result	RL	MDL	Units	Q
84-74-2	Di-n-butyl phthalate	ND	5.0	2.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	2.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	2.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	2.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	5.0	2.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	1.2	ug/l	
87-68-3	Hexachlorobutadiene	ND	5.0	1.7	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	1.5	ug/l	
67-72-1	Hexachloroethane	ND	5.0	1.9	ug/l	
78-59-1	Isophorone	ND	5.0	1.0	ug/l	
88-74-4	2-Nitroaniline	ND	10	2.0	ug/l	
99-09-2	3-Nitroaniline	ND	10	2.0	ug/l	
100-01-6	4-Nitroaniline	ND	10	2.0	ug/l	
98-95-3	Nitrobenzene	ND	5.0	1.0	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	5.0	1.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	1.5	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	42%		14-62%
4165-62-2	Phenol-d5	28%		10-40%
118-79-6	2,4,6-Tribromophenol	87%		33-118%
4165-60-0	Nitrobenzene-d5	80%		42-108%
321-60-8	2-Fluorobiphenyl	79%		40-106%
1718-51-0	Terphenyl-d14	79%		39-121%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8270C BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	R09534.D	1	08/02/07	NJ	07/31/07	OP21676	SR451
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	1.0	0.50	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.50	ug/l	
120-12-7	Anthracene	ND	1.0	0.50	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.20	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.20	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.20	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.20	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.20	0.10	ug/l	
218-01-9	Chrysene	ND	0.20	0.10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.20	0.050	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.25	ug/l	
86-73-7	Fluorene	ND	1.0	0.25	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.20	0.050	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.25	ug/l	
91-20-3	Naphthalene	ND	1.0	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.50	ug/l	
129-00-0	Pyrene	ND	1.0	0.25	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
2113 Emmorton Park Road
Edgewood, Maryland
410-612-6350
FAX: 410-612-6351

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Eric Malarek, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation - Volatiles
Accutest Laboratories, Inc., SDG F51353

DATE: February 21, 2008

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on July 26, 2007. The samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW846 Method 5035/8260B for solid matrices. A total of thirty solid samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SB04A	F51353-1	43SB02B	F51353-17
43SB04B	F51353-2	TMSB02B	F51353-18
43SB04C	F51353-3	43SB02C	F51353-19
43SB05A	F51353-4	43SB03A	F51353-20
43SB05B	F51353-5	43SB03B	F51353-21
TMSB05B	F51353-6	43SB03C	F51353-22
43SB05C	F51353-7	APSB07A	F51353-23
APSB06A	F51353-9	APSB07B	F51353-24
APSB06B	F51353-10	TMSB07B	F51353-25
TMSB06B	F51353-11	APSB08A	F51353-26
43SB01A	F51353-12	APSB08B	F51353-27
43SB01B	F51353-13	APSB10A	F51353-28
43SB01C	F51353-14	APSB10B	F51353-29
43SB02A	F51353-15	APSB09A	F51353-30
TMSB01C	F51353-16	APSB09B	F51353-31

Data were reviewed by Eric Malarek and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Results
	X	Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
	X	Laboratory Control Sample
X		Matrix Spike / Spike Duplicate Sample
	X	System Monitoring Compounds
	X	Internal Standards
X		Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Eric Malarek, Chemist

2/20/08
Date

RFAAP VALIDATION REPORT
VOLATILES REVIEW
SDG F51353

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of analysis. Holding time criteria: For soil samples cooled @ 4°C±2°C; the maximum holding time is 14 days from sample collection to analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 07/26/07, the coolers were received by the primary laboratory (Accutest) on 07/27/07 at 3.0°C, 3.6°C, 3.8°C, and 4.0°C. The herbicides were subcontracted to Accutest TX and were received the samples at 1.6°C and 2.0°C. The dioxin subcontract laboratory (SGS Paradigm Analytical Laboratories, Inc.) received the samples at 4.6°C. Even though the receipt temperature was below criteria for one cooler, there were no impacts to the data quality. No qualifiers were applied based upon this outlier.

- Holding Time Review: For the solid samples collected 07/26/07, the VOCs were prepped and analyzed on 08/01/07 and 08/02/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check
The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, bromofluorobenzene (BFB), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent relative standard deviation (%RSD) must be ≤15% for each target compound and must be ≤30% for each calibration check compound. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration performed on 07/25/07 on instrument MSVOA9, target compounds methylene chloride (49.2%; grossly exceeding) and acetone (21.3%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds methylene chloride (r=0.9984) and acetone (r=0.9995) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) were analyzed using this initial calibration.

- For initial calibration performed on 07/31/07 on instrument MSVOA1, target compounds chloromethane (19.7%), vinyl chloride (16.3%), bromomethane (33.3%; grossly exceeding), chloroethane (18.7%), acetone (17.2%), and methylene chloride (41.3%; grossly exceeding) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds vinyl chloride (r=0.9974), bromomethane (r=0.9944), chloroethane (r=0.9973), acetone (r=0.9957), and methylene chloride (r=0.9998) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Chloromethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %RSD. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) were analyzed using this initial calibration. Confirmation for sample APSB06A (F51353-9) also applies to this initial calibration.

- For initial calibration performed on 07/16/07 on instrument MSVOA3, target compounds acetone (18.5%), methylene chloride (32.0%; grossly exceeding), ethylbenzene (15.1%), m,p-xylene (16.6%), and o-xylene (15.4%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds acetone (r=0.9962), methylene chloride (r=1.0000), ethylbenzene (r=0.9985), m,p-xylene (r=0.9988), and o-xylene (r=0.9990) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Continuing calibration establishes the 12-hour relative response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within 20% for all target compounds. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration verification performed on 07/25/07 @15:34 on instrument MSVOA9, bromomethane (28.8%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Bromomethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %D. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 08/01/07 @11:40 on instrument MSVOA9, all criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) apply to this continuing calibration.

- For initial calibration verification performed on 07/31/07 @14:08 on instrument MSVOA1, vinyl chloride (23.5%), bromomethane (29.6%), chloroethane (24.1%), and acetone (25.2%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Vinyl chloride, bromomethane, and chloroethane were non-detect for all associated samples; therefore, no qualifiers were applied based upon the high %Drifts/%Ds. Acetone would be qualified estimated "J" based upon the high %Drift for detects; however, no samples reported apply to this initial calibration verification. No qualifiers were applied based upon these outliers.

- For continuing calibration performed on 08/01/07 @09:17 on instrument MSVOA1, target compounds acetone (23.8%) and carbon tetrachloride (32.1%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone was qualified estimated "J" for detects and no qualifier for non-detects based upon the high %Drift. Carbon tetrachloride was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) apply to this continuing calibration.

- For continuing calibration performed on 08/02/07 @09:54 on instrument MSVOA1, target compounds acetone (22.9%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Acetone was non-detect for all associated samples; therefore, no qualifiers were applied based upon this outlier. Confirmation for sample APSB06A (F51353-9) applies to this continuing calibration.

- For initial calibration verification performed on 07/16/07 @18:20 on instrument MSVOA3, bromomethane (36.1%) was outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Bromomethane was non-detect for all samples; therefore, no qualifiers were applied based upon the high %D. No samples reported apply to this initial calibration verification. No qualifiers were applied based upon this outlier.

- For continuing calibration performed on 08/02/07 @09:18 on instrument MSVOA3, target compounds acetone (37.6%), 1,1,1-trichloroethane (29.9%), carbon tetrachloride (35.9%), 1,2-dichloroethane (22.1%), and trichloroethene (21.4%) were outside criteria. All other target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). Compounds acetone, 1,1,1-trichloroethane, carbon tetrachloride, 1,2-dichloroethane, and trichloroethene were non-detect for all associated samples; therefore, no qualifiers were applied based upon these outliers. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of BFB. No contaminants should be detected in any of the associated blanks > the MDL. The DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants methylene chloride, acetone, and 2-butanone). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants methylene chloride, acetone, and 2-butanone (MEK), or 5 times (5X) the maximum amount for other volatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one and for solid matrices were converted to soil values (soil conversion factor = 1) as needed. Rinse blank 072607R (F51353-8) applies to the surface soil and subsurface soil samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/kg	Action Level µg/kg	B qualified samples
08/01/07	VG1721-MB	All target <½MRL	NA	NA	None
08/01/07	VF417-MB	All target <½MRL	NA	NA	None
08/02/07	VH1667-MB	All target <½MRL	NA	NA	None
08/06/07	072607R	All target <½MRL	NA	NA	None
08/06/07	TB072607W	Methyl chloride	0.49J	2.45	None
08/02/07	TB072607S	All target <½MRL	NA	NA	None

J = Estimated value <MRL and >MDL. Data point qualified was estimated "J".
NA = Not Applicable
MRL = Method Reporting Limit

VI-Laboratory Control Sample

Data for laboratory control samples (LCS) are evaluated to determine long-term accuracy of the analytical method on various matrices. Percent recoveries (%Rs) should be within the specified control limits. DoD LCS soil recovery limits are specified in Table D-5 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample VG1721-BS was used as the solid LCS for the VOC analysis on 08/01/07. Vinyl chloride (126%) was above DoD QSM criteria and within laboratory criteria. For all other target compounds, all criteria were met. All associated samples were non-detect for vinyl chloride; therefore, no qualifiers were applied based upon this outlier. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) apply to this LCS.

- Sample VF417-BS was used as the solid LCS for the VOC analysis on 08/01/07. All criteria were met. No qualifiers were applied. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) apply to this LCS.

- Sample VH1667-BS was used as the solid LCS for the VOC analysis on 08/02/07. Methyl bromide (159%) was above DoD QSM criteria and laboratory criteria. For all other target compounds, all criteria were met. All associated samples were non-detect for methyl bromide; therefore, no qualifiers were applied based upon this outlier. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. The DoD MS/MSD solid recovery limits follow the LCS criteria and are specified in Table D-5 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample F51297-4 was used for the solid MS/MSD analysis for analysis on 08/01/07. Since this sample is not a RFAAP site sample, it was not evaluated. No qualifiers were applied. Samples 43SB04A (F51353-1), 43SB04B (F51353-2), 43SB04C (F51353-3), 43SB05A (F51353-4), 43SB05B (F51353-5), TMSB05B (F51353-6), 43SB05C (F51353-7), APSB06A (F51353-9), and APSB06B (F51353-10) apply to this MS/MSD.

- Sample 43SB03B (F51353-21) was used for the solid MS/MSD analysis on 08/01/07. Acetone (54%), carbon disulfide (RPD=32%), cis-1,3-dichloropropene (78%), trans-1,3-dichloropropene (77%), 2-hexanone (62%), 4-methyl-2-pentanone (63%), methyl bromide (157%), methyl ethyl ketone (63%), vinyl chloride (130%, 132%), and o-xylene (128%; RPD=26%) were outside lab criteria and/or DoD QSM criteria for the MS/MSD sample. The associated LCS was within criteria for these compounds (See Section VI). The spiked sample was qualified bias low "L" for detects and "UL" for non-detects for acetone, cis-1,3-dichloropropene, trans-1,3-dichloropropene, 2-hexanone, 4-methyl-2-pentanone, and methyl ethyl ketone based upon the low recoveries. The spiked sample was qualified bias high "K" for vinyl chloride based upon the high recovery. Methyl bromide and o-xylene were non-detect for the spiked sample; therefore, no qualifiers were applied based upon the high recoveries. All other percent recoveries were within criteria for all target compounds. Samples TMSB06B (F51353-11), 43SB01A (F51353-12), 43SB01B (F51353-13), 43SB01C (F51353-14), 43SB02A (F51353-15), TMSB01C (F51353-16), 43SB02B (F51353-17), TMSB02B (F51353-18), 43SB02C (F51353-19), 43SB03A (F51353-20), 43SB03B (F51353-21), 43SB03C (F51353-22), APSB07A (F51353-23), APSB07B (F51353-24), and TMSB07B (F51353-25) apply to this MS/MSD.

- Sample APSB08B (F51353-27) was used for the solid MS/MSD analysis on 08/02/07. Acetone (54%, 47%), chloroform (128%), carbon tetrachloride (149%, 140%), 2-hexanone (59%, 53%), 4-methyl-2-pentanone (63%), methyl bromide (173%, 165%), methyl ethyl ketone (52%, 46%), 1,1,1-trichloroethane (142%), and trichloroethene (132%, 128%) were outside lab criteria and/or DoD QSM criteria for the MS/MSD sample. The associated LCS was within criteria for these compounds (See Section VI), except for methyl bromide. The spiked sample was qualified bias low "UL" for non-detects for acetone, 2-hexanone, 4-methyl-2-pentanone, and methyl ethyl ketone based upon the low recoveries. No qualifiers were applied for chloroform, carbon tetrachloride, methyl bromide, 1,1,1-trichloroethane, and trichloroethene based upon the high recoveries (spiked sample was non-detect for these compounds). All other percent recoveries were within criteria for all target compounds. Samples APSB08A (F51353-26), APSB08B (F51353-27), APSB10A (F51353-28), APSB10B (F51353-29), APSB09A (F51353-30), and APSB09B (F51353-31) apply to this MS/MSD.

VIII-System Monitoring Compounds (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Recoveries for system monitoring compounds in volatile samples and blanks must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Solid Criteria:
Dibromofluoromethane (80-121%) (DoD QSM = None Listed)
Toluene-d8 (71-130%) (DoD QSM = 85-115%)
4-Bromofluorobenzene (59-148%) (DoD QSM = 85-120%)
1,2-Dichloroethane-d4 (77-123%) (DoD QSM = None Listed)

- For confirmation of sample APSB06A (F51353-9), 4-bromofluorobenzene (121%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample 43SB03B (F51353-21), 4-bromofluorobenzene (124%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For sample APSB08A (F51353-26), 4-bromofluorobenzene (136%) was outside DoD QSM criteria and within lab criteria. Since all other surrogates were within criteria, no qualifiers were applied based upon this outlier.

- For all other samples, all criteria were met. No qualifiers were applied.

IX-Internal Standards (IS)

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: area counts (-50% to +100%) of the associated calibration standard, and retention time (± 30 seconds) from that of the associated calibration standard.

- For sample 43SB02C (F51353-19), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample 43SB03C (F51353-22), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample APSB07A (F51353-23), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample 43SB04C (F51353-3), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For sample APSB06A (F51353-9), internal standard 3 1,4-dichlorobenzene-d4 was below criteria limits. No target analytes were quantified using 1,4-dichlorobenzene-d4; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The sample was rerun for confirmation. The original run was reported.

- For confirmation of sample APSB06A (F51353-9), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria. The original run was reported.

- For sample APSB08A (F51353-26), internal standard 4 tert-butyl-alcohol-d10 was below criteria limits. No target analytes were quantified using this internal standard; therefore, no qualifiers were applied based upon this outlier. All other internal standards were within criteria.

- For all other samples, all criteria were met. No qualifiers were applied.

X-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the solid samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- Field subsurface soil sample duplicate pair 43SB05B (F51353-5) and TMSB05B (F51353-6) was collected for TCL VOCs. Acetone was detected at a concentration below the MRL of 43.6J µg/kg in the original sample and non-detect at <64 µg/kg in the duplicate pair. All other TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair APSB06B (F51353-10) and TMSB06B (F51353-11) was collected for TCL VOCs. All TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB01C (F51353-14) and TMSB01C (F51353-16) was collected for TCL VOCs. Acetone was detected at a concentration below the MRL of 30.9J µg/kg in the original sample and of 23.0J ug/kg in the duplicate pair resulting in a RPD of 29.3%. All other TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

- Field subsurface soil sample duplicate pair 43SB02B (F51353-17) and TMSB02B (F51353-18) was collected for TCL VOCs. All detected compounds found in the sample and its duplicate pair and associated %RPD are noted in **Table 3**. Acetone, carbon disulfide, and methyl ethyl ketone were detected in the original sample and acetone, m,p-xylenes, and ethylbenzene were detected in the duplicate pair. All other target compounds were non-detect. Carbon disulfide and ethylbenzene were qualified estimated "J" for detects and "UJ" for non-detects based upon detections found above the MRL in one sample and non-detect in the second duplicate sample. For all other compounds, all criteria were met.

Table 3 Field Precision Hits Analysis Summary for TCL VOCs for Duplicate Pair 43SB02B (F51353-17) and TMSB02B (F51353-18)

Compound	Original Sample (µg/kg)	Duplicate Pair (µg/kg)	%RPD
Acetone	82.8	59.0	33.6
Carbon disulfide	9.0	<4.8	NA
Methyl ethyl ketone	13.7J	<24	NA
m,p-Xylene	<11	2.8J	NA
Ethylbenzene	<5.4	5.0	NA

J = Estimated value <MRL and >MDL.
NA = Not applicable.

- Field subsurface soil sample duplicate pair APSB07B (F51353-24) and TMSB07B (F51353-25) was collected for TCL VOCs. All TCL VOCs target compounds were non-detect. All criteria were met. No qualifiers were applied.

XI-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: 43SB04C (F51353-3), carbon disulfide

Conc. (µg/kg) = {(Ax)*(Is)*(DF)*(Vp)} / {(Ais)*(RRF)*(Ws)*Fs)}

where:

Ax is the compound area
Is is the corresponding internal standard concentration (ng/mL)
DF is the dilution factor
Vp is the volume purged (mL)
Ais is the corresponding internal standard area
RRF is the relative response factor
Ws is the weight of the sample (g)
Fs is the fraction solids for the sample

Conc. µg/kg = (92649 * 50 ng/mL * 1 * 5mL) / (948861 * 0.959 * 5.73g * 0.839) =
= 5.3 µg/kg

Reported Conc. = 5.3 µg/kg
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Raw Data: G0045303.D

Form I

Accutest Laboratories

Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045303.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	4.30 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	63	32	ug/kg	
71-43-2	Benzene	ND	6.3	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.3	1.3	ug/kg	
75-25-2	Bromoform	ND	6.3	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.3	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.3	3.3	ug/kg	
67-66-3	Chloroform	ND	6.3	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.3	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.3	1.6	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.3	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.3	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.3	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.3	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	6.3	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.3	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.3	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.3	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.3	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.3	1.3	ug/kg	
591-78-6	2-Hexanone	ND	32	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	32	13	ug/kg	
74-83-9	Methyl bromide	ND	6.3	2.3	ug/kg	
74-87-3	Methyl chloride	ND	6.3	2.5	ug/kg	
75-09-2	Methylene chloride	ND	13	6.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	32	13	ug/kg	
100-42-5	Styrene	ND	6.3	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.3	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.3	1.6	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.3	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.3	1.3	ug/kg	
108-88-3	Toluene	ND	6.3	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.3	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04A		
Lab Sample ID:	F51353-1	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.3	1.8	ug/kg	
	m,p-Xylene	ND	13	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.3	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	97%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045304.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.35 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	56	28	ug/kg	
71-43-2	Benzene	ND	5.6	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.6	1.1	ug/kg	
75-25-2	Bromoform	ND	5.6	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.6	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.6	2.9	ug/kg	
67-66-3	Chloroform	ND	5.6	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.6	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.6	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.6	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.6	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.6	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.6	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.6	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.6	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.6	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.6	1.1	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.6	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.6	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.6	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.6	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.6	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.6	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.6	1.1	ug/kg	
108-88-3	Toluene	ND	5.6	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.6	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04B		
Lab Sample ID:	F51353-2	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.6	1.6	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.6	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	93%		59-148%
17060-07-0	1,2-Dichloroethane-D4	99%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045305.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.73 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	48.5 J	52	26	ug/kg	J
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	5.3	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB04C		
Lab Sample ID:	F51353-3	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	91%		71-130%
460-00-4	4-Bromofluorobenzene	97%		59-148%
17060-07-0	1,2-Dichloroethane-D4	100%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045306.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.11 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	54	27	ug/kg	
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05A		
Lab Sample ID:	F51353-4	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	105%		59-148%
17060-07-0	1,2-Dichloroethane-D4	99%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045307.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.61 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	43.6 J	54	27	ug/kg	J
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05B		
Lab Sample ID:	F51353-5	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		80-121%
2037-26-5	Toluene-D8	89%		71-130%
460-00-4	4-Bromofluorobenzene	94%		59-148%
17060-07-0	1,2-Dichloroethane-D4	102%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045308.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	4.69 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	64	32	ug/kg	
71-43-2	Benzene	ND	6.4	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.4	1.3	ug/kg	
75-25-2	Bromoform	ND	6.4	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.4	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.4	3.3	ug/kg	
67-66-3	Chloroform	ND	6.4	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.4	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.4	1.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.4	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.4	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.4	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.4	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	6.4	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.4	1.3	ug/kg	
591-78-6	2-Hexanone	ND	32	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	32	13	ug/kg	
74-83-9	Methyl bromide	ND	6.4	2.3	ug/kg	
74-87-3	Methyl chloride	ND	6.4	2.6	ug/kg	
75-09-2	Methylene chloride	ND	13	6.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	32	13	ug/kg	
100-42-5	Styrene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.4	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	1.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.4	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.4	1.3	ug/kg	
108-88-3	Toluene	ND	6.4	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.4	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB05B		
Lab Sample ID:	F51353-6	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	83.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.4	1.8	ug/kg	
	m,p-Xylene	ND	13	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.4	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-121%
2037-26-5	Toluene-D8	93%		71-130%
460-00-4	4-Bromofluorobenzene	95%		59-148%
17060-07-0	1,2-Dichloroethane-D4	96%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045309.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	5.63 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	42.3 J	54	27	ug/kg	J
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB05C		
Lab Sample ID:	F51353-7	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-121%
2037-26-5	Toluene-D8	92%		71-130%
460-00-4	4-Bromofluorobenzene	98%		59-148%
17060-07-0	1,2-Dichloroethane-D4	95%		77-123%

(a) CCV outside of control limits; results may be biased high.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045310.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2 [a]	G0045323.D	1	08/02/07	SH	n/a	n/a	VG1722

	Initial Weight
Run #1	6.07 g
Run #2	5.60 g

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	47	24	ug/kg	
71-43-2	Benzene	ND	4.7	0.95	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	0.95	ug/kg	
75-25-2	Bromoform	ND	4.7	0.95	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	0.95	ug/kg	
75-00-3	Chloroethane	ND	4.7	2.5	ug/kg	
67-66-3	Chloroform	ND	4.7	0.95	ug/kg	
75-15-0	Carbon disulfide	ND	4.7	0.95	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.7	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.7	0.95	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.7	0.95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.7	0.95	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.7	0.95	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.95	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.7	0.95	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.95	ug/kg	
100-41-4	Ethylbenzene	ND	4.7	0.95	ug/kg	
591-78-6	2-Hexanone	ND	24	9.5	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.5	ug/kg	
74-83-9	Methyl bromide	ND	4.7	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.7	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.5	ug/kg	
100-42-5	Styrene	ND	4.7	0.95	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.95	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.7	0.95	ug/kg	
108-88-3	Toluene	ND	4.7	0.95	ug/kg	
79-01-6	Trichloroethylene	ND	4.7	0.95	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06A		
Lab Sample ID:	F51353-9	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.7	1.3	ug/kg	
	m,p-Xylene	ND	9.5	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.7	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%	105%	80-121%
2037-26-5	Toluene-D8	105%	98%	71-130%
460-00-4	4-Bromofluorobenzene	117%	121%	59-148%
17060-07-0	1,2-Dichloroethane-D4	98%	99%	77-123%

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0045311.D	1	08/01/07	SH	n/a	n/a	VG1721
Run #2							

	Initial Weight
Run #1	6.11 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	47	23	ug/kg	
71-43-2	Benzene	ND	4.7	0.94	ug/kg	
75-27-4	Bromodichloromethane	ND	4.7	0.94	ug/kg	
75-25-2	Bromoform	ND	4.7	0.94	ug/kg	
108-90-7	Chlorobenzene	ND	4.7	0.94	ug/kg	
75-00-3	Chloroethane	ND	4.7	2.4	ug/kg	
67-66-3	Chloroform	ND	4.7	0.94	ug/kg	
75-15-0	Carbon disulfide	ND	4.7	0.94	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.7	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.7	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.7	0.94	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.7	0.94	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.7	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.7	0.94	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.7	0.94	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.7	0.94	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.7	0.94	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.7	0.94	ug/kg	
100-41-4	Ethylbenzene	ND	4.7	0.94	ug/kg	
591-78-6	2-Hexanone	ND	23	9.4	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	23	9.4	ug/kg	
74-83-9	Methyl bromide	ND	4.7	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.7	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.4	4.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	23	9.4	ug/kg	
100-42-5	Styrene	ND	4.7	0.94	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.7	0.94	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.7	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.7	0.94	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.7	0.94	ug/kg	
108-88-3	Toluene	ND	4.7	0.94	ug/kg	
79-01-6	Trichloroethylene	ND	4.7	0.94	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration rang

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB06B		
Lab Sample ID:	F51353-10	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.7	1.3	ug/kg	
	m,p-Xylene	ND	9.4	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.7	0.94	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	102%		59-148%
17060-07-0	1,2-Dichloroethane-D4	97%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022573.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.96 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	48	24	ug/kg	
71-43-2	Benzene	ND	4.8	0.97	ug/kg	
75-27-4	Bromodichloromethane	ND	4.8	0.97	ug/kg	
75-25-2	Bromoform	ND	4.8	0.97	ug/kg	
108-90-7	Chlorobenzene	ND	4.8	0.97	ug/kg	
75-00-3	Chloroethane	ND	4.8	2.5	ug/kg	
67-66-3	Chloroform	ND	4.8	0.97	ug/kg	
75-15-0	Carbon disulfide	ND	4.8	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.8	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.8	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.8	0.97	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.8	0.97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.8	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	4.8	0.97	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
100-41-4	Ethylbenzene	ND	4.8	0.97	ug/kg	
591-78-6	2-Hexanone	ND	24	9.7	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.7	ug/kg	
74-83-9	Methyl bromide	ND	4.8	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.8	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.7	4.8	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.7	ug/kg	
100-42-5	Styrene	ND	4.8	0.97	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.8	0.97	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.8	0.97	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.8	0.97	ug/kg	
108-88-3	Toluene	ND	4.8	0.97	ug/kg	
79-01-6	Trichloroethylene	ND	4.8	0.97	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB06B		
Lab Sample ID:	F51353-11	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.8	1.4	ug/kg	
	m,p-Xylene	ND	9.7	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.8	0.97	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	102%		59-148%
17060-07-0	1,2-Dichloroethane-D4	113%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022574.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.32 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	40.5 J	45	22	ug/kg	J
71-43-2	Benzene	ND	4.5	0.90	ug/kg	
75-27-4	Bromodichloromethane	ND	4.5	0.90	ug/kg	
75-25-2	Bromoform	ND	4.5	0.90	ug/kg	
108-90-7	Chlorobenzene	ND	4.5	0.90	ug/kg	
75-00-3	Chloroethane	ND	4.5	2.3	ug/kg	
67-66-3	Chloroform	ND	4.5	0.90	ug/kg	
75-15-0	Carbon disulfide	2.1 J	4.5	0.90	ug/kg	J
56-23-5	Carbon tetrachloride	ND	4.5	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.5	0.99	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.5	0.90	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.5	0.90	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.5	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.5	0.90	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.5	0.90	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.5	0.90	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.5	0.90	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.5	0.90	ug/kg	
100-41-4	Ethylbenzene	ND	4.5	0.90	ug/kg	
591-78-6	2-Hexanone	ND	22	9.0	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	22	9.0	ug/kg	
74-83-9	Methyl bromide	ND	4.5	1.6	ug/kg	
74-87-3	Methyl chloride	ND	4.5	1.8	ug/kg	
75-09-2	Methylene chloride	ND	9.0	4.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	22	9.0	ug/kg	
100-42-5	Styrene	ND	4.5	0.90	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.5	0.90	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.5	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.5	0.90	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.5	0.90	ug/kg	
108-88-3	Toluene	ND	4.5	0.90	ug/kg	
79-01-6	Trichloroethylene	ND	4.5	0.90	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01A		
Lab Sample ID:	F51353-12	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	88.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.5	1.3	ug/kg	
	m,p-Xylene	ND	9.0	0.99	ug/kg	
95-47-6	o-Xylene	ND	4.5	0.90	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		80-121%
2037-26-5	Toluene-D8	104%		71-130%
460-00-4	4-Bromofluorobenzene	118%		59-148%
17060-07-0	1,2-Dichloroethane-D4	113%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022575.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.03 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	48	24	ug/kg	
71-43-2	Benzene	ND	4.8	0.97	ug/kg	
75-27-4	Bromodichloromethane	ND	4.8	0.97	ug/kg	
75-25-2	Bromoform	ND	4.8	0.97	ug/kg	
108-90-7	Chlorobenzene	ND	4.8	0.97	ug/kg	
75-00-3	Chloroethane	ND	4.8	2.5	ug/kg	
67-66-3	Chloroform	ND	4.8	0.97	ug/kg	
75-15-0	Carbon disulfide	ND	4.8	0.97	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.8	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.8	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.8	0.97	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.8	0.97	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.8	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	4.8	0.97	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.8	0.97	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	0.97	ug/kg	
100-41-4	Ethylbenzene	ND	4.8	0.97	ug/kg	
591-78-6	2-Hexanone	ND	24	9.7	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.7	ug/kg	
74-83-9	Methyl bromide	ND	4.8	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.8	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.7	4.8	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.7	ug/kg	
100-42-5	Styrene	ND	4.8	0.97	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.8	0.97	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.8	0.97	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.8	0.97	ug/kg	
108-88-3	Toluene	ND	4.8	0.97	ug/kg	
79-01-6	Trichloroethylene	ND	4.8	0.97	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01B		
Lab Sample ID:	F51353-13	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.8	1.4	ug/kg	
	m,p-Xylene	ND	9.7	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.8	0.97	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	104%		59-148%
17060-07-0	1,2-Dichloroethane-D4	109%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022576.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.67 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	30.9 J	51	26	ug/kg	J
71-43-2	Benzene	ND	5.1	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.1	1.0	ug/kg	
75-25-2	Bromoform	ND	5.1	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.1	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.1	2.7	ug/kg	
67-66-3	Chloroform	ND	5.1	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.1	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.1	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.1	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.1	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.1	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.1	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.1	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.1	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.1	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.1	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.1	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.1	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.1	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.1	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.1	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.1	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.1	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.1	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.1	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.1	1.0	ug/kg	
108-88-3	Toluene	ND	5.1	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.1	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB01C		
Lab Sample ID:	F51353-14	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.1	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.1	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	94%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	114%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022577.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	4.78 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	57	29	ug/kg	
71-43-2	Benzene	ND	5.7	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.7	1.1	ug/kg	
75-25-2	Bromoform	ND	5.7	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.7	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.7	3.0	ug/kg	
67-66-3	Chloroform	ND	5.7	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.7	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.7	1.5	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.7	1.3	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.7	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.7	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.7	1.5	ug/kg	
124-48-1	Dibromochloromethane	ND	5.7	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.7	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.7	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.7	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.7	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.7	1.1	ug/kg	
591-78-6	2-Hexanone	ND	29	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	29	11	ug/kg	
74-83-9	Methyl bromide	ND	5.7	2.1	ug/kg	
74-87-3	Methyl chloride	ND	5.7	2.3	ug/kg	
75-09-2	Methylene chloride	ND	11	5.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	29	11	ug/kg	
100-42-5	Styrene	ND	5.7	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.7	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.7	1.5	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.7	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.7	1.1	ug/kg	
108-88-3	Toluene	ND	5.7	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.7	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02A		
Lab Sample ID:	F51353-15	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.7	1.6	ug/kg	
	m,p-Xylene	ND	11	1.3	ug/kg	
95-47-6	o-Xylene	ND	5.7	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	105%		59-148%
17060-07-0	1,2-Dichloroethane-D4	118%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022578.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.17 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	23.0 J	46	23	ug/kg	J
71-43-2	Benzene	ND	4.6	0.91	ug/kg	
75-27-4	Bromodichloromethane	ND	4.6	0.91	ug/kg	
75-25-2	Bromoform	ND	4.6	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	4.6	0.91	ug/kg	
75-00-3	Chloroethane	ND	4.6	2.4	ug/kg	
67-66-3	Chloroform	ND	4.6	0.91	ug/kg	
75-15-0	Carbon disulfide	ND	4.6	0.91	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.6	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.6	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.6	0.91	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.6	0.91	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.6	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.6	0.91	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
100-41-4	Ethylbenzene	ND	4.6	0.91	ug/kg	
591-78-6	2-Hexanone	ND	23	9.1	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	23	9.1	ug/kg	
74-83-9	Methyl bromide	ND	4.6	1.6	ug/kg	
74-87-3	Methyl chloride	ND	4.6	1.8	ug/kg	
75-09-2	Methylene chloride	ND	9.1	4.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	23	9.1	ug/kg	
100-42-5	Styrene	ND	4.6	0.91	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.6	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.6	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.6	0.91	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.6	0.91	ug/kg	
108-88-3	Toluene	ND	4.6	0.91	ug/kg	
79-01-6	Trichloroethylene	ND	4.6	0.91	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB01C		
Lab Sample ID:	F51353-16	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.8
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.6	1.3	ug/kg	
	m,p-Xylene	ND	9.1	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.6	0.91	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	113%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	100%		59-148%
17060-07-0	1,2-Dichloroethane-D4	118%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022579.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.63 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	82.8	54	27	ug/kg	
71-43-2	Benzene	ND	5.4	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.4	1.1	ug/kg	
75-25-2	Bromoform	ND	5.4	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.4	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.4	2.8	ug/kg	
67-66-3	Chloroform	ND	5.4	1.1	ug/kg	
75-15-0	Carbon disulfide	9.0 J	5.4	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.4	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.4	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.4	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.4	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.4	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.4	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.4	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.4	1.1	ug/kg	
100-41-4	Ethylbenzene	ND UJ	5.4	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.4	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.4	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.4	ug/kg	
78-93-3	Methyl ethyl ketone	13.7 J	27	11	ug/kg	J
100-42-5	Styrene	ND	5.4	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.4	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.4	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.4	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.4	1.1	ug/kg	
108-88-3	Toluene	ND	5.4	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.4	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02B		
Lab Sample ID:	F51353-17	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.4	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.4	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	108%		59-148%
17060-07-0	1,2-Dichloroethane-D4	111%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022580.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.18 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	59.0	48	24	ug/kg	
71-43-2	Benzene	ND	4.8	0.95	ug/kg	
75-27-4	Bromodichloromethane	ND	4.8	0.95	ug/kg	
75-25-2	Bromoform	ND	4.8	0.95	ug/kg	
108-90-7	Chlorobenzene	ND	4.8	0.95	ug/kg	
75-00-3	Chloroethane	ND	4.8	2.5	ug/kg	
67-66-3	Chloroform	ND	4.8	0.95	ug/kg	
75-15-0	Carbon disulfide	ND UJ	4.8	0.95	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.8	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.8	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.8	0.95	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.8	0.95	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.8	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.8	0.95	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.8	0.95	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.8	0.95	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.8	0.95	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.8	0.95	ug/kg	
100-41-4	Ethylbenzene	5.0 J	4.8	0.95	ug/kg	
591-78-6	2-Hexanone	ND	24	9.5	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	24	9.5	ug/kg	
74-83-9	Methyl bromide	ND	4.8	1.7	ug/kg	
74-87-3	Methyl chloride	ND	4.8	1.9	ug/kg	
75-09-2	Methylene chloride	ND	9.5	4.8	ug/kg	
78-93-3	Methyl ethyl ketone	ND	24	9.5	ug/kg	
100-42-5	Styrene	ND	4.8	0.95	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.8	0.95	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.8	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.8	0.95	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.8	0.95	ug/kg	
108-88-3	Toluene	ND	4.8	0.95	ug/kg	
79-01-6	Trichloroethylene	ND	4.8	0.95	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB02B		
Lab Sample ID:	F51353-18	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.9
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.8	1.3	ug/kg	
	m,p-Xylene	2.8 J	9.5	1.0	ug/kg	J
95-47-6	o-Xylene	ND	4.8	0.95	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	115%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: F022581.D

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022581.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.03 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	25	ug/kg	
71-43-2	Benzene	ND	5.0	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	1.0	ug/kg	
75-25-2	Bromoform	ND	5.0	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	2.6	ug/kg	
67-66-3	Chloroform	ND	5.0	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	1.0	ug/kg	
591-78-6	2-Hexanone	ND	25	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	1.8	ug/kg	
74-87-3	Methyl chloride	ND	5.0	2.0	ug/kg	
75-09-2	Methylene chloride	ND	10	5.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	10	ug/kg	
100-42-5	Styrene	ND	5.0	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	1.0	ug/kg	
108-88-3	Toluene	ND	5.0	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB02C		
Lab Sample ID:	F51353-19	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	82.6
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.0	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.0	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	100%		71-130%
460-00-4	4-Bromofluorobenzene	103%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022582.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.25 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	55	28	ug/kg	
71-43-2	Benzene	ND	5.5	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	1.1	ug/kg	
75-25-2	Bromoform	ND	5.5	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.5	2.9	ug/kg	
67-66-3	Chloroform	ND	5.5	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.5	1.1	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.5	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.5	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	1.1	ug/kg	
108-88-3	Toluene	ND	5.5	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.5	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03A		
Lab Sample ID:	F51353-20	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.5	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.5	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	99%		71-130%
460-00-4	4-Bromofluorobenzene	109%		59-148%
17060-07-0	1,2-Dichloroethane-D4	114%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	Date Sampled:	07/26/07
Matrix:	SO - Soil	Date Received:	07/27/07
Method:	SW846 8260B	Percent Solids:	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022568.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.43 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	58.5 L	53	26	ug/kg	
71-43-2	Benzene	ND	5.3	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.3	1.1	ug/kg	
75-25-2	Bromoform	ND	5.3	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.3	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.3	2.7	ug/kg	
67-66-3	Chloroform	ND	5.3	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.3	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.3	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.3	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.3	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.3	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	NDUL	5.3	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	NDUL	5.3	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.3	1.1	ug/kg	
591-78-6	2-Hexanone	NDUL	26	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	NDUL	26	11	ug/kg	
74-83-9	Methyl bromide	ND	5.3	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.3	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.3	ug/kg	
78-93-3	Methyl ethyl ketone	NDUL	26	11	ug/kg	
100-42-5	Styrene	ND	5.3	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.3	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.3	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.3	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.3	1.1	ug/kg	
108-88-3	Toluene	ND	5.3	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.3	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03B		
Lab Sample ID:	F51353-21	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	87.5
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	6.6 K	5.3	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.3	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	103%		71-130%
460-00-4	4-Bromofluorobenzene	124%		59-148%
17060-07-0	1,2-Dichloroethane-D4	103%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022583.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	6.01 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	68.8	46	23	ug/kg	
71-43-2	Benzene	ND	4.6	0.91	ug/kg	
75-27-4	Bromodichloromethane	ND	4.6	0.91	ug/kg	
75-25-2	Bromoform	ND	4.6	0.91	ug/kg	
108-90-7	Chlorobenzene	ND	4.6	0.91	ug/kg	
75-00-3	Chloroethane	ND	4.6	2.4	ug/kg	
67-66-3	Chloroform	ND	4.6	0.91	ug/kg	
75-15-0	Carbon disulfide	ND	4.6	0.91	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.6	1.2	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.6	1.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.6	0.91	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.6	0.91	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.6	1.2	ug/kg	
124-48-1	Dibromochloromethane	ND	4.6	0.91	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.6	0.91	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.6	0.91	ug/kg	
100-41-4	Ethylbenzene	ND	4.6	0.91	ug/kg	
591-78-6	2-Hexanone	ND	23	9.1	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	23	9.1	ug/kg	
74-83-9	Methyl bromide	ND	4.6	1.6	ug/kg	
74-87-3	Methyl chloride	ND	4.6	1.8	ug/kg	
75-09-2	Methylene chloride	ND	9.1	4.6	ug/kg	
78-93-3	Methyl ethyl ketone	ND	23	9.1	ug/kg	
100-42-5	Styrene	ND	4.6	0.91	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.6	0.91	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.6	1.2	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.6	0.91	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.6	0.91	ug/kg	
108-88-3	Toluene	ND	4.6	0.91	ug/kg	
79-01-6	Trichloroethylene	ND	4.6	0.91	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	43SB03C		
Lab Sample ID:	F51353-22	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.6	1.3	ug/kg	
	m,p-Xylene	ND	9.1	1.0	ug/kg	
95-47-6	o-Xylene	ND	4.6	0.91	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	96%		71-130%
460-00-4	4-Bromofluorobenzene	104%		59-148%
17060-07-0	1,2-Dichloroethane-D4	115%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022584.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.75 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	49	25	ug/kg	
71-43-2	Benzene	ND	4.9	0.99	ug/kg	
75-27-4	Bromodichloromethane	ND	4.9	0.99	ug/kg	
75-25-2	Bromoform	ND	4.9	0.99	ug/kg	
108-90-7	Chlorobenzene	ND	4.9	0.99	ug/kg	
75-00-3	Chloroethane	ND	4.9	2.6	ug/kg	
67-66-3	Chloroform	ND	4.9	0.99	ug/kg	
75-15-0	Carbon disulfide	ND	4.9	0.99	ug/kg	
56-23-5	Carbon tetrachloride	ND	4.9	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	4.9	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	4.9	0.99	ug/kg	
107-06-2	1,2-Dichloroethane	ND	4.9	0.99	ug/kg	
78-87-5	1,2-Dichloropropane	ND	4.9	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	4.9	0.99	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	4.9	0.99	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	4.9	0.99	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	4.9	0.99	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	4.9	0.99	ug/kg	
100-41-4	Ethylbenzene	ND	4.9	0.99	ug/kg	
591-78-6	2-Hexanone	ND	25	9.9	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	9.9	ug/kg	
74-83-9	Methyl bromide	ND	4.9	1.8	ug/kg	
74-87-3	Methyl chloride	ND	4.9	2.0	ug/kg	
75-09-2	Methylene chloride	ND	9.9	4.9	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	9.9	ug/kg	
100-42-5	Styrene	ND	4.9	0.99	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	4.9	0.99	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	4.9	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	4.9	0.99	ug/kg	
127-18-4	Tetrachloroethylene	ND	4.9	0.99	ug/kg	
108-88-3	Toluene	ND	4.9	0.99	ug/kg	
79-01-6	Trichloroethylene	5.4	4.9	0.99	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07A		
Lab Sample ID:	F51353-23	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	88.2
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	4.9	1.4	ug/kg	
	m,p-Xylene	ND	9.9	1.1	ug/kg	
95-47-6	o-Xylene	ND	4.9	0.99	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-121%
2037-26-5	Toluene-D8	103%		71-130%
460-00-4	4-Bromofluorobenzene	119%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022585.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.24 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	55	28	ug/kg	
71-43-2	Benzene	ND	5.5	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.5	1.1	ug/kg	
75-25-2	Bromoform	ND	5.5	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.5	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.5	2.9	ug/kg	
67-66-3	Chloroform	ND	5.5	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.5	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.5	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.5	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.5	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.5	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.5	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.5	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.5	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.5	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.5	1.1	ug/kg	
591-78-6	2-Hexanone	ND	28	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	28	11	ug/kg	
74-83-9	Methyl bromide	ND	5.5	2.0	ug/kg	
74-87-3	Methyl chloride	ND	5.5	2.2	ug/kg	
75-09-2	Methylene chloride	ND	11	5.5	ug/kg	
78-93-3	Methyl ethyl ketone	ND	28	11	ug/kg	
100-42-5	Styrene	ND	5.5	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.5	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.5	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.5	1.1	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.5	1.1	ug/kg	
108-88-3	Toluene	ND	5.5	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.5	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB07B		
Lab Sample ID:	F51353-24	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.5	1.6	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.5	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	114%		80-121%
2037-26-5	Toluene-D8	95%		71-130%
460-00-4	4-Bromofluorobenzene	102%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F022586.D	1	08/01/07	WJ	n/a	n/a	VF417
Run #2							

	Initial Weight
Run #1	5.59 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	52	26	ug/kg	
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TMSB07B		
Lab Sample ID:	F51353-25	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	85.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	115%		80-121%
2037-26-5	Toluene-D8	91%		71-130%
460-00-4	4-Bromofluorobenzene	100%		59-148%
17060-07-0	1,2-Dichloroethane-D4	120%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044818.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.55 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	53	27	ug/kg	
71-43-2	Benzene	ND	5.3	1.1	ug/kg	
75-27-4	Bromodichloromethane	ND	5.3	1.1	ug/kg	
75-25-2	Bromoform	ND	5.3	1.1	ug/kg	
108-90-7	Chlorobenzene	ND	5.3	1.1	ug/kg	
75-00-3	Chloroethane	ND	5.3	2.8	ug/kg	
67-66-3	Chloroform	ND	5.3	1.1	ug/kg	
75-15-0	Carbon disulfide	ND	5.3	1.1	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.3	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.3	1.2	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.3	1.1	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.3	1.1	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.3	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.3	1.1	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.3	1.1	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.3	1.1	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.3	1.1	ug/kg	
100-41-4	Ethylbenzene	ND	5.3	1.1	ug/kg	
591-78-6	2-Hexanone	ND	27	11	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	27	11	ug/kg	
74-83-9	Methyl bromide	ND	5.3	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.3	2.1	ug/kg	
75-09-2	Methylene chloride	ND	11	5.3	ug/kg	
78-93-3	Methyl ethyl ketone	ND	27	11	ug/kg	
100-42-5	Styrene	ND	5.3	1.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.3	1.1	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.3	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.3	1.1	ug/kg	
127-18-4	Tetrachloroethylene	6.4	5.3	1.1	ug/kg	
108-88-3	Toluene	ND	5.3	1.1	ug/kg	
79-01-6	Trichloroethylene	ND	5.3	1.1	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08A		
Lab Sample ID:	F51353-26	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	84.3
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.3	1.5	ug/kg	
	m,p-Xylene	ND	11	1.2	ug/kg	
95-47-6	o-Xylene	ND	5.3	1.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-121%
2037-26-5	Toluene-D8	108%		71-130%
460-00-4	4-Bromofluorobenzene	136%		59-148%
17060-07-0	1,2-Dichloroethane-D4	104%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044819.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	4.53 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND UL	64	32	ug/kg	
71-43-2	Benzene	ND	6.4	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.4	1.3	ug/kg	
75-25-2	Bromoform	ND	6.4	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.4	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.4	3.3	ug/kg	
67-66-3	Chloroform	ND	6.4	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.4	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.4	1.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.4	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.4	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.4	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.4	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	6.4	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.4	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.4	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.4	1.3	ug/kg	
591-78-6	2-Hexanone	ND UL	32	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND UL	32	13	ug/kg	
74-83-9	Methyl bromide	ND	6.4	2.3	ug/kg	
74-87-3	Methyl chloride	ND	6.4	2.6	ug/kg	
75-09-2	Methylene chloride	ND	13	6.4	ug/kg	
78-93-3	Methyl ethyl ketone	ND UL	32	13	ug/kg	
100-42-5	Styrene	ND	6.4	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.4	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.4	1.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.4	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.4	1.3	ug/kg	
108-88-3	Toluene	ND	6.4	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.4	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB08B		
Lab Sample ID:	F51353-27	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	86.0
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.4	1.8	ug/kg	
	m,p-Xylene	ND	13	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.4	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	117%		59-148%
17060-07-0	1,2-Dichloroethane-D4	114%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044822.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.20 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	52	26	ug/kg	
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10A		
Lab Sample ID:	F51353-28	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	92.1
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		80-121%
2037-26-5	Toluene-D8	99%		71-130%
460-00-4	4-Bromofluorobenzene	120%		59-148%
17060-07-0	1,2-Dichloroethane-D4	105%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044823.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	4.46 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	62	31	ug/kg	
71-43-2	Benzene	ND	6.2	1.2	ug/kg	
75-27-4	Bromodichloromethane	ND	6.2	1.2	ug/kg	
75-25-2	Bromoform	ND	6.2	1.2	ug/kg	
108-90-7	Chlorobenzene	ND	6.2	1.2	ug/kg	
75-00-3	Chloroethane	ND	6.2	3.2	ug/kg	
67-66-3	Chloroform	ND	6.2	1.2	ug/kg	
75-15-0	Carbon disulfide	ND	6.2	1.2	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.2	1.6	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.2	1.4	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.2	1.2	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.2	1.2	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.2	1.6	ug/kg	
124-48-1	Dibromochloromethane	ND	6.2	1.2	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.2	1.2	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.2	1.2	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.2	1.2	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.2	1.2	ug/kg	
100-41-4	Ethylbenzene	ND	6.2	1.2	ug/kg	
591-78-6	2-Hexanone	ND	31	12	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	31	12	ug/kg	
74-83-9	Methyl bromide	ND	6.2	2.2	ug/kg	
74-87-3	Methyl chloride	ND	6.2	2.5	ug/kg	
75-09-2	Methylene chloride	ND	12	6.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	31	12	ug/kg	
100-42-5	Styrene	ND	6.2	1.2	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.2	1.2	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.2	1.6	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.2	1.2	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.2	1.2	ug/kg	
108-88-3	Toluene	ND	6.2	1.2	ug/kg	
79-01-6	Trichloroethylene	ND	6.2	1.2	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB10B		
Lab Sample ID:	F51353-29	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.2	1.7	ug/kg	
	m,p-Xylene	ND	12	1.4	ug/kg	
95-47-6	o-Xylene	ND	6.2	1.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-121%
2037-26-5	Toluene-D8	98%		71-130%
460-00-4	4-Bromofluorobenzene	115%		59-148%
17060-07-0	1,2-Dichloroethane-D4	112%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044824.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.23 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	52	26	ug/kg	
71-43-2	Benzene	ND	5.2	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.2	1.0	ug/kg	
75-25-2	Bromoform	ND	5.2	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.2	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.2	2.7	ug/kg	
67-66-3	Chloroform	ND	5.2	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.2	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.2	1.4	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.2	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.2	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.2	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.2	1.4	ug/kg	
124-48-1	Dibromochloromethane	ND	5.2	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.2	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.2	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.2	1.0	ug/kg	
591-78-6	2-Hexanone	ND	26	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	26	10	ug/kg	
74-83-9	Methyl bromide	ND	5.2	1.9	ug/kg	
74-87-3	Methyl chloride	ND	5.2	2.1	ug/kg	
75-09-2	Methylene chloride	ND	10	5.2	ug/kg	
78-93-3	Methyl ethyl ketone	ND	26	10	ug/kg	
100-42-5	Styrene	ND	5.2	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.2	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.2	1.4	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.2	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.2	1.0	ug/kg	
108-88-3	Toluene	ND	5.2	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.2	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09A		
Lab Sample ID:	F51353-30	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	91.7
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.2	1.5	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.2	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	114%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044825.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	4.13 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	67	33	ug/kg	
71-43-2	Benzene	ND	6.7	1.3	ug/kg	
75-27-4	Bromodichloromethane	ND	6.7	1.3	ug/kg	
75-25-2	Bromoform	ND	6.7	1.3	ug/kg	
108-90-7	Chlorobenzene	ND	6.7	1.3	ug/kg	
75-00-3	Chloroethane	ND	6.7	3.5	ug/kg	
67-66-3	Chloroform	ND	6.7	1.3	ug/kg	
75-15-0	Carbon disulfide	ND	6.7	1.3	ug/kg	
56-23-5	Carbon tetrachloride	ND	6.7	1.7	ug/kg	
75-34-3	1,1-Dichloroethane	ND	6.7	1.5	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	6.7	1.3	ug/kg	
107-06-2	1,2-Dichloroethane	ND	6.7	1.3	ug/kg	
78-87-5	1,2-Dichloropropane	ND	6.7	1.7	ug/kg	
124-48-1	Dibromochloromethane	ND	6.7	1.3	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	6.7	1.3	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	6.7	1.3	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	6.7	1.3	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	6.7	1.3	ug/kg	
100-41-4	Ethylbenzene	ND	6.7	1.3	ug/kg	
591-78-6	2-Hexanone	ND	33	13	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	33	13	ug/kg	
74-83-9	Methyl bromide	ND	6.7	2.4	ug/kg	
74-87-3	Methyl chloride	ND	6.7	2.7	ug/kg	
75-09-2	Methylene chloride	ND	13	6.7	ug/kg	
78-93-3	Methyl ethyl ketone	ND	33	13	ug/kg	
100-42-5	Styrene	ND	6.7	1.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	6.7	1.3	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	6.7	1.7	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	6.7	1.3	ug/kg	
127-18-4	Tetrachloroethylene	ND	6.7	1.3	ug/kg	
108-88-3	Toluene	ND	6.7	1.3	ug/kg	
79-01-6	Trichloroethylene	ND	6.7	1.3	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	APSB09B		
Lab Sample ID:	F51353-31	**Date Sampled:**	07/26/07
Matrix:	SO - Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	90.4
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	6.7	1.9	ug/kg	
	m,p-Xylene	ND	13	1.5	ug/kg	
95-47-6	o-Xylene	ND	6.7	1.3	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	118%		59-148%
17060-07-0	1,2-Dichloroethane-D4	119%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TB072607S		
Lab Sample ID:	F51353-32	**Date Sampled:**	07/26/07
Matrix:	SO - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	H044826.D	1	08/02/07	SH	n/a	n/a	VH1667
Run #2							

	Initial Weight
Run #1	5.00 g
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	50	25	ug/kg	
71-43-2	Benzene	ND	5.0	1.0	ug/kg	
75-27-4	Bromodichloromethane	ND	5.0	1.0	ug/kg	
75-25-2	Bromoform	ND	5.0	1.0	ug/kg	
108-90-7	Chlorobenzene	ND	5.0	1.0	ug/kg	
75-00-3	Chloroethane	ND	5.0	2.6	ug/kg	
67-66-3	Chloroform	ND	5.0	1.0	ug/kg	
75-15-0	Carbon disulfide	ND	5.0	1.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	5.0	1.3	ug/kg	
75-34-3	1,1-Dichloroethane	ND	5.0	1.1	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	5.0	1.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	5.0	1.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	5.0	1.3	ug/kg	
124-48-1	Dibromochloromethane	ND	5.0	1.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	5.0	1.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	5.0	1.0	ug/kg	
100-41-4	Ethylbenzene	ND	5.0	1.0	ug/kg	
591-78-6	2-Hexanone	ND	25	10	ug/kg	
108-10-1	4-Methyl-2-pentanone	ND	25	10	ug/kg	
74-83-9	Methyl bromide	ND	5.0	1.8	ug/kg	
74-87-3	Methyl chloride	ND	5.0	2.0	ug/kg	
75-09-2	Methylene chloride	ND	10	5.0	ug/kg	
78-93-3	Methyl ethyl ketone	ND	25	10	ug/kg	
100-42-5	Styrene	ND	5.0	1.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	5.0	1.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	5.0	1.3	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	5.0	1.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	5.0	1.0	ug/kg	
108-88-3	Toluene	ND	5.0	1.0	ug/kg	
79-01-6	Trichloroethylene	ND	5.0	1.0	ug/kg	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	TB072607S		
Lab Sample ID:	F51353-32	**Date Sampled:**	07/26/07
Matrix:	SO - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	5.0	1.4	ug/kg	
	m,p-Xylene	ND	10	1.1	ug/kg	
95-47-6	o-Xylene	ND	5.0	1.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-121%
2037-26-5	Toluene-D8	97%		71-130%
460-00-4	4-Bromofluorobenzene	113%		59-148%
17060-07-0	1,2-Dichloroethane-D4	121%		77-123%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072607W		
Lab Sample ID:	F51353-33	**Date Sampled:**	07/26/07
Matrix:	AQ - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0050228.D	1	08/06/07	KW	n/a	n/a	VC2031
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.20	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.29	ug/l	
75-25-2	Bromoform	ND	1.0	0.28	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.46	ug/l	
67-66-3	Chloroform	ND	1.0	0.21	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.20	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.29	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.25	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.23	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.25	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.24	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.20	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
591-78-6	2-Hexanone	ND	10	2.9	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.2	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.54	ug/l	
74-87-3	Methyl chloride	0.49 J	2.0	0.38	ug/l	J
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.0	ug/l	
100-42-5	Styrene	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.27	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.38	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	TB072607W		
Lab Sample ID:	F51353-33	**Date Sampled:**	07/26/07
Matrix:	AQ - Trip Blank Soil	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.34	ug/l	
	m,p-Xylene	ND	2.0	0.36	ug/l	
95-47-6	o-Xylene	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	105%		86-112%
460-00-4	4-Bromofluorobenzene	104%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	C0050227.D	1	08/06/07	KW	n/a	n/a	VC2031
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	25	10	ug/l	
71-43-2	Benzene	ND	1.0	0.20	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.29	ug/l	
75-25-2	Bromoform	ND	1.0	0.28	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.20	ug/l	
75-00-3	Chloroethane	ND	2.0	0.46	ug/l	
67-66-3	Chloroform	ND	1.0	0.21	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.20	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.29	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.25	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.23	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.20	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.25	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.28	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.24	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.20	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.20	ug/l	
591-78-6	2-Hexanone	ND	10	2.9	ug/l	
108-10-1	4-Methyl-2-pentanone	ND	5.0	2.2	ug/l	
74-83-9	Methyl bromide	ND	2.0	0.54	ug/l	
74-87-3	Methyl chloride	ND	2.0	0.38	ug/l	
75-09-2	Methylene chloride	ND	5.0	1.0	ug/l	
78-93-3	Methyl ethyl ketone	ND	5.0	2.0	ug/l	
100-42-5	Styrene	ND	1.0	0.20	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.29	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.37	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.30	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.25	ug/l	
108-88-3	Toluene	ND	1.0	0.27	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.38	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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Accutest Laboratories

Report of Analysis

Client Sample ID:	072607R		
Lab Sample ID:	F51353-8	**Date Sampled:**	07/26/07
Matrix:	AQ - Equipment Blank	**Date Received:**	07/27/07
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

VOA TCL List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-01-4	Vinyl chloride	ND	1.0	0.34	ug/l	
	m,p-Xylene	ND	2.0	0.36	ug/l	
95-47-6	o-Xylene	ND	1.0	0.20	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		87-116%
17060-07-0	1,2-Dichloroethane-D4	103%		76-127%
2037-26-5	Toluene-D8	104%		86-112%
460-00-4	4-Bromofluorobenzene	106%		84-120%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Shaw Environmental, Inc.
16406 US224 East
Findlay, OH 45840
419-425-6037
FAX: 419-425-6085

Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Pesticides and PCBs
Accutest Laboratories, Inc., SDG F52025

DATE: March 25, 2008 REVISED 6/10/08 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on August 22, 2007. Aqueous samples were analyzed for pesticides and PCBs using USEPA Method 3510C/8081A and 3510C/8082, respectively. A total of six aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SWMU1	F52025-1	43SWMU4	F52025-4
43SWMU2	F52025-2	43SWMU5	F52025-5
43SWMU3	F52025-3	43SWMU6	F52025-6

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
X		Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
X		System Monitoring Compounds
X		Laboratory Control Samples
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/18
Date

RFAAP VALIDATION REPORT
PESTICIDE/PCB REVIEW
SDG F52025

I-Holding Times and Preservation
The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, pesticide and PCB compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis (USEPA criteria).

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 08/22/07, the coolers were received by the primary laboratory (Accutest) on 08/23/07 at 1.4°C, 1.2°C, 1.0°C, 1.2°C, 1.0°C, 1.0°C, 1.6°C, 1.4°C, 1.2°C and 1.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/24/07 at 2.8°C and 5.8°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples on 08/28/07 at 4.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For aqueous samples collected 08/22/07, the pesticides were extracted on 08/28/07 and analyzed on 09/06/07 and 09/10/07. Sample 43SWMU5 (F52025-5) was re-extracted out of holding time on 09/13/07 and analyzed on 09/19/07 and 09/20/07 due to low surrogate recoveries and to confirm non-detects. Sample 43SWMU5 (F52025-5) was qualified as estimated "UJ" for non-detects based upon this outlier. The PCBs were extracted 08/28/07 and analyzed 09/06/07 and 09/08/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check (Degradation Standard)
Performance checks on the gas chromatograph with electron capture detector (GC/ECD) system are performed to ensure adequate resolution and instrument sensitivity. The performance evaluation mixture (PEM) must be analyzed at the beginning of the analytical sequence. The breakdown of Endrin and 4,4'-DDT must be ≤15% on both signals.

- For analysis performed on 08/31/07 @13:31, endrin and 4,4'-DDT percent breakdowns were 12.4% and 8.8% on signal #1 and 12.3% and 7.6% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 09/06/07 @09:36, endrin and 4,4'-DDT percent breakdowns were 14.4% and 7.4% on signal #1 and 14.9% and 7.0% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 09/07/07 @11:27, endrin and 4,4'-DDT percent breakdowns were 8.4% and 5.7% on signal #1 and 7.7% and 5.1% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 09/10/07 @09:46, endrin and 4,4'-DDT percent breakdowns were 6.8% and 4.7% on signal #1 and 6.3% and 4.2% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 09/19/07 @10:19, endrin and 4,4'-DDT percent breakdowns were 3.1% and 10.0% on signal #1 and 3.7% and 8.9% on signal #2, respectively. All criteria were met. No qualifiers were applied.

- For analysis performed on 09/20/07 @13:57, endrin and 4,4'-DDT percent breakdowns were 7.6% and 3.4% on signal #1 and 7.6% and 2.6% on signal #2, respectively. All criteria were met. No qualifiers were applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5 point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. Calibration factors are generated for each compound. The DoD QSM specifies that the percent relative standard deviation (%RSD) for all single peak target analytes, and aroclors 1016, 1242, 1254, and 1260 must be <20% or the mean %RSD for all analytes in the standard must be ≤20%. If linear regression is used, the correlation coefficient must be ≥0.995. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits.

- For the pesticide initial calibration performed on 08/31/07 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples 43SWMU1 (F2025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) were analyzed using this initial calibration.

- For the pesticide initial calibration performed on 09/07/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Sample 43SWMU5 (F52025-5) was analyzed using this initial calibration.

- For the pesticide initial calibration performed on 09/19/07 on instrument ECD6, all criteria were met. No qualifiers were applied. Sample 43SWMU5 (F52025-5) was analyzed using this initial calibration.

- For the PCB initial calibration performed on 09/06/07 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples 43SWMU1 (F2025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for pesticide/PCB target compounds. Continuing calibration standards containing both target compounds and surrogates are analyzed at the beginning of each 12-hour analytical shift and after every 20 samples. The DoD QSM specifies that the percent difference (%D) or the average %Ds for all analytes in the standard from the initial calibration should be no greater than ±20%.

- For pesticide initial calibration verification performed on 08/31/07 @16:57 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 09/06/07 @09:55 on instrument ECD5, all criteria were met. No qualifiers were applied. Samples 43SWMU1 (F2025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) were analyzed using this continuing calibration.

- For pesticide chlordane continuing calibration performed on 09/06/07 @10:18 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide toxaphene continuing calibration performed on 09/06/07 @10:33 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 09/06/07 @13:36 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 09/06/07 @16:47 on instrument ECD5, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 09/07/07 @14:58 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 09/10/07 @17:53 on instrument ECD6, all criteria were met. No qualifiers were applied. Sample 43SWMU5 (F52025-5) was analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 09/10/07 @19:28 on instrument ECD6, target compounds 4,4'-DDT (35.0%, 28.8%) and methoxychlor (24.7%, 24.9%) were outside criteria for signal #1 and signal #2 respectively. All other criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide initial calibration verification performed on 09/19/07 @13:19 on instrument ECD6, all criteria were met. No qualifiers were applied. Sample 43SWMU5 (F52025-5) was analyzed using this initial calibration verification.

- For pesticide continuing calibration performed on 09/19/07 @15:44 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For pesticide continuing calibration performed on 09/20/07 @22:55 on instrument ECD6, target compounds endrin aldehyde (22.1%) and endrin ketone (40.5%; grossly exceeding) were outside criteria for signal #1 and endrin ketone (37.9%) were outside criteria for signal #2. All other criteria were met. No qualifiers were applied. Sample 43SWMU5 (F52025-5) was analyzed using this continuing calibration and was qualified as estimated, "UJ", for endrin ketone for non-detects based upon grossly exceeding outlier.

- For pesticide continuing calibration performed on 09/20/07 @23:43 on instrument ECD6, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 initial calibration verification performed on 09/06/07 @15:58 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this initial calibration verification.

- For PCB 1016/1260 continuing calibration performed on 09/07/07 @02:33 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples 43SWMU1 (F2025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), and 43SWMU4 (F52025-4) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 09/07/07 @06:03 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples 43SWMU5 (F52025-5) and 43SWMU6 (F52025-6) were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 09/07/07 @07:30 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 09/08/07 @06:04 on instrument ECD3, all criteria were met. No qualifiers were applied. Samples 43SWMU5 (F52025-5) was analyzed using this continuing calibration.

- For PCB 1016/1260 continuing calibration performed on 09/08/07 @10:17 on instrument ECD3, all criteria were met. No qualifiers were applied. No samples reported were analyzed using this continuing calibration.

V-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for pesticide and PCB target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Parameter	Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
Pesticides	09/06/07	OP22089-MB	All target <½MRL	NA	NA	None
Pesticides	09/19/07	OP22329-MB	All target <½MRL	NA	NA	None
Pesticides	09/20/07	OP22329-MB	All target <½MRL	NA	NA	None
PCBs	09/07/07	OP22088-MB	All target <½MRL	NA	NA	None
PCBs	09/08/07	OP22088-MB	All target <½MRL	NA	NA	None

NA = Not Applicable
MRL = Method Reporting Limit

VI-System Monitoring Compound (Surrogates)

Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:	Tetrachloro-m-xylene:	Pesticides: 42-127% (DoD QSM 25-140%)
	Decachlorobiphenyl:	Pesticides: 27-127% (DoD QSM 30-135%)
Aqueous Criteria:	Tetrachloro-m-xylene:	PCBs: 38-127% (DoD QSM Not Listed)
	Decachlorobiphenyl:	PCBs: 25-137% (DoD QSM 40-135%)

- For pesticides sample 43SWMU5 (F52025-5), tetrachlorom-xylene (27.0%) and decachlorobiphenyl (8.0%) were below DoD QSM criteria and laboratory criteria. The sample was re-extracted and analyzed out of hold time to confirm non-detects. The surrogate recoveries were within criteria for the re-extracted sample. Since the original analysis and the re-extraction analysis QC had non-conformance issues the results were qualified as estimated bias "UJ".

- For all other samples, all criteria were met for pesticides and PCBs analysis.

VII-Laboratory Control Samples
Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-14 and Table D-16 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP22089-BS was used as the aqueous LCS for the pesticide analysis on 09/06/07. Compound endrin aldehyde (24%) was outside DoD QSM criteria, however within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon the low recovery. All other criteria were met. No qualifiers were applied. Samples 43SWMU1 (F2025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this LCS.

- Sample OP22329-BS was used as the aqueous LCS for the pesticide analysis on 09/19/07. Compound endrin aldehyde (13%) was outside DoD QSM criteria, however within laboratory criteria. Compound endrin aldehyde was non-detect for all associated samples and was qualified estimated bias "UL" for non-detects based upon the low recovery. All other criteria were met. No qualifiers were applied. Sample 43SWMU5 (F52025-5) applies to this LCS.

- Sample OP22088-BS was used as the aqueous LCS for the PCB analysis on 09/07/07. All criteria were met. No qualifiers were applied. Samples 43SWMU1 (F2025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5) and 43SWMU6 (F52025-6) apply to this LCS.

VIII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-14 and Table D-16 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Samples F51982-1 and F52428-1, non-project related samples, were used as the MS/MSD for the pesticide analysis. The RPD value was not evaluated. No qualifiers were applied.

- Sample F51982-2, a non-related project sample, was used as the MS/MSD for the PCB analysis. The RPD value was not evaluated. No qualifiers were applied.

IX-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- A field duplicate is not associated with this sample set. The RPD values were not evaluated. No qualifiers were applied.

X-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. The difference between the calculated value and the reported value must be within 10% difference. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." All criteria were met.

- All chlorinated pesticides and PCBs were non-detect for this SDG. No confirmations were required.

Sample: OP22089-BS, Aldrin

Conc. µg/L = (Amt * DF * Vt) / (CF * Vo)

where: Amt is the response on column (ng/mL) of the sample
CF = Calibration Factor (from initial calibration)
Vt is the volume of final extract (mL)
DF is the dilution factor
Vo is the volume of the sample extracted (mL)

Conc. µg/L = (10388054 ng/mL * 1 * 10 mL) / (217900 * 1000 mL)
= 0.074 ng/mL = 0.48 µg/L
Reported Conc. = 0.48 µg/L
%D = 0.0%
Values were within 10% difference

Sample: OP21770-BS, Aroclor 1016

Conc. µg/L = (Ax * Vt * DF) / (CF * Vi * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area/response for compound being measured.
Vt = Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10000 µL.
CF = Ave calibration response factor for compound being measured from ICAL (Area/pg)
Vi = Volume of extract injected (µL).
Vs = Volume of sample extracted (L).
DF = Dilution factor

Signal #1
Conc1 µg/L = (1002517 * 10000* 1) / (2984 *(1000000) * 1 * 1.00) = 3.36 µg/L
Conc2 µg/L = (1793074 * 10000* 1) / (5211 *(1000000) * 1 * 1.00) = 3.44 µg/L
Conc3 µg/L = (3281190 * 10000* 1) / (9490 *(1000000) * 1 * 1.00) = 3.46 µg/L
Conc4 µg/L = (1942218 * 10000* 1) / (5460 *(1000000) * 1 * 1.00) = 3.56µg/L
Conc5 µg/L = (1475262 * 10000* 1) / (4246 *(1000000) * 1 * 1.00) = 3.47 µg/L
Conc6 µg/L = (1709258 * 10000* 1) / (4676 *(1000000) * 1 * 1.00) = 3.66 µg/L
Average concentration = 3.5 µg/L

Signal #2
Conc1 µg/L = (152981 * 10000* 1) / (460 *(1000000) * 1 * 1.00) = 3.33 µg/L
Conc2 µg/L = (254833 * 10000* 1) / (732.3 *(1000000) * 1 * 1.00) = 3.48 µg/L
Conc3 µg/L = (456595 * 10000* 1) / (1313 *(1000000) * 1 * 1.00) = 3.48 µg/L
Conc4 µg/L = (251030 * 10000* 1) / (706.7 *(1000000) * 1 * 1.00) = 3.55 µg/L
Conc5 µg/L = (200165 * 10000* 1) / (558.1 *(1000000) * 1 * 1.00) = 3.59 µg/L
Conc6 µg/L = (230655 * 10000* 1) / (648.6 *(1000000) * 1 * 1.00) = 3.56µg/L
Average concentration = 3.5 µg/L

Reported Value = 3.5 µg/L (from signal #1)
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Semi-Volatiles & Polynuclear Aromatic Hydrocarbons Accutest Laboratories, Inc., SDG F52025

DATE: March 25, 2008 REVISED 6/10/8 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on August 22, 2007. Samples were analyzed for semivolatile organic compounds (SVOCs) using USEPA SW846 Methods 3510C/8270C for aqueous matrices. The polynuclear aromatic hydrocarbons (PAHs) were analyzed using selective ion monitoring (SIM) techniques. A total of six aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SWMU1	F52025-1	43SWMU4	F52025-4
43SWMU2	F52025-2	43SWMU5	F52025-5
43SWMU3	F52025-3	43SWMU6	F52025-6

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Surrogate Spikes
	X	Internal Standards
	X	Laboratory Control Sample
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
SEMIVOLATILES AND PAH REVIEW
SDG F52025

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For semivolatile (SVOC) and polynuclear aromatic hydrocarbons (PAH) compounds, the samples are cooled @4°C ± 2°C for aqueous samples with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 08/22/07, the coolers were received by the primary laboratory (Accutest) on 08/23/07 at 1.4°C, 1.2°C, 1.0°C, 1.2°C, 1.0°C, 1.0°C, 1.6°C, 1.4°C, 1.2°C and 1.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/24/07 at 2.8°C and 5.8°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples on 08/28/07 at 4.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For the aqueous samples collected 08/22/07, the SVOCs were extracted on 08/28/07 and analyzed on 09/08/07. Sample APGW03 (F51454-2) was re-extracted for confirmation analysis out of hold time on 08/20/07 and analyzed on 08/29/07. The original results were confirmed by the re-analysis and the original results were reported. For the aqueous samples collected 08/22/07, the PAHs by SIM were extracted on 08/28/07 and analyzed on 09/12/07 and 09/13/07. Sample collection dates may be found on the attached form 1s. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, decafluorotriphenylphosphine (DFTPP), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for compounds on the semivolatile target compound list (TCL). Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. The minimum relative response factor (RRF) criteria must be ≥0.05. The DoD QSM specifies that the initial calibration percent relative standard deviation (%RSD) must be ≤15% on the average for all compounds (<30% for CCCs). All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- Initial calibration for the SVOCs was performed on 08/16/07 on instrument MSBNA03. Target compounds 2,4-dinitrophenol (25.1%) and 4,6-dinitro-2-methylphenol (18.1%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9992) and 4,6-dinitro-2-methylphenol (r=0.9992) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. No samples were reported using this initial calibration.

- Initial calibration for the SVOCs was performed on 09/06/07 on instrument MSBNA03. Target compounds 2,4-dinitrophenol (38.8%) and 4,6-dinitro-2-methylphenol (16.1%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds 2,4-dinitrophenol (r=0.9964) and 4,6-dinitro-2-methylphenol (r=0.9998) were quantified using linear or second order regression with correlation coefficients >0.995, therefore, no qualifiers were applied based upon the high %RSDs. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) were analyzed using this initial calibration.

- Initial calibration for the PAHs by SIM was performed on 09/04/07 on instrument MSBNA01. All target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). No samples were analyzed using this initial calibration.

- Initial calibration for the PAHs by was performed on 09/06/07 on instrument MSBNA01, All target compounds were within criteria (%RSD≤15%; RRF≥0.05). No qualifiers were applied. Sample Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) were analyzed using this initial calibration for confirmation analysis.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used was capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration standards containing both target and surrogates compounds are analyzed at the beginning of each 12-hour analysis period following the analysis of the instrument performance check and prior to the analysis of blanks and samples. The minimum relative response factors (RRF) for semivolatile target compounds and surrogates must be ≥0.05. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within ±20% for all target compounds. Grossly exceeding is defined where %D>40%. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For SVOC initial calibration verification performed on 08/16/07 @12:53 on instrument MSBNA03, 4-chloroaniline (35.2%) and 3-nitroaniline (36.1%) were outside criteria limits. For all other target compounds, all criteria were met. All samples were non-detect for 4-chloroaniline and 3-nitroaniline. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC continuing calibration performed on 09/05/07 @11:53 on instrument MSBNA03, target compound 2,4-dinitrophenol (44.4%, grossly exceeded) was outside criteria. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For SVOC initial calibration verification performed on 09/06/07 @14:46 on instrument MSBNA03, bis(2-chloroethoxy)methane (23.6%) was outside criteria. For all other target compounds, all criteria were met. All samples were non-detect for bis(2-chloroethoxy)methane. No samples reported apply to this initial calibration verification. No qualifiers were applied.

- For SVOC continuing calibration performed on 09/08/07 @10:18 on instrument MSBNA03, all criteria were met for all target compounds. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 09/05/07 @12:35 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PAH by SIM initial calibration verification performed on 09/06/07 @13:48 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For PAH by SIM continuing calibration verification performed on 09/12/07 @09:59 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Sample 43SWMU1 (F52025-1) applies to this continuing calibration.

- For PAH by SIM continuing calibration verification performed on 09/13/07 @12:16 on instrument MSBNA01, all criteria were met for all target compounds. No qualifiers were applied. Sample 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) applies to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of DFTPP. No contaminants should be detected in any of the associated blanks > the MDL. DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants phthalate esters). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants phthalate esters, or 5 times (5X) the maximum amount for other semivolatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. Rinse blank 082307R (F52035-5) applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
09/05/07	OP22083-MB	All SVOC target <½MRL	NA	NA	None
09/08/07	OP22083-MB	All SVOC target <½MRL	NA	NA	None
09/05/07	082307R	All SVOC target <½MRL	NA	NA	None
09/06/07	OP22084-MB	All PAH SIM target <½MRL	NA	NA	None
09/12/07	OP22084-MB	All PAH SIM target <½MRL	NA	NA	None
09/13/07	OP22084-MB	All PAH SIM target <½MRL	NA	NA	None
09/14/07	082307R	All PAH SIM target <½MRL	NA	NA	None

NA = Not applicable.
MRL = Method reporting limit.

VI-Surrogate Spikes
Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Surrogate spikes are added to all samples and blanks to measure their recovery in sample and blank matrices. The percent recoveries (%Rs) must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-2 and Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria:
2-Fluorophenol (14-62%) – (DoD QSM = 20-110%)
Phenol – d5 (10-40%) – (DoD QSM = 10-115%)
2,4,6-Tribromophenol (33-118%) – (DoD QSM = 40-125%)
Nitrobenzene-d5 (42-108%) – (DoD QSM = 40-110%)
2-Fluorobiphenyl (40-106%) – (DoD QSM = 50-110%)
p-Terphenyl – d14 (39-121%) – (DoD QSM = 50-135%)

- All surrogate recovery criteria were met. No qualifiers were applied.

VII-Internal Standards
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The retention time of the internal standards in samples and blanks must not vary by more than ±30 seconds from the retention time of the associated calibration standard.

- All criteria were met. No qualifiers were applied.

VIII-Laboratory Control Sample
Laboratory control samples (LCS) are used to monitor laboratory accuracy by calculating the percent recoveries of the spiked compounds. All LCS percent recoveries must be within the specified control limits. DoD LCS aqueous recovery limits are specified in Table D-2 and Table D-6 of the DoD QSM (DoD, 2006).

- Sample OP22083-BS was used as the aqueous LCS for the SVOC analysis on 09/05/07. All criteria were met. All criteria were met. No qualifiers were applied. No samples reported apply to this LCS.

- Sample OP22083-BS was used as the aqueous LCS for the SVOC analysis on 09/08/07. All criteria were met. All criteria were met. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this LCS.

- Sample OP22084-BS was used as the aqueous LCS for the PAH SIM analysis on 09/06/07. All criteria were met. No qualifiers were applied. No samples reported apply to this LCS.

- Sample OP22084-BS was used as the aqueous LCS for the PAH SIM analysis on 09/12/07. All criteria were met. All criteria were met. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this LCS.

IX-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-2 and Table D-6 of the DoD QSM (DoD, 2006).

- Non-project related sample was used for the analysis of the MS/MSD pair. The precision was not evaluated. No qualifiers were applied.

X-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- No field duplicate is associated with this sample set. No qualifiers were applied.

XI-Quantitation Verification
The accuracy of analytical results was verified through the calculation of several parameters. Percent difference (%D) between the calculated and reported values must be ≤10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: 43SWMU6, N-nitrosodiphenylamine

Conc. (µg/L) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_o)*(V_i)}

where:	$Conc_{sample}$	=	Sample concentration in µg/L
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_o	=	Volume of water extracted (mL).
	V_i	=	Volume of extract injected (µL).
	DF	=	Dilution Factor

Conc. µg/L = (23062 * 40 * 1000 * 1) / (338878 * 0.588 * 1000 * 1) = 4.63 ng/mL
= 34.5 µg/L

Reported Value = 4.63 µg/L
% Difference = 0.0%
Values were within 10% difference.

Sample: OP22084-BS, phenanthrene

Conc. (µg/L) = {(Ax)*(Is)*(Vt)*(DF)}/{(Ais)*(RRF)*(V_o)*(V_i)}

where:	$Conc_{sample}$	=	Sample concentration in µg/L
	A_x	=	Area of characteristic ion for compound being measured.
	I_s	=	Amount of internal standard injected (ng).
	V_t	=	Volume of total extract, taking into account dilutions (i.e., a 1-to-10 dilution of a 1-mL extract will mean V(t) = 10,000 µL.
	A_{is}	=	Area of characteristic ion for the internal standard.
	RRF_A	=	Average relative response factor for compound being measured
	V_o	=	Volume of water extracted (mL).
	V_i	=	Volume of extract injected (µL).
	DF	=	Dilution Factor

Conc. µg/L = (388589 * 4 * 1000 * 1) / (284506 * 1.190 * 1000 * 1) = 4.59 ng/mL
= 2.0 µg/L

Reported Value = 4.59 µg/L
% Difference = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Perchlorate
Datachem Laboratories, Inc. SDG 07E-0766-01
(Accutest Laboratories, Inc., SDG F52025)

DATE: March 25, 2008 REVISED 6/10/08 PPC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on August 22, 2007. The aqueous samples were analyzed for perchlorate analysis using liquid chromatography mass spectroscopy (LC/MS) SW-846 method 6850 in selective ion monitoring (SIM) mode. A total of six aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SWMU1	F52025-1	43SWMU4	F52025-4
43SWMU2	F52025-2	43SWMU5	F52025-5
43SWMU3	F52025-3	43SWMU6	F52025-6

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *DOD Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006), *DoD Perchlorate Handbook August, Rev1, Change 1, 2007* (DoD, 2007), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Check
	X	Initial and Continuing Calibration
	X	Blank Analysis
	X	Internal Standards
	X	Laboratory Control Sample (LCS)
	X	Matrix Spike (MS) and Spike Duplicate (MSD)
	X	Field Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
PERCHLORATE REVIEW
SDG 07E-0766-01 (F52025)

I-Holding Times and Preservation

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. For perchlorate analysis, aqueous samples are received and stored at cool @4°C±2°C with a maximum holding time of 28 days from collection (DoD Perchlorate Handbook criteria).

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 08/22/07, the coolers were received by the primary laboratory (Accutest) on 08/23/07 at 1.4°C, 1.2°C, 1.0°C, 1.2°C, 1.0°C, 1.0°C, 1.6°C, 1.4°C, 1.2°C and 1.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/24/07 at 2.8°C and 5.8°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples on 08/28/07 at 4.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: The aqueous samples were collected on 08/22/07. The aqueous perchlorate samples were prepped on 09/04/07 and analyzed on 09/04/07. All holding time criteria were met. No qualifiers were applied.

II-Instrument Performance Check

GC/MS instrument performance checks are performed to ensure mass resolution, identification and, to some degree, sensitivity. The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, $^{35}Cl^{16}O_3$, met the mass calibration criteria. No qualification was applied.

III-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

Perchlorate:	1- blank (<1/2MRL DoD Perchlorate Handbook)
	5 – standards (r≥0.995 DoD Perchlorate Handbook)
	ICV (±10%D DoD Perchlorate Handbook)
	CCV/ICS (±30%D DoD Perchlorate Handbook)
	LODV (±30%D DoD Perchlorate Handbook)

- The perchlorate samples were analyzed on 09/04/07 for the aqueous samples. Perchlorate was calibrated second order for on 09/04/07 with a coefficient of 0.9999. All ICV/CCV/ICS/LODV standards were within criteria. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F51454-6) apply to this calibration.

IV-Blanks

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be detected in any of the associated blanks >MDL. The DoD Perchlorate Handbook criterion specifies all concentrations should be less than ½ MRL for method blanks. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5X) the maximum amount for target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc. µg/L	Action Level µg/L	B qualified samples
09/04/07	Perchlorate	BL-259634-1	<½MRL	NA	None

MRL = Method Reporting Limit.
NA = Not Applicable.

V-Internal Standards

Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Internal standard area counts for samples and blanks must not vary by more than a factor of two (-50% to +100%) from the associated calibration standard. The DoD Handbook specifies retention times (RT) 1.0 ± 2% of last calibration standard and the ratio of RT of sample to standard should be 3.06 and fall between 2.3 and 3.8. The laboratory 83:85 mass ratio limit range is 2.15 to 4.00. The internal standard peak area responses should fall between 50% to 150% recoveries.

- All criteria were met. No qualifiers were applied.

VI-Laboratory Control Samples (LCS)

The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. DoD Perchlorate Handbook and laboratory aqueous limits are 85-115%.

- Sample QC-259204-1 was used as aqueous LCS for perchlorate analysis dated 09/04/07. All criteria were met. No qualifiers were applied.

VII-Matrix Spike (MS) and Spike Duplicate (MSD)

MS and MSD are generated to determine long-term accuracy and precision of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike samples at a frequency of one MS/MSD per 20 samples of similar matrix. MS/MSD recoveries and relative percent differences between MS recoveries should be within the specified limits. DoD Perchlorate Handbook aqueous limits are 75-125%; RPD≤20%. The laboratory limits are 80-120%; RPD≤15%.

- Sample 43SWMU1 (F52025-1) was used used for the MS/MSD analysis. All criteria were met. No qualifiers were applied.

VIII-Field Duplicate Sample Analysis

Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- No field duplicate was provided for this sample set. No qualifiers were applied the samples in this SDG.

IX-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever was greater) was qualified as estimated, "J." The following calculations were performed for verification.

Sample: 43SWMU1 (F52025-1), Perchlorate

y (area ratio) = (Sample Area/Area EIC89) = (3022.0/61184.0) = 0.0493920 = ax^2 + bx + c

Setting y = 0,
x = [-b ± SQRT(b^2-4ac)] / (2a)

where: x is the amount ratio

a = 0.0350178 b = 1.23841 (set to zero = c-y) c = - .000900730 – 0.0493920 = -0.050292728

amount ratio ={-1.23841± [SQRT{(1.23841^2) – (4*0.0350178*-.050292728)}] / (2*0.0350178)
= (-1.23841±1.241251) / (0.0700356)
= 0.0040564

Conc. µg/L = (Amount ratio * Is * DF)

where: Conc. = Sample concentration in ug/L
I_s = Amount of internal standard (µg/L).
DF = Dilution factor

Conc. µg/L = (Amount ratio * Is * DF)
= (0.0040564* 5 µg/L * 1) = 0.203 µg/L

Reported concentration = 0.203 µg/L
%D = 0.0%
Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – TAL Metals (Total)
Accutest Laboratories, Inc., SDG F52025

DATE: March 25, 2008 REVISED 6/10/8 pdc

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on August 22, 2007. Aqueous samples were analyzed for total target analyte list (TAL) metals using USEPA SW-846 3010A/6010B for ICP metals and SW-846 7470A for mercury. A total of six aqueous samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SWMU1	F52025-1	43SWMU4	F52025-4
43SWMU2	F52025-2	43SWMU5	F52025-5
43SWMU3	F52025-3	43SWMU6	F52025-6

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Inorganic Data Review* (April, 1993). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial and Continuing Calibration
X		Blank Analysis
	X	ICP Interference Check Sample (ICS)
	X	Laboratory Control Sample (LCS)
	X	Laboratory Sample Duplicate
	X	Matrix Spike and Spike Duplicate
X		ICP Serial Dilution
	X	Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
METALS REVIEW
SDG F52025

I-Holding Times

The primary objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample analysis. Holding time criteria: For aqueous matrices, the samples are shipped cool @4°C±2°C and preserved to pH<2 with HNO_3 with a maximum holding time is 180 days for ICP metals and 28 days for mercury.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 08/22/07, the coolers were received by the primary laboratory (Accutest) on 08/23/07 at 1.4°C, 1.2°C, 1.0°C, 1.2°C, 1.0°C, 1.0°C, 1.6°C, 1.4°C, 1.2°C and 1.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/24/07 at 2.8°C and 5.8°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples on 08/28/07 at 4.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For aqueous samples collected 08/22/07, they were digested on 09/05/07 and analyzed on 09/06/07 for total all ICP total metals. The samples were digested on 08/30/07 and analyzed on 08/30/07 for total mercury. All criteria were met. No qualifiers were applied.

II-Initial and Continuing Calibration

Requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable quantitative data. Initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of the analysis run, and continuing calibration verification documents that the initial calibration is still valid.

ICP:	1- blank (DoD QSM <½ MRL) 3 – standards (r≥0.995) ICV/CCV (90-110%) (DoD QSM 90-110%) MRL (70-130%) (DoD QSM 80-120%) High Std. (95-105%)	Hg:	1 – blank (DoD QSM <½ MRL) 5 – standards (r≥0.995) ICV/CCV (80-120%)(DoD QSM ICV 90-110% & CCV 80-120%) MRL (80-120%) (DoD QSM 80-120%) High Std. (95-105%)

- TOTAL METALS – The aqueous samples were analyzed for ICP metals on 09/05/07 for all ICP metals. Mercury was analyzed for the aqueous samples on 08/30/07 with a correlation coefficient of 0.9998. All ICV/CCV/High Standard criteria were met for all metals and runs. **Table 2** summarizes the MRL standard analysis. Samples with concentrations detected less than two times the MRL with out of criteria MRL recovery were qualified.

Table 2 MRL Analysis Summary

Analysis Date	Analysis	MRL (µg/L)	MRL %Recovery	Qualified samples @ <2xMRL	Validation Qualifiers
08/30/07	Hg	1.0	60%	All	L, UL
09/05/07	ICP- Sb	6.0	121%	None	None
09/05/07	ICP-Se	10	124%	None	None

III-Blanks
Blanks (preparation and calibration blanks) are assessed to determine the existence and magnitude of contamination problems. No contaminants should be detected (i.e. <MDL) in any of the associated blanks. DoD QSM limits are <½MRL for the method blank and <2*MDL for the calibration blanks. Samples are qualified "B" when they are less than 5x the absolute value of the maximum blank concentration. **Table 3** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to these samples.

- The instrument has demonstrated baseline drift for antimony during the analysis of samples. The amount detected in the CCBs range from 3.6 to 17.9 ug/L for antimony. The laboratory increased the MRL by a factor of 2 for the CCBs from 6.0 ug/L to 12 ug/L. There is no evidence of volume change or dilutions to warrant the increase in the MRL. The ability to accurately report values at the original MRL level of 6.0 ug/L is severely challenged. Antimony was non-detect for all associated samples and reported as non-detect at the elevated MRL. Antimony was qualified estimated non-detect "UJ" for both the total fractions based on professional judgment for all associated samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5) and 43SWMU6 (F52025-6).

Table 3 Blank Contamination Analysis Summary

Analysis Date	Analysis	QC Blank ID	Max Conc. µg/L	Action Level µg/L	B qualified samples
09/05/07	Sb	ICB/CCBs	17.9	89.5	None
08/30/07	Hg	ICB/CCBs	<2*MDL	NA	None
09/05/07	ICP	ICB/CCBs	<2*MDL	NA	None

IV-ICP Interference Check Sample (ICS)
The ICP interference check sample (ICS) verifies interelement and background correction factors. ICP Interference Check is performed at the beginning and end of each sample analysis run. Control limits are 80-120% (DoD QSM limits 80-120%).

- All ICP metals met criteria. No qualifiers were applied.

V-Laboratory Control Samples (LCS)
The laboratory control sample (LCS) serves as a monitor of the overall performance of each step during the analysis, including the sample preparation. All aqueous LCS results must fall within the control limits. The DoD QSM aqueous LCS recovery limits are specified in Table D-18 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample MP12878-BS was used as aqueous LCS for ICP total metals analysis on 09/05/07. All criteria were met. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5) and 43SWMU6 (F52025-6) apply to this LCS.

- Sample MP12843-BS was used as aqueous LCS for total mercury analysis performed on 08/06/07. All criteria were met. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5) and 43SWMU6 (F52025-6) apply to this LCS.

VI-Laboratory Duplicate Sample Analysis
Duplicate sample determinations are used to demonstrate acceptable method precision by the laboratory at the time of analysis. Duplicate analyses are also performed to generate data in order to determine the long-term precision of the analytical method on various matrices. RPDs must be within established control limits. DoD QSM limits for metals are 20% RPD for ICP metals and mercury.

- Sample 43SWMU1 (F52025-1) was used as aqueous laboratory duplicates for ICP total analyses. The RPD value for beryllium (40%) was outside criteria. The reported values used in the evaluation are less than 5x the MDL; therefore, no qualifier was applied based upon this outlier.

VII-Matrix Spike/Spike Duplicate
MS/MSD are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. Specific criteria include the analyses of matrix spike and matrix spike duplicate samples at a frequency of one MS and MSD per 20 samples of similar matrix. MS and MSD recoveries and relative percent differences between MS and MSD recoveries should be within the specified limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-18 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used. Post digestion spikes limits are 75-125% for ICP metals and mercury.

- Sample 43SWMU1 (F52025-1) was used as aqueous matrix spike and matrix spike duplicate for ICP total metals analysis. All criteria were met. No qualifiers were applied.

VIII-ICP Serial Dilution
An ICP serial dilution is performed to determine whether significant physical or chemical interferences exist due to sample matrix at high concentrations. An analysis of a 5-fold dilution should agree within 10% difference of the original result when the concentration in sample is a factor of 50 above MDL.

- Sample 43SWMU1 (F52025-1) was used for ICP serial dilution. Magnesium (12.2%) was outside the criteria. All other metals were within criteria. All samples were qualified as estimated, "J" for magnesium based upon this outlier.

IX-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 35% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- No field duplicate is associated with this sample set. The RPD value was not evaluated.

X-Quantitation Verification
The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J." The following calculations were performed for verification.

ICP Sample: 43SWMU1 (F52025-1), Aluminum

Conc. (µg/L) = (conc. µg/L) *(Final Volume mL) * (DF) / (Volume Sample mL)

Conc. (µg/L) = (198 µg/L)*(50 mL)*(1) / (50 mL) = 198 µg/L

Reported concentration = 198 µg/L
%D = 0.0%
Values were within 10% difference.

CVAA Sample: MP12843-BS, Mercury

Conc. (µg/L) = (conc. µg/L) *(Final Volume mL) * (DF) / (Volume Sample mL)

Conc. (µg/L) = (3.0 µg/L)*(50 mL)*(1) / (50 mL) = 3.0 µg/L

Reported concentration = 3.0 µg/L
%D = 0.0%.
Values were within 10% difference.

USEPA Region III Validation Qualifiers

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B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

D = Indicates sample was analyzed at a dilution.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

N (Metals) = Laboratory spike sample recovery not within control limits.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Report of Analysis

Client Sample ID:	43MW1		
Lab Sample ID:	F52025-1	**Date Sampled:**	08/22/07
Matrix:	AQ - Ground Water	**Date Received:**	08/23/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
J	Aluminum	198 J	200	79	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UJ	Antimony [a]	6.6 U	12	6.6	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Arsenic	3.7 U	10	3.7	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Barium	63.2 J	200	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Beryllium	1.2 J	4.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Calcium	51100	1000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Chromium	6.5 J	10	0.92	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Cobalt	1.6 J	50	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Copper	1.2 U	25	1.2	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Iron	197 J	300	15	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Magnesium	26000	5000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Manganese	17.3	15	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UL	Mercury	0.11 U	1.0	0.11	ug/l	1	08/30/07	08/30/07	LM	SW846 7470A [1]	SW846 7470A [3]
J	Nickel	2.8 J	40	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Potassium	2310 J	10000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Selenium	4.0 U	10	4.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Silver	0.77 U	10	0.77	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Sodium	8900 J	10000	500	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Vanadium	1.3 J	50	1.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Zinc	5.0 U	20	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5945
(2) Instrument QC Batch: MA5956
(3) Prep QC Batch: MP12843
(4) Prep QC Batch: MP12878

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43MW2		
Lab Sample ID:	F52025-2	**Date Sampled:**	08/22/07
Matrix:	AQ - Ground Water	**Date Received:**	08/23/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
	Aluminum	714	200	79	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UJ	Antimony [a]	6.6 U	12	6.6	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Arsenic	4.4 J	10	3.7	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Barium	42.6 J	200	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Beryllium	2.0 J	4.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Calcium	94800	1000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Chromium	10.9	10	0.92	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cobalt	1.0 U	50	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Copper	1.2 U	25	1.2	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Iron	11800	300	15	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
= J	Magnesium	34900	5000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Manganese	8.4 J	15	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UL	Mercury	0.11 U	1.0	0.11	ug/l	1	08/30/07	08/30/07	LM	SW846 7470A [1]	SW846 7470A [3]
J	Nickel	3.3 J	40	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Potassium	2940 J	10000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Selenium	4.0 U	10	4.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Silver	0.77 U	10	0.77	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Sodium	5350 J	10000	500	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Vanadium	1.7 J	50	1.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Zinc	5.7 J	20	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]

6/10/8 PDC

(1) Instrument QC Batch: MA5945
(2) Instrument QC Batch: MA5956
(3) Prep QC Batch: MP12843
(4) Prep QC Batch: MP12878

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43MW3		
Lab Sample ID:	F52025-3	**Date Sampled:**	08/22/07
Matrix:	AQ - Ground Water	**Date Received:**	08/23/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
U	Aluminum	79 U	200	79	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UJ	Antimony [a]	6.6 U	12	6.6	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Arsenic	34.9	10	3.7	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Barium	75.4 J	200	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Beryllium	1.0 U	4.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Calcium	152000	1000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Chromium	1.9 J	10	0.92	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Cobalt	2.4 J	50	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Copper	1.2 U	25	1.2	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Iron	10200	300	15	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Magnesium	64100	5000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Manganese	9.9 J	15	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UL	Mercury	0.11 U	1.0	0.11	ug/l	1	08/30/07	08/30/07	LM	SW846 7470A [1]	SW846 7470A [3]
J	Nickel	4.1 J	40	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Potassium	3600 J	10000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Selenium [b]	20 U	40	20	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Silver	0.77 U	10	0.77	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Sodium	11600	10000	500	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Vanadium	1.1 U	50	1.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Zinc	5.0 U	20	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5945
(2) Instrument QC Batch: MA5956
(3) Prep QC Batch: MP12843
(4) Prep QC Batch: MP12878

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.
(b) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43MW4		
Lab Sample ID:	F52025-4	**Date Sampled:**	08/22/07
Matrix:	AQ - Ground Water	**Date Received:**	08/23/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
U	Aluminum	79 U	200	79	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UJ	Antimony [a]	6.6 U	12	6.6	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Arsenic	8.2 J	10	3.7	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Barium	226	200	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Beryllium	1.5 J	4.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Calcium	85700	1000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Chromium	2.2 J	10	0.92	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Cobalt	6.2 J	50	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Copper	1.2 U	25	1.2	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Iron	10900	300	15	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Magnesium	32600	5000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Manganese	835	15	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UL	Mercury	0.11 U	1.0	0.11	ug/l	1	08/30/07	08/30/07	LM	SW846 7470A [1]	SW846 7470A [3]
J	Nickel	2.9 J	40	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Potassium	2370 J	10000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Selenium	4.0 U	10	4.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Silver	0.77 U	10	0.77	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Sodium	9790 J	10000	500	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Vanadium	1.1 U	50	1.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Zinc	8.0 J	20	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5945
(2) Instrument QC Batch: MA5956
(3) Prep QC Batch: MP12843
(4) Prep QC Batch: MP12878

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Report of Analysis

Client Sample ID:	43MW5		
Lab Sample ID:	F52025-5	**Date Sampled:**	08/22/07
Matrix:	AQ - Ground Water	**Date Received:**	08/23/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
U	Aluminum	79 U	200	79	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UJ	Antimony [a]	6.6 U	12	6.6	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Arsenic	3.7 U	10	3.7	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Barium	170 J	200	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Beryllium	1.0 U	4.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Calcium	111000	1000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Chromium	2.0 J	10	0.92	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cobalt	1.0 U	50	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Copper	1.2 U	25	1.2	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Iron	15 U	300	15	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Magnesium	46000	5000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Manganese	3.1 J	15	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UL	Mercury	0.11 U	1.0	0.11	ug/l	1	08/30/07	08/30/07	LM	SW846 7470A [1]	SW846 7470A [3]
J	Nickel	1.2 J	40	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Potassium	2860 J	10000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Selenium [b]	16 U	20	16	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Silver	0.77 U	10	0.77	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Sodium	6750 J	10000	500	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Vanadium	1.1 U	50	1.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Zinc	5.0 U	20	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5945
(2) Instrument QC Batch: MA5956
(3) Prep QC Batch: MP12843
(4) Prep QC Batch: MP12878

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.
(b) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	43MW6		
Lab Sample ID:	F52025-6	**Date Sampled:**	08/22/07
Matrix:	AQ - Ground Water	**Date Received:**	08/23/07
		Percent Solids:	n/a
Project:	WPA 019 Field Investigation; Radford AAP, VA		

Metals Analysis

	Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
U	Aluminum	79 U	200	79	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UJ	Antimony [a]	6.6 U	12	6.6	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Arsenic	3.7 U	10	3.7	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Barium	181 J	200	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Beryllium	1.1 J	4.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Cadmium	1.0 U	5.0	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Calcium	104000	1000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Chromium	1.4 J	10	0.92	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Cobalt	2.3 J	50	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Copper	1.2 U	25	1.2	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Iron	3820	300	15	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Lead	2.1 U	5.0	2.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Magnesium	43500	5000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Manganese	144	15	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
UL	Mercury	0.11 U	1.0	0.11	ug/l	1	08/30/07	08/30/07	LM	SW846 7470A [1]	SW846 7470A [3]
U	Nickel	1.0 U	40	1.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
J	Potassium	2700 J	10000	100	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Selenium [b]	16 U	20	16	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Silver	0.77 U	10	0.77	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
	Sodium	15000	10000	500	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Thallium	6.5 U	10	6.5	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Vanadium	1.1 U	50	1.1	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]
U	Zinc	5.0 U	20	5.0	ug/l	1	09/05/07	09/06/07	DM	SW846 6010B [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA5945
(2) Instrument QC Batch: MA5956
(3) Prep QC Batch: MP12843
(4) Prep QC Batch: MP12878

(a) Elevated RL/MDL due to CRIA exceeding acceptance criteria.
(b) Elevated reporting limit(s) due to matrix interference.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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MEMORANDUM

TO: Jeff Parks, Shaw E&I RFAAP Project Manager

FROM: Philip Conley, Shaw E&I RFAAP Project Chemist

SUBJECT: Radford Army Ammunition Plant (RFAAP) Data Validation – Herbicides
Accutest Laboratories, Inc., SDG F52025

DATE: March 25, 2008 REVISED 6/10/8 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on August 22, 2007. Aqueous samples were analyzed for chlorinated herbicides using USEPA SW846 Method 3510C/8151A. A total of six aqueous samples were validated. The sample Ids are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SWMU1	F52025-1	43SWMU4	F52025-4
43SWMU2	F52025-2	43SWMU5	F52025-5
43SWMU3	F52025-3	43SWMU6	F52025-6

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times
X		Initial Calibration
X		Continuing Calibration
	X	Blank Analysis
	X	System Monitoring Compounds
	X	Laboratory Control Sample
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
CHLORINATED HERBICIDES REVIEW
SDG F52025

I-Holding Times

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, chlorinated herbicides compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 08/22/07, the coolers were received by the primary laboratory (Accutest) on 08/23/07 at 1.4°C, 1.2°C, 1.0°C, 1.2°C, 1.0°C, 1.0°C, 1.6°C, 1.4°C, 1.2°C and 1.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/24/07 at 2.8°C and 5.8°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples on 08/28/07 at 4.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For aqueous samples collected 08/22/07, the herbicides were extracted on 09/01/07 and analyzed on 09/01/07. No qualifiers were applied.

II-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The DoD QSM specifies that the percent relative standard deviation (%RSD) for a 5-point standard calibration should be ≤20% for each target compound.

- No initial calibration was provided for MCPP and MCPA on instrument GC-DD. During discussions with the laboratory, they indicated that they perform a daily single point calibration rather than a five point calibration. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this single point calibration.

- For initial calibration performed on 08/31/07 on instrument GC-DD, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this initial calibration.

III-Continuing Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for semivolatile target compounds. Continuing calibration establishes the response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The DoD QSM specifies that the percent difference (%D) between the initial calibration CF and the continuing calibration CF must be ≤20%.

- A single point calibration was provided for MCPP and MCPA on instrument GC-DD for 08/31/07 run. The calibration standard indicated adequate response for MCPP and MCPA. However, since a five point calibration was not performed, %D calculation could not be verified. All samples were non-detect and qualified estimated "UJ" based upon this outlier. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this single point calibration.

- For continuing calibration performed on 08/31/07 @23:51 on instrument GC-DD, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 09/01/07 @04:49 on instrument GC-DD, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this continuing calibration.

- For continuing calibration performed on 09/01/07 @09:48 on instrument GC-DD, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 09/05/07 @21:41 on instrument GC-DD, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For continuing calibration performed on 09/05/07 @23:56 on instrument GC-DD, all criteria were met for signal #1 and signal #2 for all target compounds, except MCPP and MCPA. No qualifiers were applied. No samples reported apply to this continuing calibration.

IV-Blank Analysis
The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field or laboratory activities. No contaminants should be detected in any of the associated blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are qualified "B" if the concentration of the analyte is ≤ five times (5x) the absolute maximum blank concentration. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
09/01/07	OP7963-MB	All target compounds <½MRL	NA	NA	None

V-System Monitoring Compounds (Surrogates)
Laboratory performance on individual samples is established by means of spiking activities. All samples are spiked with surrogate compounds prior to sample preparation. Spike recoveries must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Control Limit: 2,4-DCAA (34-179%)

- All criteria were met. No qualifiers were applied.

VI-Laboratory Control Samples
Data for laboratory control samples (LCS) are generated to determine long-term precision and accuracy of the analytical method. Percent recoveries must be within the specified control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-8 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP7963-BS was used as the aqueous LCS for the 09/01/07 run. Laboratory reported double spiking of analytes. All herbicides were within criteria. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-8 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample 43SWMU1 (F52025-1) was used for the aqueous MS/MSD analysis on 09/05/07. the laboratory reported the MS/MSD spiking was doubled. Compound dinoseb (RPD=67%) was above laboratory criteria. All samples were non-detect for these herbicides; therefore, no qualifiers were applied based upon these outliers. All other herbicides were within criteria. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this MS/SD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were qualified because of blank contamination (B-qualified) or were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- No project specific aqueous field duplicate was performed in this SDG; therefore, it was not evaluated.

IX-Quantitation Verification

The accuracy of analytical results is verified through the calculation of several parameters. Percent difference (%D) between the calculated value and the reported value must be within 10%. All positive values must have less than or equal to 40% %D between the primary and secondary columns. Any sample value >MDL and <MRL is qualified as estimated, "J." All criteria were met. No qualifiers were applied.

- All chlorinated herbicides were non-detect. No confirmations were required.

Sample: 43SWMU1-MS (F52025-1MS), 2,4-D

Conc. µg/L = (Amt * DF * Vt) / (CF * Vo)

where: Amt = the response on column (ng/mL) of the sample
CF = Calibration Factor (from initial calibration)
Vt = volume of final extract (mL)
DF = dilution factor
Vo = volume of the sample extracted (mL)

Conc. µg/L = (5701991 ng/mL * 1 * 10 mL) / (14240* 1000 mL) / 2 (lab reported double spiking)
= 2.0 ng/mL = 2.0 µg/L

Reported Conc. = 2.0 µg/L
%D = 0.0%
Values were within 10% difference

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

A (Dioxins) = MDL is based upon the signal-to-noise measurement.

B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics and Dioxins) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

D (Organics) = Indicates sample was analyzed at a dilution.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

E (Dioxins) = Reported value is estimated because of the presence of ether interferences.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/F ions is outside accepted ranges. The detected PCDD/F is reported as an estimated maximum possible concentration (EMPC).

I (Dioxins) = Reported value is estimated because of the incorrect isotope rations were obtained.

J (All) = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, (2) estimating a concentration <MRL and ≥ MDL, or estimating a concentration below the calibration range.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

U (All) = ND = BQL = Not detected. The associated number indicates the compound reporting limit for the sample.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation – Explosives, PETN, & Nitroglycerin
Accutest Laboratories, Inc., SDG F52025

DATE: March 25, 2008 REVISED 6/10/08 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on August 22, 2007. Aqueous samples were analyzed for explosives, nitroglycerin, and PETN using USEPA SW-846 3535A/8330A. A total of six aqueous samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SWMU1	F52025-1	43SWMU4	F52025-4
43SWMU2	F52025-2	43SWMU5	F52025-5
43SWMU3	F52025-3	43SWMU6	F52025-6

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Blank Analysis
	X	Initial Calibration
	X	Continuing Calibration
	X	System Monitoring Compounds
	X	Laboratory Control Sample
	X	Matrix Spike/Spike Duplicate
	X	Field Duplicate
	X	Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
EXPLOSIVES REVIEW
SDG F52025

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of sample extraction and analysis. Holding time criteria: For aqueous samples, explosive compounds are shipped cooled (@4°C ± 2°C) with a maximum holding time of 7 days from sample collection to preparative extraction and 40 days from preparative extraction to determinative analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 08/22/07, the coolers were received by the primary laboratory (Accutest) on 08/23/07 at 1.4°C, 1.2°C, 1.0°C, 1.2°C, 1.0°C, 1.0°C, 1.6°C, 1.4°C, 1.2°C and 1.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/24/07 at 2.8°C and 5.8°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples on 08/28/07 at 4.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For the aqueous samples collected 08/22/07, the explosives were extracted on 08/29/07 and analyzed on 08/30/07 and 08/31/07. All criteria were met. No qualifiers were applied.

II-Blank Analysis

The purpose of laboratory or field blank analyses is to determine the existence and magnitude of contamination problems resulting from laboratory or field activities. One method blank per analytical batch must be run on each instrument used to analyze samples. No contaminants should be present in the blanks. The DoD QSM criterion specifies all concentrations should be less than one-half MRL. Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤5 times (5x) the maximum amount for explosive target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. No rinse blank applies to the groundwater "GW" samples in this SDG.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
08/30/07	OP22102-MB	PETN & NG <½MRL	NA	NA	None
08/30/07	OP22102-MB	All target explosives <½MRL	NA	NA	None
08/31/07	OP22102-MB	All target explosives <½MRL	NA	NA	None
08/31/07	OP22102-MB	All target explosives <½MRL	NA	NA	None
08/09/07	OP21754-MB	All target explosives <½MRL	NA	NA	None

MRL = Method Reporting Limit
NA = Not Applicable

III-Initial Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. The initial 5-point calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run. The DoD QSM specifies that the correlation coefficient must be ≥0.995 and/or the percent relative standard deviation (%RSD) must be ≤20%. All detects were qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For the explosives initial calibration performed on 10/20/06 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. No samples apply to this initial calibration.

- For the explosives initial calibration performed on 08/21/07 on instrument G1315B, all criteria were met for target explosives compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this initial calibration.

- For the PETN and nitroglycerin initial calibration performed on 03/15/07 on instrument G1315B, all criteria were met for target compounds. All compounds were determined using calibration factors with RSDs ≤20%. No qualifiers were applied. Samples APGW02 (F51454-1), APGW03 (F51454-2), APGW04 (F51454-3), APGW05 (F51454-4) and TMGW05 (F1454-5) apply to this initial calibration.

IV-Continuing Calibration
Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for the target compounds. Continuing calibration standards are analyzed after every 10 injections, and at the end of the analysis sequence. The DoD QSM specifies that the percent difference (%D) from initial calibration should be no greater than ±20%. All detects were qualified as estimated "J" for where there were exceeding %Ds, and all non-detects were qualified as estimated "UJ" for where there were grossly exceeding recoveries. Grossly exceeding is defined as twice the established criteria limits.

- For explosives initial calibration verification performed on 10/20/06 @14:03 on instrument G1315B, target compound nitrobenzene (20.5%) was outside criteria. All other target compounds met criteria. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 10/20/06 @15:10 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives initial calibration verification performed on 08/21/07 @20:17 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/30/07 @10:44 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/30/07 @15:47 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), and 43SWMU6 (F52025-6) apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/30/07 @21:24 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/31/07 @10:04 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SWMU1 (F52025-1) and 43SWMU5 (F52025-5) apply to this initial verification calibration.

- For explosives continuing calibration performed on 08/31/07 @13:45 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/31/07 @16:01 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For explosives continuing calibration performed on 08/31/07 @19:36 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerin initial calibration verification performed on 03/15/07 @12:35 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/30/07 @11:26 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this continuing calibration.

- For PETN and nitroglycerin continuing calibration performed on 08/30/07 @13:09 on instrument G1315B, all criteria were met for target compounds. No qualifiers were applied. No samples reported apply to this continuing calibration.

V-System Monitoring Compound (Surrogates)

Laboratory performance on individual samples is established by means of spiking activities. The percent recovery (%R) for all samples and blanks must be within the laboratory control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria: 3,4-dinitrotoluene (70-136%)

- All criteria were met. No qualifiers were applied.

VI-Laboratory Control Sample
Laboratory control samples (LCS) are used to monitor long-term accuracy of the analytical method. The analysis is performed at a frequency of 1 per analytical batch. The percent recoveries (%Rs) must be within the laboratory control limits. DoD QSM aqueous LCS recovery limits are specified in Table D-12 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample OP22102-BS was used as aqueous LCS for explosives analyzed on 08/30/07. All target compounds met criteria but within DoD QSM criteria. No qualifiers were applied. Samples 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), and 43SWMU6 (F52025-6) apply to this LCS.

- Sample OP22102-BS was used as aqueous LCS for explosives analyzed on 08/31/07. The target compound 2-amino-4,6-dinitrotoluene (118%) was outside laboratory criteria but within DoD QSM criteria. Samples were non-detect for this compound. No qualifiers were applied based upon this outlier. Samples 43SWMU1 (F52025-1) and 43SWMU5 (F52025-5) apply to this LCS.

- Sample OP22102-BS2 was used as aqueous LCS for PETN and nitroglycerin analyzed on 08/30/07. All criteria were met. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate
Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the laboratory control limits. DoD QSM aqueous MS/MSD recovery limits follow the LCS criteria and are specified in Table D-12 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- A non-project related sample was used for the MS/MSD pair for explosives analysis. Method precision was not evaluated. No qualifiers were applied. No samples apply this MS/MSD.

- Sample 43SWMU5 (F52025-5) was used as the aqueous MS/MSD for the PETN and nitroglycerin analysis on 08/30/07. All criteria were met. No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this MS/MSD.

VIII-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- No field duplicate is associated with this sample set. No qualifiers were applied. The RPD values were not evaluated.

IX-Quantitation Verification

The accuracy of analytical results was verified through the calculation of several parameters. The calculation was based calibration factors. The absolute percent difference (%D) between the calculated and the reported value must be within 10% difference. All values >MDL and <MRL or <3*MDL (whichever was greater) were qualified as estimated "J". All positive values must have less than or equal to 40% %D between the primary and secondary columns.

- All explosives, PETN, and nitroglycerin were non-detect. No confirmations were required.

Sample: OP22102-BS, Nitrobenzene

Conc. µg/L = (Ax * Vt * DF) / (CF * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
Vs = Volume of sample extracted (mL).
DF = Dilution factor

Conc. µg/L = (4085105 * 10 * 1) / (6838 * 1000) = 6.0 µg/L (Signal #1)

Reported Value = 6.0 µg/L
% Difference = 0.0%
Values were within 10% difference

Sample: OP21754-BS2, nitroglycerin

Conc. µg/L = (Ax * Vt * DF) / (CF * Vs)

where: Conc. = Sample concentration in µg/L
Ax = Area of characteristic ion for compound being measured.
Vt = Volume of total extract (mL).
CF = Average relative calibration factor for compound being measured (from ICAL)
Vs = Volume of sample extracted (mL).
DF = Dilution factor

Conc. µg/L = (3137463 * 10 * 1) / (1228 * 1000) = 25.5 µg/L (Signal #1)

Reported Value = 25.6 µg/L
% Difference = 0.4%
Values were within 10% difference. Difference was due to rounding average calibration factor.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥ MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

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Shaw® Shaw Environmental, Inc.

MEMORANDUM

TO: Jeff Parks, Shaw E&I Radford Army Ammunition Plant (RFAAP) Project Manager

FROM: Philip Conley, Shaw E&I Project Chemist

SUBJECT: RFAAP Data Validation - Volatiles
Accutest Laboratories, Inc., SDG F52025

DATE: March 25, 2008 REVISED 6/10/08 PDC

The purpose of this memorandum is to present the data validation report for the samples collected at Main Manufacturing Area at RFAAP for a RFI/CMS Nine Sites on August 22, 2007. The samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW846 Method 5030B/8260B for aqueous matrices. A total of six aqueous samples were validated. The sample IDs are:

Field Sample ID	Lab Sample ID	Field Sample ID	Lab Sample ID
43SWMU1	F52025-1	43SWMU4	F52025-4
43SWMU2	F52025-2	43SWMU5	F52025-5
43SWMU3	F52025-3	43SWMU6	F52025-6

Data were reviewed by Philip Conley and validated using a combination of project QAPP, *Quality Systems Manual for Environmental Laboratories, Final Version 3, January, 2006* (DoD, 2006) (DoD QSM), method-specific criteria, and laboratory SOP criteria. The data qualifier scheme was consistent with the *Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). Parameters evaluated are presented in **Table 1**. Data associated with parameters in compliance with quality control specifications have not been qualified. Data associated with parameters that did not comply with quality control specifications and directly impacted project data have been qualified in accordance with USEPA Region III specifications.

Table 1 Laboratory Performance Criteria

Qualified		Parameter
Yes	No	
	X	Holding Times and Preservation
	X	Instrument Performance Results
	X	Initial Calibration
	X	Continuing Calibration
	X	Blank Analysis
	X	Laboratory Control Sample
	X	Matrix Spike / Spike Duplicate Sample
	X	System Monitoring Compounds
	X	Internal Standards
	X	Field Sample Duplicate
X		Quantitation Verification

The quality of data collected in support of this sampling activity is considered acceptable with noted qualifications.

Philip Conley, Chemist

6/10/08
Date

RFAAP VALIDATION REPORT
VOLATILES REVIEW
SDG F52025

I-Holding Times and Preservation

The objective is to ascertain the validity of results based on the holding time of the sample from time of collection to time of analysis. Holding time criteria: For aqueous samples cooled @ 4°C±2°C; pH<2 HCl, the maximum holding time is 14 days (7 days if no HCl added) from sample collection to analysis.

- Temperature Review: The temperature blank was sent with each cooler and recorded by the laboratory upon receipt. For samples collected on 08/22/07, the coolers were received by the primary laboratory (Accutest) on 08/23/07 at 1.4°C, 1.2°C, 1.0°C, 1.2°C, 1.0°C, 1.0°C, 1.6°C, 1.4°C, 1.2°C and 1.2°C. The herbicides were subcontracted to Accutest TX and were received on 08/24/07 at 2.8°C and 5.8°C, properly preserved and intact. The perchlorate subcontract laboratory (Datachem Laboratories, Inc.) received the aqueous samples on 08/28/07 at 4.0°C. Even though some of the receipt temperatures were below criteria, there were no impacts to the data quality. No qualifiers were applied based upon these outliers.

- Holding Time Review: For the aqueous samples collected 08/22/07, the VOCs were prepped and analyzed on 08/31/07. All criteria were met. No qualifiers were applied.

II-Instrument Performance Check

The analysis of the instrument performance check solution must be performed at the beginning of each 12-hour period during which samples are analyzed.

- The instrument performance check, bromofluorobenzene (BFB), met the ion abundance criteria. No qualification was applied.

III-Initial Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent relative standard deviation (%RSD) must be ≤15% for each target compound and must be ≤30% for each calibration check compound. For compounds analyzed using linear regression or second order, correlation coefficients must be >0.995 and coefficients of determination >0.99. All detects are qualified as estimated "J" for where there were exceeding %RSDs, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration performed on 08/31/07 on instrument MSVOA6, target compounds chloroethane (20.1%), methylene chloride (55.0%; grossly exceeding), Methyl ethyl ketone (15.6%) trans-1,3-dichloropropene (20.7%), Dibromochloromethane (18.9%), 2-Hexanone (17.9%), and Styrene (16.9%) were outside criteria. All other target compounds were within criteria (%RSD≤15% or ≤30%; RRF≥0.05). Compounds chloroethane (r=0.9965), methylene chloride (r=0.9971), Methyl ethyl ketone (r=0.9957) trans-1,3-dichloropropene (r=0.9973), Dibromochloromethane (r=0.9988), 2-Hexanone (r=0.9990), and Styrene (r=0.9994) were quantified using linear or second order regression with correlation coefficients >0.995; therefore, no qualifiers were applied based upon these outliers. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) were analyzed using this initial calibration.

IV-Continuing Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument used is capable of producing acceptable qualitative and quantitative data for volatile target compounds. Continuing calibration establishes the 12-hour relative response factors on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. The RRF must be greater than 0.1 for chloromethane, 1,1-dichloroethane, and bromoform and greater than 0.3 for 1,1,2,2-tetrachloroethane and chlorobenzene. The minimum relative response factor (RRF) must be ≥0.05 for all other compounds. The DoD QSM specifies that the percent difference (%D) between the initial calibration RRF and the continuing calibration RRF must be within 20% for all target compounds. All detects are qualified as estimated "J" for where there were exceeding %Ds, and all non-detects are qualified as estimated "UJ" for where there were grossly exceeding recoveries, unless determined to be unusable "R". Grossly exceeding is defined as twice the established criteria limits. For where there were low RRFs, all detects are qualified as estimated "J" and non-detects are rejected "R".

- For initial calibration verification performed on 08/31/07 @13:48 on instrument MSVOA6, all target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No qualifiers were applied. No samples reported apply to this initial calibration verification.

- For continuing calibration performed on 08/31/07 @14:58 on instrument MSVOA6, all target compounds were within criteria (%D≤20%; %Drift≤20%; RRF≥0.05). No qualifiers were applied. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this continuing calibration.

V-Blank Analysis

The purpose of blank analyses is to determine the presence and magnitude of contamination problems resulting from field and laboratory activities. A method blank analysis must be performed after the calibration standards and once every 12-hour time period beginning with the injection of BFB. No contaminants should be detected in any of the associated blanks > the MDL. The DoD QSM criteria specifies all concentrations should be less than one-half MRL (<MRL for common laboratory contaminants methylene chloride, acetone, and 2-butanone). Positive sample results are reported and qualified "B", if the concentration of the compound in the sample is ≤10 times (10x) the maximum amount in any blank for the common laboratory contaminants methylene chloride, acetone, and 2-butanone (MEK), or 5 times (5X) the maximum amount for other volatile target compounds. **Table 2** summarizes the blank contamination analysis. Action levels are based upon dilution factor of one. Rinse blank 082307R (F52035-5) applies to the groundwater "GW" samples in this SDG. The trip blank TB082207 (F52025-7) applies to the aqueous samples collected 08/22/07.

Table 2 Blank Contamination Analysis Summary

Analysis Date	QC Blank ID	Compound	Max Conc. µg/L	Action Level µg/L	B qualified samples
08/31/07	VJ2219-MB	All target <½MRL	NA	NA	None
08/31/07	TB082207	Chloroform	0.51	2.55	None, all samples ND
09/05/07	082307R	All target <½MRL	NA	NA	None

ND = Non-detect
NA = Not Applicable
MRL = Method Reporting Limit

VI-Laboratory Control Sample

Data for laboratory control samples (LCS) are evaluated to determine long-term accuracy of the analytical method on various matrices. Percent recoveries (%Rs) should be within the specified control limits. The DoD aqueous LCS recovery limits are specified in Table D-4 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- Sample VJ2219-BS was used as the aqueous LCS for the VOC analysis on 08/31/07. All percent recoveries were within criteria for all target compounds. Samples 43SWMU1 (F52025-1), 43SWMU2 (F52025-2), 43SWMU3 (F52025-3), 43SWMU4 (F52025-4), 43SWMU5 (F52025-5), and 43SWMU6 (F52025-6) apply to this LCS.

VII-Matrix Spike/Matrix Spike Duplicate

Data for matrix spike/matrix spike duplicates (MS/MSD) are generated to determine long-term precision and accuracy of the analytical method on various matrices and to demonstrate acceptable compound recovery by the laboratory at the time of sample analysis. The percent recoveries (%Rs) and the relative percent difference (RPD) must be within the specified control limits. The DoD MS/MSD aqueous recovery limits follow the LCS criteria and are specified in Table D-4 of the DoD QSM (DoD, 2006). If the compound is not listed, then the laboratory criteria shall be used.

- All criteria were met. No qualifiers were applied. Sample F52073-1, a non-project related sample, was used for the aqueous MS/MSD analysis on 08/31/07. No qualifiers were applied based upon the non-related project sample

VIII-System Monitoring Compounds (Surrogates)
Laboratory performance on individual samples is evaluated through the review of surrogate spike samples. Recoveries for system monitoring compounds in volatile samples and blanks must be within the specified control limits. DoD surrogate recovery limits are specified in Table D-3 of the DoD QSM (DoD, 2006). If the surrogate is not listed, then the laboratory criteria shall be used.

Aqueous Criteria: Dibromofluoromethane (87-116%) (DoD QSM = 85-115%)
1,2-Dichloroethane-d4 (76-127%) (DoD QSM = 70-120%)
Toluene-d8 (86-112%) (DoD QSM = 85-120%)
4-Bromofluorobenzene (84-120%) (DoD QSM = 75-120%)

- All criteria were met. No qualifiers were applied.

IX-Internal Standards (IS)
Internal standards performance criteria ensure that GC/MS sensitivity and response are stable during every analytical run. Specific criteria include: area counts (-50% to +100%) of the associated calibration standard, and retention time (± 30 seconds) from that of the associated calibration standard.

- All criteria were met. No qualifiers were applied.

X-Field Duplicate Sample Analysis
Field duplicates were collected to identify the cumulative precision of the sampling and analytical process and sent to the laboratory blind. The RPD was calculated only for those analytes which were detected at levels exceeding the method reporting limits in both samples of the duplicate pair. Analytes that were rejected (R-qualified) in either sample of the duplicate pair were excluded from the duplicate assessment. Precision control criterion was established at 50% RPD for the aqueous samples. Analytical results were qualified as estimated (J) for any RPDs exceeding criteria.

- No field duplicate is associated with this sample set. The RPD was not evaluated. No qualifiers were applied.

XI-Quantitation Verification
The accuracy of analytical results is verified through the calculation of several parameters. The percent difference (%D) between the calculated and the reported values should be within 10%. Any sample value >MDL and <MRL or <3*MDL (whichever is greater) was qualified as estimated, "J."

Sample: 43SWMU6 (F52025-6), tetrachloroethylene

Conc. (µg/L) = (Ax)*(Is) *(DF)/(Ais)*(RRF)

where: Ax is the compound area
Ais is the corresponding internal standard area
Is is the corresponding internal standard concentration (µg/L)
DF is the dilution factor
RRF is the relative response factor.

Conc. µg/L = (19857 * 50 µg/L * 1) / (1238173 * 0.310) = 2.6 µg/L

Reported Conc. = 2.6 µg/L
%D = 0.0%

Values were within 10% difference.

USEPA Region III Validation Qualifiers

(No Code) = Confirmed identification.

B = The analyte has been detected in the sample and the associated laboratory or field blank.

J = Indicates an estimated value for (1) estimated value due to QC non-conformance. Reported value may not be accurate or precise, (2) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (3) estimating a concentration ≥MDL and <MRL or <3*MDL, whichever is greater.

K = Analyte present. Reported value may be biased high (estimated) due to QC non-conformance.

L = Analyte present. Reported value may be biased low (estimated) due to QC non-conformance.

R = Unreliable result. Analyte may or may not be present in the sample due to QC non-conformance.

UL = Value is estimated bias low and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise. Quantitation limit is probably higher.

UJ = Value is estimated and not detected due to QC non-conformance. Reporting limit may be inaccurate or imprecise.

Laboratory Qualifiers

(No Code) = Confirmed identification.

U = Not detected. The associated number indicates the compound reporting limit for the sample.

A (Dioxins) = B (Metals) = The reported value was obtained from a reading <MRL and ≥MDL and is considered estimated.

B (Organics) = The analyte or compound has been detected in the sample and laboratory method blank. It indicates probable blank contamination.

E (Metals) = Reported value is estimated because of the presence of interferences.

E (Organics) = Identifies compounds whose concentrations exceed the upper level of the calibration range.

EMPC (Dioxins) = The ion-abundance ratio between the two characteristic PCDD/PCDF ions was outside accepted ranges. The detected PCDD/PCDF was reported as an estimated maximum possible concentration (EMPC).

D = Indicates sample was analyzed at a dilution.

J = Indicates an estimated value for (1) estimating a concentration as a tentatively identified compound as indicated by the mass spectral and retention time data, or (2) estimating a concentration <MRL and ≥ MDL.

N (Organics) = Indicates presumptive evidence of a compound for tentatively identified compounds using a library search.

N (Metals) = Laboratory spike sample recovery not within control limits.

P (Organics) = Target analyte confirmation >40% difference for detected compound between the primary and secondary columns. The lower of the two values was reported.

* (Metals) = Duplicate analysis not within control limits.

* (Organics) = Surrogate outside of QC limits on both original and re-analysis.

Appendix B

Well Purge Forms

and

Well Boring Logs

Appendix B-1

Well Purge Forms

Well Purging-Field Water Quality Measurements Form

Location (Site / Facility Name) RFAAP
Well Number 43MW01 Date 8-22-07
Field Personnel CS / BS
Sample Organization Shaw Environmental
Identify MP

Depth to 13 (top) / 28 (bottom) of screen (below MP)
Pump Intake at (ft. below MP)
Purging Device (e.g., Redi Flo2)
PID Reading (ppm)

Clock Time 24 HR	Water Depth ft. below MP	Pump Setting[1]	Purge Rate mL/min	Cum. Volume Purged liters	pH	Spec. Cond. mS/cm	Turbidity NTU	DO mg/L	Temp. deg. C	ORP/Eh[2] mv	Comments
1415	18.90										
1425	18.96	106.7	300		7.33	.576	140	4.63	16.75	84	
1430	18.97	106.7	300		7.26	.573	40	3.36	16.90	80	
1435	18.99	106.7	300		7.18	.571	29	2.74	17.13	65	
1440	19.00	107.8	300		7.12	.570	29	2.34	15.28	14	
1445	19.02	107.8	300		7.09	.565	26	2.22	15.89	16	
1450	19.03	107.8	300		7.07	.555	27	2.19	15.78	18	
1455	Sample Taken										

[1] Pump dial setting (e.g., hertz, cycles/min., etc.)
[2] Oxidation reduction potential (stand in for Eh)

Well Purging-Field Water Quality Measurements Form

Location (Site / Facility Name) RFAAP
Well Number 43MW2 Date 8.22.07
Field Personnel TM
Sample Organization Shaw Environmental
Identify MP TOC

Depth to ~~[illegible]~~ / ~~[illegible]~~ of screen (below MP)
top 19.5 bottom 34.5
Pump Intake at (ft. below MP)
Purging Device (e.g., Redi Flo2) RF2
PID Reading (ppm) 0

Clock Time 24 HR	Water Depth ft. below MP	Pump Setting[1]	Purge Rate mL/min	Cum. Volume Purged liters	pH	Spec. Cond. mS/cm	Turbidity NTU	DO mg/L	Temp. deg. C	ORP/Eh[2] mv	Comments
	24.64										
1510	24.77	110.1	300		2.12	0.675	536	2.67	15.92	-62	
1515	24.82	110.1	300		6.96	0.671	444	1.68	16.05	-64	
1520	24.85	110.1	300		6.82	0.670	425	1.42	16.37	-65	
1525	24.85	110.1	300		6.80	0.668	415	1.12	16.68	-71	
1530	24.85	110.1	300		6.82	0.670	402	1.06	16.84	-75	

[1] Pump dial setting (e.g., hertz, cycles/min., etc.)
[2] Oxidation reduction potential (stand in for Eh)

Well Purging-Field Water Quality Measurements Form

Location (Site / Facility Name) RFAAP
Well Number 43MW3 Date 8-22-07
Field Personnel B. Squire
Sample Organization Shaw Environmental
Identify MP TOC

Depth to ~~22.5~~ / ~~37.5~~ of screen (below MP)
top bottom
Pump Intake at (ft. below MP)
Purging Device (e.g., Redi Flo2) RF2
PID Reading (ppm) 0

Clock Time 24 HR	Water Depth ft. below MP	Pump Setting[1]	Purge Rate mL/min	Cum. Volume Purged liters	pH	Spec. Cond. mS/cm	Turbidity NTU	DO mg/L	Temp. deg. C	ORP/Eh[2] mv	Comments
	23.00										
1100	25.50	118.3	300		6.49	1.21	-5.0	1.26	14.81	-49	cloudy orange
1105	25.60	118.3	300		6.50	1.20	847	0.73	15.65	-57	
1110	25.82	115.3	300		6.49	1.19	837	0.60	16.72	-58	
1115	25.91	115.3	300		6.48	1.20	742	0.61	17.33	-58	
1120	25.93	115.3	300		6.48	1.20	720	0.62	17.40	-58	
1125	25.95	115.3	300		6.49	1.20	705	0.63	17.45	-51	

[1] Pump dial setting (e.g., hertz, cycles/min., etc.)
[2] Oxidation reduction potential (stand in for Eh)

Well Purging-Field Water Quality Measurements Form

Location (Site / Facility Name) RFAAP
Well Number 43MW04 **Date** 8-22-07
Field Personnel CS BS
Sample Organization Shaw Environmental
Identify MP

Depth to 13.5 (top) / 28.5 (bottom) **of screen (below MP)**
Pump Intake at (ft. below MP)
Purging Device (e.g., Redi Flo2)
PID Reading (ppm)

Clock Time 24 HR	Water Depth ft. below MP	Pump Setting[1]	Purge Rate mL/min	Cum. Volume Purged liters	pH	Spec. Cond. mS/cm	Turbidity NTU	DO mg/L	Temp. deg. C	ORP/Eh[2] mv	Comments
1045	21.86										
1050	21.91	115.0	250		6.12	0.747	294	0.22	16.20	-70	
1055	21.91	115.0			6.31	.748	250	0	16.22	-83	
1100	21.91	115.0			6.41	.746	148	0	16.57	-97	
1105	21.91	115.0			6.46	.745	118	0	16.84	-108	
1110	21.92	115.0			6.48	.745	112	0	16.96	-110	
1115	21.92	115.0			6.49	.751	84	0	16.47	-119	
1120	21.92	115.0			6.49	.750	78	0	16.22	-122	
1125	21.92	115.0			6.49	.742	74	0	16.52	-124	
1130	SAMPLE		TIME								

[1] Pump dial setting (e.g., hertz, cycles/min., etc.)
[2] Oxidation reduction potential (stand in for Eh)

Well Purging-Field Water Quality Measurements Form

Location (Site / Facility Name) RFAAP
Well Number 43MW5 Date 8-22-07
Field Personnel BS
Sample Organization Shaw Environmental
Identify MP TOC

Depth to 32.3 / 42.3 of screen (below MP)
top bottom
Pump Intake at (ft. below MP)
Purging Device (e.g., Redi Flo2) RF2
PID Reading (ppm) 0

Clock Time 24 HR	Water Depth ft. below MP	Pump Setting[1]	Purge Rate mL/min	Cum. Volume Purged liters	pH	Spec. Cond. mS/cm	Turbidity NTU	DO mg/L	Temp. deg. C	ORP/Eh[2] mv	Comments
	17.31										
1345	17.38	98.5	300		6.97	0.760	140	0.69	16.66	-309	
1350	17.38	98.5	300		6.78	6.752	106	0.38	17.43	-304	
1355	17.38	98.5	300		6.80	0.753	77	0.20	18.08	-310	
1400	17.38	98.5	300		6.85	0.756	47	0.12	19.16	-315	
1405	17.38	98.5	300		6.88	0.756	39	0.09	20.09	-318	
1410	17.38	98.5	300		6.88	0.758	33	0.06	20.10	-321	
1415	17.38	98.5	300		6.89	6.758	31	0.04	20.13	-322	

[1] Pump dial setting (e.g., hertz, cycles/min., etc.)
[2] Oxidation reduction potential (stand in for Eh)

Well Purging-Field Water Quality Measurements Form

Location (Site / Facility Name) RFAAP
Well Number 43MW06 **Date** 8-22-07
Field Personnel CS / BS
Sample Organization Shaw Environmental
Identify MP

Depth to 28 (top) / 38 (bottom) **of screen (below MP)**
Pump Intake at (ft. below MP)
Purging Device (e.g., Redi Flo2)
PID Reading (ppm)

Clock Time 24 HR	Water Depth ft. below MP	Pump Setting[1]	Purge Rate mL/min	Cum. Volume Purged liters	pH	Spec. Cond. mS/cm	Turbidity NTU	DO mg/L	Temp. deg. C	ORP/Eh[2] mv	Comments
1310	18.37										
1320	18.71	108.5	200		6.73	.840	200	0.68	17.40	-54	
1325	18.93	108.5	200		6.69	.840	315	0	16.53	-73	
1330	19.00	108.5	200		6.68	.839	169	0	16.93	-75	
1335	19.06	108.5	200		6.69	.840	88	0	17.40	-83	
1340	19.10	108.5	200		6.68	.840	86	0	17.57	-93	
1345	19.14	108.5	200		6.68	.842	89	0	17.62	-99	
1350	Sample	Taken									

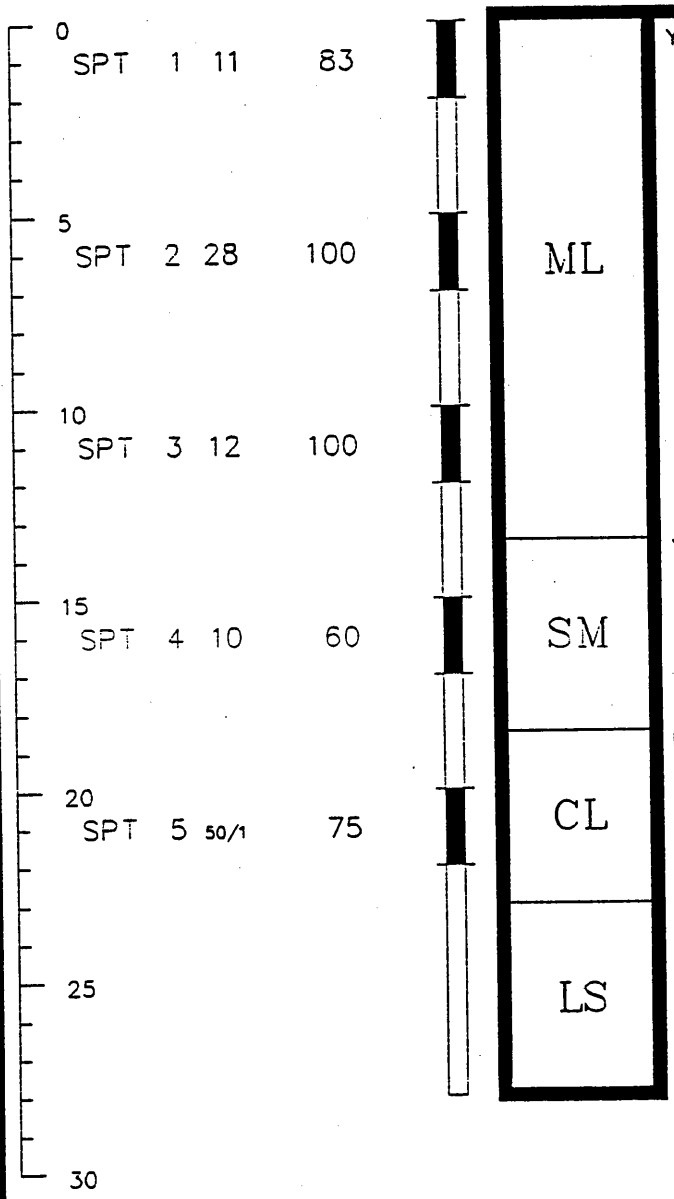
[1] Pump dial setting (e.g., hertz, cycles/min., etc.)
[2] Oxidation reduction potential (stand in for Eh)

Appendix B-2

Boring Logs

BORING 43MW1

Surface Elevation: **1,703.9** Feet, MSL
Location: Radford AAP, Virginia
Start: 07:30 on 8-13-91
Finish: 08:50 on 8-13-91



Description

YELLOWISH BROWN (10YR 5/4) SANDY SILT, TRACE ORANGE MOTTLING, STIFF, DRY

GRADING MOIST

YELLOWISH BROWN (10YR 5/6) SILTY SAND, VERY MOIST, LOOSE, MICACEOUS, TRACE GRAY MOTTLING

WATER AT 18.0 FEET

LIGHT GRAY (2.5Y N/7) CLAY WITH LIMESTONE GRAVEL
WITH HIGHLY FRACTURED HIGHLY WEATHERED LIMESTONE PIECES

N/7 LIGHT GRAY LIMESTONE, HARD, NOT HIGHLY WEATHERED

HIGHLY WEATHERED ZONE

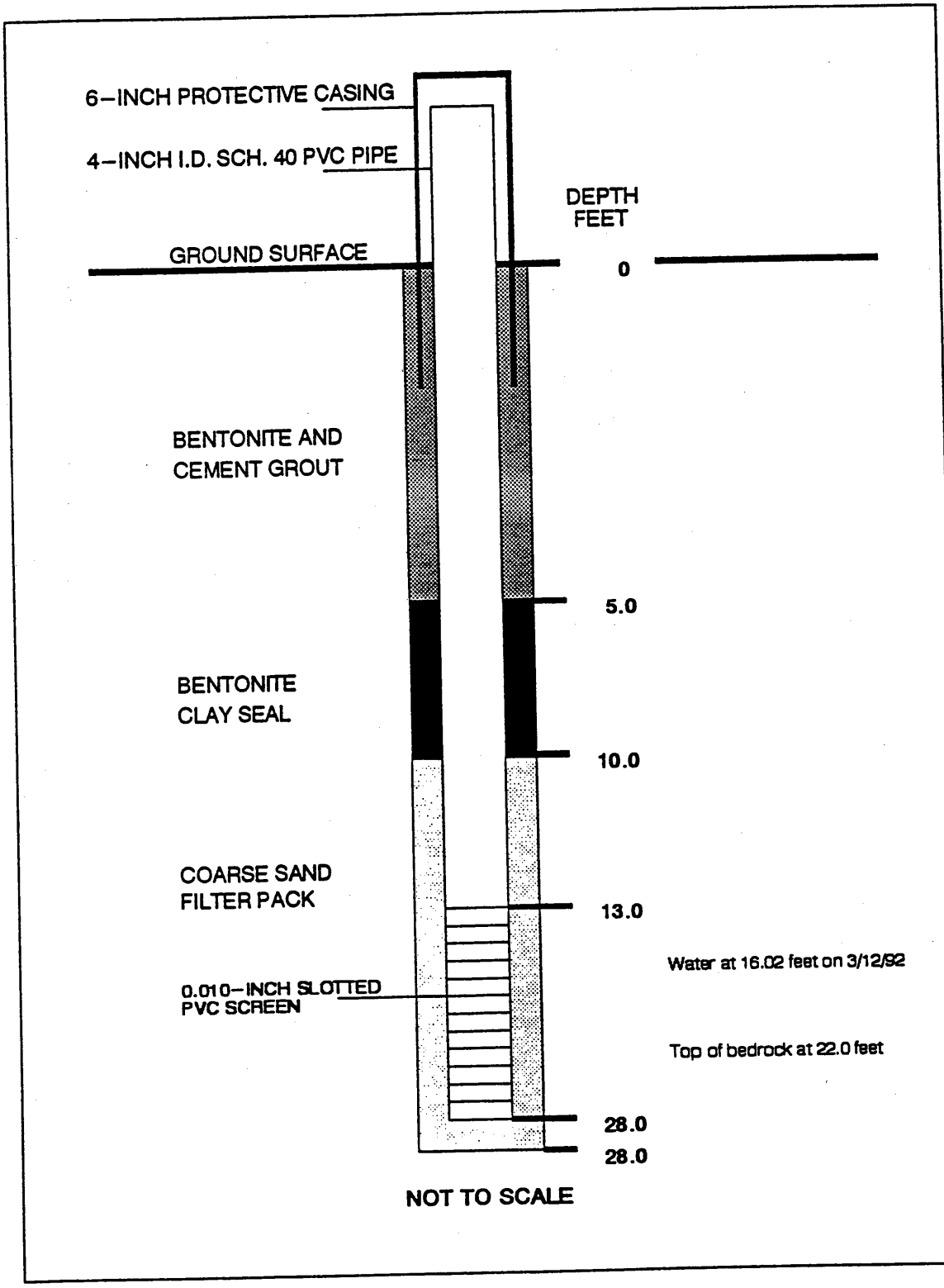
BOREHOLE TERMINATED AT A DEPTH OF 28.0 FEET

PLATE
LOG OF BORING

Dames & Moore

WELL INSTALLATION DIAGRAM
FOR VERIFICATION INVESTIGATION
RADFORD AAP, VIRGINIA

Location: 43MW1
Installation Date: 8/13/91
Surface Elevation: 1703.9 Feet
Top of PVC Elevation: 1705.87 Feet



Dames & Moore

BORING 43MW2

Surface Elevation: **1,705.0** Feet, MSL
Location: Radford AAP, Virginia
Start: 07:28 on 8-13-91
Finish: 14:40 on 8-13-91

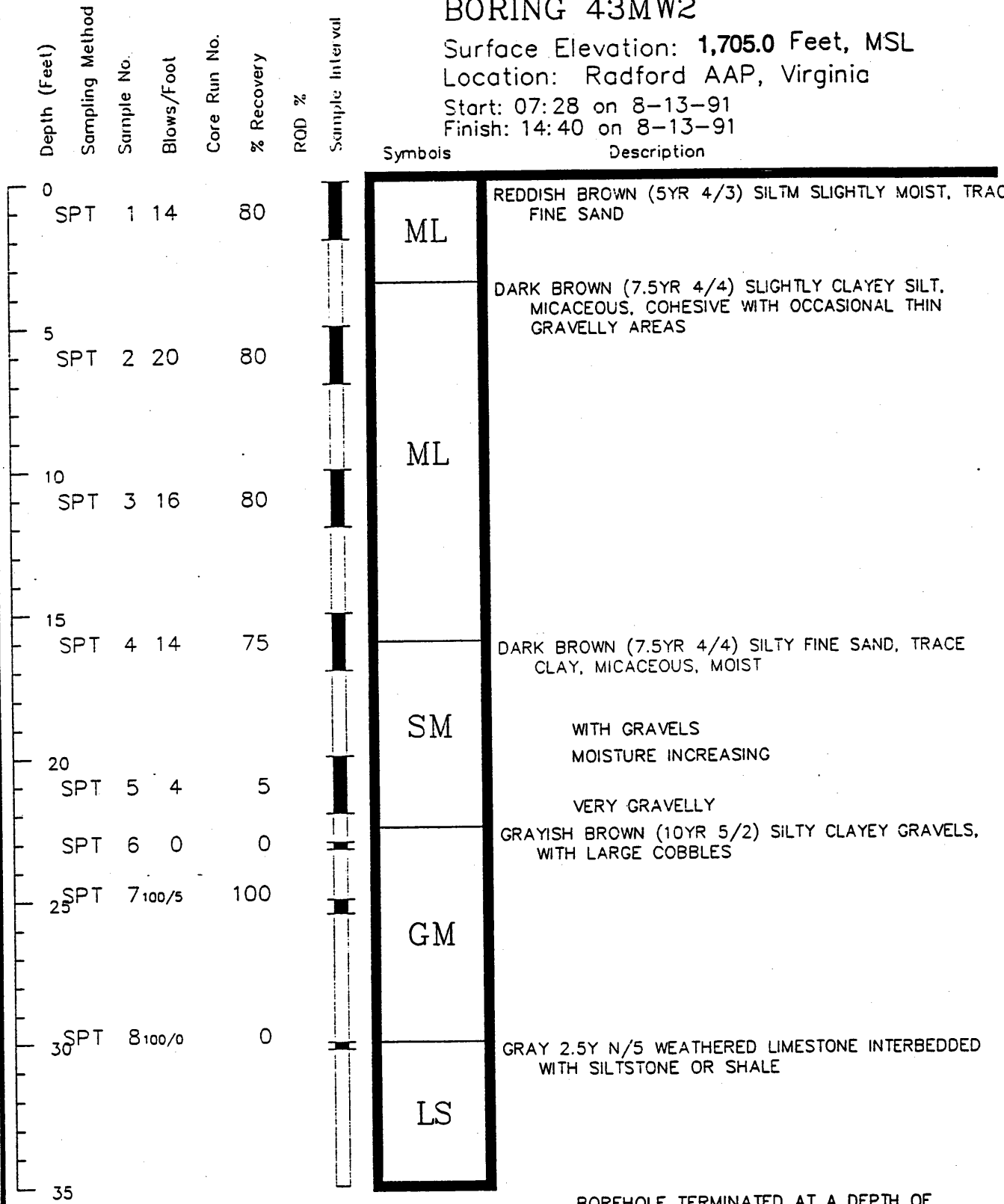
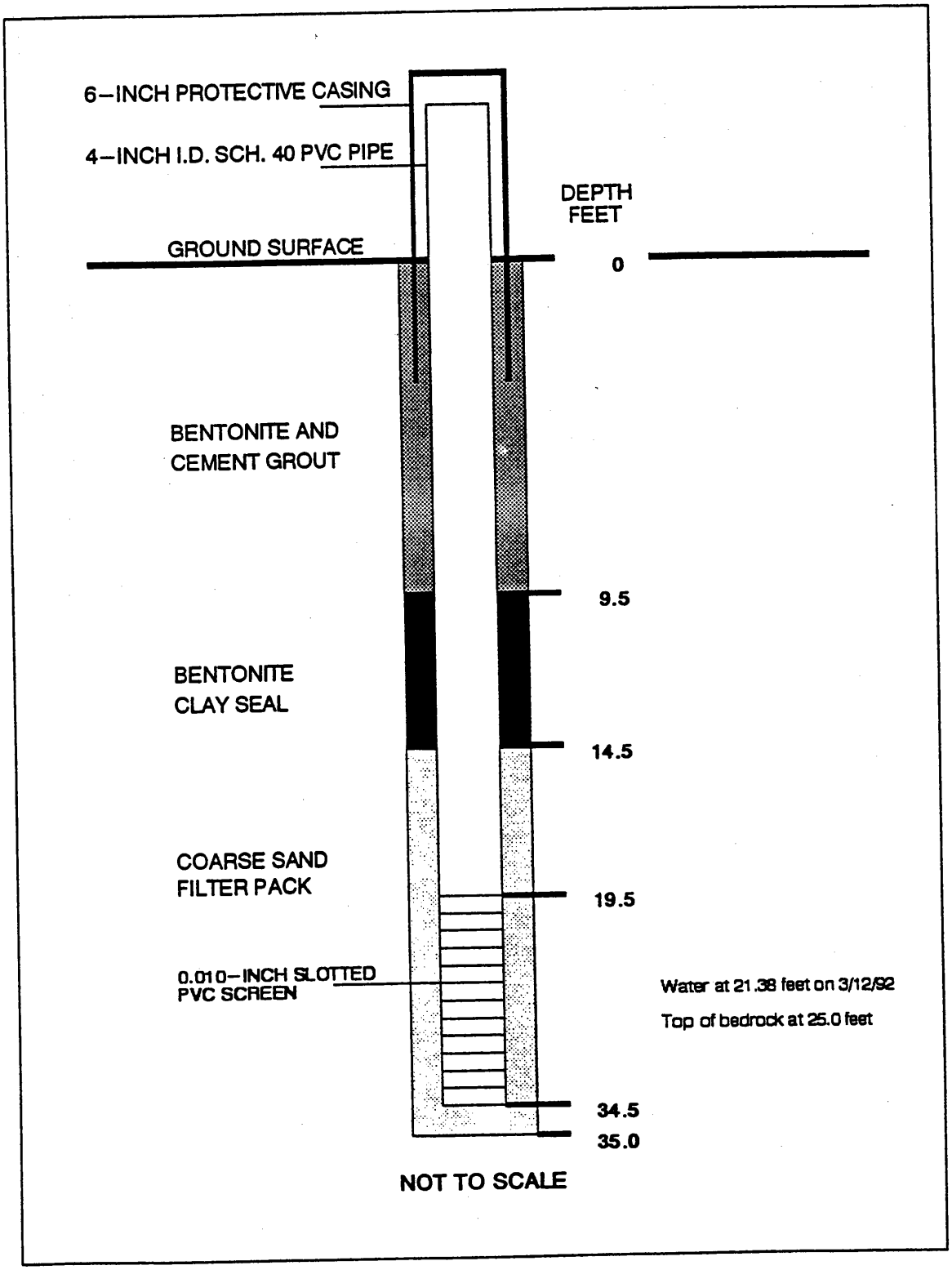


PLATE
LOG OF BORING

Dames & Moore

WELL INSTALLATION DIAGRAM
FOR VERIFICATION INVESTIGATION
RADFORD AAP, VIRGINIA

Location: 43MW2
Installation Date: 8/14/91
Surface Elevation: 1705.0 Feet
Top of PVC Elevation: 1707.62 Feet



Dames & Moore

BORING 43MW3

Surface Elevation: **1,701.2** Feet, MSL
Location: Radford AAP, Virginia
Start: 08:00 on 8-19-91
Finish: 11:30 on 8-19-91

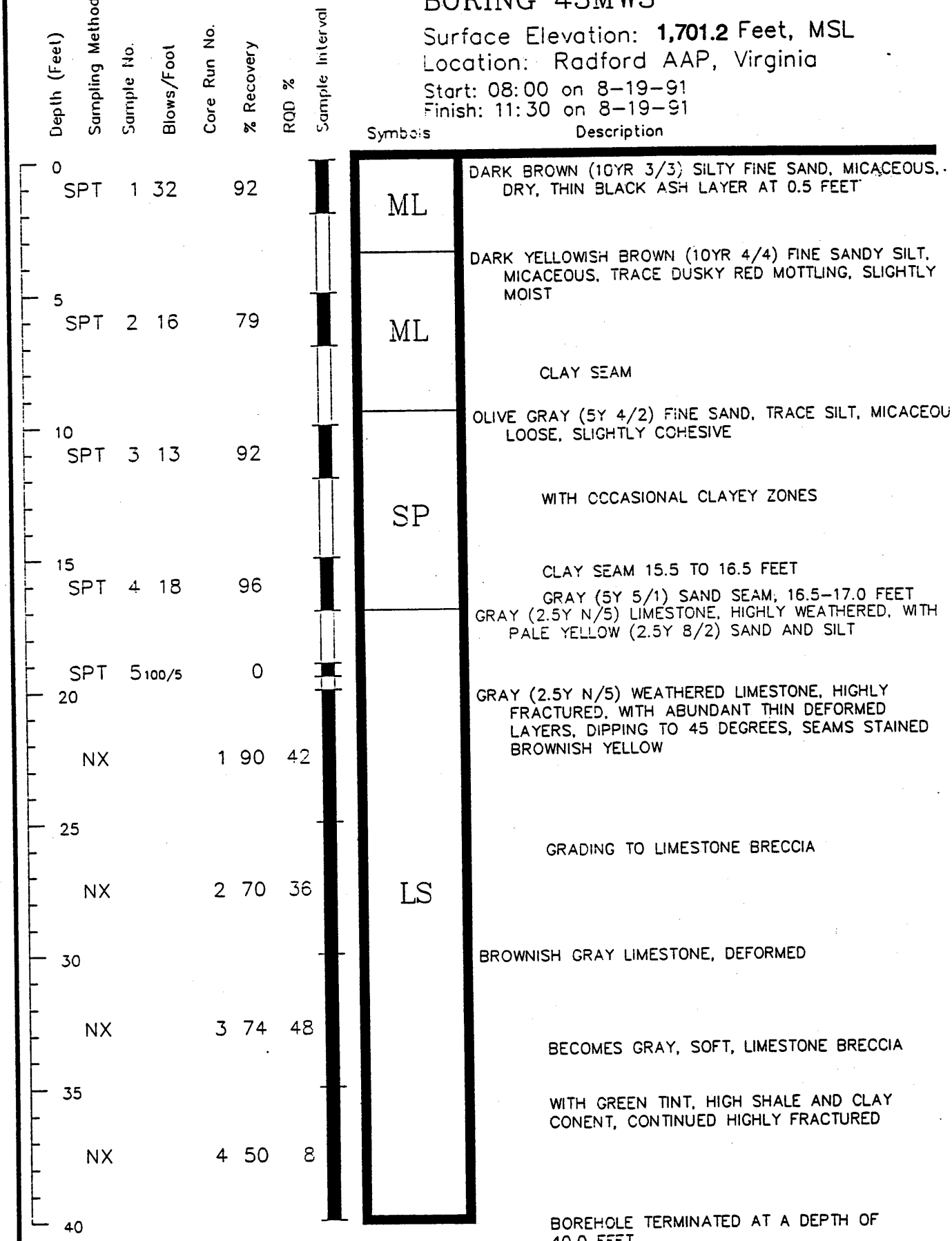
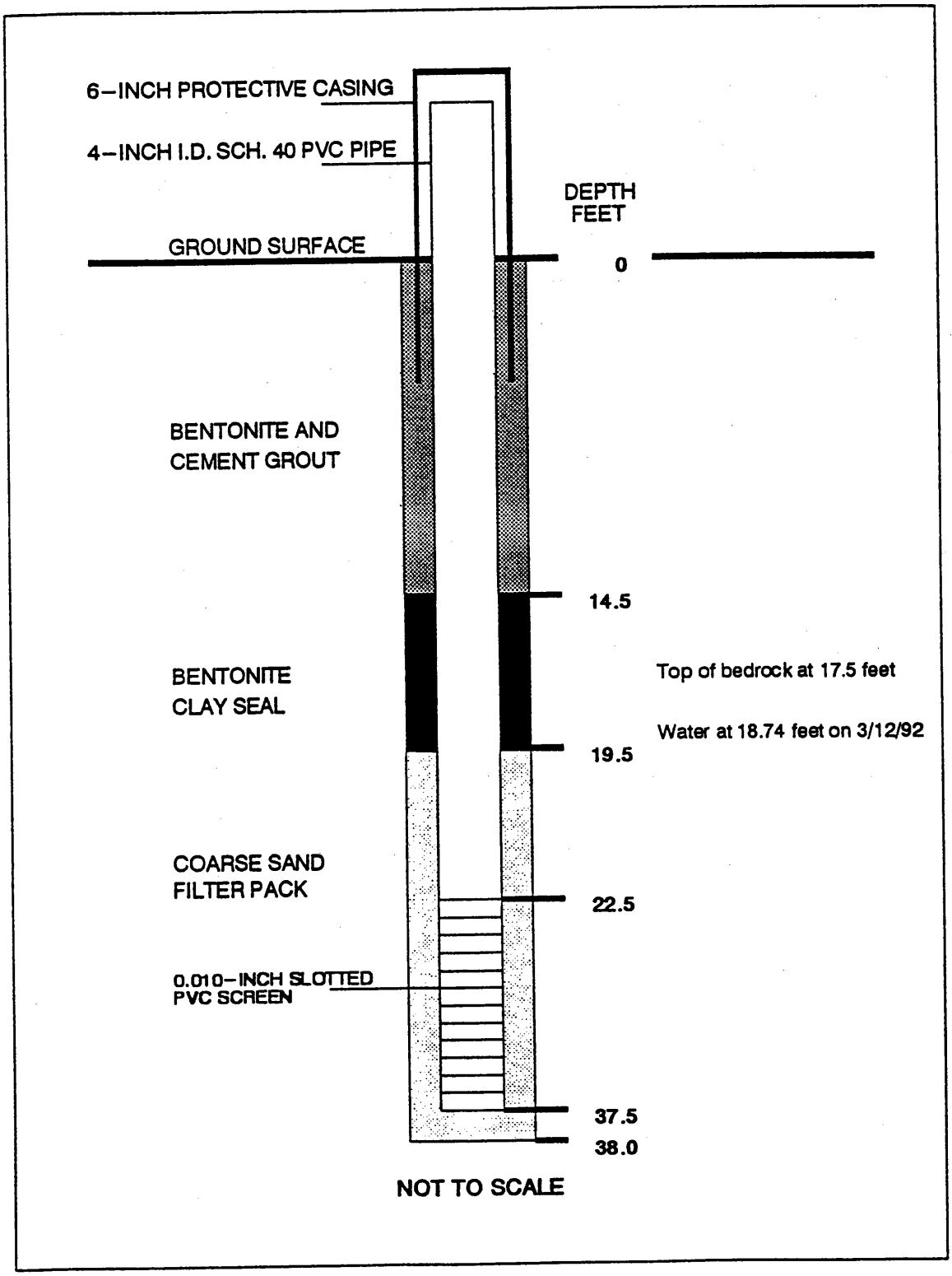


PLATE
LOG OF BORING

Dames & Moore

WELL INSTALLATION DIAGRAM
FOR VERIFICATION INVESTIGATION
RADFORD AAP, VIRGINIA

Location: 43MW3
Installation Date: 8/19/91
Surface Elevation: 1701.2 Feet
Top of PVC Elevation: 1703.35 Feet



Dames & Moore

BORING 43MW4

Surface Elevation: 0
Location: Radford AAP, Virginia
Start: 07:46 ON 8-15-91
Finish: 11:07 ON 8-15-91

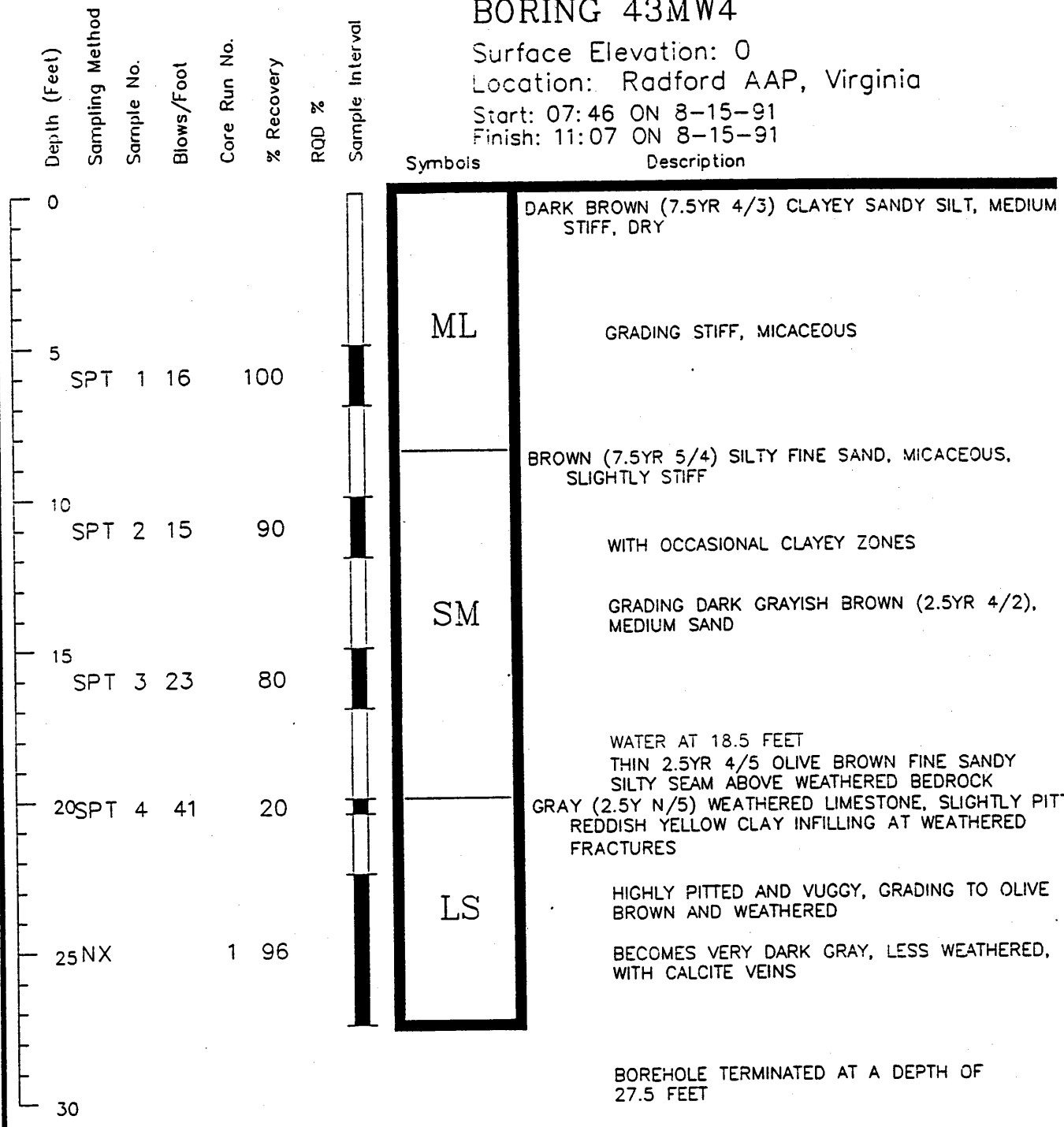
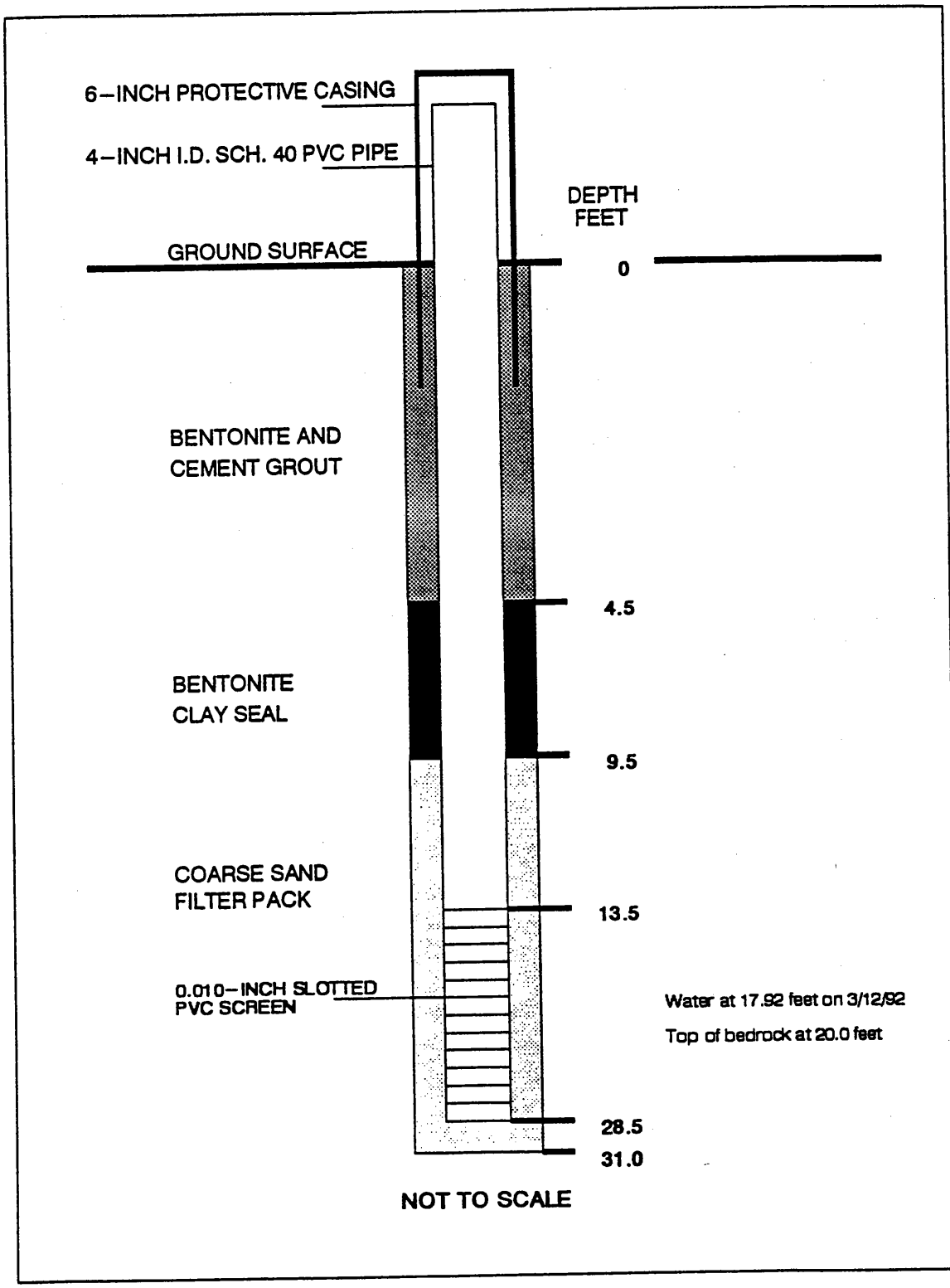


PLATE
LOG OF BORING

Dames & Moore

WELL INSTALLATION DIAGRAM
FOR VERIFICATION INVESTIGATION
RADFORD AAP, VIRGINIA

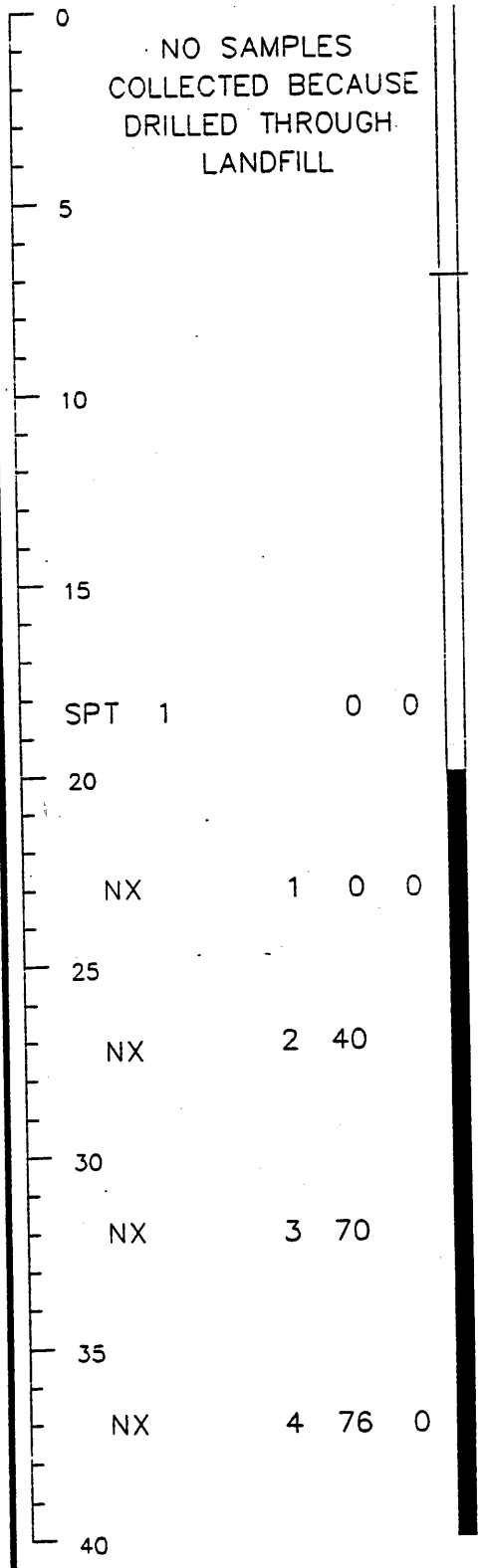
Location: 43MW4
Installation Date: 8/19/91
Surface Elevation: 1700.9 Feet
Top of PVC Elevation: 1702.78 Feet



Dames & Moore

BORING 43MW5

Surface Elevation: **1,700.4** Feet, MSL
Location: Radford AAP, Virginia
Start: 07:46 ON 8/15/91
Finish: 11:07 ON 8/15/91



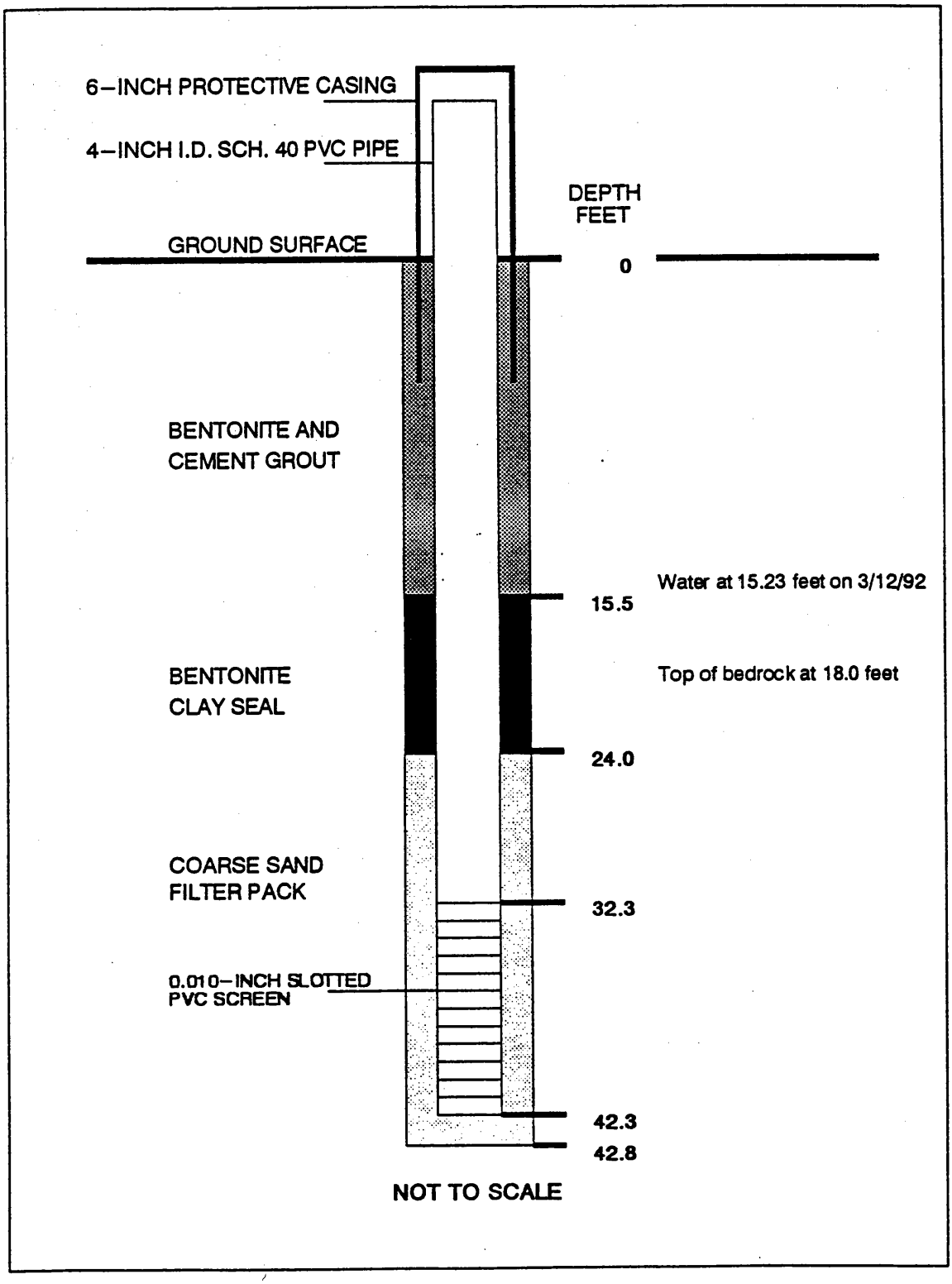
Symbols	Description
ML	BROWN(7.5YR 5/4)CLAY AND SILT, CLAY
ML	BOWNISH YELLOW(10YR 5/6) CLAY AND SILT, WITH LANDFILL MATERIAL INCLUDING PAPER, CARDBOARD, BANDAIDS METAL, RAGS
SM	DARK OLIVE GRAY(5YR 3/2) CLAYEY FINE SAND STILL IN LANDFILL
	THIN SEAM OF DARK GRAY (2.5YR 10/4) CLAYEY, GRAVELLY SILT OVERLYING WEATHERED BEDROCK
LS	DARK GRAY TO GRAY HIGHLY WEATHERED LIMESTONE CONGLOMERATE
	NO NX CORE RECOVERY DUE TO SOFT, HIGHLY WEATHERED ROCK.
	GRAY (2.5YR N/5)LIMESTONE CONGLOMERATE, MEDIUM GRAINED,5 OF 4, POORLY CEMENTED, MUCH CLAY DUE TO IN FILLING AND WEATHERING,
	BLACK CLAYEY MEDIUM GRAVEL LIMESTONE CONGLOMERATE, SLIGHTLY HARDER BUT HIGHLY WEATHERED AND FRACTURED , WITH BLACK CLAY IN FILLING OF CRACKS
	BECOMING HIGHLY CRACKED AND RE-CEMENTED WITH CALCITE; HIGHLY WEATHERED TO CLAYSTONE AT 34FEET.
	CONTINUED SOFT, HIGHLY WEATHERED LIMESTONE WITH HIGH CLAY CONTENT AND ABUNDANT CALCITE.
	BORING TERMINATED AT A DEPTH OF 42.8 FEET

PLATE
LOG OF BORING

Dames & Moore

WELL INSTALLATION DIAGRAM
FOR VERIFICATION INVESTIGATION
RADFORD AAP, VIRGINIA

Location: 43MW5
Installation Date: 8/15/91
Surface Elevation: 1700.4 Feet
Top of PVC Elevation: 1702.94 Feet



Dames & Moore

BORING 43MW6

Surface Elevation: **1,701.2** Feet, MSL
Location: Radford AAP, Virginia
Start: 11:58 on 8-13-91
Finish: 14:00 on 8-14-91

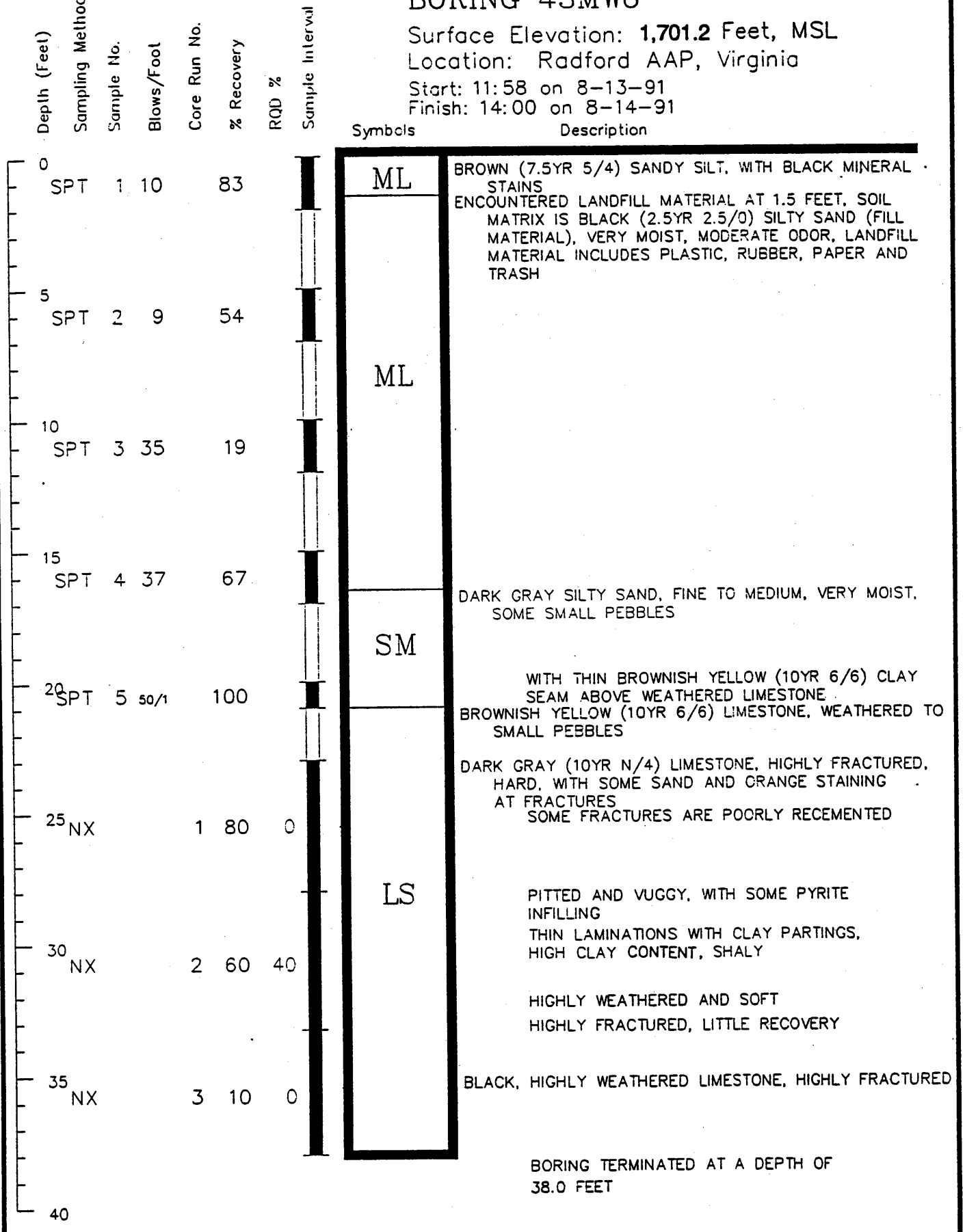
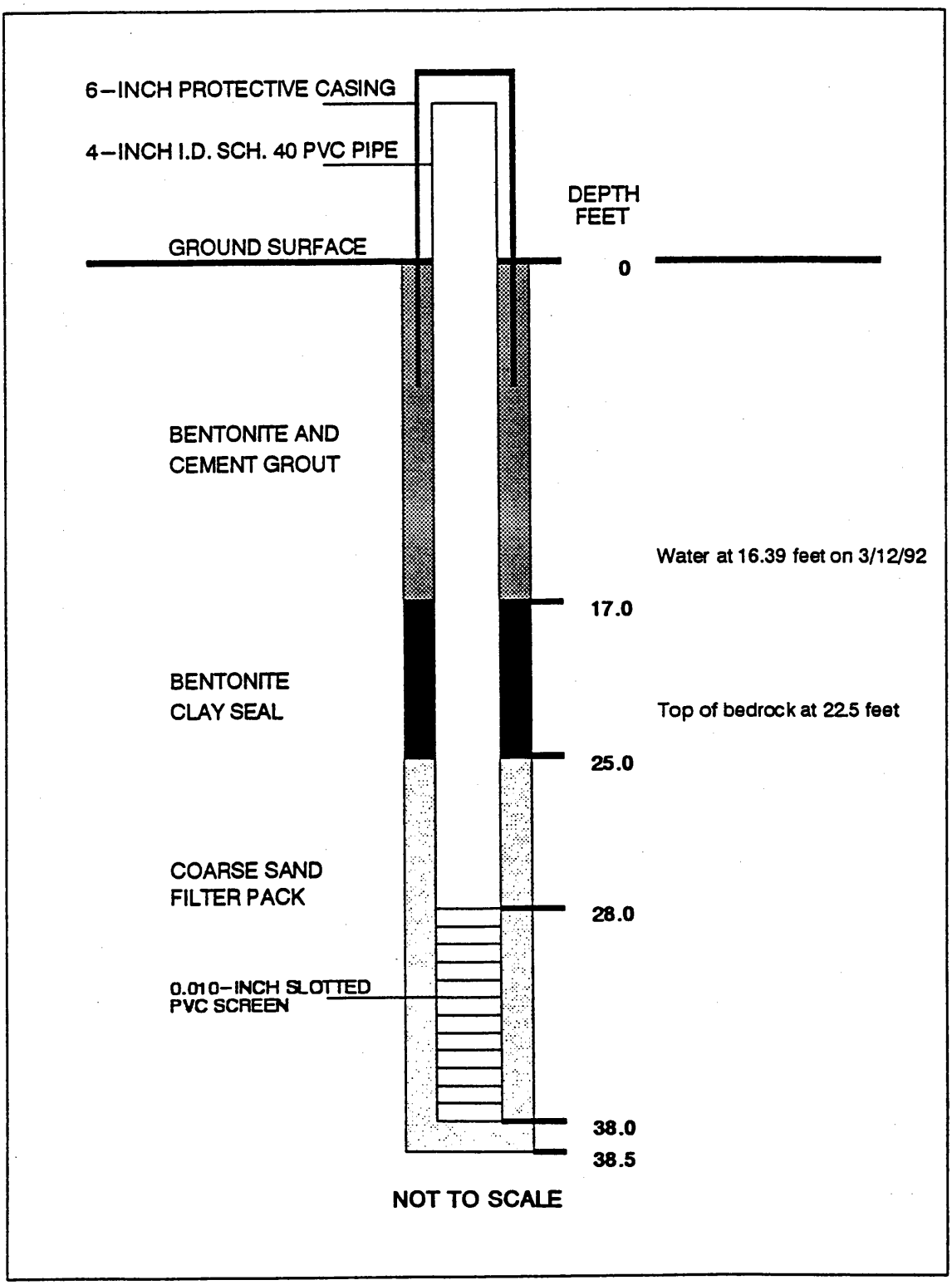


PLATE
LOG OF BORING

Dames & Moore

WELL INSTALLATION DIAGRAM
FOR VERIFICATION INVESTIGATION
RADFORD AAP, VIRGINIA

Location: 43MW6
Installation Date: 8/14/91
Surface Elevation: 1701.2 Feet
Top of PVC Elevation: 1703.88 Feet



Dames & Moore

LOG OF BORING No. 43SB06

PROJECT: Radford Army Ammunition Plant SWMU 43 **PROJECT NO.:** 123461
CLIENT: Army
PROJECT LOCATION:
LOCATION: SWMU 43 **ELEVATION:** 1705.54 NAD 1983
DRILLER: Bedford Well Drilling **LOGGED BY:** Chris Jones
DRILLING METHOD: Hollow Stem Auger **DATE:** 7/25/2007
DEPTH TO - WATER> INITIAL: ▽ 12.5 **AFTER 24 HOURS:** ▽ NA **CAVING>** C BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS: Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨ (10 20 30 40 50)
0	Road Base (Fill)		06A			
	1					
	Gray, moist, stiff, Poorly-graded GRAVEL with clay (Fill)					
	2					
3	Greenish brown, moist, stiff, Lean CLAY (Fill)					
	No Recovery					
	5.5					
6	Greenish brown, moist, stiff, Lean CLAY (Fill)					
	6					
	Black/gray, moist, coal ash (Fill)		06B			
9						
12	▽					
	14					
15	Greenish brown, wet, fine grained, Poorly-graded SAND		06C			
	Boring terminated at 16 ft.					
18						
21						

Fuel odor detected in wet soil above 14 ft.

Figure

LOG OF BORING No. 43SB07

PROJECT: Radford Army Ammunition Plant SWMU 43 PROJECT NO.: 123461
CLIENT: Army
PROJECT LOCATION:
LOCATION: SWMU 43 ELEVATION: 1705.45 NAD 1983
DRILLER: Bedford Well Drilling LOGGED BY: Chris Jones
DRILLING METHOD: Hollow Stem Auger DATE: 7/25/2007
DEPTH TO - WATER> INITIAL: ▽ NA AFTER 24 HOURS: ▽ NA CAVING> ℄ BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS: Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨ (10 20 30 40 50)
0						
	Road Base (Fill)		07A			
1						
	Gray, moist, stiff, Poorly-graded GRAVEL with clay (Fill)					
2						
	Black/gray, moist, construction debris (Fill)					
3						
5						
6	Construction debris including plastic and paper (Fill)		07B			
7						
	Brown, moist, Clayey SAND (Fill)					
8						
9	Construction debris (Fill)					
9						
	Brown, moist, fine-medium grained, Clayey Sand		07C			
12						
	Boring terminated at 12 ft.					
15						
18						
21						

Fuel odor from 5-7 ft.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. 43SB08

PROJECT: Radford Army Ammunition Plant SWMU 43 PROJECT NO.: 123461
CLIENT: Army
PROJECT LOCATION:
LOCATION: SWMU 43 ELEVATION: 1706.28 NAD 1983
DRILLER: Bedford Well Drilling LOGGED BY: Chris Jones
DRILLING METHOD: Hollow Stem Auger DATE: 7/25/2007
DEPTH TO - WATER> INITIAL: NA AFTER 24 HOURS: NA CAVING> C BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS: Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨ (10 20 30 40 50)
0						
	Organic layer (Fill)		08A			
	.5					
	Greenish brown, moist, Clayey SAND (Fill)					
3	2.75					
	Black/gray, moist, construction debris (Fill)					
	5					
	Construction debris including plastic and paper (Fill)		08B			
6						
9						
12						
	13					
	Brown, moist, Clayey SAND		08C			
15						
	Boring terminated at 16 ft.					
18						
21						

Fuel odor from 10-12 ft.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. 43SB09

PROJECT: Radford Army Ammunition Plant SWMU 43 PROJECT NO.: 123461
CLIENT: Army
PROJECT LOCATION:
LOCATION: SWMU 43 ELEVATION: 1706.55 NAD 1983
DRILLER: Bedford Well Drilling LOGGED BY: Chris Jones
DRILLING METHOD: Hollow Stem Auger DATE: 7/25/07
DEPTH TO - WATER> INITIAL: ▽ NA AFTER 24 HOURS: ▽ NA CAVING> ℄ BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS: Plastic Limit ⊢—⊣ Liquid Limit; Water Content - ●; Penetration - ▨ (10 20 30 40 50)
0			09A			
3						
6						
9						
11	Construction debris including wood, broken glass and plastic		09B			
12						
15						
15	Brown, moist, Lean CLAY		09C			
	Boring terminated at 16 ft.					
18						
21						

Fuel odor from 11 to 15 ft. Slight fuel odor from 15 to 15 ft.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

LOG OF BORING No. 43SB10

PROJECT: Radford Army Ammunition Plant SWMU 43 **PROJECT NO.:** 123461
CLIENT: Army
PROJECT LOCATION:
LOCATION: SWMU 43 **ELEVATION:** 1700.52 NAD 1983
DRILLER: Bedford Well Drilling **LOGGED BY:** Chris Jones
DRILLING METHOD: Hollow Stem Auger **DATE:** 7/25/07
DEPTH TO - WATER> INITIAL: NA **AFTER 24 HOURS:** NA **CAVING>** BOC

Depth (feet)	Description	Graphic	Sample No.	Blow Counts	% < #200	TEST RESULTS: Plastic Limit — Liquid Limit; Water Content - ●; Penetration - ▨ (10 20 30 40 50)
0						
	Brown, moist, Silty Lean CLAY		09A			
3						
6						
	Brown, moist, Lean CLAY with sand		09B			
8						
	Brown, moist, Silty Lean CLAY		09C			
9						
12						
	Boring terminated at 12.3 ft. Auger Refusal @ 12.3 ft.					
15						
18						
21						

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

Figure

Appendix C

Geophysical Survey

and

GPS Coordinates

Appendix C-1

Geophysical Survey

DRAFT GEOPHYSICAL INVESTIGATION REPORT

Radford Army Ammunition Plant
Radford, Virginia

SWMU43 - Project No. 123461.63000002

Western Burning Ground - Project No. 829870-10030000

Draft — June 10, 2007

Prepared for:

Shaw Environmental and Infrastructure, Inc.

Prepared by:

Shaw Environmental, Inc.
100 Technology Center Drive
Stoughton, MA 02072

Table of Contents

List of Figures

1.0 Introduction

This report presents the results of a geophysical investigation conducted by Shaw Environmental, Inc. (Shaw) at the Radford Army Ammunition Plant (RAAP), Radford, VA, which is located about forty five miles west of Roanoke, VA. The data collection was performed from April 23 through 26, 2007. The geophysical methods used at this facility were frequency domain electromagnetic induction and electrical resistivity. The aggregate coverage for this investigation, at two separate sites, was approximately 7.5 acres.

1.1 Objectives

The objectives of this investigation were to determine the extent of a historical landfill, referred to as solid waste management unit (SWMU) 43, and to determine the presence, trend, and pattern of vertical bedrock fractures below the Western Burning Ground (WBG).

1.2 Site Description

The 6,900-acre facility straddles the New River. Two areas, SWMU 43 and the WBG, were investigated within this Scope of Work.

SWMU 43

The site is located on the south bank of the New River.SWMU 43 is a closed, unlined sanitary landfill that operated as a trench – fill operation from about 1967 to the early 1970s. Two down-gradient borings along the northerly-bounding fence encountered landfill material consisting of paper, rubber and plastic debris to depths of 18 feet below ground surface (BGS) (Work Plan Addendum 19). Native subsurface materials in this area consist of fine to coarse-grained sandy silts and silty sand and interbedded silty clays overlying weathered limestone bedrock.

The area of interest for the geophysical investigation is approximately 100-250 feet wide in a north-south direction and approximately 1,400 feet long in an east-west direction. The survey area was bounded on the north and east by chain link fencing, to the south by a paved access road, and to the west by an area of trailers and staged materials (which interfered with the EM measurements). At the time of this investigation, the ground surface was open and covered with about six inches of mowed grass. The area is more or less level with the exception of a drainage ditch that bisects the site in a north-south direction.

WBG

The site is located in an isolated region approximately 7 miles from SWMU 43. The area of interest for the geophysical investigation is situated between an artificial pond and a

former burning ground once utilized for burning “off-spec” product from the RAAP. The soils from the burning ground had previously been excavated down to bedrock and removed. The extent of this removal action is indicated on the site maps (Work Plan Addendum 19). The subsurface geology at this location was assumed to be similar to SWMU 43, that is, silty sands and sandy silts overlying limestone bedrock, though at a shallower depth. While the base maps for the main (operational) areas of RAAP have been updated to the NAD83 coordinate system, the existing base maps for this inactive area are in the older NAD27 coordinate system

During the course of environmental cleanup work it was determined that near-surface sediments in a localized section of the pond had become contaminated and a geophysical survey was recommended to assess whether bedrock features such as vertical fractures were present which could act as preferred migration pathways.
The survey area is located above the pond at the top of a fairly steep embankment that appears to be composed of a combination of boulders and rip-rap. The area is generally rectangular-shaped and approximately 275 feet by 180 feet. Approximately one half of the site is open ground (next to the pond) and the other half is wooded. Probable bedrock crops out at several locations.

2.0 Technology and Approach

This section presents the theoretical background and rationale for using frequency domain electromagnetic induction and electrical resistivity methods.

2.1 Frequency Domain Electromagnetics

Frequency Domain Electromagnetic Induction (FDEM) was used to assess the location of the buried non-metallic and metallic materials. The Geonics, Ltd. EM31 MK2 terrain Conductivity Meter (EM31), which is commonly used to explore for buried metallic and non-metallic debris to depths ranging to 18 feet under favorable conditions, was utilized for this project. The EM31 is used to locate and delineate many subsurface features including underground storage tanks, groundwater contaminant plumes, oil brine pits, landfill boundaries, metallic bodies, and pits and/or trenches containing metallic and nonmetallic debris.

FDEM instrumentation consists of a transmitter coil and a receiver coil. An alternating current is applied to the transmitter coil, causing the coil to radiate a primary EM field, which generates eddy currents in conductive subsurface materials. These eddy currents have associated secondary magnetic fields whose strength and phase shift (relative to the primary field) are dependent on the conductivity of the medium. The combined effect of the primary and secondary fields is measured by the receiver coil. Both in-phase and 90 degrees out-of-phase (quadrature) components are measured. The quadrature component, also referred to as terrain conductivity, is representative of the conductivity of subsurface materials in milli-Siemens/meter (mS/m). The in-phase component is measured in parts

per thousand (ppt), also referred to as current density, and its value is generally representative of the presence or absence of accumulations of buried metallic debris.

The EM31 consists of a data logger and 13-foot boom that is carried at the hip of operator. The data logger is connected by a cable that is attached directly to the EM31 and controls and records data from the instrument. EM31 survey data are typically presented as plan-view contour maps of both terrain conductivity and the in-phase component. The maps are color-contoured to aid in interpretation of subtle anomalies.

2.2 Electrical Resistivity

For acquisition of continuous 2D resistivity profile data, Shaw used an AGI 8-channel Super Sting R8 Resistivity System (Super Sting). Based on initial modeling tests for maximum horizontal and vertical range, each base profile line consisted of 56 electrodes spaced at 5 feet. The Super Sting was equipped with a 56-electrode switching box, which is controlled by the uploaded command program. Acquisition parameters were set at 2 cycles per reading, 1000 milliamp output, and a 2% maximum noise threshold level.

All resistivity methods employ an artificial source of current that is introduced into the ground through a pair of electrodes. The potential difference is measured in milli-Volts (mV) between two other electrodes in the vicinity of the current flow. Apparent resistivity in ohm-meters (ohm-m) of the subsurface can be calculated with the ratio of the measured potential difference to the input current multiplying a geometric factor (specific to the array being used and the electrode spacing).

There are three basic modes of operation for resistivity methods: sounding, profiling and sounding-profiling. In sounding, the distance between the current electrodes or the distance between the current and potential dipoles is expanded in a regular manner between readings, which yields apparent resistivity as a function of depth. In profiling, the electrode spacing is fixed at a distance dependent on the desired depth of exploration and measurements are taken at successive intervals along a profile line to detect lateral anomalies. When both lateral and vertical information is desired, efficiency is increased by using a combination or sounding and profiling.

During resistivity surveys, there are five arrays commonly used: Wenner, Schlumberger, pole-dipole, dipole-dipole and gradient. The measured quantity in resistivity work is apparent resistivity. If the Earth were uniform, apparent resistivity would represent true Earth resistivity. For the real-Earth model, apparent resistivity is taken to be the bulk or average resistivity of all soils and rock influencing the flow of current.

For each type of array, resistivity data can be processed with different commercial forward modeling and inversion programs. The measured apparent resistivity data are generally presented as 2-dimensional profiles. Environmental applications include mapping overburden depths, stratigraphy, faults, fractures, rock units, saltwater intrusion, contaminant plumes, waste dumps and voids.

2.3 GPS

Horizontal positioning control was attained by use of a Trimble AG114 Global Positioning System (GPS). The AG114 is a differential GPS instrument with sub-meter accuracy. The GPS receiver was linked directly to the logger for EM31 data acquisition at both sites, and was used in stand-alone mode to acquire coordinates of electrical resistivity profiles and pertinent site features.

3.0 Geophysical Survey Procedures

3.1 Frequency Domain Electromagnetic Survey

Frequency-domain electromagnetic data were collected with the EM31. Coordinates of each reading were acquired as latitude and longitude, and were later translated to NAD83 and NAD27, Virginia South Zone, US Survey feet coordinates for SWMU 43 and WBG, respectively, consistent with the site base maps. Additional data were collected to ensure that the instrument was functioning correctly and that instrument drift was within acceptable limits.

SWMU 43

A combined EM31 and GPS setup was used and data were acquired across the site. The instrument was set to record five readings per second. Since it was suspected that the landfill ends at or near the roadway that bounds the southerly edge of the site, traverses were walked in a N-S direction (perpendicular to the long axis) and at an 8-foot line spacing. Additionally, GPS coordinates were taken at several well clusters, along both edges of the roadway, and down the centerline of the drainage ditch to aid in overall positioning control.

WBG

The EM31/GPS survey was performed in all the open areas to assist in the interpretation of the resistivity data. The survey was not extended into the heavily wooded areas where the overhead canopy would have obstructed the GPS measurements. As with the SWMU 43 site, the instrument recorded data at five readings per second. Survey line locations and spacings were selected to take the best advantage of the terrain while providing adequate coverage.

3.2 Resistivity Surveys

SWMU 43

Since bedrock fracture mapping was not an objective at this location, resistivity data were not collected here.

WBG

The plan for data collection at this location required a number of profiles oriented along the trend of the pond, WNW-ESE plus one NE-SW cross tie line, and centered around the area exhibiting contamination. The lines, WBG-1 to 5, were spaced from the top of the embankment toward the burning ground itself, which is a well defined area surrounded by low berms. The resistivity survey parameters were selected to best characterize the assumed fill area: an electrode spacing of 5 feet, yielding lines 275 feet in length, and a dipole-dipole array were chosen. Survey planning software indicated that the depth and lateral data points of the arrays would be sufficient to image bedrock conditions at the site.

4.0 Geophysical Data Processing

4.1 EM31 Data Processing

The EM31 data were downloaded and reviewed using the manufacturer's software. The data were leveled by removing instrument drift and presented as plan maps using Geosoft's Oasis Montaj software.

4.2 Resistivity Inversion Processing

For QC purposes, the data was pre-processed in the field using the AGI EarthImager 2D software, and all files were backed up and saved for later in-house processing.
The final inversion models derived from the EarthImager 2D software resulted in the generation of 2D resistivity image sections. The data processing involves several critical steps.

1. Initial inversion and processing parameters settings were set to include all recorded data points, and the minimum-maximum apparent resistivity range was set at 1 ohm-m to 10,000 ohm-m, respectively. The maximum noise threshold was set at 2%.
2. The EarthImager 2D inversion software read the raw file and the processor performed a data point noise analysis, and an edit routine removed noisy data.
3. Initial inversion processing was performed to analyze and compare the measured pseudo-apparent resistivity section and calculated pseudo-apparent resistivity section. A close fit between the two sections was indicative of a good inversion solution. Additionally, the total RMS error was evaluated. The ideal RMS and L2 Norm, which are qualitative measure of the inversion model fit, should be about 5%. Values in excess of 20% RMS are indications of poor model convergence of the inversion solution With the exception of Profile WBG3, the average RMS value was 7.6%, indicating a good inversion model fit. See notes concerning WBG3 under Results and Interpretation.

4. Although the initial inversion was set for 8 iterations, analysis of convergence solutions may indicate "best fit" solutions with fewer iterations. The processor selects the best resistivity image model based on the least number of iterations required to achieve the lowest RMS error. Excessive inversion processing can introduce artificial features that are not real, therefore, the least number of inversion iterations required to achieve the "best fit" model solution is selected for final processing and interpretation.

5.0 Results and Interpretation

SWMU 43

The EM31 in-phase and quadrature phase data are shown on Figures 1 and 2 respectively. The in-phase data (Figure 1) exhibits high values in a series of distinct linear zones trending northeast – southwest, approximately parallel to the access road. These zones most likely represent backfilled trenches containing concentrations of metallic objects and are suggestive of the historical description of the landfill as a trench operation.

The quadrature phase or ground conductivity data (Figure 2) exhibits a less distinct pattern than the in-phase response. Some suggestion of the linear zones is present near the westerly end of the survey area, and to a lesser degree in the southeast corner, but for the most part the high values in the east have coalesced into a more general background. This may be due to more conductive overlying materials in the east (e.g. clays).

The central portion of the survey area, corresponding to the drainage ditch and its approaches, exhibits generally low values on both figures. A sharp high at the southerly end of the ditch, particularly on Figure 1, corresponds to the location of the reinforced concrete culvert passing under the road embankment.

High values along the northerly and easterly edges of the survey area are likely due to the presence of a chain link fence, and high values along the access road may be due to subsurface utilities, and/or overhead electric lines. However the possibility of buried debris in these areas cannot be discounted.

The far western edge of the survey area was not accessible due to the presence of small trailers and numerous metal objects on the surface which would have grossly interfered with the EM31 measurements.

Figure 3 shows our interpretation of subsurface conditions from the EM31 data, a series of extensive, backfilled trenches oriented approximately parallel to the access road. The area containing the trenches correlates well with the approximate landfill limits (shown as a blue line) on the provided base map.

WBG

The central portion of the survey area was inaccessible to the EM31 due to the presence of heavy woods.

The EM31 in-phase and quadrature phase data are shown on Figures 4 and 5 respectively. Both maps show a general lack of conductive/metallic material within the extent of the former burning ground (likely due to the soil removal) and a zone of higher values located immediately west of the burning ground where concentrations of metal and other conductive materials may be present.

The in-phase values are lower, but remain slightly elevated through the burning ground itself, and in scattered locations through the remainder of the surveyed area. Higher values of quadrature phase response are not present in the burning ground, but appear to extend southeast toward the pond.

Locations of the resistivity profiles are shown on Figure 6. The resistivity profile plots shown in Figure 7 represent 2D inversion image sections that indicate the relative distribution of vertical and horizontal apparent resistivity (scale in meters). As mentioned above, although the RMS value for WBG3 was higher than the average of the other profiles (32.4%), visual comparison of the observed and modeled pseudo-apparent resistivity sections, as well as comparison between WBG3 and adjacent profiles suggests a relatively good representation of conditions. The color range represents the minimum-maximum apparent resistivity values measured along the profile, and is numerically presented in Ohm-m. Given the geologic setting, the types of rock and soil, moisture content, the predicted range of apparent resistivity values should fall between 100 ohm-m and 5000 ohm-m. In general, we observe three distinct sub-ranges of apparent resistivity. The lower resistivity range between 5 and 120 ohm-m, a middle range between 150 and 900 ohm-m, and a high distribution range between 1000 ohm-m to 10000 ohm-m.

All six profiles show relatively conductive materials at the surface (moister and/or finer soils such as loam, clay, silt) interbedded with and overlying more resistive materials (dryer and/or coarser, such as sand and gravel, boulders). The conductive surface layer is generally consistent to depths of 15 feet or so, but is interrupted by zones of more resistive materials, suggesting that the area was disturbed in the past.

Underlying the soils is highly resistive material, most likely representing limestone bedrock. The rock surface is generally undulating and exhibits numerous irregularities suggesting possible channels, cavities, or other solution features. Possible cavities are present at depth as well, particularly on Profiles WBG-1 and WBG-4.

Depths to the top of the interpreted bedrock surface were tabulated at each electrode location and contoured to provide the map of Figure 8. Inspection of Figure 8 reveals the following observations.

- Numerous small peaks and depressions are seen in the bedrock surface, corresponding to the irregularities noted above.

- Shallowest bedrock is found in the area of the burning ground, with interpreted depths of 5 to 10 feet. The rock surface generally deepens in the direction of the

pond; however the deepest point within the survey area is seen near the intersection of Profiles WBG-2 and WBG-5, reaching depths in excess of 34 feet.

- Two low areas with the appearance of channels extend from the deepest area toward the pond, one appearing to terminate near the zone of contaminated sediments.

- Although Figure 8 illustrates interpreted bedrock depth and not elevation, the ground surface at the site also slopes generally downward toward the pond and would tend to accentuate flow from the burning ground toward the pond.

- Vertical conductivity anomalies connecting the resistivity profiles and potentially associated with bedrock fracture zones were not observed.

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Appendix C-2

GPS Coordinates

Appendix C
2002 RFI/RI Sample Location Coordinates and Elevations

Site ID	Northing	Easting	Elevation
SWMU 43			
43SB01	3599364.67	10894048.71	1703.95
43SB02	3599326.58	10894147.93	1707.01
43SB03	3599380.90	10894307.14	1704.89
43SB04	3599396.09	10894519.49	1704.49
43SB05	3599488.84	10894592.07	1700.31
43SB06	3599187.57	10893333.12	1705.54
43SB07	3599175.53	10893407.21	1705.45
43SB08	3599215.58	10893541.32	1706.28
43SB09	3599243.81	10893768.76	1706.55
43SB10	3599340.21	10893824.42	1700.52

* Coordinates are in VA State Plane (NAD 1983)

**Elevations are feet above mean sea level (NAVD 88)

Appendix D

Fate and Transport

CONTAMINANT FATE AND TRANSPORT

D.1 TRANSFORMATION AND FATE OF CONTAMINANTS

When contaminants are exposed to the environment, the potential for transformations of the chemical exists. The endpoint of the transformation process is referenced as the “fate” of the chemical. The ultimate "fate" refers to the expected final state that an element, compound, or group of compounds will achieve following release to the environment. The fate processes for organic contaminants may include sorption, volatilization, hydrolysis, and abiotic and biotic degradation, while the fate processes for inorganic contaminants may include ion exchange, chemical speciation, and oxidation/reduction. These fate processes dictate how contaminants will be transported in the environment. Contaminants can be transported with little attenuation or retardation due to these fate processes, or they can be delayed or transformed so that little migration occurs. Various fate processes, as well as the properties that may affect the fate of contaminants, are discussed below.

D.1.1 Contaminant Properties Affecting Fate

The physical and chemical properties of contaminants play a large role in determining their fate after release to the environment. The following section provides a discussion of several of these key properties.

D.1.1.1 Specific Gravity

Specific gravity is the ratio of the density of a compound to the density of water. It is a measure of the tendency of a compound to float (specific gravity <1) or sink (specific gravity >1) in water. Contaminants that are immiscible in water can exist as separate phase liquids and are referred to as Light Non-Aqueous Phase Liquids (LNAPLs) if their specific gravity is less than one, or Dense Non-Aqueous Phase Liquids (DNAPLs) if their specific gravity is greater than one.

D.1.1.2 Water Solubility

The solubility of a compound in water is the maximum or saturated concentration of the compound in pure water at a specific temperature. Compounds with high solubility in water tend to remain in the aqueous phase and not partition to soil or sediment, are less likely to volatilize from water, and are generally more likely to biodegrade. Conversely, compounds with a low water solubility tend to partition to soil or sediment, volatilize more readily from water, and are less likely to be biodegradable. The solubility of inorganic chemicals varies widely from insoluble to greater than 100,000 mg/L, depending on temperature, pH, ORP, and the concentrations of dissolved constituents such as humic and fulvic acids.

D.1.1.3 Vapor Pressure

Vapor pressure is a property of a chemical in its pure state, which indicates how readily it will volatilize to the atmosphere. Volatilization from water is dependent upon vapor pressure and Henry’s Law Constant. Vapor pressures for chemicals in their pure states range from 0.001 to 760 mm mercury (mm Hg) for liquids to less than 10^{-10} mm Hg for solids.

D.1.1.4 Henry's Law Constant

The Henry's Law Constant of a compound is essentially the air/water partition coefficient. In dimensional form, the Henry's Law Constant is the ratio of the vapor pressure to the water

solubility (in atm-m^3/mole). The Henry's Law Constant indicates how a chemical will partition between air and water at equilibrium, and can be used to calculate the rate of volatilization of a chemical from water.

D.1.1.5 Organic Carbon/Water Partition Coefficient

The organic carbon/water partition coefficient (K_{oc}) is a measure of the tendency for a chemical to be sorbed to the organic fraction of soil and sediment. Normal K_{oc} values range from 1 to 10^7 L/kg, with higher values indicating greater sorption potential by the soil and lower values indicating high leaching capabilities for the contaminants from the waste source into surface runoff and groundwater.

D.1.1.6 Octanol/Water Partition Coefficient

The octanol/water partition coefficient (K_{ow}) is a measure of the distribution of a compound at equilibrium between n-octanol and water. The octanol/water partition coefficient, K_{ow}, gives an indication of how a compound will preferentially distribute into a solvent or water, and is a measure of how hydrophobic a compound is. A chemical with a high K_{ow} is hydrophobic and may be relatively immobile in an aqueous system (e.g., contaminant sorbs to soil particles), but may be mobilized in the presence of an organic solvent.

D.1.2 Fate of Organic Contaminants

D.1.2.1 Sorption

Sorption and desorption are two major mechanisms affecting the fate of contaminants in the subsurface. Sorption includes both adsorption and absorption. Adsorption is defined as the accumulation occurring at an interface, while absorption is the partitioning between two phases (Knox et al., 1993).

Sorption is the process by which a compound is retained onto a solid particle rather than remaining dissolved in solution. The sorption of contaminants to the soil matrix is an important factor affecting their transport in terrestrial environments. The sorption of contaminants to suspended sediments and bottom sediment is an important factor affecting chemical transport in aquatic environments.

In general, sorption reactions may be classified as either sorbent or solvent-motivated. Sorbent-motivated sorption occurs when an attraction between the sorbent (subsurface material) and the solute (contaminant), and the contaminant accumulates at the surface due to the affinity of the surface for the contaminant. An example of sorbent-motivated sorption would be a highly polar or ionizable contaminant interaction with the cation exchange sites of clay minerals. This type of sorption typically occurs with inorganics and is more commonly referred to as ion exchange. Solvent-motivated sorption occurs when the contaminant is hydrophobic, such as nonpolar organics, which prefer nonpolar phases to the polar water phase. Hydrophobic contaminants will accumulate at an interface or partition into a nonpolar phase (e.g., associate with the organic content of the subsurface medium) rather than partition into the water phase. The sorption of most neutral organic constituents falls into the category of hydrophobic, or solvent-motivated sorption (Knox et al., 1993). The best indicators of the partitioning of a compound between soil and water are the organic carbon/water partition coefficient (K_{oc}), the soil/water distribution coefficient (K_d), the octanol/water partition coefficient (K_{ow}), and the retardation factor (R).

For nonionic organic chemicals and aquifer materials, sorption is largely controlled by the clay and organic carbon content of the soil. The distribution of an organic chemical between water

and a specific soil matrix is characterized by the organic carbon/water partition coefficient, K_{oc}. This coefficient, which is based on the specific organic carbon content of the soil, is typically measured empirically using a linear adsorption isotherm where the partitioning between the two phases is determined by the following equation (Olsen and Davis, 1990):

$$K_d = \frac{C_s}{C_w} \qquad \textit{Equation 1}$$

where:

K_d = Soil/water distribution coefficient (L/kg)
C_s = Mass of the solute on the solid phase per unit mass of the solid phase (mg/kg)
C_w = Mass of the solute per unit volume of solution (mg/L)

The soil/water distribution coefficient, K_d, obtained from the above equation is then normalized to correct for variations in the organic carbon content of differing soil matrices to calculate K_{oc}:

$$K_{oc} = \frac{K_d}{f_{oc}} \qquad \textit{Equation 2}$$

where:

K_{oc} = Organic carbon/water partition coefficient (L/kg)
K_d = Soil/water distribution coefficient (L/kg)
f_{oc} = Fraction of organic carbon in the soil

The normalization of the adsorption coefficient to ascertain K_{oc} correlates well with other adsorption coefficient estimation methods which use other properties of the chemical such as water solubility or octanol/water partitioning (Callahan et al., 1979).

If the empirical K_d or K_{oc} value for the chemical is not available, the most widely accepted method of estimating the organic carbon/water partition coefficient involves the octanol/water partition coefficient, K_{ow}. The octanol/water partition coefficient, K_{ow}, has been correlated to water solubility, the organic carbon/water partition coefficient, and bioconcentration factors for aquatic life and represents the extent of partitioning by a chemical between organic and aqueous phases (Lyman et al., 1990). The relationship between K_{oc} and K_{ow} is expressed as a regression equation:

$$\log K_{oc} = a \log K_{ow} + b \qquad \textit{Equation 3}$$

where a and b are constants derived from specific data sets which represent differing classes of chemicals such as pesticides, aromatic compounds, and chlorinated hydrocarbons. Chemicals with low K_{ow} (i.e., less than 10 L/kg) are considered relatively hydrophilic and tend to have high water solubilities and small K_{oc} values. Conversely, hydrophobic compounds typically have K_{ow} values greater than 10^4 L/kg (Lyman et al., 1990). In general, the more hydrophobic a contaminant is, the more likely the contaminant will be sorbed to soil.

From Equation 1, when C_s is equal to zero, K_d also equals zero. Under this condition, no adsorption or retardation of the chemical occurs. This implies that the contaminant moves at the same velocity as the groundwater and in this case, the contaminant is termed a conservative or nonreactive solute. However, the velocity of the contaminant front can be substantially different for solutes that are adsorbed within the soil matrix. The retardation factor is defined as the ratio of the groundwater flow velocity to the contaminant front velocity:

$$R = 1 + \rho_b \frac{K_d}{n_e} \qquad \textit{Equation 4}$$

where:

R	=	Retardation factor (dimensionless)
θ_b	=	Bulk density of the soil (g/mL)
K_d	=	Distribution coefficient (mL/g)
n_e	=	Effective porosity of the soil (dimensionless)

The retardation factor indicates the extent of retardation of contaminant migration in groundwater due to adsorption. A retardation factor of 1.0 indicates that the contaminant has little tendency to bind to soils and, hence, moves freely in the groundwater. By contrast, the larger the R, the greater the tendency for a contaminant to bind to the soil matrix and the slower it will move in the groundwater. The retardation factor cannot fall below 1.0.

Other factors which affect the adsorption of chemicals to the soil matrix include temperature, pH of the soil and water, particle size distribution, and surface area of solids. The value of the distribution coefficient K_d usually decreases with increasing temperature because adsorption is an exothermic process. Neutral and slightly polarized organic compounds are somewhat affected by pH. Chemicals that tend to ionize are significantly affected by pH (Lyman et al., 1990). When the pH of the groundwater is approximately 1.0 to 1.5 units above the negative log of the acid dissociation constant (pK_a), adsorption becomes significant. A comparison of the pK_a of an organic acid with the pH of the groundwater indicates the potential importance of the dissociation of the organic compound in determining the degree of partitioning. The size of affected soil particles also plays a role in a contaminant's sorption characteristics. Particles of small size, such as particles of fine silt or clay, will have a greater tendency to adsorb chemicals.

D.1.2.2 Volatilization

Volatilization is a process whereby a compound changes state from the aqueous phase to the vapor phase. Compounds that do not adsorb onto soil/sediment or dissolve in water have the greatest tendency to volatilize. The volatility of a compound can be evaluated from its K_{oc} and by assessing its Henry's Law Constant. The value of K_{oc} indicates the degree of sorption of a compound to soil/sediment. A compound with a high K_{oc} value will have a reduced volatility because the compound sorbs extensively to the soil/sediment surface. The Henry's Law Constant can be considered the partition coefficient of the contaminant between the aqueous phase and the gas phase. A Henry's Law Constant of greater than 10^{-3} atm-m^3/mol indicates a high volatility, and a Henry's Law Constant of less than 10^{-5} atm-m^3/mol indicates a low volatility. **Table D-1** provides a rough outline of relative volatility of a solute according to its Henry's Law Constant.

Table D-1
Volatility of Compounds Based on Henry's Law Constants

Volatility	Henry's Law Constant
Volatilization is very slow, at a rate controlled by slow diffusion through air	$< 10^{-5}$ atm-m^3/mol
Volatilization is not rapid but significant	10^{-5} atm-m^3/mol to 10^{-3} atm-m^3/mol
Volatilization is rapid	$> 10^{-3}$ atm-m^3/mol

The Henry's Law Constant is related to other physical properties of the compound, the most important of which are vapor pressure and water solubility. Compounds exhibiting a high vapor pressure and low water solubility tend to have high volatilization rates. In fact, in the absence of literature values, Henry's Law Constants can be estimated from the following equation (Olsen and Davis, 1990):

$$H = \frac{(V_p)(MW)(16.04)}{(WS)(T)} \qquad \textit{Equation 5}$$

where:

V_p = Vapor pressure of the chemical (mm Hg)
MW = Molecular weight of the chemical (g/mol)
WS = Solubility in water (mg/L)
T = Temperature (^oK)
H = Henry's Law Constant ([mg/L]/[mg/L])

From this equation, it is evident that the volatilization of a compound to air will depend on its vapor pressure, water solubility, and temperature. Other important factors affecting volatilization include wind speed, the depth of the aquifer, and the geology of the unsaturated zone.

D.1.2.3 Hydrolysis

Hydrolysis is the reaction of a compound with water. It usually involves the introduction of a hydroxyl (-OH) group into an organic compound, usually at a point of unbalanced charge distribution (Cherry et al., 1983). The hydrolysis reaction can displace halogens, and may be catalyzed by the presence of acids, bases, or metal ions. Therefore, the rate of hydrolysis is pH and metal-ion concentration dependent. Surface effects also may affect the rate of hydrolysis. Halogenated aliphatics are susceptible to hydrolysis, with reactions proceeding most rapidly for monohalogenated compounds, and much more slowly as the number of halogen ions increases (Fetter, 1993).

Hydrolysis applies to a limited number of chemicals. These contain hydrolyzable groups, such as esters, aliphatic halogens, amides, carbamates, and phosphate esters (Howard, 1991). Compounds that are not susceptible include: alkanes, alkenes, aldehydes, amines, and carboxy-containing compounds (Olsen and Davis, 1990).

D.1.2.4 Abiotic Degradation

Abiotic degradation is the chemical degradation of compounds without the assistance of biological activities. In the natural environment, the most common abiotic degradation processes are hydrolysis and hydroxyl radical reactions. Other abiotic degradation processes include direct photolysis, dehydrohalogenation, and oxidation.

Hydrolysis, as mentioned above, is a chemical reaction in which compounds react with water molecules in the environment, resulting in the introduction of a hydroxyl group (-OH) and the loss of a leaving group (-X), typically a halogen.

$$RX + H_2O \rightarrow ROH + HX \ (or\ H^+, X^-) \qquad Equation\ 6$$

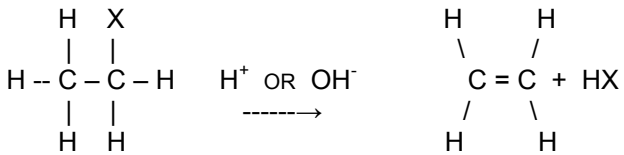
These reactions are catalyzed mainly by hydronium (H_3O^+) and/or hydroxyl ions (OH^-). Therefore, as mentioned above, hydrolysis reactions are pH dependent. Selected metals may also catalyze a hydrolysis reaction (Olsen and Davis, 1990).

Hydroxyl radical reactions are reactions with hydroxyl radicals photochemically generated from sunlight. These reactions may occur mostly in the atmosphere and to a lesser degree in surface water. Once the free radicals are formed, they will react with organic molecules to form an intermediate organic-free radical, which usually reacts further with other compounds. For most chemicals in the atmosphere, reaction with photochemically-generated hydroxyl radicals is the most common degradation process. For many chemicals, experimental reaction rate constants for reactions involving hydroxyl radicals are available in the scientific literature and are used to calculate an estimated half-life by assuming an average hydroxyl radical concentration of $5x10^5$ molecules/cm^3 in non-smog conditions (Howard, 1991).

Occasionally, other reactions besides hydroxyl radical reactions occur in the atmosphere such as ozone oxidation and direct photolysis. Direct photolysis is a photochemical alteration of the compound as a result of the compound absorbing direct sunlight. The possibility of direct photolysis in air or water can be partially assessed by examining the UV spectrum of the chemical. If the chemical does not absorb sunlight at wavelengths greater than 290 nm, the chemical cannot directly photolyze.

Dehydrohalogenation is an elimination reaction in which an alkyl derivative will eliminate HX to form an alkene, where X is commonly a halogen, hydroxyl radical, or ester group:

Equation 7



D.1.2.5 Biotic Degradation

Biodegradation is the process in which the chemical degradation of a compound is assisted by soil microorganisms (e.g., fungi, bacteria). Reactions include oxidation, reduction, hydrolysis, and sometimes rearrangement of the molecule. Though biodegradation may occur very slowly for some compounds, the eventual mineralization of almost every organic compound in the

terrestrial and aquatic environment can be attributed to biodegradation (Alexander, 1978). A typical range of half lives for different degradation rates are summarized in **Table D-2**.

Rates of biotic degradation depend on many factors. Microorganisms require a carbon source (e.g., organic matter), an electron acceptor (e.g., oxygen, nitrate), nutrients (e.g., nitrogen, phosphorus), and various trace elements in order to maintain existing cells and produce new cells. Many environmental factors can also serve to limit the occurrence of microbial metabolism in the subsurface. These factors include pH, temperature, toxics, substrate concentration, and the presence of microbes. Most bacteria find the optimum pH range to be 6.5 to 7.5 and are not able to survive at pH values greater than 9.5 or below 4.0 (Knox et al., 1993). Microbial activity generally increases with increasing temperature. The presence of certain compounds may also be toxic to microorganisms. Heavy metals, acids, bases, or high concentrations of the substrate can serve to limit microbial activity. Finally, for biotic degradation to occur in the subsurface, microbes capable of metabolizing (or cometabolizing) the substrate must be present.

Table D-2
Rate of Biodegradation Based on Half Lives

Biodegradation Rate	Approximate Biodegradation Half-Life
Fast	1 day to 7 days
Moderately Fast	7 days to 4 weeks
Slow	4 weeks to 6 months
Resistant	6 months to 1 year

Complete biotic degradation of organic chemicals by microorganisms, utilizing enzymes to facilitate degradation, ultimately produces microbial cells, water, and carbon dioxide, which eventually lead to mineralization of the compound. Whether or not a chemical is transformed by enzymes depends on the configuration alignment of the enzyme with the organic chemical during the reaction. If an ideal configuration of the enzyme with organic chemicals occurs, the reaction will occur. Persistent chemicals have less favorable alignments, and non-reacting or recalcitrant chemicals fail to bond or produce favorable alignments.

Biotic degradation can be either aerobic or anaerobic. An aerobic reaction occurs in the presence of oxygen. Aerobic reactions occur in oxygen-rich environments such as surface soil (i.e., 0 to 6 inches bgs) and upper layers of sediment. An aerobic reaction is usually an oxidation reaction. An anaerobic reaction occurs in the absence of oxygen. Anaerobic reactions occur in such places as the saturated zone in terrestrial environments and the bottom layer of sediment in aquatic environments. Because of the lack of oxygen in these environments, an anaerobic reaction usually favors dehydrohalogenation reactions or reductive reactions.

D.1.3 Fate of Inorganic Contaminants

D.1.3.1 Ion Exchange

Metals in soil are generally immobile, particularly under neutral or alkaline conditions, and tend to sorb to soil particles. As described in *Section D.1.2.1*, sorption can be considered as either

sorbent- or solvent-motivated. Solvent-motivated sorption (partitioning) typically occurs for nonpolar, hydrophobic organic chemicals in groundwater by accumulation occurring on the organic content of the media. Ion exchange is sorbent-motivated sorption and occurs for inorganic chemicals due to an affinity of the solid surface for the compound. Typically, the sorbent surface contains a charge deficiency and requires the accumulation of ions near the solid/liquid interface to neutralize the surface charge. In subsurface media, the mineral fraction most commonly involved in ion exchange is the clay fraction (Knox et al., 1993). Ion exchange occurs when the sorbent charge deficiency can be neutralized more efficiently by ions in solution than by those ions currently adsorbed. For example, if sodium ions (monovalent) have accumulated and calcium ions (divalent) suddenly appear, the excess surface charge can be more efficiently neutralized by the calcium ions than by sodium. Thus, the sodium ions will desorb, the calcium ions will adsorb, and an exchange of ions occurs. The cation exchange capacity of a given aquifer material indicates the probable type and amount of clay minerals present, and can be used as an indication of the ability of a soil to attenuate cations found in the groundwater (Makeig, 1982).

D.1.3.2 Chemical Speciation

Most inorganic chemicals occur in more than one ionic form, or species, in soils and groundwater. These species, which form as a result of hydrolysis, oxidation/reduction, and complexation reactions, may have different valences and mobilities in groundwater due to different affinities for adsorption and different solubility controls. Simple ionic species often combine with ligands to form ionic or neutral-charge aqueous complexes. The major inorganic ligands in groundwater are generally Cl^-, HCO_3^{-2}, CO_2, and SO_4^{-2}, and in some cases, NH_3, NO_3^- and F^- (Cherry et al., 1983). Environmental conditions which affect speciation of inorganic chemicals include pH, redox potential, and inorganic ligands.

D.1.3.3 Oxidation/Reduction

Oxidation and reduction ("redox") refers to the transfer of electrons and the resultant species change of ions or compounds. Oxidation is the loss of electrons, while reduction is the gain of electrons. Redox processes are important because they can cause changes in the mobility of many inorganic compounds. The ability of a redox reaction to occur is a function of the redox potential. The redox potential is defined in terms of the negative logarithm of the free-electron activity and is referred to as pE. The redox potential can also be expressed in terms of volts (E_h). Low values of pE indicate high electron activity and favor electron-rich species (reduced). High values of pE indicate low electron activity and favor electron-poor species (oxidized).

D.2 TRANSPORT OF CONTAMINANTS

Contaminant transport refers to the mechanisms and rates of migration of contaminants away from the source area. Migration pathways often include air, water, soil, and the interfaces between the phases of the contaminant (i.e., solid, liquid, or gas). Mechanisms controlling the movement of contaminants include advection, dispersion, diffusion, volatilization, and sorption. These mechanisms are dictated by the physical and chemical nature of the environmental media and their interaction with the potential COCs. Water pathways include surface water, storm water runoff, groundwater, infiltration/percolation, and precipitation. The air pathways include uptake into the atmosphere and deposition from it either in a dry or wet form. The soil pathways include sediment and soil transported by erosion or by site activities such as construction and movement through the vadose zone as soil gas. Transport across an interface is primarily due to

partitioning. The degree of partitioning will depend on the volatility, solubility, and sorptive capacity of the phases. The primary transport mechanisms across the water-air and soil-air interfaces are volatilization and sorption, while transport across the soil-water interface is controlled by sorption/desorption and dissolution (solubilization).

D.2.1 Advection

Contaminant transport by advection occurs when the contaminant is moved in and with the bulk flow of either water or the atmosphere. The primary advective transport pathway at Building 4343 is migration into surface water.

D.2.2 Diffusion

Transport by diffusion is the result of a concentration gradient in the contaminant plume or the soil gas within the vadose zone. The rate of diffusion is expressed by the diffusivity coefficient, which is affected by temperature, pressure, density, and soil porosity. Diffusion in soil is strongly dependent on the effective porosity of the soil. Residual clays have high porosity but low effective (interconnected) porosity. Transport due to diffusion in clays is usually minimal.

D.2.3 Volatilization

Volatilization occurs when a liquid changes its phase to a gas. This is primarily a mechanism for organic contaminants migrating from the soil or surface water to the air. Volatilization is a mass transfer process that is limited by a compound's solubility in water, molecular weight, vapor pressure, K_{oc} value, and by the local temperature.

D.2.4 Sorption

As discussed previously, sorption is a general term used in place of the specific terms absorption or adsorption. Adsorption describes the process whereby a contaminant is bound to the surface of a medium, whereas absorption occurs when the contaminant is bound within the medium. The distinction between the two is not always relevant, but the fact that a contaminant has been sorbed indicates that it has been bound to its new medium and will be transported with this new medium. This transport mechanism may be significant when a high concentration of suspended solids is found in water samples.

Desorption is the release (leaching) of a contaminant from the sorbent phase. Sorption/desorption is a primary mechanism of transport for water and soil pathways. In a water-soil environment, soil is the adsorbent and the contaminants are the adsorbates. Sorption/desorption of organic and inorganic compounds within soil-water systems is assessed by several physical and chemical properties of both the compound and the soil or sediment (*Section D.1.2.1*).

Appendix E

HHRA

Appendix E-1

RAGS Tables

Table E.1-1
Selection of Exposure Pathways - SWMU 43

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Surface Soil	Surface Soil	SWMU 43	Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance workers could contact surface soil at SWMU 43 and be exposed to COPCs via incidental ingestion.
						Dermal	On-site	Quant	Maintenance workers could contact surface soil at SWMU 43 and be exposed to COPCs via dermal absorption.
				Industrial Worker	Adult	Ingestion	On-site	None	There are no workers currently exposed to surface soil at SWMU 43 on a daily basis.
						Dermal	On-site	None	There are no workers currently exposed to surface soil at SWMU 43 on a daily basis.
				Trespasser	Adolescent	Ingestion	On-site	None	Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
						Dermal	On-site	None	Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
		Air	SWMU 43	Maintenance Worker	Adult	Inhalation	On-site	Quant	Maintenance workers could be exposed to airborne volatiles or particulate matter released from surface soil at SWMU 43.
				Industrial Worker	Adult	Inhalation	On-site	None	There are no workers currently exposed to airborne volatiles or particulates from surface soil at SWMU 43 on a daily basis.
				Trespasser	Adolescent	Inhalation	On-site	None	Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
	Total Soil (Surface and Subsurface)	Total Soil (Surface and Subsurface)	SWMU 43	None	None	None	On-site	None	Current excavation or construction activities are not occurring at SWMU 43.
	Groundwater	Groundwater	SWMU 43	None	None	None	On-site	None	Groundwater is not currently being used at SWMU 43. Therefore, there is currently no direct exposure to groundwater.
		Air	Volatile groundwater COPCs released to ambient air	Maintenance Worker	Adult	Inhalation	On-site	Quant	Volatiles could be released from groundwater into ambient air. Maintenance workers could be exposed via inhalation.

Table E.1-1
Selection of Exposure Pathways - SWMU 43

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Soil	Surface Soil	SWMU 43	Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance workers could contact surface soil at SWMU 43 and be exposed to COPCs via incidental ingestion.
						Dermal	On-site	Quant	Maintenance workers could contact surface soil at SWMU 43 and be exposed to COPCs via dermal absorption.
				Industrial Worker	Adult	Ingestion	On-site	Quant	Industrial workers could contact surface soil at SWMU 43 and be exposed to COPCs via incidental ingestion.
						Dermal	On-site	Quant	Industrial workers could contact surface soil at SWMU 43 and be exposed to COPCs via dermal absorption.
				Trespasser	Adolescent	Ingestion	On-site	None	Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
						Dermal	On-site	None	Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
		Air	SWMU 43	Maintenance Worker	Adult	Inhalation	On-site	Quant	Maintenance workers could be exposed to airborne volatiles or particulate matter released from surface soil at SWMU 43.
				Industrial Worker	Adult	Inhalation	On-site	Quant	Industrial workers could be exposed to airborne volatiles or particulate matter released from surface soil at SWMU 43.
				Trespasser	Adolescent	Inhalation	On-site	None	Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
	Total Soil (Surface and Subsurface)	Total Soil (Surface and Subsurface)	SWMU 43	Maintenance Worker	Adult	Ingestion	On-site	Quant	Maintenance workers could contact soil at SWMU 43 and be exposed to COPCs via incidental ingestion.
						Dermal	On-site	Quant	Maintenance workers could contact soil at SWMU 43 and be exposed to COPCs via dermal absorption.
				Industrial Worker	Adult	Ingestion	On-site	Quant	Industrial workers could contact soil at SWMU 43 and be exposed to COPCs via incidental ingestion.
						Dermal	On-site	Quant	Industrial workers could contact soil at SWMU 43 and be exposed to COPCs via dermal absorption.
				Excavation Worker	Adult	Ingestion	On-site	Quant	Excavation workers could contact soil at SWMU 43 and be exposed to COPCs via incidental ingestion.
						Dermal	On-site	Quant	Excavation workers could contact soil at SWMU 43 and be exposed to COPCs via dermal absorption.
				Resident	Adult	Ingestion	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
						Dermal	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via dermal absorption.
					Child	Ingestion	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
						Dermal	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in total soil via dermal absorption.

Table E.1-1
Selection of Exposure Pathways - SWMU 43

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Total Soil (Surface and Subsurface)	Total Soil (Surface and Subsurface)		Trespasser	Adolescent	Ingestion	On-site	None	Given the industrial nature of the site, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
						Dermal	On-site	None	Given the industrial nature of the site, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
		Air	SWMU 43	Maintenance Worker	Adult	Inhalation	On-site	Quant	Maintenance workers could be exposed to airborne volatiles or particulate matter released from soils at SWMU 43.
				Industrial Worker	Adult	Inhalation	On-site	Quant	Industrial workers could be exposed to airborne volatiles or particulate matter released from soils at SWMU 43.
				Excavation Worker	Adult	Inhalation	On-site	Quant	Excavation workers could be exposed to airborne volatiles or particulate matter released from soils at SWMU 43.
				Resident	Adult	Inhalation	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to airborne volatiles or particulate matter released from total soil.
					Child	Inhalation	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to airborne volatiles or particulate matter released from total soil.
				Trespasser	Adolescent	Inhalation	On-site	None	Given the industrial nature of the site, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
	Groundwater	Groundwater	SWMU 43	Maintenance Worker	Adult	Ingestion	On-site	None	Maintenance workers would not contact groundwater at SWMU 43.
						Dermal	On-site	None	Maintenance workers would not contact groundwater at SWMU 43.
				Industrial Worker	Adult	Ingestion	On-site	Quant	If SWMU 43 were to be further developed for industrial purposes and groundwater wells were installed at the site, site workers could be exposed to COPCs in groundwater via ingestion.
						Dermal	On-site	None	Although site worker dermal exposures to groundwater could occur, the exposed body surface area of a worker (i.e., hands and arms) would be small and exposures would be infrequent.
				Excavation Worker	Adult	Ingestion	On-site	None	Based on the depth to groundwater, excavation workers would not contact groundwater at SWMU 43.
						Dermal	On-site	None	Based on the depth to groundwater, excavation workers would not contact groundwater at SWMU 43.

Table E.1-1
Selection of Exposure Pathways - SWMU 43

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Groundwater (cont.)	Groundwater (cont.)	SWMU 43	Resident	Adult	Ingestion	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
						Dermal	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via dermal absorption.
					Child	Ingestion	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via ingestion. The residential scenario is not considered to be a reasonably anticipated land use; however, it is being included in this evaluation to meet "clean closure" requirements under RCRA.
						Dermal	On-site	Quant	If SWMU 43 were to be further developed for residential purposes, residents could be exposed to COPCs in groundwater via dermal absorption.
				Trespasser	Adolescent	Ingestion	On-site	None	Due to security at the installation, trespasser exposures are unlikely.
						Dermal	On-site	None	Due to security at the installation, trespasser exposures are unlikely.
		Homegrown fruits and vegetables	SWMU 43	Resident	Adult	Ingestion	On-site	Quant	Residents could ingest COPCs in groundwater that had been taken up by homegrown fruits and vegetables.
					Child	Ingestion	On-site	Quant	Residents could ingest COPCs in groundwater that had been taken up by homegrown fruits and vegetables.
		Air	Volatile groundwater COPCs released to ambient air	Maintenance Worker	Adult	Inhalation	On-site	Quant	Volatiles could be released from groundwater into ambient air. Maintenance workers could be exposed via inhalation.
			Indoor Vapors	Industrial Worker	Adult	Inhalation	On-site	Quant	Volatiles in groundwater could potentially migrate into buildings via vapor intrusion.
			Trench Vapors	Excavation Worker	Adult	Inhalation	On-site	Quant	Volatiles in groundwater could potentially migrate into a construction or utility trench via vapor intrusion.
			Volatiles at Showerhead	Resident	Adult	Inhalation	On-site	Quant	If groundwater wells were installed for residential purposes, adult residents could contact volatiles in groundwater via showering.
					Child	Inhalation	On-site	None	Children are assumed to bathe rather than shower. Therefore, inhalation exposure is assessed using only indoor air.
			Indoor Vapors	Resident	Adult	Inhalation	On-site	Quant	Volatiles in groundwater could potentially migrate into residences via vapor intrusion.
					Child	Inhalation	On-site	Quant	Volatiles in groundwater could potentially migrate into residences via vapor intrusion.
			Volatile groundwater COPCs released to ambient air	Trespasser	Adolescent	Inhalation	On-site	None	Due to security at the installation, trespasser exposures are unlikely. However, the maintenance worker scenario would be protective of the limited exposures that would be experienced by a trespasser.
		Surface water	New River	Recreational User	Adult	Ingestion	Off-site	Quant	Groundwater at SWMU 43 discharges to the New River. If COPCs from SWMU 43 groundwater were to migrate off-site in the future, off-site receptors could be exposed to COPCs in groundwater via ingestion during recreational activities at the New River.
						Dermal	Off-site	Quant	Groundwater at SWMU 43 discharges to the New River. If COPCs from SWMU 43 groundwater were to migrate off-site in the future, off-site receptors could be exposed to COPCs in groundwater via dermal absorption during recreational activities at the New River.

Table E.1-1
Selection of Exposure Pathways - SWMU 43

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	On-Site/ Off-Site	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Surface Water	Surface Water from Spring/Seep (assumes area will increase in size)	New River	Recreational User	Adult	Ingestion	Off-site	Quant	Surface water from springs/seeps would mix with surface water in New River if the area increases in size. Off-site receptors could be exposed to COPCs in surface water during recreational activities at the New River.
						Dermal	Off-site	Quant	Surface water from springs/seeps would mix with surface water in New River if the area increases in size. Off-site receptors could be exposed to COPCs in surface water during recreational activities at the New River.

Table E.1-2
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Surface Soil - SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential C Value	Potential C Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	NA	2,3,7,8-TCDD-TE	1.56E-06	5.74E-06	mg/kg	43SB03A	2/2	N/A	5.74E-06	N/A	4.50E-06 (C)	N/A	N/A	Yes	ASL
Surface Soil	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	2.48E-05	2.48E-05	mg/kg	43SB03A	1/2	5.19E-07 - 5.19E-07	2.48E-05	N/A	N/A	N/A	N/A	No	TEQ
	35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	4.28E-05 J	1.62E-04	mg/kg	43SB03A	2/2	N/A	1.62E-04	N/A	N/A	N/A	N/A	No	TEQ
	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	5.02E-07 J	1.94E-06 J	mg/kg	43SB03A	2/2	N/A	1.94E-06	N/A	N/A	N/A	N/A	No	TEQ
	70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	9.34E-07 B	1.26E-06 B	mg/kg	43SB03A	2/2	N/A	1.26E-06	N/A	N/A	N/A	N/A	No	TEQ
	39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	5.21E-07 J	1.51E-06 J	mg/kg	43SB03A	2/2	N/A	1.51E-06	N/A	N/A	N/A	N/A	No	TEQ
	57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	4.17E-07 B	6.00E-07 B	mg/kg	43SB03A	2/2	N/A	6.00E-07	N/A	N/A	N/A	N/A	No	TEQ
	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.78E-06 J	4.82E-06 J	mg/kg	43SB03A	2/2	N/A	4.82E-06	N/A	N/A	N/A	N/A	No	TEQ
	72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	4.12E-07 J	4.12E-07 J	mg/kg	43SB03A	1/2	5.19E-07 - 5.19E-07	4.12E-07	N/A	N/A	N/A	N/A	No	TEQ
	19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	1.25E-06 J	3.77E-06 J	mg/kg	43SB03A	2/2	N/A	3.77E-06	N/A	N/A	N/A	N/A	No	TEQ
	57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	1.78E-07 J	2.39E-07 J	mg/kg	43SB03A	2/2	N/A	2.39E-07	N/A	N/A	N/A	N/A	No	TEQ
	40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3.20E-07 J	9.46E-07 J	mg/kg	43SB03A	2/2	N/A	9.46E-07	N/A	N/A	N/A	N/A	No	TEQ
	60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	5.62E-07 J	8.63E-07 J	mg/kg	43SB03A	2/2	N/A	8.63E-07	N/A	N/A	N/A	N/A	No	TEQ
	57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	3.69E-07 J	3.72E-07	mg/kg	43SB03A	2/2	N/A	3.72E-07	N/A	N/A	N/A	N/A	No	TEQ
	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.63E-07 J	2.63E-07 J	mg/kg	43SB03A	1/2	1.80E-07 - 1.80E-07	2.63E-07	N/A	N/A	N/A	N/A	No	TEQ
	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	4.15E-07 J	4.23E-07 J	mg/kg	43SB03A	2/2	N/A	4.23E-07	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Heptachlorodibenzofuran	2.55E-05	9.89E-05 J	mg/kg	43SB03A	2/2	N/A	9.89E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Heptachlorodibenzo-p-dioxin	9.13E-05	3.52E-04	mg/kg	43SB03A	2/2	N/A	3.52E-04	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Hexachlorodibenzofuran	8.52E-06	1.97E-05 J	mg/kg	43SB03A	2/2	N/A	1.97E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Hexachlorodibenzo-p-dioxin	8.90E-06	3.20E-05 J	mg/kg	43SB03A	2/2	N/A	3.20E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Pentachlorodibenzofuran	1.20E-06	2.66E-06 J	mg/kg	43SB03A	2/2	N/A	2.66E-06	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Pentachlorodibenzo-p-dioxin	1.05E-06	9.21E-06 J	mg/kg	43SB03A	2/2	N/A	9.21E-06	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Tetrachlorodibenzofuran	8.53E-07	1.71E-06 J	mg/kg	43SB03A	2/2	N/A	1.71E-06	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Tetrachlorodibenzo-p-dioxin	2.37E-07	3.48E-06 J	mg/kg	43SB03A	2/2	N/A	3.48E-06	N/A	N/A	N/A	N/A	No	TEQ
	3268-87-9	Octachlorodibenzodioxin	7.64E-04 J	4.42E-03 J	mg/kg	43SB03A	2/2	N/A	4.42E-03	N/A	N/A	N/A	N/A	No	TEQ
	39001-02-0	Octachlorodibenzofuran	2.11E-05 B	7.97E-05	mg/kg	43SB03A	2/2	N/A	7.97E-05	N/A	N/A	N/A	N/A	No	TEQ
	67-64-1	Acetone	2.91E-02 J	4.05E-02 J	mg/kg	43SB01A	2/10	4.80E-02 - 7.20E-02	4.05E-02	N/A	6.10E+03 (N)	N/A	N/A	No	BSL
	11097-69-1	Aroclor 1254	9.40E-03 J	7.12E-02	mg/kg	43SB07A	2/10	1.70E-02 - 1.90E-02	7.12E-02	N/A	1.10E-01 (N)	N/A	N/A	No	BSL
	56-55-3	Benzo(a)anthracene	1.79E-02 J	8.88E-02	mg/kg	43SB09A	3/10	5.50E-02 - 6.20E-02	8.88E-02	N/A	1.50E-01 (C)	N/A	N/A	No	BSL
	50-32-8	Benzo(a)pyrene	1.89E-02 J	1.40E-01	mg/kg	43SB09A	3/10	5.50E-02 - 6.20E-02	1.40E-01	N/A	1.50E-02 (C)	N/A	N/A	Yes	ASL
	205-99-2	Benzo(b)fluoranthene	1.71E-02 J	8.01E-02	mg/kg	43SB09A	3/10	5.50E-02 - 6.20E-02	8.01E-02	N/A	1.50E-01 (C)	N/A	N/A	No	BSL
	191-24-2	Benzo(g,h,i)perylene (5)	2.06E-02 J	6.55E-02	mg/kg	43SB09A	2/10	5.50E-02 - 6.20E-02	6.55E-02	N/A	1.70E+02 (N)	N/A	N/A	No	BSL
	207-08-9	Benzo(k)fluoranthene	2.19E-02 J	9.35E-02	mg/kg	43SB09A	2/10	5.50E-02 - 6.20E-02	9.35E-02	N/A	1.50E+00 (C)	N/A	N/A	No	BSL
	75-15-0	Carbon disulfide	2.10E-03 J	2.10E-03 J	mg/kg	43SB01A	1/10	4.60E-03 - 7.20E-03	2.10E-03	N/A	6.70E+01 (N)	N/A	N/A	No	BSL
	218-01-9	Chrysene	1.69E-02 J	8.18E-02	mg/kg	43SB09A	3/10	5.50E-02 - 6.20E-02	8.18E-02	N/A	1.50E+01 (C)	N/A	N/A	No	BSL
	1918-00-9	Dicamba	6.70E-03 J	6.70E-03 J	mg/kg	43SB01A	1/10	6.90E-03 - 7.60E-03	6.70E-03	N/A	1.80E+02 (N)	N/A	N/A	No	BSL
	206-44-0	Fluoranthene	6.94E-02 J	6.94E-02 J	mg/kg	43SB09A	1/10	2.70E-01 - 3.10E-01	6.94E-02	N/A	2.30E+02 (N)	N/A	N/A	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	1.84E-02 J	7.28E-02	mg/kg	43SB09A	2/10	5.50E-02 - 6.20E-02	7.28E-02	N/A	1.50E-01 (C)	N/A	N/A	No	BSL
	129-00-0	Pyrene	1.18E-01 J	1.18E-01 J	mg/kg	43SB09A	1/10	2.70E-01 - 3.10E-01	1.18E-01	N/A	1.70E+02 (N)	N/A	N/A	No	BSL

Table E.1-2
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Surface Soil - SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential C Value	Potential C Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	7429-90-5	Aluminum	8.69E+03 J	1.56E+04 J	mg/kg	43SB06A	10/10	N/A	1.56E+04	N/A	7.70E+03 (N)	N/A	N/A	Yes	ASL
	7440-38-2	Arsenic	1.20E+00 L	1.77E+01 J	mg/kg	43SB07A	10/10	N/A	1.77E+01	N/A	3.90E-01 (C)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	9.89E+01 J	1.99E+02 J	mg/kg	43SB09A	10/10	N/A	1.99E+02	N/A	1.50E+03 (N)	N/A	N/A	No	BSL
	7440-41-7	Beryllium	7.50E-01	1.30E+00	mg/kg	43SB06A	10/10	N/A	1.30E+00	N/A	1.60E+01 (N)	N/A	N/A	No	BSL
	7440-43-9	Cadmium	9.30E-01 L	9.30E-01 L	mg/kg	43SB08A	1/10	5.40E-02 - 5.50E-01	9.30E-01	N/A	7.00E+00 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	1.06E+03 J	1.59E+04 J	mg/kg	43SB08A	10/10	N/A	1.59E+04	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-47-3	Chromium (Total)	1.44E+01 J	2.43E+01 J	mg/kg	43SB06A	10/10	N/A	2.43E+01	N/A	2.80E+02 (C)	N/A	N/A	No	BSL
	7440-48-4	Cobalt	6.60E+00 J	1.26E+01 J	mg/kg	43SB09A	10/10	N/A	1.26E+01	N/A	2.30E+00 (N)	N/A	N/A	Yes	ASL
	7440-50-8	Copper	9.20E+00 J	1.68E+01 J	mg/kg	43SB07A	10/10	N/A	1.68E+01	N/A	3.10E+02 (N)	N/A	N/A	No	BSL
	7439-89-6	Iron	1.26E+04 J	2.01E+04 J	mg/kg	43SB09A	10/10	N/A	2.01E+04	N/A	5.50E+03 (N)	N/A	N/A	Yes	ASL
	7439-92-1	Lead	7.00E+00 J	3.62E+01 J	mg/kg	43SB01A	10/10	N/A	3.62E+01	N/A	4.00E+02 (N)	N/A	N/A	No	BSL
	7439-95-4	Magnesium	2.13E+03 J	8.18E+03 J	mg/kg	43SB08A	10/10	N/A	8.18E+03	N/A	N/A	1.00E+06	RDA	No	BSL
	7439-96-5	Manganese	3.49E+02 J	1.71E+03 J	mg/kg	43SB09A	10/10	N/A	1.71E+03	N/A	1.80E+02 (N)	N/A	N/A	Yes	ASL
	7439-97-6	Mercury (6)	3.50E-02 J	3.10E-01	mg/kg	43SB07A	10/10	N/A	3.10E-01	N/A	2.30E+00 (N)	N/A	N/A	No	BSL
	7440-02-0	Nickel	9.10E+00 J	1.36E+01 J	mg/kg	43SB10A	10/10	N/A	1.36E+01	N/A	1.60E+02 (N)	N/A	N/A	No	BSL
	7440-09-7	Potassium	8.56E+02 J	1.44E+03 J	mg/kg	43SB10A	7/7	N/A	1.44E+03	N/A	N/A	1.00E+06	RDA	No	BSL
	7782-49-2	Selenium	3.10E-01 L	5.80E+00 J	mg/kg	43SB05A	8/10	1.10E-01 - 1.20E-01	5.80E+00	N/A	3.90E+01 (N)	N/A	N/A	No	BSL
	7440-23-5	Sodium	3.13E+02 J	5.23E+02 J	mg/kg	43SB10A	5/9	2.60E+01 - 2.80E+01	5.23E+02	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-62-2	Vanadium (7)	2.04E+01 J	4.24E+01 J	mg/kg	43SB06A	10/10	N/A	4.24E+01	N/A	3.90E+01 (N)	N/A	N/A	Yes	ASL
	7440-66-6	Zinc	4.87E+01 J	1.05E+02 J	mg/kg	43SB01A	10/10	N/A	1.05E+02	N/A	2.30E+03 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.

(4) Rationale Codes
Selection Reason:
Toxicity Information Available (TX)
Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason:
Background Levels (BKG)
Below Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for pyrene was used as a surrogate.

(6) The screening value for mercury chloride was used.

(7) The screening value for vanadium and compounds was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	71-55-6	1,1,1-Trichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	9.00E+02 (N)	No
Surface Soil	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	5.90E-01 (C)	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.10E+00 (C)	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	3.40E+00 (C)	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	2.50E+01 (N)	No
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	8.70E+00 (N)	No
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	2.20E-+02 (N)	No
	107-06-2	1,2-Dichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	4.50E-01 (C)	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	9.30E-01 (C)	No
	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	2.20E+02 (N)	No
	541-73-1	1,3-Dichlorobenzene (4)			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	2.60E+00 (C)	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	6.10E-01 (N)	No
	106-46-7	1,4-Dichlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	2.60E+00 (C)	No
	90-12-0	1-Methylnaphthalene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	2.20E+01 (C)	No
	93-76-5	2,4,5-T			mg/kg		0/10	6.90E-03 - 7.60E-03	7.60E-03	N/A	6.10E+01 (N)	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/10	1.40E-02 - 1.50E-02	1.50E-02	N/A	4.90E+01 (N)	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	6.10E+02 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	6.10E+00 (N)	No
	118-96-7	2,4,6-Trinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	3.60E+00 (N)	No
	94-75-7	2,4-D			mg/kg		0/10	3.40E-02 - 3.80E-02	3.80E-02	N/A	6.90E+01 (N)	No
	94-82-6	2,4-DB			mg/kg		0/10	6.90E-02 - 7.60E-02	7.60E-02	N/A	4.90E+01 (N)	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	1.80E+01 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	1.20E+02 (N)	No
	51-28-5	2,4-Dinitrophenol			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	N/A	1.20E+01 (N)	No
	121-14-2	2,4-Dinitrotoluene (5)			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	7.10E-01 (C)	No
	606-20-2	2,6-Dinitrotoluene (5)			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	7.10E-01 (C)	No
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	1.50E+01 (N)	No
	78-93-3	2-Butanone			mg/kg		0/10	2.20E-02 - 3.60E-02	3.60E-02	N/A	2.80E+03 (N)	No
	91-58-7	2-Chloronaphthalene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	6.30E+02 (N)	No
	95-57-8	2-Chlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.90E+01 (N)	No
	591-78-6	2-Hexanone			mg/kg		0/10	2.20E-02 - 3.60E-02	3.60E-02	N/A	N/A	NTX
	91-57-6	2-Methylnaphthalene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	3.10E+01 (N)	No
	88-74-4	2-Nitroaniline			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	88-75-5	2-Nitrophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	88-72-2	2-Nitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	2.90E+00 (C)	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/10	6.90E-03 - 7.60E-03	7.60E-03	N/A	6.10E+00 (N)	No
	N/A	3&4-Methylphenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.10E+01 (N)	No
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	1.10E+00 (C)	No
	99-09-2	3-Nitroaniline			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	1.80E+00 (N)	No
	99-08-1	3-Nitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	1.20E+02 (N)	No
	72-54-8	4,4'-DDD			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	2.00E+00 (C)	No
	72-55-9	4,4'-DDE			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	1.40E+00 (C)	No
	50-29-3	4,4'-DDT			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	1.70E+00 (C)	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	6.10E-01 (N)	No
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	1.50E+01 (N)	No
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/kg		0/10	2.20E-02 - 3.60E-02	3.60E-02	N/A	5.30E+02 (N)	No
	100-01-6	4-Nitroaniline			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	1.80E+01 (N)	No
	100-02-7	4-Nitrophenol			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	N/A	N/A	NTX
	99-99-0	4-Nitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	2.40E+01 (N)	No
	83-32-9	Acenaphthene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	3.40E+02 (N)	No
	208-96-8	Acenaphthylene (6)			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	1.70E+02 (N)	No
	309-00-2	Aldrin			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	2.90E-02 (C)	No
	319-84-6	alpha-BHC			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	7.70E-02 (C)	No
	5103-71-9	alpha-Chlordane (7)			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	1.60E+00 (C)	No
	120-12-7	Anthracene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	1.70E+03 (N)	No
	7440-36-0	Antimony			mg/kg		0/10	2.00E-01 - 3.10E-01	3.10E-01	N/A	3.10E+00 (N)	No
	12674-11-2	Aroclor 1016			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	N/A	3.90E-01 (N)	No
	11104-28-2	Aroclor 1221			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	N/A	1.70E-01 (C)	No
	11141-16-5	Aroclor 1232			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	N/A	1.70E-01 (C)	No
	53469-21-9	Aroclor 1242			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	N/A	2.20E-01 (C)	No
	12672-29-6	Aroclor 1248			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	N/A	2.20E-01 (C)	No
	11096-82-5	Aroclor 1260			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	N/A	2.20E-01 (C)	No
	71-43-2	Benzene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.10E+00 (C)	No
	65-85-0	Benzoic Acid			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	N/A	2.40E+04 (N)	No

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	100-51-6	Benzyl alcohol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.10E+03 (N)	No
	319-85-7	beta-BHC			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	2.70E-01 (C)	No
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	1.80E+01 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	1.90E-01 (C)	Yes
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.50E+00 (C)	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	3.50E+01 (C)	No
	75-27-4	Bromodichloromethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.00E+01 (C)	No
	74-83-9	Bromomethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	7.90E-01 (N)	No
	85-68-7	Butyl benzyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	2.60E+02 (C)	No
	86-74-8	Carbazole			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	56-23-5	Carbon tetrachloride			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	2.50E-01 (C)	No
	108-90-7	Chlorobenzene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	3.10E+01 (N)	No
	75-00-3	Chloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.50E+03 (N)	No
	67-66-3	Chloroform			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	3.00E-01 (C)	No
	74-87-3	Chloromethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.70E+00 (C)	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	7.80E+01 (N)	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.70E+00 (C)	No
	121-82-4	Cyclonite			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	5.50E+00 (C)	No
	75-99-0	Dalapon			mg/kg		0/10	3.40E-02 - 3.80E-02	3.80E-02	N/A	1.80E+02 (N)	No
	319-86-8	delta-BHC			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	5.20E-01 (C)	No
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/10	5.50E-02 - 6.20E-02	6.20E-02	N/A	1.50E-02 (C)	Yes
	132-64-9	Dibenzofuran			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	124-48-1	Dibromochloromethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	5.80E+00 (C)	No
	120-36-5	Dichloroprop			mg/kg		0/10	3.40E-02 - 3.80E-02	3.80E-02	N/A	N/A	NTX
	60-57-1	Dieldrin			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	3.00E-02 (C)	No
	84-66-2	Diethyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	4.90E+03 (N)	No
	131-11-3	Dimethylphthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	84-74-2	Di-n-butyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	6.10E+02 (N)	No
	117-84-0	Di-n-octyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	N/A	N/A	NTX
	959-98-8	Endosulfan I (8)			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	3.70E+01 (N)	No
	33213-65-9	Endosulfan II (8)			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	3.70E+01 (N)	No
	1031-07-8	Endosulfan sulfate (8)			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	3.70E+01 (N)	No
	72-20-8	Endrin			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	1.80E+00 (N)	No

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	7421-93-4	Endrin aldehyde (9)			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	1.80E+00 (N)	No
	53494-70-5	Endrin ketone (9)			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	1.80E+00 (N)	No
	100-41-4	Ethylbenzene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	5.70E+00 (C)	No
	86-73-7	Fluorene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	2.30E+02 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	5.20E-01 (C)	No
	5103-74-2	gamma-Chlordane (7)			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	1.60E+00 (C)	No
	76-44-8	Heptachlor			mg/kg		0/10	1.70E-03 - 9.50E-03	9.50E-03	N/A	1.10E-01 (C)	No
	1024-57-3	Heptachlor epoxide			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	N/A	5.30E-02 (C)	No
	118-74-1	Hexachlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.00E-01 (C)	No
	87-68-3	Hexachlorobutadiene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	6.10E+00 (N)	No
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.70E+01 (N)	No
	67-72-1	Hexachloroethane			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	6.10E+00 (N)	No
	2691-41-0	HMX			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	3.80E+02 (N)	No
	78-59-1	Isophorone			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	5.10E+02 (C)	No
	N/A	m+p-Xylenes			mg/kg		0/10	9.00E-03 - 1.40E-02	1.40E-02	N/A	6.00E+01 (N)	No
	94-74-6	MCPA			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.10E+00 (N)	No
	93-65-2	MCPP			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	6.10E+00 (N)	No
	72-43-5	Methoxychlor			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	N/A	3.10E+01 (N)	No
	75-09-2	Methylene chloride			mg/kg		0/10	9.00E-03 - 1.40E-02	1.40E-02	N/A	1.10E+01 (C)	No
	91-20-3	Naphthalene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	3.90E+00 (C)	No
	98-95-3	Nitrobenzene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	N/A	3.10E+00 (N)	No
	55-63-0	Nitroglycerin			mg/kg		0/10	1.50E+00 - 2.00E+00	2.00E+00	N/A	6.10E-01 (N)	Yes
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	6.90E-02 (C)	Yes
	86-30-6	n-Nitrosodiphenylamine			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	9.90E+01 (C)	No
	95-48-7	o-Cresol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	3.10E+02 (N)	No
	95-47-6	o-Xylene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	5.30E+02 (N)	No
	106-47-8	p-Chloroaniline			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	9.00E+00 (C)	No
	59-50-7	p-Chloro-m-cresol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	N/A	NTX
	87-86-5	Pentachlorophenol			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	N/A	3.00E+00 (C)	No
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/10	1.50E+00 - 2.00E+00	2.00E+00	N/A	N/A	NTX
	85-01-8	Phenanthrene (6)			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	N/A	1.70E+02 (N)	No
	108-95-2	Phenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	N/A	1.80E+03 (N)	No
	7440-22-4	Silver			mg/kg		0/10	4.70E-02 - 7.70E-02	7.70E-02	N/A	3.90E+01 (N)	No

Table E.1-3
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	100-42-5	Styrene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	6.50E+02 (N)	No
	127-18-4	Tetrachloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	5.70E-01 (C)	No
	479-45-8	Tetryl			mg/kg		0/10	3.80E-01 - 5.00E-01	5.00E-01	N/A	2.40E+01 (N)	No
	7440-28-0	Thallium			mg/kg		0/10	2.60E-01 - 1.20E+01	1.20E+01	N/A	5.10E-01 (N)	Yes
	108-88-3	Toluene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	5.00E+02 (N)	No
	8001-35-2	Toxaphene			mg/kg		0/10	8.60E-02 - 9.50E-02	9.50E-02	N/A	4.40E-01 (C)	No
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.10E+01 (N)	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	1.70E+00 (C)	No
	75-25-2	Tribromomethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	6.10E+01 (C)	No
	79-01-6	Trichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	2.80E+00 (C)	No
	75-01-4	Vinyl Chloride			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	N/A	6.00E-02 (C)	No

(1) Maximum concentration used for screening.
(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.
(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.
(4) The screening value for 1,4-dichlorobenzene was used.
(5) The screening value for dinitrotoluene mixture was used.
(6) The screening value for pyrene was used.
(7) The screening value for chlordane was used.
(8) The screening value for endosulfan was used.
(9) The screening value for endrin was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Re
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-4
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Total Soil - SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential C Value	Potential C Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	NA	2,3,7,8-TCDD-TE	2.95E-08	1.07E-05	mg/kg	43SB03B	6/6	N/A	1.07E-05	N/A	4.50E-06 (C)	N/A	N/A	Yes	ASL
Total Soil	67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran	5.15E-07 B	5.04E-05	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	5.04E-05	N/A	N/A	N/A	N/A	No	TEQ
	35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	1.65E-06 B	3.42E-04	mg/kg	43SB03B	6/6	N/A	3.42E-04	N/A	N/A	N/A	N/A	No	TEQ
	55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran	1.05E-07 J	4.24E-06 J	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	4.24E-06	N/A	N/A	N/A	N/A	No	TEQ
	70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran	1.70E-07 B	8.87E-06	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	8.87E-06	N/A	N/A	N/A	N/A	No	TEQ
	39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	2.25E-07 J	1.51E-06 J	mg/kg	43SB03A	5/6	5.19E-07 - 5.19E-07	1.51E-06	N/A	N/A	N/A	N/A	No	TEQ
	57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran	1.85E-07 B	3.11E-06 J	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	3.11E-06	N/A	N/A	N/A	N/A	No	TEQ
	57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	1.78E-06 J	7.84E-06	mg/kg	43SB03B	4/6	5.07E-07 - 5.19E-07	7.84E-06	N/A	N/A	N/A	N/A	No	TEQ
	72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran	8.92E-08 J	1.43E-06 J	mg/kg	43SB03B	4/6	5.19E-07 - 5.19E-07	1.43E-06	N/A	N/A	N/A	N/A	No	TEQ
	19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	2.64E-07 J	3.80E-06 J	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	3.80E-06	N/A	N/A	N/A	N/A	No	TEQ
	57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran	9.14E-08 J	1.33E-06 J	mg/kg	43SB03B	6/6	N/A	1.33E-06	N/A	N/A	N/A	N/A	No	TEQ
	40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin	3.20E-07 J	9.46E-07 J	mg/kg	43SB03A	4/6	5.07E-07 - 5.19E-07	9.46E-07	N/A	N/A	N/A	N/A	No	TEQ
	60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran	1.01E-07 J	2.73E-06 J	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	2.73E-06	N/A	N/A	N/A	N/A	No	TEQ
	57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran	1.72E-07 J	2.62E-06 J	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	2.62E-06	N/A	N/A	N/A	N/A	No	TEQ
	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin	2.63E-07 J	6.59E-07 J	mg/kg	43SB08B	3/6	1.43E-07 - 1.97E-07	6.59E-07	N/A	N/A	N/A	N/A	No	TEQ
	51207-31-9	2,3,7,8-Tetrachlorodibenzofuran	2.68E-07 J	5.53E-06	mg/kg	43SB08B	5/6	1.84E-07 - 1.84E-07	5.53E-06	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Heptachlorodibenzofuran	1.13E-06	1.74E-04	mg/kg	43SB03B	6/6	N/A	1.74E-04	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Heptachlorodibenzo-p-dioxin	4.47E-06	8.65E-04	mg/kg	43SB03B	6/6	N/A	8.65E-04	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Hexachlorodibenzofuran	7.48E-08	4.84E-05 J	mg/kg	43SB03B	6/6	N/A	4.84E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Hexachlorodibenzo-p-dioxin	2.28E-06	6.88E-05	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	6.88E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Pentachlorodibenzofuran	4.95E-07 J	1.73E-05 J	mg/kg	43SB03B	5/6	5.19E-07 - 5.19E-07	1.73E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Pentachlorodibenzo-p-dioxin	3.16E-07	1.20E-05 J	mg/kg	43SB03B	6/6	N/A	1.20E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Tetrachlorodibenzofuran	2.68E-07	1.81E-05 J	mg/kg	43SB03B	6/6	N/A	1.81E-05	N/A	N/A	N/A	N/A	No	TEQ
	NA	Total Tetrachlorodibenzo-p-dioxin	2.37E-07	7.63E-06 J	mg/kg	43SB03B	5/6	1.43E-07 - 1.43E-07	7.63E-06	N/A	N/A	N/A	N/A	No	TEQ
	3268-87-9	Octachlorodibenzodioxin	3.29E-05 B	5.83E-03 J	mg/kg	43SB03B	6/6	N/A	5.83E-03	N/A	N/A	N/A	N/A	No	TEQ
	39001-02-0	Octachlorodibenzofuran	1.54E-06 B	1.42E-04	mg/kg	43SB03B	6/6	N/A	1.42E-04	N/A	N/A	N/A	N/A	No	TEQ
	90-12-0	1-Methylnaphthalene	9.59E-02 J	1.03E-01 J	mg/kg	43SB02B	2/30	2.70E-01 - 3.20E-01	1.03E-01	N/A	2.20E+01 (C)	N/A	N/A	No	BSL
	118-96-7	2,4,6-Trinitrotoluene	6.37E+00 J	6.37E+00 J	mg/kg	43SB03B	1/30	1.80E-01 - 2.50E-01	6.37E+00	N/A	3.60E+00 (N)	N/A	N/A	Yes	ASL
	121-14-2	2,4-Dinitrotoluene (5)	7.27E-01	7.27E-01	mg/kg	43SB03B	1/30	1.80E-01 - 2.50E-01	7.27E-01	N/A	7.10E-01 (C)	N/A	N/A	Yes	ASL
	35572-78-2	2-amino-4,6-Dinitrotoluene	1.36E-01 J	1.36E-01 J	mg/kg	43SB03B	1/30	1.80E-01 - 2.50E-01	1.36E-01	N/A	1.50E+01 (N)	N/A	N/A	No	BSL
	78-93-3	2-Butanone	1.29E-02 J	1.29E-02 J	mg/kg	43SB02B	1/30	2.20E-02 - 3.60E-02	1.29E-02	N/A	2.80E+03 (N)	N/A	N/A	No	BSL
	91-57-6	2-Methylnaphthalene	6.74E-02 J	1.52E-01 J	mg/kg	43SB09B	2/30	2.70E-01 - 3.20E-01	1.52E-01	N/A	3.10E+01 (N)	N/A	N/A	No	BSL
	72-54-8	4,4'-DDD	1.41E-02 J	1.41E-02 J	mg/kg	43SB03B	1/30	3.40E-03 - 1.95E-02	1.41E-02	N/A	2.00E+00 (C)	N/A	N/A	No	BSL
	83-32-9	Acenaphthene	1.52E-01 J	1.52E-01 J	mg/kg	43SB09B	1/30	2.70E-01 - 3.20E-01	1.52E-01	N/A	3.40E+02 (N)	N/A	N/A	No	BSL
	67-64-1	Acetone	2.70E-02 J	9.52E-02	mg/kg	43SB08B	16/30	4.40E-02 - 7.20E-02	9.52E-02	N/A	6.10E+03 (N)	N/A	N/A	No	BSL
	12674-11-2	Aroclor 1016	4.93E-02 J	6.94E-01 J	mg/kg	43SB03B	4/30	1.70E-02 - 2.00E-02	6.94E-01	N/A	3.90E-01 (N)	N/A	N/A	Yes	ASL
	11097-69-1	Aroclor 1254	9.40E-03 J	4.62E-01 J	mg/kg	43SB03B	8/30	1.70E-02 - 2.00E-02	4.62E-01	N/A	1.10E-01 (N)	N/A	N/A	Yes	ASL
	11096-82-5	Aroclor 1260	1.74E-02 J	3.98E-02 J	mg/kg	43SB06B	2/30	1.70E-02 - 1.80E-01	3.98E-02	N/A	2.20E-01 (C)	N/A	N/A	No	BSL
	56-55-3	Benzo(a)anthracene	1.79E-02 J	8.88E-02	mg/kg	43SB09A	4/30	5.50E-02 - 6.40E-02	8.88E-02	N/A	1.50E-01 (C)	N/A	N/A	No	BSL
	50-32-8	Benzo(a)pyrene	1.52E-02 J	1.40E-01	mg/kg	43SB09A	5/30	5.50E-02 - 6.40E-02	1.40E-01	N/A	1.50E-02 (C)	N/A	N/A	Yes	ASL

Table E.1-4
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Total Soil - SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3 (N/C)	Potential C Value	Potential C Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	205-99-2	Benzo(b)fluoranthene	1.71E-02 J	8.01E-02	mg/kg	43SB09A	5/30	5.50E-02 - 6.40E-02	8.01E-02	N/A	1.50E-01 (C)	N/A	N/A	No	BSL
	191-24-2	Benzo(g,h,i)perylene (6)	2.06E-02 J	6.55E-02	mg/kg	43SB09A	2/30	5.50E-02 - 6.40E-02	6.55E-02	N/A	1.70E+02 (N)	N/A	N/A	No	BSL
	207-08-9	Benzo(k)fluoranthene	2.19E-02 J	9.35E-02	mg/kg	43SB09A	2/30	5.50E-02 - 6.40E-02	9.35E-02	N/A	1.50E+00 (C)	N/A	N/A	No	BSL
	117-81-7	bis(2-Ethylhexyl) phthalate	3.73E-01 J	7.07E-01	mg/kg	43SB09B	4/30	3.40E-01 - 8.10E-01	7.07E-01	N/A	3.50E+01 (C)	N/A	N/A	No	BSL
	75-15-0	Carbon disulfide	2.10E-03 J	7.30E-03	mg/kg	43SB09B	5/30	4.40E-03 - 7.20E-03	7.30E-03	N/A	6.70E+01 (N)	N/A	N/A	No	BSL
	218-01-9	Chrysene	1.69E-02 J	8.18E-02	mg/kg	43SB09A	5/30	5.50E-02 - 6.40E-02	8.18E-02	N/A	1.50E+01 (C)	N/A	N/A	No	BSL
	132-64-9	Dibenzofuran	1.05E-01 J	1.05E-01 J	mg/kg	43SB09B	1/30	1.70E-01 - 4.00E-01	1.05E-01	N/A	N/A	N/A	N/A	Yes	NTX
	1918-00-9	Dicamba	6.70E-03 J	6.70E-03 J	mg/kg	43SB01A	1/30	6.90E-03 - 8.10E-03	6.70E-03	N/A	1.80E+02 (N)	N/A	N/A	No	BSL
	60-57-1	Dieldrin	8.50E-04 J	8.50E-04 J	mg/kg	43SB06B	1/30	1.70E-03 - 1.80E-02	8.50E-04	N/A	3.00E-02 (C)	N/A	N/A	No	BSL
	84-66-2	Diethyl phthalate	2.10E-01 J	2.10E-01 J	mg/kg	43SB09B	1/30	3.40E-01 - 8.10E-01	2.10E-01	N/A	4.90E+03 (N)	N/A	N/A	No	BSL
	84-74-2	Di-n-butyl phthalate	9.64E-02 J	2.35E+00	mg/kg	43SB06B	4/30	3.40E-01 - 4.00E-01	2.35E+00	N/A	6.10E+02 (N)	N/A	N/A	No	BSL
	100-41-4	Ethylbenzene	3.85E-03 J	6.18E-02 J	mg/kg	43SB09B	2/30	4.40E-03 - 7.20E-03	6.18E-02	N/A	5.70E+00 (C)	N/A	N/A	No	BSL
	206-44-0	Fluoranthene	6.94E-02 J	7.77E-02 J	mg/kg	43SB09B	2/30	2.70E-01 - 3.20E-01	7.77E-02	N/A	2.30E+02 (N)	N/A	N/A	No	BSL
	86-73-7	Fluorene	1.60E-01 J	1.60E-01 J	mg/kg	43SB09B	1/30	2.70E-01 - 3.20E-01	1.60E-01	N/A	2.30E+02 (N)	N/A	N/A	No	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	1.84E-02 J	7.28E-02	mg/kg	43SB09A	2/30	5.50E-02 - 6.40E-02	7.28E-02	N/A	1.50E-01 (C)	N/A	N/A	No	BSL
	NA	m+p-Xylenes	4.15E-03 J	1.24E-02	mg/kg	43SB09B	3/30	8.80E-03 - 1.40E-02	1.24E-02	N/A	6.00E+01 (N)	N/A	N/A	No	BSL
	91-20-3	Naphthalene	6.58E-02 J	9.85E-02 J	mg/kg	43SB02B	3/30	2.70E-01 - 3.20E-01	9.85E-02	N/A	3.90E+00 (C)	N/A	N/A	No	BSL
	86-30-6	n-Nitrosodiphenylamine	1.24E-01 J	8.56E-01	mg/kg	43SB03B	4/30	1.70E-01 - 4.00E-01	8.56E-01	N/A	9.90E+01 (C)	N/A	N/A	No	BSL
	95-47-6	o-Xylene	8.90E-03	8.90E-03	mg/kg	43SB09B	1/30	4.40E-03 - 7.20E-03	8.90E-03	N/A	5.30E+02 (N)	N/A	N/A	No	BSL
	59-50-7	p-Chloro-m-cresol	7.61E-02 J	7.61E-02 J	mg/kg	43SB02B	1/30	1.70E-01 - 4.00E-01	7.61E-02	N/A	N/A	N/A	N/A	Yes	NTX
	85-01-8	Phenanthrene (6)	6.45E-02 J	3.47E-01	mg/kg	43SB09B	3/30	2.70E-01 - 3.20E-01	3.47E-01	N/A	1.70E+02 (N)	N/A	N/A	No	BSL
	129-00-0	Pyrene	1.18E-01 J	1.18E-01 J	mg/kg	43SB09A	1/30	2.70E-01 - 3.20E-01	1.18E-01	N/A	1.70E+02 (N)	N/A	N/A	No	BSL
	108-88-3	Toluene	2.70E-03 J	2.70E-03 J	mg/kg	43SB09B	1/30	4.40E-03 - 7.20E-03	2.70E-03	N/A	5.00E+02 (N)	N/A	N/A	No	BSL
	75-01-4	Vinyl Chloride	6.60E-03 K	6.60E-03 K	mg/kg	43SB03B	1/30	4.40E-03 - 7.20E-03	6.60E-03	N/A	6.00E-02 (C)	N/A	N/A	No	BSL
	7429-90-5	Aluminum	4.62E+03 J	1.56E+04 J	mg/kg	43SB06A	30/30	N/A	1.56E+04	N/A	7.70E+03 (N)	N/A	N/A	Yes	ASL
	7440-38-2	Arsenic	1.10E+00 J	1.77E+01 J	mg/kg	43SB07A	30/30	N/A	1.77E+01	N/A	3.90E-01 (C)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	2.11E+01 J	1.99E+02 J	mg/kg	43SB09A	30/30	N/A	1.99E+02	N/A	1.50E+03 (N)	N/A	N/A	No	BSL
	7440-41-7	Beryllium	3.30E-01 L	1.30E+00	mg/kg	43SB06A	28/28	N/A	1.30E+00	N/A	1.60E+01 (N)	N/A	N/A	No	BSL
	7440-43-9	Cadmium	9.30E-01 L	9.30E-01 L	mg/kg	43SB08A	1/30	5.30E-02 - 6.00E-01	9.30E-01	N/A	7.00E+00 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	6.33E+02 J	9.59E+04 J	mg/kg	43SB02C	30/30	N/A	9.59E+04	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-47-3	Chromium (Total)	8.70E+00 J	2.43E+01 J	mg/kg	43SB06A	30/30	N/A	2.43E+01	N/A	2.80E+02 (C)	N/A	N/A	No	BSL
	7440-48-4	Cobalt	3.80E+00 J	1.65E+01 J	mg/kg	43SB10C	30/30	N/A	1.65E+01	N/A	2.30E+00 (N)	N/A	N/A	Yes	ASL
	7440-50-8	Copper	4.00E+00 J	7.19E+01 J	mg/kg	43SB03B	30/30	N/A	7.19E+01	N/A	3.10E+02 (N)	N/A	N/A	No	BSL
	7439-89-6	Iron	9.75E+03 J	2.17E+04 J	mg/kg	43SB05B	30/30	N/A	2.17E+04	N/A	5.50E+03 (N)	N/A	N/A	Yes	ASL
	7439-92-1	Lead	2.20E+00 J	9.56E+01 J	mg/kg	43SB03B	30/30	N/A	9.56E+01	N/A	4.00E+02 (N)	N/A	N/A	No	BSL
	7439-95-4	Magnesium	2.13E+03 J	5.87E+04 J	mg/kg	43SB02C	30/30	N/A	5.87E+04	N/A	N/A	1.00E+06	RDA	No	BSL
	7439-96-5	Manganese	8.42E+01 J	1.71E+03 J	mg/kg	43SB09A	30/30	N/A	1.71E+03	N/A	1.80E+02 (N)	N/A	N/A	Yes	ASL
	7439-97-6	Mercury (7)	1.50E-02 K	1.90E+00	mg/kg	43SB09B	28/30	1.10E-02 - 1.20E-02	1.90E+00	N/A	2.30E+00 (N)	N/A	N/A	No	BSL
	7440-02-0	Nickel	6.40E+00 J	1.63E+01 J	mg/kg	43SB03C	30/30	N/A	1.63E+01	N/A	1.60E+02 (N)	N/A	N/A	No	BSL
	7440-09-7	Potassium	8.40E+02 J	2.12E+03 J	mg/kg	43SB01B	27/27	N/A	2.12E+03	N/A	N/A	1.00E+06	RDA	No	BSL

Table E.1-4
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Current/Future - Total Soil - SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3 (N/C)	Potential C Value	Potential C Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	7782-49-2	Selenium	1.40E-01 J	6.85E+00 J	mg/kg	43SB05B	26/30	1.10E-01 - 2.70E-01	6.85E+00	N/A	3.90E+01 (N)	N/A	N/A	No	BSL
	7440-22-4	Silver	1.80E-01 L	1.80E-01 L	mg/kg	43SB06B	1/30	4.70E-02 - 8.30E-02	1.80E-01	N/A	3.90E+01 (N)	N/A	N/A	No	BSL
	7440-23-5	Sodium	3.13E+02 J	5.57E+02 J	mg/kg	43SB07C	15/26	2.60E+01 - 3.00E+01	5.57E+02	N/A	N/A	1.00E+06	RDA	No	BSL
	7440-62-2	Vanadium (8)	1.11E+01 J	4.24E+01 J	mg/kg	43SB06A	30/30	N/A	4.24E+01	N/A	3.90E+01 (N)	N/A	N/A	Yes	ASL
	7440-66-6	Zinc	1.23E+01 J	1.15E+02 J	mg/kg	43SB07B	30/30	N/A	1.15E+02	N/A	2.30E+03 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.

(4) Rationale Codes
Selection Reason:
Toxicity Information Available (TX)
Above Screening Levels (ASL)
No Toxicity Information (NTX)
Deletion Reason:
Background Levels (BKG)
Below Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for dinitrotoluene mixture was used.

(6) The screening value for pyrene was used as a surrogate.

(7) The screening value for mercury chloride was used.

(8) The screening value for vanadium and compounds was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
Total Soil	71-55-6	1,1,1-Trichloroethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	9.00E+02 (N)	No
	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	5.90E-01 (C)	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.10E+00 (C)	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	3.40E+00 (C)	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	2.50E+01 (N)	No
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	8.70E+00 (N)	No
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	2.00E+02 (N)	No
	107-06-2	1,2-Dichloroethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	4.50E-01 (C)	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	9.30E-01 (C)	No
	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	2.20E+02 (N)	No
	541-73-1	1,3-Dichlorobenzene (4)			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	2.60E+00 (C)	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	6.10E-01 (N)	No
	106-46-7	1,4-Dichlorobenzene			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	2.60E+00 (C)	No
	93-76-5	2,4,5-T			mg/kg		0/30	6.90E-03 - 8.10E-03	8.10E-03	N/A	6.10E+01 (N)	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/30	1.40E-02 - 1.60E-02	1.60E-02	N/A	4.90E+01 (N)	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	6.10E+02 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	6.10E+00 (N)	No
	94-75-7	2,4-D			mg/kg		0/30	3.40E-02 - 4.10E-02	4.10E-02	N/A	6.90E+01 (N)	No
	94-82-6	2,4-DB			mg/kg		0/30	6.90E-02 - 8.10E-02	8.10E-02	N/A	4.90E+01 (N)	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	1.80E+01 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	1.20E+02 (N)	No
	51-28-5	2,4-Dinitrophenol			mg/kg		0/30	8.50E-01 - 2.00E+00	2.00E+00	N/A	1.20E+01 (N)	No
	606-20-2	2,6-Dinitrotoluene (5)			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	7.10E-01 (C)	No
	91-58-7	2-Chloronaphthalene			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	6.30E+02 (N)	No
	95-57-8	2-Chlorophenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	3.90E+01 (N)	No
	591-78-6	2-Hexanone			mg/kg		0/30	2.20E-02 - 3.60E-02	3.60E-02	N/A	N/A	NTX
	88-74-4	2-Nitroaniline			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	N/A	NTX
	88-75-5	2-Nitrophenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	N/A	NTX
	88-72-2	2-Nitrotoluene			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	2.90E+00 (C)	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/30	6.90E-03 - 8.10E-03	8.10E-03	N/A	6.10E+00 (N)	No
	N/A	3&4-Methylphenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	3.10E+01 (N)	No
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	1.10E+00 (C)	No

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	99-09-2	3-Nitroaniline			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	1.80E+00 (N)	No
	99-08-1	3-Nitrotoluene			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	1.20E+02 (N)	No
	72-55-9	4,4'-DDE			mg/kg		0/30	3.40E-03 - 3.70E-02	3.70E-02	N/A	1.40E+00 (C)	No
	50-29-3	4,4'-DDT			mg/kg		0/30	3.40E-03 - 3.70E-02	3.70E-02	N/A	1.70E+00 (C)	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	6.10E-01 (N)	Yes
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	1.50E+01 (N)	No
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/kg		0/30	2.20E-02 - 3.60E-02	3.60E-02	N/A	5.30E+02 (N)	No
	100-01-6	4-Nitroaniline			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	1.80E+01 (N)	No
	100-02-7	4-Nitrophenol			mg/kg		0/30	8.50E-01 - 2.00E+00	2.00E+00	N/A	N/A	NTX
	99-99-0	4-Nitrotoluene			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	2.40E+01 (N)	No
	208-96-8	Acenaphthylene (6)			mg/kg		0/30	2.70E-01 - 3.20E-01	3.20E-01	N/A	1.70E+02 (N)	No
	309-00-2	Aldrin			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	2.90E-02 (C)	No
	319-84-6	alpha-BHC			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	7.70E-02 (C)	No
	5103-71-9	alpha-Chlordane (7)			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	1.60E+00 (C)	No
	120-12-7	Anthracene			mg/kg		0/30	2.70E-01 - 3.20E-01	3.20E-01	N/A	1.70E+03 (N)	No
	7440-36-0	Antimony			mg/kg		0/30	2.00E-01 - 3.20E-01	3.20E-01	N/A	3.10E+00 (N)	No
	11104-28-2	Aroclor 1221			mg/kg		0/30	1.70E-02 - 1.80E-01	1.80E-01	N/A	1.70E-01 (C)	Yes
	11141-16-5	Aroclor 1232			mg/kg		0/30	1.70E-02 - 1.80E-01	1.80E-01	N/A	1.70E-01 (C)	Yes
	53469-21-9	Aroclor 1242			mg/kg		0/30	1.70E-02 - 1.80E-01	1.80E-01	N/A	2.20E-01 (C)	No
	12672-29-6	Aroclor 1248			mg/kg		0/30	1.70E-02 - 1.80E-01	1.80E-01	N/A	2.20E-01 (C)	No
	71-43-2	Benzene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.10E+00 (C)	No
	65-85-0	Benzoic Acid			mg/kg		0/30	8.50E-01 - 2.00E+00	2.00E+00	N/A	2.40E+04 (N)	No
	100-51-6	Benzyl alcohol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	3.10E+03 (N)	No
	319-85-7	beta-BHC			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	2.70E-01 (C)	No
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	1.80E+01 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	1.90E-01 (C)	Yes
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	3.50E+00 (C)	No
	75-27-4	Bromodichloromethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.00E+01 (C)	No
	74-83-9	Bromomethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	7.90E-01 (N)	No
	85-68-7	Butyl benzyl phthalate			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	2.60E+02 (C)	No

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	86-74-8	Carbazole			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	N/A	NTX
	56-23-5	Carbon tetrachloride			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	2.50E-01 (C)	No
	108-90-7	Chlorobenzene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	3.10E+01 (N)	No
	75-00-3	Chloroethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.50E+03 (N)	No
	67-66-3	Chloroform			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	3.00E-01 (C)	No
	74-87-3	Chloromethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.70E+00 (C)	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	7.80E+01 (N)	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.70E+00 (C)	No
	121-82-4	Cyclonite			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	5.50E+00 (C)	No
	75-99-0	Dalapon			mg/kg		0/29	3.40E-02 - 4.10E-02	4.10E-02	N/A	1.80E+02 (N)	No
	319-86-8	delta-BHC			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	5.20E-01 (C)	No
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/30	5.50E-02 - 6.40E-02	6.40E-02	N/A	1.50E-02 (C)	Yes
	124-48-1	Dibromochloromethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	5.80E+00 (C)	No
	120-36-5	Dichloroprop			mg/kg		0/30	3.40E-02 - 4.10E-02	4.10E-02	N/A	N/A	NTX
	131-11-3	Dimethylphthalate			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	N/A	NTX
	117-84-0	Di-n-octyl phthalate			mg/kg		0/30	3.40E-01 - 8.10E-01	8.10E-01	N/A	N/A	NTX
	33213-65-9	Endosulfan II (8)			mg/kg		0/30	3.40E-03 - 3.70E-02	3.70E-02	N/A	3.70E+01 (N)	No
	1031-07-8	Endosulfan sulfate (8)			mg/kg		0/30	3.40E-03 - 3.70E-02	3.70E-02	N/A	3.70E+01 (N)	No
	72-20-8	Endrin			mg/kg		0/30	3.40E-03 - 3.70E-02	3.70E-02	N/A	1.80E+00 (N)	No
	7421-93-4	Endrin aldehyde (9)			mg/kg		0/29	3.40E-03 - 1.95E-02	1.95E-02	N/A	1.80E+00 (N)	No
	53494-70-5	Endrin ketone (9)			mg/kg		0/30	3.40E-03 - 3.70E-02	3.70E-02	N/A	1.80E+00 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	5.20E-01 (C)	No
	5103-74-2	gamma-Chlordane (7)			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	1.60E+00 (C)	No
	76-44-8	Heptachlor			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	1.10E-01 (C)	No
	1024-57-3	Heptachlor epoxide			mg/kg		0/30	1.70E-03 - 1.80E-02	1.80E-02	N/A	5.30E-02 (C)	No
	118-74-1	Hexachlorobenzene			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	3.00E-01 (C)	Yes
	87-68-3	Hexachlorobutadiene			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	6.10E+00 (N)	No
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	3.70E+01 (N)	No
	67-72-1	Hexachloroethane			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	6.10E+00 (N)	No
	2691-41-0	HMX			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	3.80E+02 (N)	No
	78-59-1	Isophorone			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	5.10E+02 (C)	No
	94-74-6	MCPA			mg/kg		0/30	1.70E-01 - 2.00E-01	2.00E-01	N/A	3.10E+00 (N)	No

Table E.1-5
Summary of Screening for Non-Detected Chemicals
Current/Future - Total Soil at SWMU 43

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	93-65-2	MCPP			mg/kg		0/30	1.70E-01 - 2.00E-01	2.00E-01	N/A	6.10E+00 (N)	No
	72-43-5	Methoxychlor			mg/kg		0/30	3.40E-03 - 3.70E-02	3.70E-02	N/A	3.10E+01 (N)	No
	75-09-2	Methylene chloride			mg/kg		0/30	8.80E-03 - 1.40E-02	1.40E-02	N/A	1.10E+01 (C)	No
	98-95-3	Nitrobenzene			mg/kg		0/30	1.80E-01 - 2.50E-01	2.50E-01	N/A	3.10E+00 (N)	No
	55-63-0	Nitroglycerin			mg/kg		0/30	1.45E+00 - 2.00E+00	2.00E+00	N/A	6.10E-01 (N)	Yes
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	6.90E-02 (C)	Yes
	95-48-7	o-Cresol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	3.10E+02 (N)	Yes
	106-47-8	p-Chloroaniline			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	9.00E+00 (C)	No
	87-86-5	Pentachlorophenol			mg/kg		0/30	8.50E-01 - 2.00E+00	2.00E+00	N/A	3.00E+00 (C)	No
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/30	1.45E+00 - 2.00E+00	2.00E+00	N/A	N/A	NTX
	108-95-2	Phenol			mg/kg		0/30	1.70E-01 - 4.00E-01	4.00E-01	N/A	1.80E+03 (N)	No
	100-42-5	Styrene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	6.50E+02 (N)	No
	127-18-4	Tetrachloroethene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	5.70E-01 (C)	No
	479-45-8	Tetryl			mg/kg		0/30	3.60E-01 - 5.00E-01	5.00E-01	N/A	2.40E+01 (N)	No
	7440-28-0	Thallium			mg/kg		0/30	2.60E-01 - 1.60E+01	1.60E+01	N/A	5.10E-01 (N)	Yes
	8001-35-2	Toxaphene			mg/kg		0/30	8.60E-02 - 9.10E-01	9.10E-01	N/A	4.40E-01 (C)	Yes
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.10E+01 (N)	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	1.70E+00 (C)	No
	75-25-2	Tribromomethane			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	6.10E+01 (C)	No
	79-01-6	Trichloroethene			mg/kg		0/30	4.40E-03 - 7.20E-03	7.20E-03	N/A	2.80E+00 (C)	No

(1) Maximum concentration used for screening.
(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.
(3) Screening level values for residential soil from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1. See text for derivation of Nutrient RDAs.
(4) The screening value for 1,4-dichlorobenzene was used.
(5) The screening value for dinitrotoluene mixture was used.
(6) The screening value for pyrene was used.
(7) The screening value for chlordane was used.
(8) The screening value for endosulfan was used.
(9) The screening value for endrin was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Re
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-6
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Radford Army Ammunition Plant, SWMU 43 - Surface Water

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3 (N/C)	Potential C Value	Potential C Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	75-15-0	Carbon disulfide	3.30E-03	3.30E-03	mg/l	43SP1 (RDWB*7)	1/2	5.00E-04 - 5.00E-04	3.30E-03	N/A	1.00E+00 (N)	N/A	N/A	No	BSL
Surface Water	7429-90-5	Aluminum	4.03E-01	4.03E-01	mg/l	43SP1 (RDWB*7)	1/2	1.41E-01 - 1.41E-01	4.03E-01	N/A	3.70E+01 (N)	N/A	N/A	No	BSL
	7440-38-2	Arsenic	3.94E-03	1.52E-02	mg/l	43SP1 (RDWB*7)	2/2	N/A	1.52E-02	N/A	4.50E-04 (C)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	8.40E-02	1.94E-01	mg/l	43SP1 (RDWB*7)	2/2	N/A	1.94E-01	N/A	7.30E+00 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	7.23E+01	9.20E+01	mg/l	43SP1 (RDWB*7)	2/2	N/A	9.20E+01	N/A	N/A	500	RDA	No	BSL
	7439-89-6	Iron	1.73E+00	3.23E+01	mg/l	43SP1 (RDWB*7)	2/2	N/A	3.23E+01	N/A	2.60E+01 (N)	N/A	N/A	Yes	ASL
	7439-95-4	Magnesium	2.83E+01	4.11E+01	mg/l	43SP1 (RDWB*7)	2/2	N/A	4.11E+01	N/A	N/A	175	RDA	No	BSL
	7439-96-5	Manganese	9.81E-02	1.30E+00	mg/l	43SP1 (RDWB*7)	2/2	N/A	1.30E+00	N/A	8.80E-01 (N)	N/A	N/A	Yes	ASL
	7440-09-7	Potassium	8.56E-01	1.51E+00	mg/l	43SP2 (RDWB*10)	2/2	N/A	1.51E+00	N/A	N/A	1000	RDA	No	BSL
	7440-23-5	Sodium	9.17E+00	2.08E+01	mg/l	43SP1 (RDWB*7)	2/2	N/A	2.08E+01	N/A	N/A	20	RDA	Yes	ASL
	7440-62-2	Vanadium (5)	1.32E-02	1.32E-02	mg/l	43SP1 (RDWB*7)	1/2	1.10E-02 - 1.10E-02	1.32E-02	N/A	1.80E-01 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for tap water from USEPA Regional Screening Level Table (September 2008) and
are based on a risk level of 1.0E-06 and a hazard index of 0.1, then adjusted by a factor of 10 for surface water exposures.
See text for derivation of Nutrient RDAs.

(4) Rationale Codes Selection Reason: Toxicity Information Available (TX)
Above Screening Levels (ASL)
No Toxicity Information (NTX)

Deletion Reason: Infrequent Detection (<= 5%, IFD)
Background Levels (BKG)
Below Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for vanadium and compounds was used.

Definitions: N/A = Not Applicable or Not Available
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J, K = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	71-55-6	1,1,1-Trichloroethane			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	9.10E+00 (N)	No
Surface Water	79-34-5	1,1,2,2-Tetrachloroethane			mg/l		0/2	5.10E-04 - 5.10E-04	5.10E-04	N/A	6.70E-04 (C)	Yes
	79-00-5	1,1,2-Trichloroethane			mg/l		0/2	1.20E-03 - 1.20E-03	1.20E-03	N/A	2.40E-03 (C)	No
	75-34-3	1,1-Dichloroethane			mg/l		0/2	6.80E-04 - 6.80E-04	6.80E-04	N/A	2.40E-02 (C)	No
	75-35-4	1,1-Dichloroethene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	3.40E-01 (N)	No
	120-82-1	1,2,4-Trichlorobenzene			mg/l		0/2	1.80E-03 - 1.80E-03	1.80E-03	N/A	8.20E-03 (N)	No
	95-50-1	1,2-Dichlorobenzene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	N/A	3.70E-01 (N)	No
	107-06-2	1,2-Dichloroethane			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.50E-03 (C)	No
	540-59-0	1,2-Dichloroethene (total)			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	3.30E-01 (N)	No
	78-87-5	1,2-Dichloropropane			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	3.90E-03 (C)	No
	122-66-7	1,2-Diphenylhydrazine			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	N/A	8.40E-04 (C)	Yes
	541-73-1	1,3-Dichlorobenzene (4)			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	N/A	4.30E-03 (C)	No
	106-46-7	1,4-Dichlorobenzene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	N/A	4.30E-03 (C)	No
	95-95-4	2,4,5-Trichlorophenol			mg/l		0/2	5.20E-03 - 5.20E-03	5.20E-03	N/A	3.70E+00 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/l		0/2	4.20E-03 - 4.20E-03	4.20E-03	N/A	3.70E-02 (N)	No
	120-83-2	2,4-Dichlorophenol			mg/l		0/2	2.90E-03 - 2.90E-03	2.90E-03	N/A	1.10E-01 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/l		0/2	5.80E-03 - 5.80E-03	5.80E-03	N/A	7.30E-01 (N)	No
	51-28-5	2,4-Dinitrophenol			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	N/A	7.30E-02 (N)	No
	121-14-2	2,4-Dinitrotoluene (5)			mg/l		0/2	4.50E-03 - 4.50E-03	4.50E-03	N/A	9.90E-04 (C)	Yes
	606-20-2	2,6-Dinitrotoluene (5)			mg/l		0/2	7.90E-04 - 7.90E-04	7.90E-04	N/A	9.90E-04 (C)	No
	78-93-3	2-Butanone			mg/l		0/2	6.40E-03 - 6.40E-03	6.40E-03	N/A	7.10E+00 (N)	No
	110-75-8	2-Chloroethyl vinyl ether			mg/l		0/2	7.10E-04 - 7.10E-04	7.10E-04	N/A	N/A	NTX
	91-58-7	2-Chloronaphthalene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	2.90E+00 (N)	No
	95-57-8	2-Chlorophenol			mg/l		0/2	9.90E-04 - 9.90E-04	9.90E-04	N/A	1.80E-01 (N)	No
	591-78-6	2-Hexanone			mg/l		0/2	3.60E-03 - 3.60E-03	3.60E-03	N/A	N/A	NTX
	91-57-6	2-Methylnaphthalene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	N/A	1.50E-01 (N)	No
	88-74-4	2-Nitroaniline			mg/l		0/2	4.30E-03 - 4.30E-03	4.30E-03	N/A	N/A	NTX
	88-75-5	2-Nitrophenol			mg/l		0/2	3.70E-03 - 3.70E-03	3.70E-03	N/A	N/A	NTX
	91-94-1	3,3'-Dichlorobenzidine			mg/l		0/2	1.20E-02 - 1.20E-02	1.20E-02	N/A	1.50E-03 (C)	Yes
	99-09-2	3-Nitroaniline			mg/l		0/2	4.90E-03 - 4.90E-03	4.90E-03	N/A	1.10E-02 (N)	No
	72-54-8	4,4'-DDD			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	N/A	2.80E-03 (C)	Yes
	72-55-9	4,4'-DDE			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	N/A	2.00E-03 (C)	Yes
	50-29-3	4,4'-DDT			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	N/A	2.00E-03 (C)	Yes

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	534-52-1	4,6-Dinitro-o-cresol			mg/l		0/2	1.70E-02 - 1.70E-02	1.70E-02	N/A	3.70E-03 (N)	Yes
	101-55-3	4-Bromophenyl phenylether			mg/l		0/2	4.20E-03 - 4.20E-03	4.20E-03	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/l		0/2	3.00E-03 - 3.00E-03	3.00E-03	N/A	2.00E+00 (N)	No
	100-01-6	4-Nitroaniline			mg/l		0/2	5.20E-03 - 5.20E-03	5.20E-03	N/A	3.20E-02 (C)	No
	100-02-7	4-Nitrophenol			mg/l		0/2	1.20E-02 - 1.20E-02	1.20E-02	N/A	N/A	NTX
	83-32-9	Acenaphthene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	N/A	2.20E+00 (N)	No
	208-96-8	Acenaphthylene (6)			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.10E+00 (N)	No
	67-64-1	Acetone			mg/l		0/2	1.30E-02 - 1.30E-02	1.30E-02	N/A	2.20E+01 (N)	No
	107-02-8	Acraldehyde			mg/l		0/2	1.00E-01 - 1.00E-01	1.00E-01	N/A	4.20E-05 (N)	Yes
	107-13-1	Acrylonitrile			mg/l		0/2	1.00E-01 - 1.00E-01	1.00E-01	N/A	4.50E-04 (C)	Yes
	309-00-2	Aldrin			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	N/A	4.00E-05 (C)	Yes
	319-84-6	alpha-BHC			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	N/A	1.10E-04 (C)	Yes
	5103-71-9	alpha-Chlordane (7)			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	N/A	1.90E-03 (C)	Yes
	120-12-7	Anthracene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.10E+01 (N)	No
	7440-36-0	Antimony			mg/l		0/2	2.00E-04 - 2.20E-04	2.20E-04	N/A	1.50E-02 (N)	No
	12674-11-2	Aroclor 1016			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	N/A	2.60E-03 (N)	Yes
	11104-28-2	Aroclor 1221			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	N/A	6.80E-05 (C)	Yes
	11141-16-5	Aroclor 1232			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	N/A	6.80E-05 (C)	Yes
	53469-21-9	Aroclor 1242			mg/l		0/2	3.00E-02 - 3.00E-02	3.00E-02	N/A	3.40E-04 (C)	Yes
	12672-29-6	Aroclor 1248			mg/l		0/2	3.00E-02 - 3.00E-02	3.00E-02	N/A	3.40E-04 (C)	Yes
	11097-69-1	Aroclor 1254			mg/l		0/2	3.60E-02 - 3.60E-02	3.60E-02	N/A	3.40E-04 (C)	Yes
	11096-82-5	Aroclor 1260			mg/l		0/2	3.60E-02 - 3.60E-02	3.60E-02	N/A	3.40E-04 (C)	Yes
	71-43-2	Benzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	4.10E-03 (C)	No
	92-87-5	Benzidine			mg/l		0/2	1.00E-02 - 1.00E-02	1.00E-02	N/A	9.40E-07 (C)	Yes
	56-55-3	Benzo(a)anthracene			mg/l		0/2	1.60E-03 - 1.60E-03	1.60E-03	N/A	2.90E-04 (C)	Yes
	50-32-8	Benzo(a)pyrene			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	N/A	2.90E-05 (C)	Yes
	205-99-2	Benzo(b)fluoranthene			mg/l		0/2	5.40E-03 - 5.40E-03	5.40E-03	N/A	2.90E-04 (C)	Yes
	191-24-2	Benzo(g,h,i)perylene (6)			mg/l		0/2	6.10E-03 - 6.10E-03	6.10E-03	N/A	1.10E+00 (N)	No
	207-08-9	Benzo(k)fluoranthene			mg/l		0/2	8.70E-04 - 8.70E-04	8.70E-04	N/A	2.90E-03 (C)	No
	65-85-0	Benzoic Acid			mg/l		0/2	1.30E-02 - 1.30E-02	1.30E-02	N/A	1.50E+02 (N)	No
	100-51-6	Benzyl alcohol			mg/l		0/2	7.20E-04 - 7.20E-04	7.20E-04	N/A	1.80E+01 (N)	No
	7440-41-7	Beryllium			mg/l		0/2	5.00E-03 - 5.00E-03	5.00E-03	N/A	7.30E-02 (N)	No

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	319-85-7	beta-BHC			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	N/A	3.70E-04 (C)	Yes
	111-91-1	bis(2-Chloroethoxy)methane			mg/l		0/2	1.50E-03 - 1.50E-03	1.50E-03	N/A	1.10E-01 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/l		0/2	1.90E-03 - 1.90E-03	1.90E-03	N/A	1.20E-04 (C)	Yes
	108-60-1	bis(2-Chloroisopropyl)ether			mg/l		0/2	5.30E-03 - 5.30E-03	5.30E-03	N/A	3.20E-03 (C)	Yes
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/l		0/2	4.80E-03 - 4.80E-03	4.80E-03	N/A	4.80E-02 (C)	No
	75-27-4	Bromodichloromethane			mg/l		0/2	5.90E-04 - 5.90E-04	5.90E-04	N/A	1.10E-02 (C)	No
	74-83-9	Bromomethane			mg/l		0/2	5.80E-03 - 5.80E-03	5.80E-03	N/A	8.70E-03 (N)	No
	85-68-7	Butyl benzyl phthalate			mg/l		0/2	3.40E-03 - 3.40E-03	3.40E-03	N/A	3.50E-01 (C)	No
	7440-43-9	Cadmium			mg/l		0/2	4.01E-03 - 4.01E-03	4.01E-03	N/A	1.80E-02 (N)	No
	56-23-5	Carbon tetrachloride			mg/l		0/2	5.80E-04 - 5.80E-04	5.80E-04	N/A	2.00E-03 (C)	No
	108-90-7	Chlorobenzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	9.10E-02 (N)	No
	75-00-3	Chloroethane			mg/l		0/2	1.90E-03 - 1.90E-03	1.90E-03	N/A	2.10E+01(N)	No
	67-66-3	Chloroform			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.90E-03 (C)	No
	74-87-3	Chloromethane			mg/l		0/2	3.20E-03 - 3.20E-03	3.20E-03	N/A	1.80E-02 (C)	No
	7440-47-3	Chromium			mg/l		0/2	6.02E-03 - 6.02E-03	6.02E-03	N/A	1.10E-01 (N)	No
	218-01-9	Chrysene			mg/l		0/2	2.40E-03 - 2.40E-03	2.40E-03	N/A	2.90E-02 (C)	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/l		0/2	5.80E-04 - 5.80E-04	5.80E-04	N/A	4.30E-03 (C)	No
	7440-48-4	Cobalt			mg/l		0/2	2.50E-02 - 2.50E-02	2.50E-02	N/A	1.10E-02 (N)	Yes
	7440-50-8	Copper			mg/l		0/2	8.09E-03 - 8.09E-03	8.09E-03	N/A	1.50E+00 (N)	No
	319-86-8	delta-BHC			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	N/A	6.10E-04 (C)	Yes
	53-70-3	Dibenz(a,h)anthracene			mg/l		0/2	6.50E-03 - 6.50E-03	6.50E-03	N/A	2.90E-05 (C)	Yes
	132-64-9	Dibenzofuran			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	N/A	N/A	NTX
	124-48-1	Dibromochloromethane			mg/l		0/2	6.70E-04 - 6.70E-04	6.70E-04	N/A	8.00E-03 (C)	No
	60-57-1	Dieldrin			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	N/A	4.20E-05 (C)	Yes
	84-66-2	Diethyl phthalate			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	N/A	2.90E+01 (N)	No
	131-11-3	Dimethylphthalate			mg/l		0/2	1.50E-03 - 1.50E-03	1.50E-03	N/A	N/A	NTX
	84-74-2	Di-n-butyl phthalate			mg/l		0/2	3.70E-03 - 3.70E-03	3.70E-03	N/A	3.70E+00 (N)	No
	117-84-0	Di-n-octyl phthalate			mg/l		0/2	1.50E-02 - 1.50E-02	1.50E-02	N/A	N/A	NTX
	959-98-8	Endosulfan I (8)			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	N/A	2.20E-01 (N)	No
	33213-65-9	Endosulfan II (8)			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	N/A	2.20E-01 (N)	No
	1031-07-8	Endosulfan sulfate (8)			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	N/A	2.20E-01 (N)	No
	72-20-8	Endrin			mg/l		0/2	7.60E-03 - 7.60E-03	7.60E-03	N/A	1.10E-02 (N)	No
	7421-93-4	Endrin aldehyde (9)			mg/l		0/2	8.00E-03 - 8.00E-03	8.00E-03	N/A	1.10E-02 (N)	No

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	53494-70-5	Endrin ketone (9)			mg/l		0/2	8.00E-03 - 8.00E-03	8.00E-03	N/A	1.10E-02 (N)	No
	100-41-4	Ethylbenzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.50E-02 (C)	No
	206-44-0	Fluoranthene			mg/l		0/2	3.30E-03 - 3.30E-03	3.30E-03	N/A	1.50E+00 (N)	No
	86-73-7	Fluorene			mg/l		0/2	3.70E-03 - 3.70E-03	3.70E-03	N/A	1.50E+00 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	N/A	6.10E-04 (C)	Yes
	5103-74-2	gamma-Chlordane (6)			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	N/A	1.90E-03 (C)	Yes
	76-44-8	Heptachlor			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	N/A	1.50E-04 (C)	Yes
	1024-57-3	Heptachlor epoxide			mg/l		0/2	5.00E-03 - 5.00E-03	5.00E-03	N/A	7.40E-05 (C)	Yes
	118-74-1	Hexachlorobenzene			mg/l		0/2	1.60E-03 - 1.60E-03	1.60E-03	N/A	4.20E-04 (C)	Yes
	87-68-3	Hexachlorobutadiene			mg/l		0/2	3.40E-03 - 3.40E-03	3.40E-03	N/A	8.60E-03 (C)	No
	77-47-4	Hexachlorocyclopentadiene			mg/l		0/2	8.60E-03 - 8.60E-03	8.60E-03	N/A	2.20E-01 (N)	No
	67-72-1	Hexachloroethane			mg/l		0/2	1.50E-03 - 1.50E-03	1.50E-03	N/A	3.70E-02 (N)	No
	193-39-5	Indeno(1,2,3-cd)pyrene			mg/l		0/2	8.60E-03 - 8.60E-03	8.60E-03	N/A	2.90E-04 (C)	Yes
	78-59-1	Isophorone			mg/l		0/2	4.80E-03 - 4.80E-03	4.80E-03	N/A	7.10E-01 (C)	No
	7439-92-1	Lead			mg/l		0/2	1.26E-03 - 1.26E-03	1.26E-03	N/A	N/A	NTX
	7439-97-6	Mercury (10)			mg/l		0/2	2.43E-04 - 2.43E-04	2.43E-04	N/A	1.10E-02 (N)	No
	72-43-5	Methoxychlor			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	N/A	1.80E-01 (N)	No
	75-09-2	Methylene chloride			mg/l		0/2	2.30E-03 - 2.30E-03	2.30E-03	N/A	4.80E-02 (C)	No
	91-20-3	Naphthalene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.40E-03 (C)	No
	7440-02-0	Nickel			mg/l		0/2	3.43E-02 - 3.43E-02	3.43E-02	N/A	7.30E-01 (N)	No
	98-95-3	Nitrobenzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	3.40E-03 (N)	No
	62-75-9	N-Nitrosodimethylamine			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	N/A	4.20E-06 (C)	Yes
	621-64-7	n-Nitroso-di-n-propylamine			mg/l		0/2	4.40E-03 - 4.40E-03	4.40E-03	N/A	9.60E-05 (N)	Yes
	86-30-6	n-Nitrosodiphenylamine			mg/l		0/2	3.00E-03 - 3.00E-03	3.00E-03	N/A	1.40E-01 (N)	No
	95-48-7	o-Cresol			mg/l		0/2	3.90E-03 - 3.90E-03	3.90E-03	N/A	1.80E+00 (N)	No
	106-47-8	p-Chloroaniline			mg/l		0/2	7.30E-03 - 7.30E-03	7.30E-03	N/A	1.20E-02 (C)	No
	59-50-7	p-Chloro-m-cresol			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	N/A	N/A	NTX
	106-44-5	p-Cresol			mg/l		0/2	5.20E-04 - 5.20E-04	5.20E-04	N/A	1.80E-01 (N)	No
	87-86-5	Pentachlorophenol			mg/l		0/2	1.80E-02 - 1.80E-02	1.80E-02	N/A	5.60E-03 (C)	Yes
	85-01-8	Phenanthrene (6)			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.10E+00 (N)	No
	108-95-2	Phenol			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	N/A	1.10E+01 (N)	No
	129-00-0	Pyrene			mg/l		0/2	2.80E-03 - 2.80E-03	2.80E-03	N/A	1.10E+00 (N)	No
	7782-49-2	Selenium			mg/l		0/2	3.02E-03 - 3.02E-03	3.02E-03	N/A	1.80E-01 (N)	No

Table E.1-7
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	7440-22-4	Silver			mg/l		0/2	2.50E-04 - 2.50E-04	2.50E-04	N/A	1.80E-01 (N)	No
	100-42-5	Styrene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.60E+00 (N)	No
	127-18-4	Tetrachloroethene			mg/l		0/2	1.60E-03 - 1.60E-03	1.60E-03	N/A	1.10E-03 (C)	Yes
	7440-28-0	Thallium			mg/l		0/2	6.99E-03 - 6.99E-03	6.99E-03	N/A	2.40E-03 (N)	Yes
	108-88-3	Toluene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	2.30E+00 (N)	No
	RAD-001	Total Organic Halogens			mg/l		0/2	1.00E-02 - 1.00E-02	1.00E-02	N/A	N/A	NTX
	8001-35-2	Toxaphene			mg/l		0/2	3.60E-02 - 3.60E-02	3.60E-02	N/A	6.10E-04 (N)	Yes
	10061-02-6	trans-1,3-Dichloropropene			mg/l		0/2	7.00E-04 - 7.00E-04	7.00E-04	N/A	4.30E-03 (C)	No
	75-25-2	Tribromomethane			mg/l		0/2	2.60E-03 - 2.60E-03	2.60E-03	N/A	8.50E-02 (C)	No
	79-01-6	Trichloroethene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	N/A	1.70E-02 (C)	No
	75-69-4	Trichlorofluoromethane			mg/l		0/2	1.40E-03 - 1.40E-03	1.40E-03	N/A	1.30E+00 (N)	No
	108-05-4	Vinyl acetate			mg/l		0/2	8.30E-03 - 8.30E-03	8.30E-03	N/A	4.10E-01 (N)	No
	75-01-4	Vinyl Chloride			mg/l		0/2	2.60E-03 - 2.60E-03	2.60E-03	N/A	1.60E-04 (C)	Yes
	1330-20-7	Xylenes (total)			mg/l		0/2	8.40E-04 - 8.40E-04	8.40E-04	N/A	2.00E-01 (N)	No
	7440-66-6	Zinc			mg/l		0/2	2.11E-02 - 2.11E-02	2.11E-02	N/A	1.10E+01 (N)	No

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for tap water from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1, then adjusted by a factor of 10 for surface water exposures. See text for derivation of Nutrient RDAs.

(4) The screening value for 1,4-dichlorobenzene was used.

(5) The screening value for dinitrotoluene mixture was used.

(6) The screening value for pyrene was used.

(7) The screening value for chlordane was used.

(8) The screening value for endosulfan was used.

(9) The screening value for endrin was used.

(10) The screening value for mercury, inorganic salts was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Re
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-8
Occurrence, Distribution and Selection of Chemicals of Potential Concern
Radford Army Ammunition Plant, SWMU 43 - Groundwater

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Potential C Value	Potential C Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Groundwater	86-30-6	n-Nitrosodiphenylamine	4.50E-03 J	4.50E-03 J	mg/l	43MW6	1/6	4.90E-03 - 5.00E-03	4.50E-03	N/A	1.40E-02 (C)	N/A	N/A	No	BSL
	127-18-4	Tetrachloroethene	2.70E-04 J	2.60E-03	mg/l	43MW6	4/6	1.00E-03 - 1.00E-03	2.60E-03	N/A	1.10E-04 (C)	N/A	N/A	Yes	ASL
	7429-90-5	Aluminum	1.98E-01 J	7.14E-01	mg/l	43MW2	2/6	7.90E-02 - 7.90E-02	7.14E-01	N/A	3.70E+00 (N)	N/A	N/A	No	BSL
	7440-38-2	Arsenic	4.40E-03 J	3.49E-02	mg/l	43MW3	3/6	3.70E-03 - 3.70E-03	3.49E-02	N/A	4.50E-05 (C)	N/A	N/A	Yes	ASL
	7440-39-3	Barium	4.26E-02 J	2.26E-01	mg/l	43MW4	6/6	N/A	2.26E-01	N/A	7.30E-01 (N)	N/A	N/A	No	BSL
	7440-41-7	Beryllium	1.10E-03 J	2.00E-03 J	mg/l	43MW2	4/6	1.00E-03 - 1.00E-03	2.00E-03	N/A	7.30E-03 (N)	N/A	N/A	No	BSL
	7440-70-2	Calcium	5.11E+01	1.52E+02	mg/l	43MW3	6/6	N/A	1.52E+02	N/A	N/A	500	RDA	No	BSL
	7440-47-3	Chromium VI	1.40E-03 J	1.09E-02	mg/l	43MW2	6/6	N/A	1.09E-02	N/A	1.10E-02 (N)	N/A	N/A	No	BSL
	7440-48-4	Cobalt	1.60E-03 J	6.20E-03 J	mg/l	43MW4	4/6	1.00E-03 - 1.00E-03	6.20E-03	N/A	1.10E-03 (N)	N/A	N/A	Yes	ASL
	7439-89-6	Iron	1.97E-01 J	1.18E+01	mg/l	43MW2	5/6	1.50E-02 - 1.50E-02	1.18E+01	N/A	2.60E+00 (N)	N/A	N/A	Yes	ASL
	7439-95-4	Magnesium	2.60E+01 J	6.41E+01 J	mg/l	43MW3	6/6	N/A	6.41E+01	N/A	N/A	175	RDA	No	BSL
	7439-96-5	Manganese	3.10E-03 J	8.35E-01	mg/l	43MW4	6/6	N/A	8.35E-01	N/A	8.80E-02 (N)	N/A	N/A	Yes	ASL
	7440-02-0	Nickel	1.20E-03 J	4.10E-03 J	mg/l	43MW3	5/6	1.00E-03 - 1.00E-03	4.10E-03	N/A	7.30E-02 (N)	N/A	N/A	No	BSL
	7440-09-7	Potassium	2.31E+00 J	3.60E+00 J	mg/l	43MW3	6/6	N/A	3.60E+00	N/A	N/A	1,000	RDA	No	BSL
	7440-23-5	Sodium	5.35E+00 J	1.50E+01	mg/l	43MW6	6/6	N/A	1.50E+01	N/A	N/A	20	RDA	No	BSL
	7440-62-2	Vanadium (5)	1.30E-03 J	1.70E-03 J	mg/l	43MW2	2/6	1.10E-03 - 1.10E-03	1.70E-03	N/A	1.80E-02 (N)	N/A	N/A	No	BSL
	7440-66-6	Zinc	5.70E-03 J	8.00E-03 J	mg/l	43MW4	2/6	5.00E-03 - 5.00E-03	8.00E-03	N/A	1.10E+00 (N)	N/A	N/A	No	BSL
	14797-73-0	Perchlorate	1.42E-04 J	2.03E-04	mg/l	43MW1	2/6	2.00E-04 - 2.00E-04	2.03E-04	N/A	2.60E-03 (N)	N/A	N/A	No	BSL

(1) Maximum concentration used for screening.

(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.

(3) Screening level values for tap water from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
See text for derivation of Nutrient RDAs.

(4) Rationale Codes Selection Reason: Toxicity Information Available (TX)
Above Screening Levels (ASL)
No Toxicity Information (NTX)

Deletion Reason: Infrequent Detection (<= 5%, IFD)
Background Levels (BKG)
Below Screening and/or ARAR/TBC Level (BSL)

(5) The screening value for vanadium and compounds was used.

Definitions: N/A = Not Applicable or Not Available
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
J, K = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	71-55-6	1,1,1-Trichloroethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	9.10E-01 (N)	No
Groundwater	79-34-5	1,1,2,2-Tetrachloroethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	6.70E-05 (C)	Yes
	79-00-5	1,1,2-Trichloroethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.40E-04 (C)	Yes
	75-34-3	1,1-Dichloroethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.40E-03 (C)	No
	75-35-4	1,1-Dichloroethene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	3.40E-02 (N)	No
	120-82-1	1,2,4-Trichlorobenzene			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	8.20E-04 (N)	Yes
	95-50-1	1,2-Dichlorobenzene			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	3.70E-02 (N)	No
	107-06-2	1,2-Dichloroethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.50E-04 (C)	Yes
	78-87-5	1,2-Dichloropropane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	3.90E-04 (C)	Yes
	99-35-4	1,3,5-Trinitrobenzene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	1.10E-01 (N)	No
	541-73-1	1,3-Dichlorobenzene (4)			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	4.30E-04 (C)	Yes
	99-65-0	1,3-Dinitrobenzene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	3.70E-04 (N)	No
	106-46-7	1,4-Dichlorobenzene			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	4.30E-04 (C)	Yes
	90-12-0	1-Methylnaphthalene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	2.30E-03 (C)	No
	93-76-5	2,4,5-T			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	3.70E-02 (N)	No
	93-72-1	2,4,5-TP (Silvex)			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-02 (N)	No
	95-95-4	2,4,5-Trichlorophenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	3.70E-01 (N)	No
	88-06-2	2,4,6-Trichlorophenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	3.70E-03 (N)	Yes
	118-96-7	2,4,6-Trinitrotoluene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	1.80E-03 (N)	No
	94-75-7	2,4-D			mg/l		0/6	1.50E-03 - 1.50E-03	1.50E-03	N/A	3.70E-02 (N)	No
	94-82-6	2,4-DB			mg/l		0/6	2.00E-03 - 2.00E-03	2.00E-03	N/A	2.90E-02 (N)	No
	120-83-2	2,4-Dichlorophenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.10E-02 (N)	No
	105-67-9	2,4-Dimethylphenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	7.30E-02 (N)	No
	51-28-5	2,4-Dinitrophenol			mg/l		0/6	2.50E-02 - 2.50E-02	2.50E-02	N/A	7.30E-03 (N)	Yes
	121-14-2	2,4-Dinitrotoluene (5)			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	9.90E-05 (C)	Yes
	606-20-2	2,6-Dinitrotoluene (5)			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	9.90E-05 (C)	Yes
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	7.30E-03 (N)	No
	78-93-3	2-Butanone			mg/l		0/6	5.00E-03 - 5.00E-03	5.00E-03	N/A	7.10E-01 (N)	No
	91-58-7	2-Chloronaphthalene			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	2.90E-01 (N)	No
	95-57-8	2-Chlorophenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.80E-02 (N)	No
	591-78-6	2-Hexanone			mg/l		0/6	1.00E-02 - 1.00E-02	1.00E-02	N/A	N/A	NTX
	91-57-6	2-Methylnaphthalene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	1.50E-02 (N)	No

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	88-74-4	2-Nitroaniline			mg/l		0/6	9.80E-03 - 1.00E-02	1.00E-02	N/A	N/A	NTX
	88-75-5	2-Nitrophenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	88-72-2	2-Nitrotoluene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	3.10E-04 (C)	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	3.70E-03 (N)	No
	N/A	3&4-Methylphenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.80E-02 (N)	No
	91-94-1	3,3'-Dichlorobenzidine			mg/l		0/6	9.80E-03 - 1.00E-02	1.00E-02	N/A	1.50E-04 (C)	Yes
	99-09-2	3-Nitroaniline			mg/l		0/6	9.80E-03 - 1.00E-02	1.00E-02	N/A	1.10E-03 (N)	Yes
	99-08-1	3-Nitrotoluene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	7.30E-02 (N)	No
	72-54-8	4,4'-DDD			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	2.80E-04 (C)	No
	72-55-9	4,4'-DDE			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	2.00E-04 (C)	No
	50-29-3	4,4'-DDT			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	2.00E-04 (C)	No
	534-52-1	4,6-Dinitro-o-cresol			mg/l		0/6	9.80E-03 - 1.00E-02	1.00E-02	N/A	3.70E-04 (N)	Yes
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	7.30E-03 (N)	No
	101-55-3	4-Bromophenyl phenylether			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	7005-72-3	4-Chlorophenyl phenylether			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	108-10-1	4-Methyl-2-pentanone			mg/l		0/6	5.00E-03 - 5.00E-03	5.00E-03	N/A	2.00E-01 (N)	No
	100-01-6	4-Nitroaniline			mg/l		0/6	9.80E-03 - 1.00E-02	1.00E-02	N/A	3.20E-03 (C)	Yes
	100-02-7	4-Nitrophenol			mg/l		0/6	2.50E-02 - 2.50E-02	2.50E-02	N/A	N/A	NTX
	99-99-0	4-Nitrotoluene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	4.20E-03 (C)	No
	83-32-9	Acenaphthene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	2.20E-01 (N)	No
	208-96-8	Acenaphthylene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	N/A	NTX
	67-64-1	Acetone			mg/l		0/6	2.50E-02 - 2.50E-02	2.50E-02	N/A	2.20E+00 (N)	No
	309-00-2	Aldrin			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	4.00E-06 (C)	Yes
	319-84-6	alpha-BHC			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	1.10E-05 (C)	Yes
	5103-71-9	alpha-Chlordane (6)			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	1.90E-04 (C)	No
	120-12-7	Anthracene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	1.10E+00 (N)	No
	7440-36-0	Antimony			mg/l		0/6	6.60E-03 - 6.60E-03	6.60E-03	N/A	1.50E-03 (N)	Yes
	12674-11-2	Aroclor 1016			mg/l		0/6	4.80E-04 - 5.00E-04	5.00E-04	N/A	2.60E-04 (N)	Yes
	11104-28-2	Aroclor 1221			mg/l		0/6	4.80E-04 - 5.00E-04	5.00E-04	N/A	6.80E-06 (C)	Yes
	11141-16-5	Aroclor 1232			mg/l		0/6	4.80E-04 - 5.00E-04	5.00E-04	N/A	6.80E-06 (C)	Yes
	53469-21-9	Aroclor 1242			mg/l		0/6	4.80E-04 - 5.00E-04	5.00E-04	N/A	3.40E-05 (C)	Yes
	12672-29-6	Aroclor 1248			mg/l		0/6	4.80E-04 - 5.00E-04	5.00E-04	N/A	3.40E-05 (C)	Yes

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	11097-69-1	Aroclor 1254			mg/l		0/6	4.80E-04 - 5.00E-04	5.00E-04	N/A	3.40E-05 (C)	Yes
	11096-82-5	Aroclor 1260			mg/l		0/6	4.80E-04 - 5.00E-04	5.00E-04	N/A	3.40E-05 (C)	Yes
	71-43-2	Benzene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	4.10E-04 (C)	Yes
	56-55-3	Benzo(a)anthracene			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-05 (C)	Yes
	50-32-8	Benzo(a)pyrene			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-06 (C)	Yes
	205-99-2	Benzo(b)fluoranthene			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-05 (C)	Yes
	191-24-2	Benzo(g,h,i)perylene (7)			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	1.10E-01 (N)	No
	207-08-9	Benzo(k)fluoranthene			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-04 (C)	No
	65-85-0	Benzoic Acid			mg/l		0/6	2.50E-02 - 2.50E-02	2.50E-02	N/A	1.50E+01 (N)	No
	100-51-6	Benzyl alcohol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.80E+00 (N)	No
	319-85-7	beta-BHC			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	3.70E-05 (C)	Yes
	111-91-1	bis(2-Chloroethoxy)methane			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.10E-02 (N)	No
	111-44-4	bis(2-Chloroethyl)ether			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.20E-05 (C)	Yes
	108-60-1	bis(2-Chloroisopropyl)ether			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	3.20E-04 (C)	Yes
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	4.80E-03 (C)	Yes
	75-27-4	Bromodichloromethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.10E-03 (C)	No
	74-83-9	Bromomethane			mg/l		0/6	2.00E-03 - 2.00E-03	2.00E-03	N/A	8.70E-04 (N)	Yes
	85-68-7	Butyl benzyl phthalate			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	3.50E-02 (C)	No
	7440-43-9	Cadmium			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.80E-03 (N)	No
	86-74-8	Carbazole			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	75-15-0	Carbon disulfide			mg/l		0/6	2.00E-03 - 2.00E-03	2.00E-03	N/A	1.00E-01 (N)	No
	56-23-5	Carbon tetrachloride			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.00E-04 (C)	Yes
	108-90-7	Chlorobenzene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	9.10E-03 (N)	No
	75-00-3	Chloroethane			mg/l		0/6	2.00E-03 - 2.00E-03	2.00E-03	N/A	2.10E+00 (N)	No
	67-66-3	Chloroform			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.90E-04 (C)	Yes
	74-87-3	Chloromethane			mg/l		0/6	2.00E-03 - 2.00E-03	2.00E-03	N/A	1.80E-03 (C)	Yes
	218-01-9	Chrysene			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-03 (C)	No
	156-59-2	cis-1,2-Dichloroethene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	3.70E-02 (N)	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	4.30E-04 (C)	No
	7440-50-8	Copper			mg/l		0/6	1.20E-03 - 1.20E-03	1.20E-03	N/A	1.50E-01 (N)	No
	121-82-4	Cyclonite			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	6.10E-04 (C)	No
	75-99-0	Dalapon			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.10E-01 (N)	No

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	319-86-8	delta-BHC			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	6.10E-05 (C)	No
	53-70-3	Dibenz(a,h)anthracene			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-06 (C)	Yes
	132-64-9	Dibenzofuran			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	124-48-1	Dibromochloromethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	8.00E-04 (C)	Yes
	1918-00-9	Dicamba			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	1.10E-01 (N)	No
	120-36-5	Dichloroprop			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	N/A	NTX
	60-57-1	Dieldrin			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	4.20E-06 (C)	Yes
	84-66-2	Diethyl phthalate			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	2.90E+00 (N)	No
	131-11-3	Dimethylphthalate			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	84-74-2	Di-n-butyl phthalate			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	3.70E-01 (N)	No
	117-84-0	Di-n-octyl phthalate			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	959-98-8	Endosulfan I (8)			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	2.20E-02 (N)	No
	33213-65-9	Endosulfan II (8)			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	2.20E-02 (N)	No
	1031-07-8	Endosulfan sulfate (8)			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	2.20E-02 (N)	No
	72-20-8	Endrin			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	1.10E-03 (N)	No
	7421-93-4	Endrin aldehyde (9)			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	1.10E-03 (N)	No
	53494-70-5	Endrin ketone (9)			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	1.10E-03 (N)	No
	100-41-4	Ethylbenzene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.50E-03 (C)	No
	206-44-0	Fluoranthene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	1.50E-01 (N)	No
	86-73-7	Fluorene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	1.50E-01 (N)	No
	58-89-9	gamma-BHC (Lindane)			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	6.10E-05 (C)	No
	5103-74-2	gamma-Chlordane (6)			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	1.90E-04 (C)	No
	76-44-8	Heptachlor			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	1.50E-05 (C)	Yes
	1024-57-3	Heptachlor epoxide			mg/l		0/6	4.80E-05 - 5.00E-05	5.00E-05	N/A	7.40E-06 (C)	Yes
	118-74-1	Hexachlorobenzene			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	4.20E-05 (C)	Yes
	87-68-3	Hexachlorobutadiene			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	8.60E-04 (C)	Yes
	77-47-4	Hexachlorocyclopentadiene			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	2.20E-02 (N)	No
	67-72-1	Hexachloroethane			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	3.70E-03 (N)	Yes
	2691-41-0	HMX			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	1.80E-01 (N)	No
	193-39-5	Indeno(1,2,3-cd)pyrene			mg/l		0/6	2.00E-04 - 2.00E-04	2.00E-04	N/A	2.90E-05 (C)	Yes
	78-59-1	Isophorone			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	7.10E-02 (C)	No
	7439-92-1	Lead			mg/l		0/6	2.10E-03 - 2.10E-03	2.10E-03	N/A	N/A	NTX

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)
	ICF87	m+p-Xylenes			mg/l		0/6	2.00E-03 - 2.00E-03	2.00E-03	N/A	2.00E-02 (N)	No
	94-74-6	MCPA			mg/l		0/6	5.00E-02 - 5.00E-02	5.00E-02	N/A	1.80E-03 (N)	Yes
	93-65-2	MCPP			mg/l		0/6	5.00E-02 - 5.00E-02	5.00E-02	N/A	3.70E-03 (N)	Yes
	7439-97-6	Mercury (Inorganic) (10)			mg/l		0/6	1.10E-04 - 1.10E-04	1.10E-04	N/A	1.10E-03 (N)	No
	72-43-5	Methoxychlor			mg/l		0/6	9.50E-05 - 1.00E-04	1.00E-04	N/A	1.80E-02 (N)	No
	75-09-2	Methylene chloride			mg/l		0/6	5.00E-03 - 5.00E-03	5.00E-03	N/A	4.80E-03 (C)	Yes
	91-20-3	Naphthalene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	1.40E-04 (C)	Yes
	98-95-3	Nitrobenzene			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	3.40E-04 (N)	No
	55-63-0	Nitroglycerin			mg/l		0/6	1.90E-03 - 2.00E-03	2.00E-03	N/A	3.70E-04 (N)	Yes
	621-64-7	n-Nitroso-di-n-propylamine			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	9.60E-06 (C)	Yes
	95-48-7	o-Cresol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.80E-01 (N)	No
	95-47-6	o-Xylene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.40E-01 (N)	No
	106-47-8	p-Chloroaniline			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.20E-03 (C)	Yes
	59-50-7	p-Chloro-m-cresol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	N/A	NTX
	87-86-5	Pentachlorophenol			mg/l		0/6	5.00E-05 - 5.00E-05	5.00E-05	N/A	5.60E-04 (C)	No
	78-11-5	Pentaerythritol tetranitrate			mg/l		0/6	1.90E-03 - 2.00E-03	2.00E-03	N/A	N/A	NTX
	85-01-8	Phenanthrene (7)			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	1.10E-01 (N)	No
	108-95-2	Phenol			mg/l		0/6	4.90E-03 - 5.00E-03	5.00E-03	N/A	1.10E+00 (N)	No
	129-00-0	Pyrene			mg/l		0/6	9.80E-04 - 1.00E-03	1.00E-03	N/A	1.10E-01 (N)	No
	7782-49-2	Selenium			mg/l		0/6	4.00E-03 - 2.00E-02	2.00E-02	N/A	1.80E-02 (N)	Yes
	7440-22-4	Silver			mg/l		0/6	7.70E-04 - 7.70E-04	7.70E-04	N/A	1.80E-02 (N)	No
	100-42-5	Styrene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.60E-01 (N)	No
	479-45-8	Tetryl			mg/l		0/6	1.90E-04 - 2.00E-04	2.00E-04	N/A	1.50E-02 (N)	No
	7440-28-0	Thallium			mg/l		0/6	6.50E-03 - 6.50E-03	6.50E-03	N/A	2.40E-04 (N)	Yes
	108-88-3	Toluene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	2.30E-01 (N)	No
	8001-35-2	Toxaphene			mg/l		0/6	2.40E-03 - 2.50E-03	2.50E-03	N/A	6.10E-05 (C)	Yes
	156-60-5	trans-1,2-Dichloroethene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.10E-02 (N)	No
	10061-02-6	trans-1,3-Dichloropropene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	4.30E-04 (C)	Yes
	75-25-2	Tribromomethane			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	8.50E-03 (C)	No
	79-01-6	Trichloroethene			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.70E-03 (C)	No
	75-01-4	Vinyl Chloride			mg/l		0/6	1.00E-03 - 1.00E-03	1.00E-03	N/A	1.60E-05 (C)	Yes

Table E.1-9
Summary of Screening for Non-Detected Chemicals
Current/Future - Groundwater at SWMU 43

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value (2)	Screening Toxicity Value (3) (N/C)	Max ND greater than Screening Value? (Y/N)

(1) Maximum concentration used for screening.
(2) N/A - Refer to supporting information for background discussion.
Background values derived from site-specific statistical analysis. See text for supporting information.
(3) Screening level values for tap water from USEPA Regional Screening Level Table (September 2008) and are based on a risk level of 1.0E-06 and a hazard index of 0.1.
See text for derivation of Nutrient RDAs.
(4) The screening value for 1,4-dichlorobenzene was used.
(5) The screening value for dinitrotoluene mixture was used.
(6) The screening value for chlordane was used.
(7) The screening value for pyrene was used.
(8) The screening value for endosulfan was used.
(9) The screening value for endrin was used.
(10) The screening value for mercury, inorganic salts was used.

Definitions:
N/A = Not Applicable or Not Available
SQL = Sample Quantitation Limit
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Re
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic
RDA = Recommended Daily Allowance
NTX = No Toxicity Information

Table E.1-10
Medium-Specific Exposure Point Concentration Summary for SWMU 43 Surface Soil

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Surface Soil	2,3,7,8-TCDD-TE	mg/kg	3.65E-06	N/A	N/A	5.74E-06	5.74E-06	mg/kg	Max	Test (7)
	Benzo(a)pyrene	mg/kg	6.34E-02	Yes	6.27E-02 (N)	1.40E-01	6.27E-02	mg/kg	95% KM-t	Test (1)
	Aluminum	mg/kg	1.20E+04	No	1.32E+04 (N)	1.56E+04	1.32E+04	mg/kg	95% Student's-t	Test (4)
	Arsenic	mg/kg	3.79E+00	No	1.06E+01 (NP)	1.77E+01	1.06E+01	mg/kg	95% Cheby, Mean, Sd	Test (3)
	Cobalt	mg/kg	9.61E+00	No	1.06E+01 (N)	1.26E+01	1.06E+01	mg/kg	95% Student's-t	Test (4)
	Iron	mg/kg	1.78E+04	No	1.93E+04 (NP)	2.01E+04	1.93E+04	mg/kg	95% Student's-t	Test (3)
	Manganese	mg/kg	6.54E+02	No	8.96E+02 (L)	1.71E+03	8.96E+02	mg/kg	95% Modified-t	Test (5)
	Vanadium	mg/kg	3.20E+01	No	3.60E+01 (N)	4.24E+01	3.60E+01	mg/kg	95% Student's-t	Test (4)

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM-t (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

Table E.1-10
Medium-Specific Exposure Point Concentration Summary for SWMU 43 Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]

Table E.1-11
Medium-Specific Exposure Point Concentration Summary for SWMU 43 Total Soil

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Total Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Total Soil	2,3,7,8-TCDD-TE	mg/kg	4.04E-06	No	7.49E-06 (N)	1.07E-05	7.49E-06	mg/kg	95% Student's-t	Test (4)
	2,4,6-Trinitrotoluene[5]	mg/kg	6.37E+00	N/A	5.32E-01 (NP)	6.37E+00	5.32E-01	mg/kg	95% UCL-Bst	Test (8)
	2,4-Dinitrotoluene[5]	mg/kg	7.27E-01	N/A	1.58E-01 (NP)	7.27E-01	1.58E-01	mg/kg	95% UCL-Bst	Test (8)
	Aroclor 1016	mg/kg	2.37E-01	Yes	1.16E-01 (G)	6.94E-01	1.16E-01	mg/kg	95% KM-t	Test (1)
	Aroclor 1254	mg/kg	1.73E-01	Yes	9.07E-02 (G)	4.62E-01	9.07E-02	mg/kg	95% KM-t	Test (1)
	Benzo(a)pyrene	mg/kg	4.62E-02	Yes	3.68E-02 (L)	1.40E-01	3.68E-02	mg/kg	95% KM-% Btstrp	Test (1)
	Dibenzofuran[5]	mg/kg	1.05E-01	N/A	1.14E-01 (NP)	1.05E-01	1.05E-01	mg/kg	Max	Test (2)
	p-Chloro-m-cresol[5]	mg/kg	7.61E-02	N/A	1.14E-01 (NP)	7.61E-02	7.61E-02	mg/kg	Max	Test (2)
	Aluminum	mg/kg	1.10E+04	No	1.19E+04 (N)	1.56E+04	1.19E+04	mg/kg	95% Student's-t	Test (4)
	Arsenic	mg/kg	3.00E+00	No	5.53E+00 (NP)	1.77E+01	5.53E+00	mg/kg	95% Cheby, Mean, Sd	Test (3)
	Cobalt	mg/kg	9.53E+00	No	1.03E+01 (N)	1.65E+01	1.03E+01	mg/kg	95% Student's-t	Test (4)
	Iron	mg/kg	1.77E+04	No	1.87E+04 (NP)	2.17E+04	1.87E+04	mg/kg	95% Student's-t	Test (3)
	Manganese	mg/kg	5.08E+02	No	5.98E+02 (G)	1.71E+03	5.98E+02	mg/kg	95% Approx. Gamma	Test (6)
	Vanadium	mg/kg	2.98E+01	No	3.21E+01 (N)	4.24E+01	3.21E+01	mg/kg	95% Student's-t	Test (4)

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM-t (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

[5] Infrequent detection resulted in ProUCL modeling error for this constituent, therefore the distribution was assumed to be non-parametric and the UCL was determined using a non-ProUCL bootstrap method with random numbers for NDs (see text for details).

Table E.1-12
Medium-Specific Exposure Point Concentration Summary for SWMU 43 Surface Water

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No) [1]	95% UCL (Distribution) [2]	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic [3]	Rationale [4]
Surface Water	Arsenic	mg/l	9.57E-03	N/A	N/A	1.52E-02	1.52E-02	mg/l	Max	Test (7)
	Iron	mg/l	1.70E+01	N/A	N/A	3.23E+01	3.23E+01	mg/l	Max	Test (7)
	Manganese	mg/l	6.99E-01	N/A	N/A	1.30E+00	1.30E+00	mg/l	Max	Test (7)
	Sodium	mg/l	1.50E+01	N/A	N/A	2.08E+01	2.08E+01	mg/l	Max	Test (7)

Notes: N/A = Not applicable

[1] ProUCL software (version 4.0, USEPA, 2007) recommends use of Kaplan-Meier method if there are multiple detection limits.

[2] Statistical Distribution and 95% UCL as determined by ProUCL (unless otherwise noted): (G) the data were determined to follow gamma distribution; (L) the data were determined to follow lognormal distribution; (NP) the data were determined to be non-parametric; (N) the data were determined to be normally distributed.

[3] Statistic: Maximum Detected Value (Max); 95% KM Chebyshev (95% KM-Cheby); 97.5% KM Chebyshev (97.5% KM-Cheby); 99% KM Chebyshev (99% KM-Cheby); 95% KM Percentile Bootstrap (95% KM-% Btstrp); 95% KM-t (95% KM-t); 95% KM-BCA (95% KM-BCA); 95% H-UCL (95% H-UCL); 95% Chebyshev -Mean, SD- UCL (95% Cheby, Mean, SD); 97.5% Chebyshev -Mean, SD- UCL (97.5% Cheby, Mean, SD); 99% Chebyshev -Mean, SD- UCL (99% Cheby, Mean, SD); 95% UCL of Log-transformed Data (95% UCL-T) 95% Student's-t (95% Student's-t); 95% Modified-t (95% Modified-t); 95% UCL based on bootstrap statistic (95% UCL-Bst); 95% Approximate Gamma UCL (95% Approx. Gamma); 95% KM Chebyshev-MVUE (95% KM-Cheby-MVUE).

[4] Unless otherwise noted (see footnote 5), ProUCL EPC selection rationale based on, detection limit values, distribution, standard deviation, and sample size (see ProUCL output in appendix for further details):

Test (1): Kaplan-Meier method recommended by ProUCL due to multiple detection limits.
Test (2): The 95% UCL exceeds the maximum detected concentration, therefore, maximum concentration used for EPC.
Test (3): Shapiro-Wilk W test, Kolmogorov-Smirnov (K-S), and Anderson-Darling (A-D) tests, indicate data follow nonparametric distribution.
Test (4): Shapiro-Wilk W test indicates data are normally distributed.
Test (5): Shapiro-Wilk W test indicates data are log-normally distributed.
Test (6): Kolmogorov-Smirnov (K-S) and/or Anderson-Darling (A-D) tests indicate data follow gamma distribution.
Test (7): Sample size is less than or equal to 5, therefore, maximum concentration used for EPC.
Test (8): 95% UCL estimated by a non-Pro-UCL bootstrap method.

Table E.1-13
Medium-Specific Exposure Point Concentration Summary for SWMU 43 Groundwater

Scenario Timeframe: Current/Future
Medium: Water
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detects	Multiple Detection Limits? (Yes/No)	95% UCL (Distribution)	Maximum Concentration	Exposure Point Concentration			
							Value	Units	Statistic	Rationale
Groundwater	Tetrachloroethene	mg/l	1.31E-03	No	---	2.60E-03	2.60E-03	mg/l	Max	(1)
	Arsenic	mg/l	1.58E-02	No	---	3.49E-02	3.49E-02	mg/l	Max	(1)
	Cobalt	mg/l	3.13E-03	No	---	6.20E-03	6.20E-03	mg/l	Max	(1)
	Iron	mg/l	7.28E+00	No	---	1.18E+01	1.18E+01	mg/l	Max	(1)
	Manganese	mg/l	1.70E-01	No	---	8.35E-01	8.35E-01	mg/l	Max	(1)

Notes:

(1) The exposure point concentrations for groundwater exposures were based on the maximum values of the COPCs identified in the groundwater samples.

Table E.1-14
Values Used for Daily Intake Calculations- Current/Future Exposures to Surface Soil
SWMU 43

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Maintenance Worker	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	50	days/year	(1)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Maintenance Worker	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2002	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (3)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	50	days/year	(1)	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Best professional judgement. Based on site maintenance/inspection activities conducted 1day/week and assuming 2 weeks on vacation.
(2) Dermal absorption factors are presented in **Table E.2-25**.
(3) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, and forearms are exposed to surface soil.

USEPA, 1995: Assessing Dermal Exposure from Soil Hazardous Waste Management Division. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2003: Updated Dermal Exposure Assessment Guidance. Office of Superfund Programs, Region III, Philadelphia, PA.

Table E.1-15
Values Used for Daily Intake Calculations- Future Exposures to Total Soil
SWMU 43

Scenario Timeframe:	Future
Medium:	Total Soil
Exposure Medium:	Total Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Maintenance Worker	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	50	days/year	(1)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Excavation Worker	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	330	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	125	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	1	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	1	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a	
				ED_c	Exposure Duration	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	200	mg/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	6	years	USEPA, 1991a	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	15	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Maintenance Worker	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2001	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (3)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	50	days/year	(1)	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	

Table E.1-15
Values Used for Daily Intake Calculations- Future Exposures to Total Soil
SWMU 43

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal Absorption (con't)	Excavation Worker	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.3	mg/cm^2-day	USEPA, 2002	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (3)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	125	days/year	USEPA, 2002	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	1	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	1	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm^2-day	USEPA, 1997, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	5,700 (4)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	30	years	USEPA, 1991a	
				ED_c	Exposure Duration	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2004	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(2)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	2,800 (5)	cm^2	USEPA, 1997	
				EF	Exposure Frequency	350	days/year	USEPA, 1991a	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	6	years	USEPA, 1991a	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	15	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Best professional judgement. Based on site maintenance/inspection activities conducted 1day/week and assuming 2 weeks on vacation.
(2) Dermal absorption factors are presented in **Table E.2-25**.
(3) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, and forearms are exposed to soil.
(4) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, forearms, and lower legs are exposed to soil.
(5) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, forearms, lower legs, and feet are exposed to soil.

USEPA, 1991a: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01B.
USEPA, 1995: Assessing Dermal Exposure from Soil. Hazardous Waste Management Division. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA, 2003: Updated Dermal Exposure Assessment Guidance. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2004: Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final.

Table E.1-16
Values Used for Daily Intake Calculations- Current/Future Exposures to Surface Soil- Air
SWMU 43

Scenario Timeframe:	Current/Future
Medium:	Surface Soil
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (Particulates)	Maintenance Worker	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	50	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	25	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	
Inhalation (Volatiles)	Maintenance Worker	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	50	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	25	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	

(1) Chemical concentration for particulates in air (mg/m^3) = Concentration in soil (mg/kg) x 1/PEF (kg/m^3).
Chemical concentration of volatiles in air (mg/m^3) = Concentration in soil (mg/kg) x 1/VF (kg/m^3).

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-17
Values Used for Daily Intake Calculations- Future Exposures to Total Soil - Air
SWMU 43

Scenario Timeframe:	Future
Medium:	Total Soil
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (Particulates and Volatiles)	Maintenance Worker	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m^3) = $\frac{CA*FI*EF*ED}{AT}$
				FI	Fraction Inhaled	1	unitless	--	
				EF	Exposure Frequency	50	days/year	USEPA, 2002	
				ED	Exposure Duration	25	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	
	Excavation Worker	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m^3) = $\frac{CA*FI*EF*ED}{AT}$
				FI	Fraction Inhaled	1	unitless	--	
				EF	Exposure Frequency	125	days/year	USEPA, 2002	
				ED	Exposure Duration	1	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	365	days	Based on ED	
	Resident	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m^3) = $\frac{CA*FI*EF*ED}{AT}$
				FI	Fraction Inhaled	1	unitless	--	
				EF	Exposure Frequency	350	days/year	USEPA, 2002	
				ED_c	Exposure Duration (Cancer)	24	years	USEPA, 2002 (2)	
				ED	Exposure Duration (Noncancer)	30	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	Reference	
				AT-N	Averaging Time (Non-Cancer)	10,950	days	Based on ED (3)	
		Child	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m^3) = $\frac{CA*FI*EF*ED}{AT}$
				FI	Fraction Inhaled	1	unitless	--	
				EF	Exposure Frequency	350	days/year	USEPA, 2002	
				ED	Exposure Duration	6	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	--	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	Based on ED	

(1) Chemical concentration for particulates in air (mg/m^3) = Concentration in soil (mg/kg) x 1/PEF (kg/m^3).
Chemical concentration of volatiles in air (mg/m^3) = Concentration in soil (mg/kg) x 1/VF (kg/m^3).
(2) For carcinogens, risks for adults and children are averaged over a lifetime of 70 years (USEPA, 2002)
(3) AT for chronic exposures = 30 years x 365 days/year.

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-18
Values Used for Daily Intake Calculations - Future Exposures to Surface and Total Soil
SWMU 43

Scenario Timeframe:	Future
Medium:	Surface and Total Soil
Exposure Medium:	Surface and Total Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Worker (outdoor)	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				IR-S	Ingestion Rate of Soil	100	mg/day	USEPA, 2002	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	225	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	$\frac{CS \times IR\text{-}S \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Industrial Worker (outdoor)	Adult	SWMU 43	CS	Chemical Concentration in Soil	See site-specific EPC tables	mg/kg	See site-specific EPC tables	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm^2-day	USEPA, 1997, 2002	Internal (Lifetime) Average Daily Dose
				DABS	Dermal Absorption Factor (Solid)	(1)	--	USEPA, 1995, 2003	$[(L)ADD_{int}]$ (mg/kg-day) =
				SA	Skin Surface Area Available for Contact	3,300 (2)	cm^2	USEPA, 1997, 2004	
				EF	Exposure Frequency	225	days/year	USEPA, 2002	$\frac{CS \times SSAF \times DABS \times SA \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^6$	kg/mg	---	
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Dermal absorption factors are presented in **Table E.2-25.**
(2) Value derived from data presented in USEPA (1997), averaging across gender and age. It is assumed that head, hands, and forearms are exposed to surface soil.

USEPA, 1995: Assessing Dermal Exposure from Soil Hazardous Waste Management Division. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
USEPA, 2003: Updated Dermal Exposure Assessment Guidance. Office of Superfund Programs, Region III, Philadelphia, PA.
USEPA, 2004: Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final.

Table E.1-19
Values Used for Daily Intake Calculations - Future Exposures to Surface and Total Soil - Air
SWMU 43

Scenario Timeframe:	Future
Medium:	Surface and Total Soil
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation (Particulates and Volatiles)	Industrial Worker (Outdoor)	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	Intake concentration (mg/m3) = $\frac{CA*FI*EF*ED}{AT}$
				FI	Fraction Inhaled	1	unitless	--	
				EF	Exposure Frequency	225	days/year	USEPA, 2002	
				ED	Exposure Duration	25	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	

(1) Chemical concentration for particulates in air (mg/m^3) = Concentration in soil (mg/kg) x 1/PEF (kg/m^3).
Chemical concentration of volatiles in air (mg/m^3) = Concentration in soil (mg/kg) x 1/VF (kg/m^3).

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-20
Values Used for Daily Intake Calculations - Current/Future Exposures to Groundwater, Inhalation
SWMU 43

Scenario Timeframe:	Current/Future
Medium:	Groundwater
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Maintenance Worker	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1	unitless	--	Intake concentration (mg/m^3) =
				EF	Exposure Frequency	50	days/year	USEPA, 2002	$\frac{CA*FI*EF*ED}{AT}$
				ED	Exposure Duration	25	years	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	

(1) Ambient air concentrations are modeled by a volatilization model (ASTM, 1995).

USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

Table E.1-21
Values Used for Daily Intake Calculations - Future Exposures to Groundwater
SWMU 43

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Industrial Worker (Outdoor and Indoor)	Adult	SWMU 43	CW	Chemical Concentration in Groundwater	See site-specific EPC tables	µg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Groundwater	1	liters/day	USEPA, 1991a	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	225	days/year	USEPA, 2002	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	25	years	USEPA, 2002	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CW \times IR\text{-}W \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 2002	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	25	years	USEPA, 2002	
				CF2	Conversion Factor 2	365	days/year	---	
	Resident (On-site and Off-site)	Adult	SWMU 43	CW	Chemical Concentration in Groundwater	See site-specific EPC tables	µg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Groundwater	2	liters/day	USEPA, 1991a, 2003	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a, 2003	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CW \times IR\text{-}W \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a, 2003	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	SWMU 43	CW	Chemical Concentration in Groundwater	See site-specific EPC tables	µg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Groundwater	1	liters/day	USEPA, 2003	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	6	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CW \times IR\text{-}W \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	15	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a, 2003	
				CF2	Conversion Factor 2	365	days/year	---	
Dermal Absorption	Resident (On-site and Off-site)	Adult	SWMU 43	DA	Dose Absorbed per Unit Area per Event	--	mg/cm^2-event	(1)	
				SA	Skin Surface Area Available for Contact	18,000	cm^2	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	USEPA, 2004	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	
				ED	Exposure Duration	30	years	USEPA, 1991a, 2003	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b, 2003	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT \times CF1}$
				BW	Body Weight	70	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	365	days/year	---	
		Child	SWMU 43	DA	Dose Absorbed per Unit Area per Event	--	mg/cm^2-event	(2)	
				SA	Skin Surface Area Available for Contact	6,600	cm^2	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	USEPA, 2004	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	
				ED	Exposure Duration	6	years	USEPA, 1991a, 2003	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT \times CF1}$
				BW	Body Weight	15	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	365	days/year	---	

Table E.1-21
Values Used for Daily Intake Calculations - Future Exposures to Groundwater
SWMU 43

(1) Value is derived using the worksheets for calculating dermal exposure to chemicals in aqueous media (USEPA, 2001) and assuming an exposure time of 30 minutes (ET = 0.50 hr; USEPA, 2004).

(2) Value is derived using the worksheets for calculating dermal exposure to chemicals in aqueous media (USEPA, 2001) and assuming an exposure time of 60 minutes (ET = 1.0 hr; USEPA, 2004).

USEPA, 1991a: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01B.
USEPA, 2001: Worksheet to calculate Dermal Absorption of Organic Chemicals from Aqueous Media and Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; versions dated April, 2001. (http://www.epa.gov/oswer/riskassessment/ragse/index.htm.)
USEPA, 2003: EPA Region 3 Risk-Based Concentration Table: Technical Background Information, Region 3, Philadelphia, PA.
USEPA, 2004: Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). Final.
USEPA, 2005: EPA Region 3 web site - http://www.epa.gov/reg3hwmd/risk/human/index.htm.

Table E.1-22
Values Used for Daily Intake Calculations - Future Exposures to Groundwater, Inhalation
SWMU 43

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Industrial Worker (Outdoor and Indoor)	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1, 2)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	225	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	25	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	9,125	days	Based on ED	
	Excavation Worker	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(3)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	125	days/year	(4)	Intake concentration (mg/m^3) =
				ED	Exposure Duration	1	years	(4)	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	365	days	Based on ED	
	Resident (On-site and Off-site)	Adult	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(2, 5)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	350	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration (Non-Cancer)	30	years	USEPA, 2002	CA*FI*EF*ED
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 2002	AT
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	
				AT-N	Averaging Time (Non-Cancer)	10,950	days	Based on ED	
		Child	SWMU 43	CA	Chemical Concentration in Air	Chemical Specific	mg/m^3	(1)	
				FI	Fraction Inhaled	1.00	unitless	--	
				EF	Exposure Frequency	350	days/year	USEPA, 2002	Intake concentration (mg/m^3) =
				ED	Exposure Duration	6	years	USEPA, 2002	CA*FI*EF*ED
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 2002	AT
				AT-N	Averaging Time (Non-Cancer)	2,190	days	Based on ED	

(1) Ambient air concentrations were modeled by a volatilization model (ASTM, 1995
(2) Indoor air concentrations were modeled using the Johnson and Ettinger (1991) model.
(3) Trench air concentrations were modeled by the Trench Model (VDEQ, 2007
(4) The excavation scenario is based on a worker working on an excavation project for 125 days/year for 1 year. The excavation worker is assumed to be exposed to groundwater for 4 hrs a day (VDEQ, 200
(5) Shower room air concentrations were modeled using the Foster and Chrostowski (1987) Shower Inhalation Model.

American Society for Testing and Materials (ASTM). 1995. Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites. ASTM Committee E-50 on Environmental Assessment, Report No. E1739-95. West Conshohocken, Pennsylva
Foster, S.A. and P.C. Chrostowski. 1987. Inhalation Exposures to Volatile Organic Contaminants in the Shower. In the proceedings of the 80th Annual Meeting of the Air Pollution Control Association (APCA), June 21-26, New Yo
Johnson, P.C. and Ettinger, R.A. 1991: Heuristic Model for Predicting the Intrusion Rate of Contaminant Vapors into Buildings. Environmental Science & Technology. 25:1445-145
USEPA, 2002: Supplemental Guidance for Developing Soil Screening for Superfund Sites. OSWER 9355.4-24.
VDEQ, 2007: Voluntary Remediation Program Risk Assessment Guidance, Virginia Department of Environmental Qualit

Table E.1-22
Values Used for Daily Intake Calculations - Future Exposures to Groundwater, Inhalation
SWMU 43

Table E.1-23
Values Used for Daily Intake Calculations
Future Exposures to Home Grown Produce for Residents
SWMU 43

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Home Grown Produce

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident (On-site and Off-site)	Adult	SWMU 43	CV	Chemical Concentration in Produce	(1)	mg/kg	(1)	
				ABS	Chemical-Specific	(1)	unitless	(1)	
				IR-P	Ingestion Rate of Produce	18.6 (3)	g/d	USEPA, 1997	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a, 2003	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CV \times ABS \times IR\text{-}P \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	70	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a, 2003	
				CF2	Conversion Factor 2	365	days/year	---	
		Child	SWMU 43	CV	Chemical Concentration in Produce	(1)	mg/kg	(1)	
				ABS	Chemical-Specific	(1)	unitless	(2)	
				IR-P	Ingestion Rate of Produce	18.6 (3)	g/d	USEPA, 1997	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	350	days/year	USEPA, 1991a, 2003	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	6	years	USEPA, 1991a, 2003	
				CF1	Conversion Factor 1	$1/10^3$	mg/µg	---	$\frac{CV \times ABS \times IR\text{-}P \times EF \times ED \times CF1}{BW \times AT \times CF2}$
				BW	Body Weight	15	kg	USEPA, 1991a, 2003	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a, 2003	
				AT-N	Averaging Time (Non-Cancer)	6	years	USEPA, 1991a, 2003	
				CF2	Conversion Factor 2	365	days/year	---	

(1) Concentration of COPCs in homegrown vegetables/fruits were modeled as shown in**Table E.2-37**.
(2) Value includes 7.5 g/d of vegetables and 11.1 g/d of fruit. The ingestion rate is based on 95th percentile values for home grown food intake (Table 1-2; USEPA, 1997).

USEPA, 1991a: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01B.
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa.
USEPA 2003: EPA Region 3 Risk-Based Concentration Table: Technical Background Information, Region 3, Philadelphia, PA.

Table E.1-24
Values Used for Daily Intake Calculations - Future Exposures to Surface Water

Scenario Timeframe:	Future
Medium:	Surface Water
Exposure Medium:	Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	SWMU 43 (Swimming)	CW	Chemical Concentration in Surface Water	See site-specific EPC tables	mg/l	See site-specific EPC tables	
				IR-W	Ingestion Rate of Surface Water	0.05	liters/day	(1)	Potential (Lifetime) Average Daily Dose
				EF	Exposure Frequency	40	days/year	(2)	$[(L)ADD_{pot}]$ (mg/kg-day) =
				ED	Exposure Duration	30	years	USEPA, 1991a	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	
				BW	Body Weight	70	kg	USEPA, 1991a	$\frac{CW \times IR\text{-}W \times EF \times ED}{BW \times AT \times CF1}$
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF1	Conversion Factor 1	365	days/year	---	
Dermal Absorption	Recreational User	Adult	SWMU 43 (Swimming)	DA	Dose Absorbed Per Unit Area per Event	(3)	mg/cm^2-event	USEPA, 2004	
				SA	Skin Surface Area Available for Contact	18,000	cm^2	USEPA, 2004	Internal (Lifetime) Average Daily Dose
				EV	Event Frequency	1	events/day	(2)	$[(L)ADD_{int}]$ (mg/kg-day) =
				EF	Exposure Frequency	40	days/year	(2)	
				ED	Exposure Duration	30	years	USEPA, 1991a	
				EDc	Exposure Duration (Cancer)	24	years	USEPA, 1991b	$\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT \times CF1}$
				BW	Body Weight	70	kg	USEPA, 1991a	
				AT-C	Averaging Time (Cancer)	70	years	USEPA, 1991a	
				AT-N	Averaging Time (Non-Cancer)	30	years	USEPA, 1991a	
				CF1	Conversion Factor 1	365	days/year	---	

(1) Ingestion rate is based on 0.05 liters/hour (USEPA, 1989) for an exposure time (ET) of 1 hour/day, an average estimate for time spent swimming (USEPA, 1997).
(2) The exposure frequency and event frequency were based on recreational users swimming at New River approximately 2 days/week during the warmer months (i.e., May through September). Best professional judgement.
(3) Dermal absorption factors and DA events are presented in **Table E.2-31**.

USEPA, 1989: Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), Interim Final. EPA/540/1-89/00
USEPA, 1991a: Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-0
USEPA, 1991b: Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part B, Development of Risk-Based Preliminary Remediation Goals). OSWER 9285.7-01
USEPA, 1997: Exposure Factors Handbook, Volume I. EPA/600/P-95/002Fa
USEPA, 2004: Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) EPA/540/R/99/0

Table E.1-25
Dermal Absorption Fractions and Physical/Chemical Properties for Soil - SWMU 43
Radford Army Ammunition Plant, Radford, Virginia

Analyte	CAS NO.	ABS_d [a] (m^3/kg)	D_i [b] (cm^2/s)	D_w [b] (cm^2/s)	K_{oc} [b] (cm^3/g)	K_d [c] (cm^3/g)	H [b] (unitless)	D_A (cm^2/s)
Aluminum	7429-90-5	1.0E-02	NA	NA	NA	NA	NA	NA
Arsenic	7440-38-2	3.0E-02	NA	NA	NA	NA	NA	NA
Cobalt	7440-48-4	1.0E-02	NA	NA	NA	NA	NA	NA
Iron	7439-89-6	1.0E-02	NA	NA	NA	NA	NA	NA
Manganese	7439-96-5	1.0E-02	NA	NA	NA	NA	NA	NA
Vanadium	7440-62-2	1.0E-02	NA	NA	NA	NA	NA	NA
Aroclor 1016	12674-11-2	1.4E-01	NA	NA	2.71E+04	NA	8.20E-03	NA
Aroclor 1254	11097-69-1	1.4E-01	NA	NA	7.56E+04	NA	1.20E-02	NA
Benzo(a)pyrene	50-32-8	1.3E-01	NA	NA	7.87E+05	NA	1.90E-05	NA
p-chloro-m-cresol	59-50-7	1.0E-01	NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	1.3E-01	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene [d]	121-14-2	1.02E-01	5.90E-02	6.90E-06	3.71E+02	NA	1.60E-05	NA
2,4,6-Trinitrotoluene	118-96-7	3.2E-02	NA	NA	1.83E+03	NA	1.90E-05	NA
TCDD TE	NA	3.0E-02	NA	NA	1.46E+05	NA	2.00E-03	NA

CAS No. = Chemical Abstract Service No.
ABS_d = Dermal Absorption Factor
D_A = Apparent Diffusivity
m^3/kg = cubic meters per kilogram
cm^2/s = centimeter squared per second
NA = Not Applicable

[a] ABS_d values are taken from Exhibit 3-4, Risk Assessment Guidance for Superfund (RAGS), Volume 1, Human Health Evaluation and Manual, Part E; Supplemental Guidance for Dermal Risk Assessment, July 2004, and Region III Technical Guidance, Assessing Dermal Exposure in Soil, December 1995, unless otherwise noted.

[b] Values for derivation of VF are taken from the USEPA Regional Screening Levels Table, Physical-Chemical Parameters (dated September 12, 2008).

[c] Calculated value: $K_d = K_{oc} \times f_{oc}$

Table E.1-26
PEF Calculation - Commercial/Industrial Worker
Radford Army Ammunition Plant - SWMU 43

Site name: Radford SWMU 43

Calculation of Site-Specific Commercial/Industrial Worker PEF:
This value can be applied to workers as well as residents unless site area is greater than 0.5 acres.
Equation 4-5 from USEPA, 2002

$$PEF = \frac{Q}{C_{wind}} \; x \; \frac{3{,}600 \text{ sec/hr}}{0.036 \; x \; (1-V) \; x \; (U_m/U_t)^3 \; x \; F(x)}$$

Variable	Value	Units	Description
Q/C_{wind} =	42.63	g/m^2-s per kg/m^3	Calculated below
V =	**0.5**	unitless	fraction of vegetative cover
U_m =	**3.5**	m/s	mean annual windspeed
U_t =	**11.32**	m/s	equivalent threshold value of windspeed at 7 m
F(x) =	**0.194**	unitless	function dependent on U_m/U_t derived using Cowherd et al., 1985

Q/C_{wind} can be used for any source size from 0.5 acres to 500 acres using the equation and look up tables in Appendix D, Exhibit D-2. Source of 0.5 acres is the size of a typical exposure unit.

PEF = 1.49E+09 m^3/kg

From Exhibit D-2 from USEPA 2002:

$$Q/C_{wind} = A \; x \; \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

Variable	Value	Units	Description
A =	9.9253		Site-specific value
B =	18.6636		Site-specific value
C =	211.8862		Site-specific value
A_s =	**2.977**	acres	**Contaminated site area**

Q/C_{wind} = 42.63 g/m^2-s/kg/m^3

Table E.1-27
PEF Calculation - Construction Worker
Radford Army Ammunition Plant - SWMU 43

Site Name: **Radford SWMU 43**

Calculation of Site-Specific Construction Worker PEF:

$$PEF_{sc} = Q / C_{sr} \; x \; \frac{1}{F_D} \; x \left[\frac{T \; x \; A_R}{556 \; x \; (W/3)^{0.4} \; x \; \frac{365 \; day/yr - p)}{365 \; day/yr} \; x \; \sum VKT} \right]$$

Variable	Value	Units	Description
Q/C_{sr} =	**17.48**	g/m^2-s per kg/m^3	**calculated below**
Duration of construction =	**6**	months	
	25	weeks	
	125	days	assuming 5 days per week
t_c =	1,000	hours	assuming 8 hour days
	60,000	min	
T =	3,600,000	sec	
F_D =	0.185		dispersion correction factor
Surface area of site =	**2.977**	acres	**Site-specific**
Surface area of site =	12,047.9	m^2	
Length of side of area configured as a square =	109.8	m	equal to the square root of the area of the site
L_R =	360	ft	side of area configured as a square
W_R =	20	ft	width of roadway segment - default
A_R =	669.1	m^2	surface area of contaminated roadway segment
W =	**6**	tons	mean vehicle weight - default, assuming 2, 2-ton cars and 2, 10-ton trucks
p =	**119**	days/yr	Number of days/yr with at least 0.01 inches of precipitation - value for Radford Area from Exhibit 5-1
Number of vehicles on site	**2**	cars	value based on assumptions for W
	2	truck	
VKT =	27.4	km	sum of vehicle km traveled during exposure duration - assuming each vehicles travels road once per day and 5 days/week for total time

Variables in **BOLD** are site-specific and should be entered for each site

PEF_{sc} = 1.68E+07 m^3/kg

$$Q / C_{sr} = A \; x \; \exp \left[\frac{(\ln A_s - B)^2}{C} \right]$$

Variable	Value	Units	Description
A_s =	**2.977**	acres	Site specific area
A =	12.9351		default constant
B =	5.7383		default constant
C =	71.7711		default constant

Q/C_{sr} = 17.48 g/m^2-s per kg/m^3

A_s is site-specific and a value should be entered for each site

Table E.1-28
PEF Calculation - Residents
Radford Army Ammunition Plant - SWMU 43

Site name: Radford SWMU 43

Calculation of Site-Specific Residential PEF:
A separate PEF for residents must be calculated if the site in question is greater than 0.5 acres in size. This residential PEF is based on a 0.5 acre residential site.
Equation 4-5 from USEPA, 2002

$$PEF = \frac{Q}{C_{wind}} \; x \; \frac{3{,}600 \; sec/hr}{0.036 \; x \; (1-V) \; x \; (U_m/U_t)^3 \; x \; F(x)}$$

Variable	Value	Units	Description
Q/C_{wind} =	58.17	g/m^2-s per kg/m^3	Calculated below
V =	**0.5**	unitless	fraction of vegetative cover
U_m =	**3.5**	m/s	mean annual windspeed
U_t =	**11.32**	m/s	equivalent threshold value of windspeed at 7 m
F(x) =	**0.194**	unitless	function dependent on U_m/U_t derived using Cowherd et al., 1985

Q/C_{wind} can be used for any source size from 0.5 acres to 500 acres using the equation and look up tables in Appendix D, Exhibit D-2. Source of 0.5 acres is the size of a typical exposure unit.

PEF_R = 2.03E+09 m^3/kg

From Exhibit D-2 from USEPA 2002:

$$Q/C_{wind} = A \; x \; \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

Variable	Value	Units	Description
A =	9.9253		Site-specific value
B =	18.6636		Site-specific value
C =	211.8862		Site-specific value
A_s =	0.5	acres	**Residential exposure**

Q/C_{wind} = 58.17 g/m^2-s/kg/m^3

Table E.1-29
Parameter Values Used for Groundwater - SWMU 43
Adult Resident

Dermal Absorption - Chemicals of Potential Concern (COPC) in Groundwater

COPC	CAS No.	FA	Kp (cm/hr)	tau_{event} (hr)	B	t* (hr)	DA event (mg/cm^2-event)	COPC Assessed?
Organics								
Tetrachloroethene (1)	127-18-4	1.0	3.3E-02	0.91	0.20	2.18	1.60E-07	Yes
Inorganics								
Arsenic	7440-38-2		1.0E-03					No
Cobalt (2)	7440-48-4		1.0E-03					No
Iron (2)	7439-89-6		1.0E-03					No
Manganese	7439-96-5		1.0E-03					No

(1) COPC is a halogenated compound. The K_p correlation based on molecular weight of the hydrocarbon will tend to under estimate the permeability coefficient (USEPA, 2004).

(2) COPC was added to the USEPA spreadsheet. The default value of 1.0E-03 cm/hr was assumed for the Kp value.

USEPA, 2001. Organic parameter values are taken from Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media and Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; versions dated April, 2001. (http://ww.epa.gov/oswer/riskassessment/ragse/index.htm)

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.

Table E.1-30
Parameter Values Used for Groundwater - SWMU 43
Child Resident

Dermal Absorption - Chemicals of Potential Concern (COPC) in Groundwater

COPC	CAS No.	FA	Kp (cm/hr)	tau_{event} (hr)	B	t* (hr)	DA event (mg/cm^2-event)	COPC Assessed?
Organics								
Tetrachloroethene (1)	127-18-4	1.0	3.3E-02	0.91	0.20	2.18	2.30E-07	Yes
Inorganics								
Arsenic	7440-38-2		1.0E-03					No
Cobalt (2)	7440-48-4		1.0E-03					No
Iron (2)	7439-89-6		1.0E-03					No
Manganese	7439-96-5		1.0E-03					No

(1) COPC is a halogenated compound. The K_p correlation based on molecular weight of the hydrocarbon will tend to under estimate the permeability coefficient (USEPA, 2004).

(2) COPC was added to the USEPA spreadsheet. The default value of 1.0E-03 cm/hr was assumed for the Kp value.

USEPA, 2001. Organic parameter values are taken from Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media and Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; versions dated April, 2001. (http://ww.epa.gov/oswer/riskassessment/ragse/index.htm)

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.

Table E.1-31
Parameter Values Used for Surface Water - SWMU 43
Off-site Adult Recreational User

Dermal Absorption - Chemicals of Potential Concern (COPC) in Groundwater/Surface Water (1)

COPC	CAS No.	FA	Kp (cm/hr)	tau_{event} (hr)	B	t* (hr)	DA event (mg/cm^2/event)	COPC Assessed? (2)
Organics								
Tetrachloroethene	127-18-4	1.0	3.3E-02	0.91	0.20	2.18	2.30E-07	Yes
Inorganics								
Arsenic	7440-38-2		1.0E-03				3.50E-08	Yes
Cobalt (3)	7440-48-4		1.0E-03				6.20E-09	Yes
Iron (3)	7439-89-6		1.0E-03				3.20E-05	Yes
Manganese	7439-96-5		1.0E-03				1.30E-06	Yes
Sodium (3)	7440-23-5		1.0E-03				2.10E-05	Yes

(1) To evaluate potential future discharge of groundwater and surface water from the springs/seeps into the New River, the groundwater and surface water data sets were combined.

(2) All chemicals were assessed because dermal exposure is not compared with drinking water exposure. There is no ingestion pathway for these receptors.

(3) COPC was added to the USEPA spreadsheet. The default value of 1.0E-03 cm/hr was assumed for the Kp value.

USEPA, 2001. Inorganic parameter values are taken from Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media; version dated April, 2001. (http://ww.epa.gov/oswer/riskassessment/ragse/index.htm)

USEPA, 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final.

Table E.1-32
Calculation of Ambient Air Concentration from Groundwater
Radford Army Ammunition Plant - SWMU 43

$$VF_{wamb} = (H\ /1 + (U_a d_{air} L_{GW}\ / WD_{effws}))\ X\ 10^3\ L/m^3$$

Where:

VF_{wamb} (mg/m^3 air per mg/L water) =	calculated	Volatilization factor
H (cm^3-water per cm^3-air) =	chemical-specific	Henry's Law Constant
U_a (cm/sec) =	353	Wind speed above ground surface (NOAA, 2007)
d_{air} (cm) =	200	Ambient air mixing zone height (ASTM, 1995)
L_{GW} (cm) =	655	Depth to groundwater (site specific; average depth measured in August 2007)
W (cm) =	6,858	Width of source area parallel to wind flow direction (site-specific; measured from GIS mapping)
D_{effws} (cm^2/sec) =	calculated	Effective diffusion coefficient between groundwater and soil surface

$$D_{effws} = \left(h_{cap} + h_v\right)\left[\frac{h_{cap}}{D_{effcap}} + \frac{h_v}{D_{effs}}\right]^{-1}$$

Where:

D_{effws} (cm^2/sec) =	calculated	Effective diffusion coefficient between groundwater and soil surface
h_{cap} (cm) =	30.48	Thickness of capillary fringe (site specific; based on field investigation, August 2007)
h_v (cm) =	152.4	Thickness of vadose zone (site specific; based on field investigation, August 2007)
D_{effcap} (cm^2/sec) =	calculated	Effective diffusion coefficient through capillary fringe
D_{effs} (cm^2/sec) =	calculated	Effective diffusion coefficient in soil based on vapor phase concentration

Table E.1-32
Calculation of Ambient Air Concentration from Groundwater
Radford Army Ammunition Plant - SWMU 43

$$D_{effcap} = D^{air} \frac{\theta_{acap}^{3.33}}{\theta_T^2} + D^{wat} \frac{1}{H} \frac{\theta_{wcap}^{3.33}}{\theta_T^2}$$

Where:

D_{effcap} (cm^2/sec) =	calculated	Effective diffusion coefficient through capillary fringe
D_{air} (cm^2/sec) =	chemical-specific	Diffusion coefficient in air
D_{wat} (cm^2/sec) =	chemical-specific	Diffusion coefficient in water
θ_{acap} (cm^3-air/cm^3-soil)	0.0489	Volumetric air content in capillary fringe soils
θ_{wcap} (cm^3-water/cm^3-soil)	0.440	Volumetric water content in capillary fringe soils
θ_T (cm^3/cm^3-soil)	0.489	Total soil porosity

$$D_{effs} = D^{air} \frac{\theta_{as}^{3.33}}{\theta_T^2} + D^{wat} \frac{1}{H} \frac{\theta_{ws}^{3.33}}{\theta_T^2}$$

Where:

D_{effs} (cm^2/sec) =	calculated	Effective diffusion coefficient in soil based on vapor phase concentration
D_{air} (cm^2/sec) =	chemical-specific	Diffusion coefficient in air
D_{wat} (cm^2/sec) =	chemical-specific	Diffusion coefficient in water
θ_{as} (cm^3-air/cm^3-soil)	0.322	Volumetric air content in vadose zone soils
θ_{ws} (cm^3-water/cm^3-soil)	0.167	Volumetric water content in vadose zone soils
H (cm^3-water per cm^3-air) =	chemical-specific	Henry's Law Constant
θ_T (cm^3/cm^3-soil)	0.489	Total soil porosity

Table E.1-32
Calculation of Ambient Air Concentration from Groundwater
Radford Army Ammunition Plant - SWMU 43

The concentration of the COPC in the ambient air is calculated using the following equation:

$$C_{air} = C_{GW} \times VF_{wamb}$$

Where:

C_{air} (mg/m^3) =	calculated	Concentration of chemical in ambient air
C_{GW} (mg/L) =	site-specific	Maximum detected concentration of chemical in groundwater
VF_{wamb} (mg/m^3 air per mg/L water) =	calculated	Volatilization factor

References:

American Society for Testing and Materials (ASTM), 1995. Standard Guide for Risk-Based Corrective Action at Petroleum Release Sites. ASTM Committee E-50 on Environmental Assessment. Report No. E1739-95. West Conshohocken, Pennsylvania.

National Oceanic and Atmospheric Administration (NOAA), 2007. Comprehensive Climatic Data for the United States through 2006. National Climatic Data Center, Asheville, North Carolina.

Table E.1-32b
Calculation of Ambient Air Concentration from Groundwater - SWMU 43

Spreadsheet to calculate outdoor air vapor concentration from groundwater, based on ASTM method.

Constituent	Henry's Law Const.	Wind Speed	Mixing Zone Height	Thickness of Capillary Fringe	Thickness of Vadose Zone	Depth to Groundwater	Effec. Diffus. Coeff. from GW to Soil	Width of Source Area Parallel to Wind	Effec. Diffus. Coeff. in Cap-illary Fringe	Effec. Diffus. Coeff. in Soil	Total Soil Porosity	Vol. Air Cont in Capillary Fringe Soil	Vol. Water Cont. in Capillary Fringe Soil	Vol. Air Cont. in Vadose Zone Soil	Vol. H2O Cont. in Vadose Zone Soil	Diffusion Coeff. in Air	Diffusion Coeff. in H2O	**OUTPUT** Volatilization Factor
symbol:	(H)	(Uair)	(ht)	(hcap)	(hv)	(Lgw)	(DwsEff)	(W)	(DcapEff)	(DsEff)	(0t)	(0acap)	(0wcap)	(0as)	(0ws)	(Dair)	(Dwat)	(VFamb)
units:	cm3-H2O / cm3-Air	(cm/sec)	(cm)	(cm)	(cm)	(cm)	(cm^2/sec)	(cm)	(cm^2/sec)	(cm^2/sec)	cm3 / cm3-soil	cm3-Air / cm3-soil	cm3-H2O / cm3-soil	cm3-Air / cm3-soil	cm3-H2O / cm3-soil	cm2/sec	cm2/sec	mg/m3-Air / mg/L-H2O
Tetrachloroethene	7.54E-01	353	200	30.48	152.4	655	9.47E-05	6,858	1.60E-05	0.0069	0.489	0.0489	0.440	0.322	0.167	7.20E-02	8.20E-06	1.06E-05

Source: ASTM, 1994

Constituents	Groundwater Concentration (mg/L)	VFamb	**"Ca"** Concentration (mg/m^3)
Tetrachloroethene	2.60E-03	#######	2.75E-08

Table E.1-33
Groundwater Inhalation Indoor Air Concentration Summary - SWMU 43
Radford Army Ammunition Plant, Radford, Virginia

Chemicals of Potential Concern in Groundwater and Indoor Air

Analyte	CAS No.	Cw ug/L	Ca mg/m^3
Organics			
Chloroform	67-66-3		
Tetrachloroethene	127-18-4	2.60E+00	9.44E-05

Notes:
Indoor air concentrations modeled using Johnson and Ettinger Model
Model output provided in **Appendix E.6**

Non-default model inputs (based on site-specific data):

Average soil temperature (T_s) is set at 62.5°F or 16.96°C, based on the average temperature of soil for the vicinity of SWMU 43.

Depth below grade to bottom of enclosed space floor (L_F) is set at the default value of 200 cm because building construction is likely to include a basement

Depth below grade to water table (L_{wt}) is set at 655 cm (21.5 ft), based on the average depth of groundwater measured in the area of SWMU 43 that is most suitable for construction.

The soil type in the vadose zone was modeled as silt (SI). This is based on the range of soil types found at SWMU 43.

The thickness and properties of the capillary zone are based on values in the "lookup" table for the SI soil type.

The vadose zone soil total porosity is set at 0.489, based on the "lookup" soil parameter in the model for silt.

The vadose zone soil water-filled porosity is set at 0.167 cm^3/cm^3, based on the "lookup" soil parameter in the model for silt.

The vadose zone soil dry bulk density (pb) is set at the "lookup" soil parameter of 1.35 g/cm^3 for silt in the model.

The calculated concentration of each COPC in building air ($C_{building}$) served as the EPC in the intake calculations for inhalation.

Table E.1-34
Groundwater Inhalation -Excavation Worker - Trench Gas Concentration Calculations - SWMU 43

Analyte	CAS No.	C_w ug/L	H_i atm-m^3/mole	D_{air} cm^2/sec	VF L/min^3	C_a mg/m^3
Tetrachloroethene	127-18-4	#######	1.84E-02	7.20E-02	1.06E-01	2.75E-04

NA = Not Applicable.
NV = No Value.

Exposure point calculations calculated using trench model for construction worker/ utility worker in a trench where average depth to groundwater is greater than 15 feet (VDEQ,2007).

$$VF = \frac{(H_i \times D_{air} \times AC_{vad}^{3.33} \times A \times F \times 10^{-3} \times 10^{4} \times 3600)}{(R \times T \times L_d \times ACH \times V \times Por_{vad}^{2})}$$

where:

Parameters	Value	
H_i (atm-m^3/mol) =	chemical-specific	Henry's Law constant for contaminant
D_{air} (cm^2/s) =	chemical-specific	Diffusion coefficient in air
AC_{vad} (cm^3/cm^3) =	0.322	Volumetric air content in vadose zone soil
A (m^2) =	2.22	Area of trench (default)
F (unitless) =	1	Fraction of floor through which contaminant can enter
R (atm-m^3/mole-°K) =	$8.2x10^{-5}$	ideal gas constant
T (°K) =	290	Average system absolute temperature
L_d (cm) =	198	Distance between trench bottom and groundwater (site-specific)
ACH (h^{-1}) =	2	Air changes per hour
V (m^3) =	10.14	Volume of trench (length x width x depth)
Por_{vad} (cm^3/cm^3) =	0.489	Total soil porosity in vadose zone (default)
Conversion Factor (L/cm^3) =	0.001	
Conversion Factor (cm^2/m^2) =	10,000	
Conversion Factor (s/hr) =	3,600	

$$C_a = C_w \times VF \times 0.001$$

C_a (µg/m^3) =	chemical-specific	Concentration in trench air
C_w (µg/L) =	chemical-specific	Concentration in groundwater
VF (L/min^3) =	chemical-specific	Volatilization factor
Conversion Factor (mg/µg) =	0.001	

Table E.1-35
Groundwater Inhalation Shower Air Concentration Calculations - SWMU 43

Analyte	CAS No.	Cw mg/L	MW g/mole	H atm-m^3/mole	k_l cm/hr	k_g cm/hr	K_L cm/hr	K_{aL} cm/hr	C_{wd} mg/L	S mg/m^3-min	Ca mg/m^3
Organics											
Tetrachloroethene	127-18-4	2.60E-03	1.66E+02	1.84E-02	1.03E+01	9.88E+02	1.02E+01	1.37E+01	2.81E-04	2.34E-04	3.67E-03

NA = Not Applicable.

Variable	Equations:	
k_l (cm/hr) =	$20 \times (44/MW)^{0.5}$	Liquid-film transfer coefficient
k_g (cm/hr) =	$3000 \times (18/MW)^{0.5}$	Gas-film transfer coefficient
K_L (cm/hr) =	$(1/k_l + (R \times T/H^* k_g))^{-1}$	overall mass transfer coefficient
K_{aL} (cm/hr) =	$K_L \times ((T \times \mu_s/T_s \times \mu_l)^{-0.5}$	overall mass transfer coefficient adjusted to shower water temperature
C_{wd} (mg/L) =	$C_w \times (1-\exp(-K_{aL} \times t_s/60 \times d)$	VOC concentration leaving shower droplet after time t_s
S (mg/m^3-min) =	$C_{wd} \times FR/SV$	VOC generation rate
C_a (mg/m^3) =	$\left[\frac{S}{R_a \times t}\right] x \left[D_s + \frac{e^{(-Ra x t)}}{R_a} - \frac{e^{R_a(D_s - t)}}{R_a}\right]$	VOC concentration in shower air

Constants:	Value	
R (atm-m^3/mole-K) =	8.2×10^{-5}	Gas constant
T (K) =	293	Room Temperature
T_s (K) =	318	Water Temperature
μ_s (centapoise) =	0.596	Water viscosity at Ts
μ_l (centapoise) =	1.002	Water viscosity at T
t_s (sec) =	0.5	Shower droplet drop time
d (mm) =	1	Droplet diameter
FR (L/min) =	10	Shower flow rate
SV (m^3) =	12	Shower room air volume
R_a (per min) =	0.01667	Air exchange rate
D_s (min) =	30	Shower Duration
t (min) =	60	Total time in shower room

Table E.1-36
Summary of Groundwater-to-Air Exposure Point Concentrations
SWMU 43

COPC	GW Conc. mg/L	J-E Vapor Intrusion Modeled Infinite Source Building Air Conc. ($\mu g/m^3$)	Air Conc. in Shower Room ($\mu g/m^3$)	ASTM Ambient Air Conc from GW ($\mu g/m^3$)	Trench Model Air Conc. ($\mu g/m^3$)
Tetrachloroethylene	2.60E-03	9.44E-02	3.67E+00	2.75E-05	2.75E-01

Table E.1-37
Calculation of Homegrown Produce Concentrations from Groundwater - SWMU 43

Analyte	CAS No.	Concentration in Groundwater (mg/L)	CV_w Concentration in Fruits/Vegetables (mg/kg)
Arsenic	7440-38-2	3.49E-02	3.80E-03

The transfer of COPCs in groundwater to vegetables by watering a garden was calculated using two equations based on "exposed produce" developed by Baes et al. (1984).

$$CV_w = WR \times R \times \frac{1-e^{-kt}}{Y \times K}$$

where:

Parameters	Value	
CV_w (mg/kg) =	chemical-specific	Constituent concentration in the vegetables/fruits
WR (mg/m^2-year) =	calculated	Watering rate
R (unitless) =	0.0319	Interception fraction for exposed vegetables/fruits
K (yr^{-1}) =	18	plant surface degradation rate constant for COPC wash-off
t (year) =	0.5	length of growing season (based on 184 frost-free days)
Y (kg/m^2) =	1.5	Vegetation yield

$$WR = C_w \times I \times F$$

where:

Parameters	Value	
WR (mg/m^2-year)	chemical-specific	Watering rate
C_w (mg/L) =	chemical-specific	Constituent concentration in groundwater
I (L/event)	0.5	Watering intensity
F (events/year) =	184	Watering frequency (once each day assumed for a 6-month growing season from May through October)

Table E.1-38
Non-Cancer Toxicity Data - Oral/Dermal

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral to Dermal Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Dates of RfD (3): (MM/DD/YY)
Organics										
Aroclor 1016	Chronic	7.0.E-05	mg/kg-day	100%	7.0E-05	mg/kg-day	Reduced birth weight	100	IRIS	3/6/09:11/1/96
Aroclor 1254	Chronic	2.0E-05	mg/kg-day	100%	2.0E-05	mg/kg-day	Immune system, eyes	300	IRIS	3/6/09:11/1/96
Benzo(a)pyrene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
p-Chloro-m-cresol (4)	Chronic	5.0E-02	mg/kg-day	100%	5.0E-02	mg/kg-day	Nervous System	1,000	IRIS	3/6/09:9/1/90
Dibenzofuran	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	Chronic	2.0E-03	mg/kg-day	100%	2.0E-03	mg/kg-day	CNS, Blood, Liver	100	IRIS	3/6/09:2/1/93
TCDD TE	Chronic	1.0E-09	mg/kg-day	100%	1.0E-09	mg/kg-day	Developmental nervous system	N/A	EPA, 2008; ATSDR	3/6/09:9/12/08
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	100%	1.0E-02	mg/kg-day	Liver	1,000	IRIS	3/6/09: 3/1/88
2,4,6-Trinitrotoluene	Chronic	5.0E-04	mg/kg-day	100%	5.0E-04	mg/kg-day	Liver	1,000	IRIS	3/6/09:2/1/93
Inorganics										
Aluminum	Chronic	1.0E+00	mg/kg-day	100%	1.0E+00	mg/kg-day	Developmental nervous system	N/A	PPRTV; EPA, 2008; VDEQ, 2008	3/6/09:9/12/08
Arsenic	Chronic	3.0E-04	mg/kg-day	100%	3.0E-04	mg/kg-day	Skin, Vascular System	3	IRIS	3/6/09:2/1/93
Cobalt	Chronic	3.0E-04	mg/kg-day	100%	3.0E-04	mg/kg-day	N/A	N/A	PPRTV; EPA, 2008	3/6/09:9/12/08
Iron	Chronic	7.0E-01	mg/kg-day	100%	7.0E-01	mg/kg-day	Blood, Liver, GI Tract	N/A	PPRTV; EPA, 2008; VDEQ, 2008	3/6/09:9/12/08
Manganese	Chronic	2.4E-02	mg/kg-day	4%	9.6E-04	mg/kg-day	CNS	1	IRIS	3/6/09:5/1/96
Sodium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium (5)	Chronic	5.0E-03	mg/kg-day	2.6%	1.3E-04	mg/kg-day	Kidney	N/A	EPA, 2008; VDEQ, 2008; NCEA	3/6/09:9/12/08

(1) Source: Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Section 4.2 and Exhibit 4-1.
(2) The equation used to derive the adjusted dermal RfD is presented in the text.
(3) For IRIS values, the date IRIS was searched and the date of the most recent review are provided. For HEAST values, the date of HEAST is provided.
(4) The toxicity value for 3-Methylphenol (m-cresol) was used as a surrogate for this COPC (VDEQ, 2008).
(5) The toxicity value for Vanadium was based on Vanadium and Compounds.

Definitions:
N/A = Not Available
ATSDR = Agency for Toxic Substances Disease Registry
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 = Regional Screening Values, ORNL, September 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.1, Non-Cancer Toxicity Data, August 1, 2008.

Table E.1-39
Non-Cancer Toxicity Data - Inhalation

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ (s)	Combined Uncertainty/ Modifying Factors	RfC:Target Organ(s)	
		Value	Units			Source(s) (2)	Dates of RfD: (MM/DD/YY)
Organics							
Aroclor 1016	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Aroclor 1254	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:11/1/96
Benzo(a)pyrene	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08
p-Chloro-m-cresol (3)	N/A	N/A	N/A	N/A	N/A	IRIS	3/6/09:4/1/92
Dibenzofuran	N/A	N/A	N/A	N/A	N/A	N/A	5/1/92
2,4-Dinitrotoluene	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
TCDD TE	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Tetrachloroethene	Chronic	2.7E-01	mg/m^3	CNS	N/A	EPA, 2008; VDEQ, 2008: ATSDR	3/6/09:9/12/08
2,4,6-Trinitrotoluene	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Inorganics							
Aluminum	Chronic	5.0E-03	mg/m^3	N/A	N/A	EPA, 2008; VDEQ, 2008; PPRTV	3/6/09:9/12/08
Arsenic	Chronic	3.0E-05	mg/m^3	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Cobalt	Chronic	6.0E-06	mg/m^3	N/A	N/A	PPRTV; EPA, 2008	3/6/09:9/12/08
Iron	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Manganese	Chronic	5.0E-05	mg/m^3	CNS	1,000	IRIS	3/6/09:12/1/93
Sodium	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09
Vanadium	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08

(1) The adjusted inhalation RfD was derived from the RfC value assuming a 70 kg a
inhales 20 m^3/day as follows: RfD = RfC * (20 m^3/day / 70 kg).

(2) For NCEA values, the date of the article provided by NCEA is provided.
For IRIS values, the date IRIS was searched and the date of the most recent review are provided.
For HEAST values, the date of HEAST is provided.

(3) 3-Methylphenol (m-cresol) was used as a surrogate for this COPC, (VDEQ, 2008).

Definitions: N/A = Not Available
ATSDR = Agency for Toxic Substances Disease Registry
IRIS = Integrated Risk Information System
NCEA = National Center for Environmental Assessment
HEAST = Health Effects Assessment Tables
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 - Regional Screening Valules, ORNL, September 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.1, Non-Cancer Toxicity Data, August 1, 2008.

Table E.1-40
Cancer Toxicity Data - Oral/Dermal

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source	Date (3) (MM/DD/YY)
Organics								
Aroclor 1016	7.0E-02	$(mg/kg\text{-}day)^{-1}$	100%	7.0E-02	$(mg/kg\text{-}day)^{-1}$		EPA, 2008	3/6/09:9/12/06
Aroclor 1254	2.0E+00	$(mg/kg\text{-}day)^{-1}$	100%	2.0E+00	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 2008	3/6/09:9/12/08
Benzo(a)pyrene	7.3E+00	$(mg/kg\text{-}day)^{-1}$	100%	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	3/6/09:11/1/94
p-Chloro-m-cresol (4)	N/A	N/A	N/A	N/A	N/A	C	IRIS	3/6/09:8/1/91
Dibenzofuran	N/A	N/A	N/A	N/A	N/A	D	N/A	10/01/90
2,4-Dinitrotoluene (5)	6.8E-01	$(mg/kg\text{-}day)^{-1}$	100%	6.8E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	3/6/09:9/1/90
TCDD TE	1.3E+05	$(mg/kg\text{-}day)^{-1}$	100%	1.3E+05	$(mg/kg\text{-}day)^{-1}$	B2	EPA, 2008; Cal EPA	3/6/09:9/12/08
Tetrachloroethene	5.4E-01	$(mg/kg\text{-}day)^{-1}$	100%	5.4E-01	$(mg/kg\text{-}day)^{-1}$	C	EPA, 2008; VDEQ, 2008	3/6/09:9/12/08
2,4,6-Trinitrotoluene	3.0E-02	$(mg/kg\text{-}day)^{-1}$	100%	3.0E-02	$(mg/kg\text{-}day)^{-1}$	C	IRIS	3/6/09:7/1/93
Inorganics								
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Arsenic	1.5E+00	$(mg/kg\text{-}day)^{-1}$	100%	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	3/6/09:4/10/98
Cobalt	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Iron	N/A	N/A	N/A	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Manganese	N/A	N/A	N/A	N/A	N/A	D	IRIS	3/6/09:12/1/96
Sodium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vanadium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3/6/09:9/12/08

(1) Source: Risk Assessment Guidance for Fuperfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. Section 4.2 and Exhibit 4-1.
(2) The equation for deriving the adjusted dermal cancer slope factors are presented in the text.
(3) For IRIS values, the date IRIS was searched and the date of the most recent review are provided. For HEAST values, the date of HEAST is provided.
(4) 3-Methylphenol (m-cresol) was used as a surrogate for this COPC (VDEQ, 2008).
(5) Value is based on dinitrotoluene mixture.

Definitions:
N/A = Not Available
Cal EPA = California Environmental Protection Agency
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 = Regional Screening Values, ORNL Sept 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.1, Non-Cancer Toxicity Data, August 1, 2008.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Table E.1-41
Cancer Toxicity Data - Inhalation

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation CSF	
	Value	Units		Source	Date (1) (MM/DD/YY)
Organics					
Aroclor 1016	2.00E-05	$(ug/m^3)^{-1}$		EPA, 2008	3/6/09:9/12/08
Aroclor 1254	5.70E-04	$(ug/m^3)^{-1}$	B2	EPA, 2008	3/6/09:9/12/08
Benzo(a)pyrene	1.10E-03	$(ug/m^3)^{-1}$	B2	EPA, 2008; Cal EPA	3/6/09:9/12/08
p-Chloro-m-cresol (2)	N/A	N/A	C	IRIS	3/6/09: 8/1/91
Dibenzofuran	N/A	N/A	D	N/A	10/1/90
2,4-Dinitrotoluene	N/A	N/A	N/A	N/A	3/6/09:9/1/90
TCDD TE	3.80E+01	$(ug/m^3)^{-1}$	B2	EPA, 2008	3/6/098:9/12/08
Tetrachloroethene	5.90E-06	$(ug/m^3)^{-1}$	C	EPA, 2008; Cal EPA	3/6/09:9/12/08
2,4,6-Trinitrotoluene	N/A	N/A	N/A	N/A	3/6/09: 9/12/08
Inorganics					
Aluminum	N/A	N/A	N/A	N/A	3/6/09:9/12/08
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	A	IRIS	3/6/09:4/10/98
Cobalt	9.0E-03	$(ug/m^3)^{-1}$	N/A	PPRTV; EPA, 2008	3/6/09:9/12/08
Iron	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08
Manganese	N/A	N/A	D	IRIS	3/6/09:12/1/96
Sodium	N/A	N/A	N/A	N/A	3/6/09
Vanadium	N/A	N/A	N/A	EPA, 2008	3/6/09:9/12/08

(1) For IRIS values, the date IRIS was searched and the date of the most recent review are provided.
For HEAST values, the date of HEAST is provided.
(2) 3-Methylphenol (m-cresol) was used as a surrogate for this COPC (VDEQ, 2008).

Definition:
N/A = Not Available
Cal EPA = California Environmental Protection Agency
IRIS = Integrated Risk Information System
HEAST= Health Effects Assessment Summary Tables
NCEA = National Center for Environmental Assessment
PPRTV = Provisional Peer-Reviewed Toxicity Values
EPA, 2008 = Regional Screening Values, ORNL, September 12, 2008
VDEQ, 2008 = Virginia Department of Environmental Quality, Voluntary Remediation Program, Table 4.2, Cancer Toxicity Data, August 1, 2008.

EPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Table E.1-42
Calculation of Cancer Risks
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Soil	Surface Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	5.74E-06	mg/kg	4.0E-13	mg/kg-day	1.3E+05	$(mg/kg-day)^{-1}$	5.2E-08
				Benzo(a)pyrene	6.27E-02	mg/kg	4.4E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	3.2E-08
				Inorganics							
				Aluminum	1.32E+04	mg/kg	9.2E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	1.06E+01	mg/kg	7.4E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.1E-06
				Cobalt	1.06E+01	mg/kg	7.4E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.93E+04	mg/kg	1.3E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.96E+02	mg/kg	6.3E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.60E+01	mg/kg	2.5E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								1.2E-06
			Dermal Absorption	**Organics**							
				TCDD TE	5.74E-06	mg/kg	7.9E-14	mg/kg-day	1.3E+05	$(mg/kg-day)^{-1}$	1.0E-08
				Benzo(a)pyrene	6.27E-02	mg/kg	3.8E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	2.7E-08
				Inorganics							
				Aluminum	1.32E+04	mg/kg	6.1E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	1.06E+01	mg/kg	1.5E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.2E-07
				Cobalt	1.06E+01	mg/kg	4.9E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.93E+04	mg/kg	8.9E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.96E+02	mg/kg	4.1E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.60E+01	mg/kg	1.7E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								2.6E-07
		Exposure Point Total									1.5E-06
	Exposure Media Total										1.5E-06
	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.85E-12	µg/m³	1.9E-13	µg/m³	3.8E+01	$(µg/m^3)^{-1}$	7.2E-12
				Benzo(a)pyrene	4.21E-08	µg/m³	2.1E-09	µg/m³	1.1E-03	$(µg/m^3)^{-1}$	2.3E-12
				Inorganics							
				Aluminum	8.86E-03	µg/m³	4.3E-04	µg/m³	N/A	$(µg/m^3)^{-1}$	---
				Arsenic	7.11E-06	µg/m³	3.5E-07	µg/m³	4.3E-03	$(µg/m^3)^{-1}$	1.5E-09
				Cobalt	7.11E-06	µg/m³	3.5E-07	µg/m³	9.0E-03	$(µg/m^3)^{-1}$	3.1E-09
				Iron	1.30E-02	µg/m³	6.3E-04	µg/m³	N/A	$(µg/m^3)^{-1}$	---
				Manganese	6.01E-04	µg/m³	2.9E-05	µg/m³	N/A	$(µg/m^3)^{-1}$	---
				Vanadium	2.42E-05	µg/m³	1.2E-06	µg/m³	N/A	$(µg/m^3)^{-1}$	---
			Exp. Route Total								4.6E-09
		Exposure Point Total									4.6E-09
	Exposure Media Total										4.6E-09
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPC							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											1.5E-06

Table E.1-42
Calculation of Cancer Risks
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Groundwater	Air	SWMU 43	**Inhalation** (Ambient Air)	**Organics** Tetrachloroethene	2.75E-05	µg/m^3	1.3E-06	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	7.9E-12
			Exp. Route Total								7.9E-12
		Exposure Point Total									7.9E-12
	Exposure Media Total										7.9E-12
Groundwater Total											7.9E-12
										Total of Receptor Risks Across All Media	1.5E-06

N/A = Not Applicable.

Table E.1-43
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Surface Soil	Surface Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	5.74E-06	mg/kg	1.1E-12	mg/kg-day	1.0E-09	mg/kg-day	1.1E-03
				Benzo(a)pyrene	6.27E-02	mg/kg	1.2E-08	mg/kg-day	N/A	mg/kg-day	---
				Inorganics							
				Aluminum	1.32E+04	mg/kg	2.6E-03	mg/kg-day	1.0E+00	mg/kg-day	2.6E-03
				Arsenic	1.06E+01	mg/kg	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	6.9E-03
				Cobalt	1.06E+01	mg/kg	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	6.9E-03
				Iron	1.93E+04	mg/kg	3.8E-03	mg/kg-day	7.0E-01	mg/kg-day	5.4E-03
				Manganese	8.96E+02	mg/kg	1.8E-04	mg/kg-day	2.4E-02	mg/kg-day	7.3E-03
				Vanadium	3.60E+01	mg/kg	7.0E-06	mg/kg-day	5.0E-03	mg/kg-day	1.4E-03
			Exp. Route Total								3.2E-02
			Dermal Absorption	**Organics**							
				TCDD TE	5.74E-06	mg/kg	2.2E-13	mg/kg-day	1.0E-09	mg/kg-day	2.2E-04
				Benzo(a)pyrene	6.27E-02	mg/kg	1.1E-08	mg/kg-day	N/A	mg/kg-day	---
				Inorganics							
				Aluminum	1.32E+04	mg/kg	1.7E-04	mg/kg-day	1.0E+00	mg/kg-day	1.7E-04
				Arsenic	1.06E+01	mg/kg	4.1E-07	mg/kg-day	3.0E-04	mg/kg-day	1.4E-03
				Cobalt	1.06E+01	mg/kg	1.4E-07	mg/kg-day	3.0E-04	mg/kg-day	4.6E-04
				Iron	1.93E+04	mg/kg	2.5E-04	mg/kg-day	7.0E-01	mg/kg-day	3.6E-04
				Manganese	8.96E+02	mg/kg	1.2E-05	mg/kg-day	9.6E-04	mg/kg-day	1.2E-02
				Vanadium	3.60E+01	mg/kg	4.6E-07	mg/kg-day	1.3E-04	mg/kg-day	3.6E-03
			Exp. Route Total								1.8E-02
		Exposure Point Total									5.0E-02
	Exposure Media Total										5.0E-02
	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.85E-15	mg/m^3	5.3E-16	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	4.21E-11	mg/m^3	5.8E-12	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	8.86E-06	mg/m^3	1.2E-06	mg/m^3	5.0E-03	(mg/m^3)	2.4E-04
				Arsenic	7.11E-09	mg/m^3	9.7E-10	mg/m^3	3.0E-05	(mg/m^3)	3.2E-05
				Cobalt	7.11E-09	mg/m^3	9.7E-10	mg/m^3	6.0E-06	(mg/m^3)	1.6E-04
				Iron	1.30E-05	mg/m^3	1.8E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	6.01E-07	mg/m^3	8.2E-08	mg/m^3	5.0E-05	(mg/m^3)	1.6E-03
				Vanadium	2.42E-08	mg/m^3	3.3E-09	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								2.1E-03
		Exposure Point Total									2.1E-03
	Exposure Media Total										2.1E-03
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											5.2E-02

Table E.1-43
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Current/Future - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Groundwater	Air	SWMU 43	**Inhalation** (Ambient Air)	**Organics** Tetrachloroethene	2.75E-08	mg/m³	3.8E-09	mg/m³	2.7E-01	(mg/m³)	1.4E-08
			Exp. Route Total								1.4E-08
		Exposure Point Total									1.4E-08
	Exposure Media Total										1.4E-08
Groundwater Total											1.4E-08
										Total of Receptor Hazards Across All Media	5.2E-02

N/A = Not Applicable.

Table E.1-44
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	5.2E-13	mg/kg-day	1.3E+05	$(mg/kg-day)^{-1}$	6.8E-08
				Aroclor 1016	1.16E-01	mg/kg	8.1E-09	mg/kg-day	7.0E-02	$(mg/kg-day)^{-1}$	5.7E-10
				Aroclor 1254	9.07E-02	mg/kg	6.3E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.3E-08
				Benzo(a)pyrene	3.68E-02	mg/kg	2.6E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.9E-08
				p-chloro-m-cresol	7.61E-02	mg/kg	5.3E-09	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	7.3E-09	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	1.1E-08	mg/kg-day	6.8E-01	$(mg/kg-day)^{-1}$	7.5E-09
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	3.7E-08	mg/kg-day	3.0E-02	$(mg/kg-day)^{-1}$	1.1E-09
				Inorganics							
				Aluminum	1.19E+04	mg/kg	8.3E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	3.9E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	5.8E-07
				Cobalt	1.03E+01	mg/kg	7.2E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	1.3E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	4.2E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	2.2E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								6.9E-07
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.0E-13	mg/kg-day	1.3E+05	$(mg/kg-day)^{-1}$	1.3E-08
				Aroclor 1016	1.16E-01	mg/kg	7.5E-09	mg/kg-day	7.0E-02	$(mg/kg-day)^{-1}$	5.2E-10
				Aroclor 1254	9.07E-02	mg/kg	5.9E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.2E-08
				Benzo(a)pyrene	3.68E-02	mg/kg	2.2E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.6E-08
				p-chloro-m-cresol	7.61E-02	mg/kg	3.5E-09	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	6.3E-09	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	7.4E-09	mg/kg-day	6.8E-01	$(mg/kg-day)^{-1}$	5.1E-09
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	7.9E-09	mg/kg-day	3.0E-02	$(mg/kg-day)^{-1}$	2.4E-10
				Inorganics							
				Aluminum	1.19E+04	mg/kg	5.5E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	7.7E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.1E-07
				Cobalt	1.03E+01	mg/kg	4.8E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.87E+04	mg/kg	8.6E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	2.8E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	1.5E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								1.6E-07
		Exposure Point Total									8.5E-07
	Exposure Media Total										8.5E-07

Table E.1-44
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	5.03E-12	µg/m^3	2.5E-13	µg/m^3	3.8E+01	(µg/m^3)$^{-1}$	9.3E-12
				Aroclor 1016	7.79E-08	µg/m^3	3.8E-09	µg/m^3	2.0E-05	(µg/m^3)$^{-1}$	7.6E-14
				Aroclor 1254	6.09E-08	µg/m^3	3.0E-09	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.7E-12
				Benzo(a)pyrene	2.47E-08	µg/m^3	1.2E-09	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	1.3E-12
				p-chloro-m-cresol	5.11E-08	µg/m^3	2.5E-09	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Dibenzofuran	7.05E-08	µg/m^3	3.4E-09	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4-Dinitrotoluene	1.06E-07	µg/m^3	5.2E-09	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4,6-Trinitrotoluene	3.57E-07	µg/m^3	1.7E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Inorganics							
				Aluminum	7.99E-03	µg/m^3	3.9E-04	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Arsenic	3.71E-06	µg/m^3	1.8E-07	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	7.8E-10
				Cobalt	6.91E-06	µg/m^3	3.4E-07	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	3.0E-09
				Iron	1.26E-02	µg/m^3	6.1E-04	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Manganese	4.01E-04	µg/m^3	2.0E-05	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Vanadium	2.15E-05	µg/m^3	1.1E-06	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
			Exp. Route Total								3.8E-09
		Exposure Point Total									3.8E-09
	Exposure Media Total										3.8E-09
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											8.5E-07

Table E.1-44
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Soil	Surface Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	5.74E-06	mg/kg	4.0E-13	mg/kg-day	1.3E+05	$(mg/kg-day)^{-1}$	5.2E-08
				Benzo(a)pyrene	6.27E-02	mg/kg	4.4E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	3.2E-08
				Inorganics							
				Aluminum	1.32E+04	mg/kg	9.2E-04	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	1.06E+01	mg/kg	7.4E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.1E-06
				Cobalt	1.06E+01	mg/kg	7.4E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.93E+04	mg/kg	1.3E-03	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.96E+02	mg/kg	6.3E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.60E+01	mg/kg	2.5E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								1.2E-06
			Dermal Absorption	**Organics**							
				TCDD TE	5.74E-06	mg/kg	7.9E-14	mg/kg-day	1.3E+05	$(mg/kg-day)^{-1}$	1.0E-08
				Benzo(a)pyrene	6.27E-02	mg/kg	3.8E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	2.7E-08
				Inorganics							
				Aluminum	1.32E+04	mg/kg	6.1E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Arsenic	1.06E+01	mg/kg	1.5E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.2E-07
				Cobalt	1.06E+01	mg/kg	4.9E-08	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.93E+04	mg/kg	8.9E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.96E+02	mg/kg	4.1E-06	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Vanadium	3.60E+01	mg/kg	1.7E-07	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								2.6E-07
		Exposure Point Total									1.5E-06
	Exposure Media Total										1.5E-06
	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.85E-12	$\mu g/m^3$	1.9E-13	$\mu g/m^3$	3.8E+01	$(\mu g/m^3)^{-1}$	7.2E-12
				Benzo(a)pyrene	4.21E-08	$\mu g/m^3$	2.1E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	2.3E-12
				Inorganics							
				Aluminum	8.86E-03	$\mu g/m^3$	4.3E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	7.11E-06	$\mu g/m^3$	3.5E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.5E-09
				Cobalt	7.11E-06	$\mu g/m^3$	3.5E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.1E-09
				Iron	1.30E-02	$\mu g/m^3$	6.3E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	6.01E-04	$\mu g/m^3$	2.9E-05	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	2.42E-05	$\mu g/m^3$	1.2E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								4.6E-09
		Exposure Point Total									4.6E-09
	Exposure Media Total										4.6E-09
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPC							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											1.5E-06

Table E.1-44
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Groundwater	Air	SWMU 43	**Inhalation** (Ambient Air)	**Organics** Tetrachloroethene	2.75E-05	µg/m^3	1.3E-06	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	7.9E-12
			Exp. Route Total								7.9E-12
		Exposure Point Total									7.9E-12
	Exposure Media Total										7.9E-12
Groundwater Total											7.9E-12
										Total of Receptor Risks Across All Media	1.5E-06

N/A = Not Applicable.

Since surface soil represents the more highly contaminated portion of soil, total risk and hazard estimates are conservatively based on this data grouping.

Table E.1-45
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.5E-12	mg/kg-day	1.0E-09	mg/kg-day	1.5E-03
				Aroclor 1016	1.16E-01	mg/kg	2.3E-08	mg/kg-day	7.0E-05	mg/kg-day	3.2E-04
				Aroclor 1254	9.07E-02	mg/kg	1.8E-08	mg/kg-day	2.0E-05	mg/kg-day	8.9E-04
				Benzo(a)pyrene	3.68E-02	mg/kg	7.2E-09	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	1.5E-08	mg/kg-day	5.0E-02	mg/kg-day	3.0E-07
				Dibenzofuran	1.05E-01	mg/kg	2.1E-08	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	3.1E-08	mg/kg-day	2.0E-03	mg/kg-day	1.5E-05
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	1.0E-07	mg/kg-day	5.0E-04	mg/kg-day	2.1E-04
				Inorganics							
				Aluminum	1.19E+04	mg/kg	2.3E-03	mg/kg-day	1.0E+00	mg/kg-day	2.3E-03
				Arsenic	5.53E+00	mg/kg	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.6E-03
				Cobalt	1.03E+01	mg/kg	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	6.7E-03
				Iron	1.87E+04	mg/kg	3.7E-03	mg/kg-day	7.0E-01	mg/kg-day	5.2E-03
				Manganese	5.98E+02	mg/kg	1.2E-04	mg/kg-day	2.4E-02	mg/kg-day	4.9E-03
				Vanadium	3.21E+01	mg/kg	6.3E-06	mg/kg-day	5.0E-03	mg/kg-day	1.3E-03
			Exp. Route Total								2.7E-02
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	2.9E-13	mg/kg-day	1.0E-09	mg/kg-day	2.9E-04
				Aroclor 1016	1.16E-01	mg/kg	2.1E-08	mg/kg-day	7.0E-05	mg/kg-day	3.0E-04
				Aroclor 1254	9.07E-02	mg/kg	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	8.2E-04
				Benzo(a)pyrene	3.68E-02	mg/kg	6.2E-09	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	9.8E-09	mg/kg-day	5.0E-02	mg/kg-day	2.0E-07
				Dibenzofuran	1.05E-01	mg/kg	1.8E-08	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	2.1E-08	mg/kg-day	2.0E-03	mg/kg-day	1.0E-05
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	2.2E-08	mg/kg-day	5.0E-04	mg/kg-day	4.4E-05
				Inorganics							
				Aluminum	1.19E+04	mg/kg	1.5E-04	mg/kg-day	1.0E+00	mg/kg-day	1.5E-04
				Arsenic	5.53E+00	mg/kg	2.1E-07	mg/kg-day	3.0E-04	mg/kg-day	7.1E-04
				Cobalt	1.03E+01	mg/kg	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	4.4E-04
				Iron	1.87E+04	mg/kg	2.4E-04	mg/kg-day	7.0E-01	mg/kg-day	3.5E-04
				Manganese	5.98E+02	mg/kg	7.7E-06	mg/kg-day	9.6E-04	mg/kg-day	8.0E-03
				Vanadium	3.21E+01	mg/kg	4.1E-07	mg/kg-day	1.3E-04	mg/kg-day	3.2E-03
			Exp. Route Total								1.4E-02
		Exposure Point Total									4.1E-02
	Exposure Media Total										4.1E-02

Table E.1-45
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	5.03E-15	mg/m^3	6.9E-16	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1016	7.79E-11	mg/m^3	1.1E-11	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1254	6.09E-11	mg/m^3	8.3E-12	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	2.47E-11	mg/m^3	3.4E-12	mg/m^3	N/A	(mg/m^3)	---
				p-chloro-m-cresol	5.11E-11	mg/m^3	7.0E-12	mg/m^3	N/A	(mg/m^3)	---
				Dibenzofuran	7.05E-11	mg/m^3	9.7E-12	mg/m^3	N/A	(mg/m^3)	---
				2,4-Dinitrotoluene	1.06E-10	mg/m^3	1.5E-11	mg/m^3	N/A	(mg/m^3)	---
				2,4,6-Trinitrotoluene	3.57E-10	mg/m^3	4.9E-11	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	7.99E-06	mg/m^3	1.1E-06	mg/m^3	5.0E-03	(mg/m^3)	2.2E-04
				Arsenic	3.71E-09	mg/m^3	5.1E-10	mg/m^3	3.0E-05	(mg/m^3)	1.7E-05
				Cobalt	6.91E-09	mg/m^3	9.5E-10	mg/m^3	6.0E-06	(mg/m^3)	1.6E-04
				Iron	1.26E-05	mg/m^3	1.7E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	4.01E-07	mg/m^3	5.5E-08	mg/m^3	5.0E-05	(mg/m^3)	1.1E-03
				Vanadium	2.15E-08	mg/m^4	3.0E-09	mg/m^4	N/A	(mg/m^4)	---
			Exp. Route Total								1.5E-03
		Exposure Point Total									1.5E-03
	Exposure Media Total										1.5E-03
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											4.3E-02

Table E.1-45
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Surface Soil	Surface Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	5.74E-06	mg/kg	1.1E-12	mg/kg-day	1.0E-09	mg/kg-day	1.1E-03
				Benzo(a)pyrene	6.27E-02	mg/kg	1.2E-08	mg/kg-day	N/A	mg/kg-day	---
				Inorganics							
				Aluminum	1.32E+04	mg/kg	2.6E-03	mg/kg-day	1.0E+00	mg/kg-day	2.6E-03
				Arsenic	1.06E+01	mg/kg	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	6.9E-03
				Cobalt	1.06E+01	mg/kg	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	6.9E-03
				Iron	1.93E+04	mg/kg	3.8E-03	mg/kg-day	7.0E-01	mg/kg-day	5.4E-03
				Manganese	8.96E+02	mg/kg	1.8E-04	mg/kg-day	2.4E-02	mg/kg-day	7.3E-03
				Vanadium	3.60E+01	mg/kg	7.0E-06	mg/kg-day	5.0E-03	mg/kg-day	1.4E-03
			Exp. Route Total								3.2E-02
			Dermal Absorption	**Organics**							
				TCDD TE	5.74E-06	mg/kg	2.2E-13	mg/kg-day	1.0E-09	mg/kg-day	2.2E-04
				Benzo(a)pyrene	6.27E-02	mg/kg	1.1E-08	mg/kg-day	N/A	mg/kg-day	---
				Inorganics							
				Aluminum	1.32E+04	mg/kg	1.7E-04	mg/kg-day	1.0E+00	mg/kg-day	1.7E-04
				Arsenic	1.06E+01	mg/kg	4.1E-07	mg/kg-day	3.0E-04	mg/kg-day	1.4E-03
				Cobalt	1.06E+01	mg/kg	1.4E-07	mg/kg-day	3.0E-04	mg/kg-day	4.6E-04
				Iron	1.93E+04	mg/kg	2.5E-04	mg/kg-day	7.0E-01	mg/kg-day	3.6E-04
				Manganese	8.96E+02	mg/kg	1.2E-05	mg/kg-day	9.6E-04	mg/kg-day	1.2E-02
				Vanadium	3.60E+01	mg/kg	4.6E-07	mg/kg-day	1.3E-04	mg/kg-day	3.6E-03
			Exp. Route Total								1.8E-02
		Exposure Point Total									5.0E-02
	Exposure Media Total										5.0E-02
	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.85E-15	mg/m^3	5.3E-16	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	4.21E-11	mg/m^3	5.8E-12	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	8.86E-06	mg/m^3	1.2E-06	mg/m^3	5.0E-03	(mg/m^3)	2.4E-04
				Arsenic	7.11E-09	mg/m^3	9.7E-10	mg/m^3	3.0E-05	(mg/m^3)	3.2E-05
				Cobalt	7.11E-09	mg/m^3	9.7E-10	mg/m^3	6.0E-06	(mg/m^3)	1.6E-04
				Iron	1.30E-05	mg/m^3	1.8E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	6.01E-07	mg/m^3	8.2E-08	mg/m^3	5.0E-05	(mg/m^3)	1.6E-03
				Vanadium	2.42E-08	mg/m^3	3.3E-09	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								2.1E-03
		Exposure Point Total									2.1E-03
	Exposure Media Total										2.1E-03
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											5.2E-02

Table E.1-45
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Groundwater	Air	SWMU 43	**Inhalation** (Ambient Air)	**Organics** Tetrachloroethene	2.75E-08	mg/m^3	3.8E-09	mg/m^3	2.7E-01	(mg/m^3)	1.4E-08
			Exp. Route Total								1.4E-08
		Exposure Point Total									1.4E-08
	Exposure Media Total										1.4E-08
Groundwater Total											1.4E-08
										Total of Receptor Hazards Across All Media	5.2E-02

N/A = Not Applicable.

Since surface soil represents the more highly contaminated portion of soil, total risk and hazard estimates are conservatively based on this data grouping.

Table E.1-46
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	2.4E-12	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	3.1E-07
				Aroclor 1016	1.16E-01	mg/kg	3.6E-08	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	2.6E-09
				Aroclor 1254	9.07E-02	mg/kg	2.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.7E-08
				Benzo(a)pyrene	3.68E-02	mg/kg	1.2E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.4E-08
				p-chloro-m-cresol	7.61E-02	mg/kg	2.4E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	3.3E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	5.0E-08	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-08
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	1.7E-07	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	5.0E-09
				Inorganics							
				Aluminum	1.19E+04	mg/kg	3.7E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	1.7E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-06
				Cobalt	1.03E+01	mg/kg	3.2E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	5.9E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	1.9E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	1.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								3.1E-06
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	4.7E-13	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	6.1E-08
				Aroclor 1016	1.16E-01	mg/kg	3.4E-08	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	2.4E-09
				Aroclor 1254	9.07E-02	mg/kg	2.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-08
				Benzo(a)pyrene	3.68E-02	mg/kg	9.9E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.2E-08
				p-chloro-m-cresol	7.61E-02	mg/kg	1.6E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	2.8E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	3.3E-08	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	2.3E-08
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	3.5E-08	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	1.1E-09
				Inorganics							
				Aluminum	1.19E+04	mg/kg	2.5E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	3.4E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-07
				Cobalt	1.03E+01	mg/kg	2.1E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	3.9E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	1.2E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	6.7E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								7.3E-07
		Exposure Point Total									3.8E-06
	Exposure Media Total										3.8E-06

Table E.1-46
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	5.03E-12	µg/m^3	1.1E-12	µg/m^3	3.8E+01	(µg/m^3)$^{-1}$	4.2E-11
				Aroclor 1016	7.79E-08	µg/m^3	1.7E-08	µg/m^3	2.0E-05	(µg/m^3)$^{-1}$	3.4E-13
				Aroclor 1254	6.09E-08	µg/m^3	1.3E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	7.6E-12
				Benzo(a)pyrene	2.47E-08	µg/m^3	5.4E-09	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	6.0E-12
				p-chloro-m-cresol	5.11E-08	µg/m^3	1.1E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Dibenzofuran	7.05E-08	µg/m^3	1.6E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4-Dinitrotoluene	1.06E-07	µg/m^3	2.3E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4,6-Trinitrotoluene	3.57E-07	µg/m^3	7.9E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Inorganics							
				Aluminum	7.99E-03	µg/m^3	1.8E-03	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Arsenic	3.71E-06	µg/m^3	8.2E-07	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	3.5E-09
				Cobalt	6.91E-06	µg/m^3	1.5E-06	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.4E-08
				Iron	1.26E-02	µg/m^3	2.8E-03	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Manganese	4.01E-04	µg/m^3	8.8E-05	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Vanadium	2.15E-05	µg/m^3	4.7E-06	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
			Exp. Route Total								1.7E-08
		Exposure Point Total									1.7E-08
	Exposure Media Total										1.7E-08
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											3.8E-06

Table E.1-46
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Soil	Surface Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	5.74E-06	mg/kg	1.8E-12	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	2.3E-07
				Benzo(a)pyrene	6.27E-02	mg/kg	2.0E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07
				Inorganics							
				Aluminum	1.32E+04	mg/kg	4.2E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	1.06E+01	mg/kg	3.3E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.0E-06
				Cobalt	1.06E+01	mg/kg	3.3E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.93E+04	mg/kg	6.1E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	8.96E+02	mg/kg	2.8E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.60E+01	mg/kg	1.1E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								5.4E-06
			Dermal Absorption	**Organics**							
				TCDD TE	5.74E-06	mg/kg	3.6E-13	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	4.6E-08
				Benzo(a)pyrene	6.27E-02	mg/kg	1.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-07
				Inorganics							
				Aluminum	1.32E+04	mg/kg	2.7E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	1.06E+01	mg/kg	6.6E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-07
				Cobalt	1.06E+01	mg/kg	2.2E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.93E+04	mg/kg	4.0E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	8.96E+02	mg/kg	1.9E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.60E+01	mg/kg	7.5E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.2E-06
		Exposure Point Total									6.5E-06
	Exposure Media Total										6.5E-06
	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.85E-12	$\mu g/m^3$	8.5E-13	$\mu g/m^3$	3.8E+01	$(\mu g/m^3)^{-1}$	3.2E-11
				Benzo(a)pyrene	4.21E-08	$\mu g/m^3$	9.3E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.0E-11
				Inorganics							
				Aluminum	8.86E-03	$\mu g/m^3$	2.0E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Arsenic	7.11E-06	$\mu g/m^3$	1.6E-06	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	6.7E-09
				Cobalt	7.11E-06	$\mu g/m^3$	1.6E-06	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.4E-08
				Iron	1.30E-02	$\mu g/m^3$	2.9E-03	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Manganese	6.01E-04	$\mu g/m^3$	1.3E-04	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
				Vanadium	2.42E-05	$\mu g/m^3$	5.3E-06	$\mu g/m^3$	N/A	$(\mu g/m^3)^{-1}$	---
			Exp. Route Total								2.1E-08
		Exposure Point Total									2.1E-08
	Exposure Media Total										2.1E-08
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											6.6E-06

Table E.1-46
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Groundwater	Groundwater	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	8.2E-06	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	4.4E-06
				Inorganics							
				Arsenic	3.49E+01	µg/L	1.1E-04	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-04
				Cobalt	6.20E+00	µg/L	1.9E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.18E+04	µg/L	3.7E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	8.35E+02	µg/L	2.6E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.7E-04
		Exposure Point Total									1.7E-04
	Exposure Media Total										1.7E-04
	Air	SWMU 43	**Inhalation** (Ambient Air)	**Organics** Tetrachloroethene	2.75E-05	$\mu g/m^3$	6.1E-06	$\mu g/m^3$	5.9E-06	$(\mu g/m^3)^{-1}$	3.6E-11
			Exp. Route Total								3.6E-11
		Exposure Point Total									3.6E-11
	Exposure Media Total										3.6E-11
	Air	SWMU 43	**Inhalation** (Indoor Air)	**Organics** Tetrachloroethene	9.44E-02	$\mu g/m^3$	2.1E-02	$\mu g/m^3$	5.9E-06	$(\mu g/m^3)^{-1}$	1.2E-07
			Exp. Route Total								1.2E-07
		Exposure Point Total									1.2E-07
	Exposure Media Total										1.2E-07
Groundwater Total											1.7E-04
										Total of Receptor Risks Across All Media	1.8E-04

N/A = Not Applicable.

Since surface soil represents the more highly contaminated portion of soil, total risk and hazard estimates are conservatively based on this data grouping.

Table E.1-47
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	6.6E-12	mg/kg-day	1.0E-09	mg/kg-day	6.6E-03
				Aroclor 1016	1.16E-01	mg/kg	1.0E-07	mg/kg-day	7.0E-05	mg/kg-day	1.5E-03
				Aroclor 1254	9.07E-02	mg/kg	8.0E-08	mg/kg-day	2.0E-05	mg/kg-day	4.0E-03
				Benzo(a)pyrene	3.68E-02	mg/kg	3.2E-08	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	6.7E-08	mg/kg-day	5.0E-02	mg/kg-day	1.3E-06
				Dibenzofuran	1.05E-01	mg/kg	9.2E-08	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	1.4E-07	mg/kg-day	2.0E-03	mg/kg-day	7.0E-05
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	4.7E-07	mg/kg-day	5.0E-04	mg/kg-day	9.4E-04
				Inorganics							
				Aluminum	1.19E+04	mg/kg	1.0E-02	mg/kg-day	1.0E+00	mg/kg-day	1.0E-02
				Arsenic	5.53E+00	mg/kg	4.9E-06	mg/kg-day	3.0E-04	mg/kg-day	1.6E-02
				Cobalt	1.03E+01	mg/kg	9.1E-06	mg/kg-day	3.0E-04	mg/kg-day	3.0E-02
				Iron	1.87E+04	mg/kg	1.6E-02	mg/kg-day	7.0E-01	mg/kg-day	2.4E-02
				Manganese	5.98E+02	mg/kg	5.3E-04	mg/kg-day	2.4E-02	mg/kg-day	2.2E-02
				Vanadium	3.21E+01	mg/kg	2.8E-05	mg/kg-day	5.0E-03	mg/kg-day	5.7E-03
			Exp. Route Total								1.2E-01
			Dermal	**Organics**							
			Absorption	TCDD TE	7.49E-06	mg/kg	1.3E-12	mg/kg-day	1.0E-09	mg/kg-day	1.3E-03
				Aroclor 1016	1.16E-01	mg/kg	9.4E-08	mg/kg-day	7.0E-05	mg/kg-day	1.3E-03
				Aroclor 1254	9.07E-02	mg/kg	7.4E-08	mg/kg-day	2.0E-05	mg/kg-day	3.7E-03
				Benzo(a)pyrene	3.68E-02	mg/kg	2.8E-08	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	4.4E-08	mg/kg-day	5.0E-02	mg/kg-day	8.8E-07
				Dibenzofuran	1.05E-01	mg/kg	7.9E-08	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	9.4E-08	mg/kg-day	2.0E-03	mg/kg-day	4.7E-05
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	9.9E-08	mg/kg-day	5.0E-04	mg/kg-day	2.0E-04
				Inorganics							
				Aluminum	1.19E+04	mg/kg	6.9E-04	mg/kg-day	1.0E+00	mg/kg-day	6.9E-04
				Arsenic	5.53E+00	mg/kg	9.6E-07	mg/kg-day	3.0E-04	mg/kg-day	3.2E-03
				Cobalt	1.03E+01	mg/kg	6.0E-07	mg/kg-day	3.0E-04	mg/kg-day	2.0E-03
				Iron	1.87E+04	mg/kg	1.1E-03	mg/kg-day	7.0E-01	mg/kg-day	1.6E-03
				Manganese	5.98E+02	mg/kg	3.5E-05	mg/kg-day	9.6E-04	mg/kg-day	3.6E-02
				Vanadium	3.21E+01	mg/kg	1.9E-06	mg/kg-day	1.3E-04	mg/kg-day	1.4E-02
			Exp. Route Total								6.5E-02
		Exposure Point Total									1.9E-01
	Exposure Media Total										1.9E-01

Table E.1-47
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	5.03E-15	mg/m^3	3.1E-15	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1016	7.79E-11	mg/m^3	4.8E-11	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1254	6.09E-11	mg/m^3	3.8E-11	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	2.47E-11	mg/m^3	1.5E-11	mg/m^3	N/A	(mg/m^3)	---
				p-chloro-m-cresol	5.11E-11	mg/m^3	3.1E-11	mg/m^3	N/A	(mg/m^3)	---
				Dibenzofuran	7.05E-11	mg/m^3	4.3E-11	mg/m^3	N/A	(mg/m^3)	---
				2,4-Dinitrotoluene	1.06E-10	mg/m^3	6.5E-11	mg/m^3	N/A	(mg/m^3)	---
				2,4,6-Trinitrotoluene	3.57E-10	mg/m^3	2.2E-10	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	7.99E-06	mg/m^3	4.9E-06	mg/m^3	5.0E-03	(mg/m^3)	9.8E-04
				Arsenic	3.71E-09	mg/m^3	2.3E-09	mg/m^3	3.0E-05	(mg/m^3)	7.6E-05
				Cobalt	6.91E-09	mg/m^3	4.3E-09	mg/m^3	6.0E-06	(mg/m^3)	7.1E-04
				Iron	1.26E-05	mg/m^3	7.7E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	4.01E-07	mg/m^3	2.5E-07	mg/m^3	5.0E-05	(mg/m^3)	4.9E-03
				Vanadium	2.15E-08	mg/m^3	1.3E-08	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								6.7E-03
		Exposure Point Total									6.7E-03
	Exposure Media Total										6.7E-03
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											1.9E-01

Table E.1-47
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Surface Soil	Surface Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	5.74E-06	mg/kg	5.1E-12	mg/kg-day	1.0E-09	mg/kg-day	5.1E-03
				Benzo(a)pyrene	6.27E-02	mg/kg	5.5E-08	mg/kg-day	N/A	mg/kg-day	---
				Inorganics							
				Aluminum	1.32E+04	mg/kg	1.2E-02	mg/kg-day	1.0E+00	mg/kg-day	1.2E-02
				Arsenic	1.06E+01	mg/kg	9.3E-06	mg/kg-day	3.0E-04	mg/kg-day	3.1E-02
				Cobalt	1.06E+01	mg/kg	9.3E-06	mg/kg-day	3.0E-04	mg/kg-day	3.1E-02
				Iron	1.93E+04	mg/kg	1.7E-02	mg/kg-day	7.0E-01	mg/kg-day	2.4E-02
				Manganese	8.96E+02	mg/kg	7.9E-04	mg/kg-day	2.4E-02	mg/kg-day	3.3E-02
				Vanadium	3.60E+01	mg/kg	3.2E-05	mg/kg-day	5.0E-03	mg/kg-day	6.3E-03
			Exp. Route Total								1.4E-01
			Dermal Absorption	**Organics**							
				TCDD TE	5.74E-06	mg/kg	1.0E-12	mg/kg-day	1.0E-09	mg/kg-day	1.0E-03
				Benzo(a)pyrene	6.27E-02	mg/kg	4.7E-08	mg/kg-day	N/A	mg/kg-day	---
				Inorganics							
				Aluminum	1.32E+04	mg/kg	7.7E-04	mg/kg-day	1.0E+00	mg/kg-day	7.7E-04
				Arsenic	1.06E+01	mg/kg	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	6.2E-03
				Cobalt	1.06E+01	mg/kg	6.2E-07	mg/kg-day	3.0E-04	mg/kg-day	2.1E-03
				Iron	1.93E+04	mg/kg	1.1E-03	mg/kg-day	7.0E-01	mg/kg-day	1.6E-03
				Manganese	8.96E+02	mg/kg	5.2E-05	mg/kg-day	9.6E-04	mg/kg-day	5.4E-02
				Vanadium	3.60E+01	mg/kg	2.1E-06	mg/kg-day	1.3E-04	mg/kg-day	1.6E-02
			Exp. Route Total								8.2E-02
		Exposure Point Total									2.2E-01
	Exposure Media Total										2.2E-01
	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.85E-15	mg/m^3	2.4E-15	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	4.21E-11	mg/m^3	2.6E-11	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	8.86E-06	mg/m^3	5.5E-06	mg/m^3	5.0E-03	(mg/m^3)	1.1E-03
				Arsenic	7.11E-09	mg/m^3	4.4E-09	mg/m^3	3.0E-05	(mg/m^3)	1.5E-04
				Cobalt	7.11E-09	mg/m^3	4.4E-09	mg/m^3	6.0E-06	(mg/m^3)	7.3E-04
				Iron	1.30E-05	mg/m^3	8.0E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	6.01E-07	mg/m^3	3.7E-07	mg/m^3	5.0E-05	(mg/m^3)	7.4E-03
				Vanadium	2.42E-08	mg/m^3	1.5E-08	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								9.4E-03
		Exposure Point Total									9.4E-03
	Exposure Media Total										9.4E-03
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics**							
				No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Surface Soil Total											2.3E-01

Table E.1-47
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Groundwater	Groundwater	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	2.3E-05	mg/kg-day	1.0E-02	mg/kg-day	2.3E-03
				Inorganics							
				Arsenic	3.49E+01	µg/L	3.1E-04	mg/kg-day	3.0E-04	mg/kg-day	1.0E+00
				Cobalt	6.20E+00	µg/L	5.5E-05	mg/kg-day	3.0E-04	mg/kg-day	1.8E-01
				Iron	1.18E+04	µg/L	1.0E-01	mg/kg-day	7.0E-01	mg/kg-day	1.5E-01
				Manganese	8.35E+02	µg/L	7.4E-03	mg/kg-day	2.4E-02	mg/kg-day	3.1E-01
			Exp. Route Total								1.7E+00
		Exposure Point Total									1.7E+00
	Exposure Media Total										1.7E+00
	Air	SWMU 43	**Inhalation**	**Organics**							
			(Ambient Air)	Tetrachloroethene	2.75E-08	mg/m^3	1.7E-08	mg/m^3	2.7E-01	(mg/m^3)	6.3E-08
			Exp. Route Total								6.3E-08
		Exposure Point Total									6.3E-08
	Exposure Media Total										6.3E-08
	Air	SWMU 43	**Inhalation**	**Organics**							
			(Indoor Air)	Tetrachloroethene	9.44E-05	mg/m^3	5.8E-05	mg/m^3	2.7E-01	(mg/m^3)	2.2E-04
			Exp. Route Total								2.2E-04
		Exposure Point Total									2.2E-04
	Exposure Media Total										2.2E-04
Groundwater Total											1.7E+00
										Total of Receptor Hazards Across All Media	1.9E+00

N/A = Not Applicable.

Since total soil represents the more highly contaminated portion of soil, total risk and hazard estimates are conservatively based on this data grouping.

Table E.1-48
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.7E-13	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	2.2E-08
				Aroclor 1016	1.16E-01	mg/kg	2.7E-09	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	1.9E-10
				Aroclor 1254	9.07E-02	mg/kg	2.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-09
				Benzo(a)pyrene	3.68E-02	mg/kg	8.5E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.2E-09
				p-chloro-m-cresol	7.61E-02	mg/kg	1.8E-09	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	2.4E-09	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	3.6E-09	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-09
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	1.2E-08	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	3.7E-10
				Inorganics							
				Aluminum	1.19E+04	mg/kg	2.7E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	1.3E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-07
				Cobalt	1.03E+01	mg/kg	2.4E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	4.3E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	1.4E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	7.4E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								2.3E-07
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.6E-14	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	2.0E-09
				Aroclor 1016	1.16E-01	mg/kg	1.1E-09	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	7.9E-11
				Aroclor 1254	9.07E-02	mg/kg	8.8E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-09
				Benzo(a)pyrene	3.68E-02	mg/kg	3.3E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-09
				p-chloro-m-cresol	7.61E-02	mg/kg	5.3E-10	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	9.4E-10	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	1.1E-09	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	7.6E-10
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	1.2E-09	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-11
				Inorganics							
				Aluminum	1.19E+04	mg/kg	8.2E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	1.1E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08
				Cobalt	1.03E+01	mg/kg	7.1E-09	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	1.3E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	4.1E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	2.2E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								2.4E-08
		Exposure Point Total									2.5E-07
	Exposure Media Total										2.5E-07

Table E.1-48
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	4.46E-10	µg/m^3	2.2E-12	µg/m^3	3.8E+01	(µg/m^3)$^{-1}$	8.3E-11
				Aroclor 1016	6.90E-06	µg/m^3	3.4E-08	µg/m^3	2.0E-05	(µg/m^3)$^{-1}$	6.8E-13
				Aroclor 1254	5.40E-06	µg/m^3	2.6E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.5E-11
				Benzo(a)pyrene	2.19E-06	µg/m^3	1.1E-08	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	1.2E-11
				p-chloro-m-cresol	4.53E-06	µg/m^3	2.2E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Dibenzofuran	6.25E-06	µg/m^3	3.1E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4-Dinitrotoluene	9.40E-06	µg/m^3	4.6E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4,6-Trinitrotoluene	3.17E-05	µg/m^3	1.5E-07	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Inorganics							
				Aluminum	7.08E-01	µg/m^3	3.5E-03	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Arsenic	3.29E-04	µg/m^3	1.6E-06	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	6.9E-09
				Cobalt	6.13E-04	µg/m^3	3.0E-06	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	2.7E-08
				Iron	1.11E+00	µg/m^3	5.4E-03	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Manganese	3.56E-02	µg/m^3	1.7E-04	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Vanadium	1.91E-03	µg/m^3	9.3E-06	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
			Exp. Route Total								3.4E-08
		Exposure Point Total									3.4E-08
	Exposure Media Total										3.4E-08
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											2.9E-07
Groundwater	Air	SWMU 43	**Inhalation** (Trench Air)	**Organics** Tetrachloroethene	2.75E-01	µg/m^3	1.3E-03	µg/m^3	5.9E-06	(µg/m^3)$^{-1}$	7.9E-09
			Exp. Route Total								7.9E-09
		Exposure Point Total									7.9E-09
	Exposure Media Total										7.9E-09
Groundwater Total											7.9E-09
										Total of Receptor Risks Across All Media	2.9E-07

N/A = Not Applicable.

Table E.1-49
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.2E-11	mg/kg-day	1.0E-09	mg/kg-day	1.2E-02
				Aroclor 1016	1.16E-01	mg/kg	1.9E-07	mg/kg-day	7.0E-05	mg/kg-day	2.7E-03
				Aroclor 1254	9.07E-02	mg/kg	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	7.3E-03
				Benzo(a)pyrene	3.68E-02	mg/kg	5.9E-08	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	1.2E-07	mg/kg-day	5.0E-02	mg/kg-day	2.5E-06
				Dibenzofuran	1.05E-01	mg/kg	1.7E-07	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	2.6E-07	mg/kg-day	2.0E-03	mg/kg-day	1.3E-04
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	8.6E-07	mg/kg-day	5.0E-04	mg/kg-day	1.7E-03
				Inorganics							
				Aluminum	1.19E+04	mg/kg	1.9E-02	mg/kg-day	1.0E+00	mg/kg-day	1.9E-02
				Arsenic	5.53E+00	mg/kg	8.9E-06	mg/kg-day	3.0E-04	mg/kg-day	3.0E-02
				Cobalt	1.03E+01	mg/kg	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	5.5E-02
				Iron	1.87E+04	mg/kg	3.0E-02	mg/kg-day	7.0E-01	mg/kg-day	4.3E-02
				Manganese	5.98E+02	mg/kg	9.7E-04	mg/kg-day	2.4E-02	mg/kg-day	4.0E-02
				Vanadium	3.21E+01	mg/kg	5.2E-05	mg/kg-day	5.0E-03	mg/kg-day	1.0E-02
			Exp. Route Total								2.2E-01
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.1E-12	mg/kg-day	1.0E-09	mg/kg-day	1.1E-03
				Aroclor 1016	1.16E-01	mg/kg	7.9E-08	mg/kg-day	7.0E-05	mg/kg-day	1.1E-03
				Aroclor 1254	9.07E-02	mg/kg	6.2E-08	mg/kg-day	2.0E-05	mg/kg-day	3.1E-03
				Benzo(a)pyrene	3.68E-02	mg/kg	2.3E-08	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	3.7E-08	mg/kg-day	5.0E-02	mg/kg-day	7.4E-07
				Dibenzofuran	1.05E-01	mg/kg	6.6E-08	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	7.8E-08	mg/kg-day	2.0E-03	mg/kg-day	3.9E-05
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	8.2E-08	mg/kg-day	5.0E-04	mg/kg-day	1.6E-04
				Inorganics							
				Aluminum	1.19E+04	mg/kg	5.8E-04	mg/kg-day	1.0E+00	mg/kg-day	5.8E-04
				Arsenic	5.53E+00	mg/kg	8.0E-07	mg/kg-day	3.0E-04	mg/kg-day	2.7E-03
				Cobalt	1.03E+01	mg/kg	5.0E-07	mg/kg-day	3.0E-04	mg/kg-day	1.7E-03
				Iron	1.87E+04	mg/kg	9.1E-04	mg/kg-day	7.0E-01	mg/kg-day	1.3E-03
				Manganese	5.98E+02	mg/kg	2.9E-05	mg/kg-day	9.6E-04	mg/kg-day	3.0E-02
				Vanadium	3.21E+01	mg/kg	1.6E-06	mg/kg-day	1.3E-04	mg/kg-day	1.2E-02
			Exp. Route Total								5.4E-02
		Exposure Point Total									2.8E-01
	Exposure Media Total										2.8E-01

Table E.1-49
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	4.46E-13	mg/m^3	1.5E-13	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1016	6.90E-09	mg/m^3	2.4E-09	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1254	5.40E-09	mg/m^3	1.8E-09	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	2.19E-09	mg/m^3	7.5E-10	mg/m^3	N/A	(mg/m^3)	---
				p-chloro-m-cresol	4.53E-09	mg/m^3	1.6E-09	mg/m^3	N/A	(mg/m^3)	---
				Dibenzofuran	6.25E-09	mg/m^3	2.1E-09	mg/m^3	N/A	(mg/m^3)	---
				2,4-Dinitrotoluene	9.40E-09	mg/m^3	3.2E-09	mg/m^3	N/A	(mg/m^3)	---
				2,4,6-Trinitrotoluene	3.17E-08	mg/m^3	1.1E-08	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	7.08E-04	mg/m^3	2.4E-04	mg/m^3	5.0E-03	(mg/m^3)	4.9E-02
				Arsenic	3.29E-07	mg/m^3	1.1E-07	mg/m^3	3.0E-05	(mg/m^3)	3.8E-03
				Cobalt	6.13E-07	mg/m^3	2.1E-07	mg/m^3	6.0E-06	(mg/m^3)	3.5E-02
				Iron	1.11E-03	mg/m^3	3.8E-04	mg/m^3	N/A	(mg/m^3)	---
				Manganese	3.56E-05	mg/m^3	1.2E-05	mg/m^3	5.0E-05	(mg/m^3)	2.4E-01
				Vanadium	1.91E-06	mg/m^3	6.5E-07	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								3.3E-01
		Exposure Point Total									3.3E-01
	Exposure Media Total										3.3E-01
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											6.1E-01
Groundwater	Air	SWMU 43	**Inhalation** (Trench Air)	**Organics** Tetrachloroethene	2.75E-04	mg/m^3	9.4E-05	mg/m^3	2.7E-01	(mg/m^3)	3.5E-04
			Exp. Route Total								3.5E-04
		Exposure Point Total									3.5E-04
	Exposure Media Total										3.5E-04
Groundwater Total											3.5E-04
										Total of Receptor Hazards Across All Media	6.1E-01

N/A = Not Applicable.

Table E.1-50
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.2E-11	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	1.5E-06
				Aroclor 1016	1.16E-01	mg/kg	1.8E-07	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-08
				Aroclor 1254	9.07E-02	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07
				Benzo(a)pyrene	3.68E-02	mg/kg	ADAF	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-06
				p-chloro-m-cresol	7.61E-02	mg/kg	1.2E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	1.6E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	2.5E-07	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-07
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	8.3E-07	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	2.5E-08
				Inorganics							
				Aluminum	1.19E+04	mg/kg	1.9E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	8.7E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-05
				Cobalt	1.03E+01	mg/kg	1.6E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	2.9E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	9.4E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	5.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.7E-05
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.1E-12	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	1.4E-07
				Aroclor 1016	1.16E-01	mg/kg	8.0E-08	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	5.6E-09
				Aroclor 1254	9.07E-02	mg/kg	6.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07
				Benzo(a)pyrene	3.68E-02	mg/kg	ADAF	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-07
				p-chloro-m-cresol	7.61E-02	mg/kg	3.8E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	6.7E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	8.0E-08	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	5.4E-08
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	8.4E-08	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	2.5E-09
				Inorganics							
				Aluminum	1.19E+04	mg/kg	5.9E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	8.2E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-06
				Cobalt	1.03E+01	mg/kg	5.1E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	9.2E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	3.0E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	1.6E-06	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								2.3E-06
		Exposure Point Total									1.9E-05
	Exposure Media Total										1.9E-05

Table E.1-50
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.69E-12	µg/m^3	1.5E-12	µg/m^3	3.8E+01	(µg/m^3)$^{-1}$	5.8E-11
				Aroclor 1016	5.72E-08	µg/m^3	2.3E-08	µg/m^3	2.0E-05	(µg/m^3)$^{-1}$	4.7E-13
				Aroclor 1254	4.47E-08	µg/m^3	1.8E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.0E-11
				Benzo(a)pyrene	1.81E-08	µg/m^3	ADAF	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	2.1E-11
				p-chloro-m-cresol	3.75E-08	µg/m^3	1.5E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Dibenzofuran	5.17E-08	µg/m^3	2.1E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4-Dinitrotoluene	7.79E-08	µg/m^3	3.2E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4,6-Trinitrotoluene	2.62E-07	µg/m^3	1.1E-07	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Inorganics							
				Aluminum	5.86E-03	µg/m^3	2.4E-03	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Arsenic	2.73E-06	µg/m^3	1.1E-06	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	4.8E-09
				Cobalt	5.08E-06	µg/m^3	2.1E-06	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.9E-08
				Iron	9.22E-03	µg/m^3	3.8E-03	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Manganese	2.95E-04	µg/m^3	1.2E-04	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Vanadium	1.58E-05	µg/m^3	6.5E-06	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
			Exp. Route Total								2.4E-08
		Exposure Point Total									2.4E-08
	Exposure Media Total										2.4E-08
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											1.9E-05

Table E.1-50
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Groundwater	Groundwater	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	3.9E-05	mg/kg-day	5.4E-01	$(mg/kg-day)^{-1}$	2.1E-05
				Inorganics							
				Arsenic	3.49E+01	µg/L	5.2E-04	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	7.8E-04
				Cobalt	6.20E+00	µg/L	9.2E-05	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Iron	1.18E+04	µg/L	1.8E-01	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
				Manganese	8.35E+02	µg/L	1.2E-02	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	---
			Exp. Route Total								8.0E-04
			Dermal Absorption	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	2.2E-05	mg/kg-day	5.4E-01	$(mg/kg-day)^{-1}$	1.2E-05
				Inorganics							
				Arsenic	3.49E+01	µg/L	N/A	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	NV
				Cobalt	6.20E+00	µg/L	N/A	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	NV
				Iron	1.18E+04	µg/L	N/A	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	NV
				Manganese	8.35E+02	µg/L	N/A	mg/kg-day	N/A	$(mg/kg-day)^{-1}$	NV
			Exp. Route Total								1.2E-05
		Exposure Point Total									8.1E-04
	Exposure Media Total										8.1E-04
	Air	SWMU 43	**Inhalation** (Indoor Air)	**Organics** Tetrachloroethene	9.44E-02	$µg/m^3$	3.9E-02	$µg/m^3$	5.9E-06	$(µg/m^3)^{-1}$	2.3E-07
			Exp. Route Total								2.3E-07
		Exposure Point Total									2.3E-07
	Exposure Media Total										2.3E-07
			Inhalation (Shower Room)	**Organics** Tetrachloroethene	3.67E+00	$µg/m^3$	1.2E+00	$µg/m^3$	5.9E-06	$(µg/m^3)^{-1}$	7.1E-06
			Exp. Route Total								7.1E-06
		Exposure Point Total									7.1E-06
	Exposure Media Total										7.1E-06
	Home Grown Produce	SWMU 43	**Ingestion**	**Inorganics** Arsenic	3.8E-03	mg/kg	7.2E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.1E-06
			Exp. Route Total								1.1E-06
		Exposure Point Total									1.1E-06
	Exposure Media Total										1.1E-06
Groundwater Total											8.2E-04
										Total of Receptor Risks Across All Media	8.4E-04

N/A = Not Applicable.
NC = Not calculated. Intake for Lifetime Resident based on age-adjusted calculation.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.
ADAF = Age-Dependent Adjustment Factors were applied in estimating risks associated with early life exposures.

Table E.1-51
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Adult Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	1.0E-11	mg/kg-day	1.0E-09	mg/kg-day	1.0E-02
				Aroclor 1016	1.16E-01	mg/kg	1.6E-07	mg/kg-day	7.0E-05	mg/kg-day	2.3E-03
				Aroclor 1254	9.07E-02	mg/kg	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	6.2E-03
				Benzo(a)pyrene	3.68E-02	mg/kg	5.0E-08	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	1.0E-07	mg/kg-day	5.0E-02	mg/kg-day	2.1E-06
				Dibenzofuran	1.05E-01	mg/kg	1.4E-07	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	2.2E-07	mg/kg-day	2.0E-03	mg/kg-day	1.1E-04
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	7.3E-07	mg/kg-day	5.0E-04	mg/kg-day	1.5E-03
				Inorganics							
				Aluminum	1.19E+04	mg/kg	1.6E-02	mg/kg-day	1.0E+00	mg/kg-day	1.6E-02
				Arsenic	5.53E+00	mg/kg	7.6E-06	mg/kg-day	3.0E-04	mg/kg-day	2.5E-02
				Cobalt	1.03E+01	mg/kg	1.4E-05	mg/kg-day	3.0E-04	mg/kg-day	4.7E-02
				Iron	1.87E+04	mg/kg	2.6E-02	mg/kg-day	7.0E-01	mg/kg-day	3.7E-02
				Manganese	5.98E+02	mg/kg	8.2E-04	mg/kg-day	2.4E-02	mg/kg-day	3.4E-02
				Vanadium	3.21E+01	mg/kg	4.4E-05	mg/kg-day	5.0E-03	mg/kg-day	8.8E-03
			Exp. Route Total								1.9E-01
			Dermal	**Organics**							
			Absorption	TCDD TE	7.49E-06	mg/kg	1.2E-12	mg/kg-day	1.0E-09	mg/kg-day	1.2E-03
				Aroclor 1016	1.16E-01	mg/kg	8.9E-08	mg/kg-day	7.0E-05	mg/kg-day	1.3E-03
				Aroclor 1254	9.07E-02	mg/kg	6.9E-08	mg/kg-day	2.0E-05	mg/kg-day	3.5E-03
				Benzo(a)pyrene	3.68E-02	mg/kg	2.6E-08	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	4.2E-08	mg/kg-day	5.0E-02	mg/kg-day	8.3E-07
				Dibenzofuran	1.05E-01	mg/kg	7.5E-08	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	8.8E-08	mg/kg-day	2.0E-03	mg/kg-day	4.4E-05
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	9.3E-08	mg/kg-day	5.0E-04	mg/kg-day	1.9E-04
				Inorganics							
				Aluminum	1.19E+04	mg/kg	6.5E-04	mg/kg-day	1.0E+00	mg/kg-day	6.5E-04
				Arsenic	5.53E+00	mg/kg	9.1E-07	mg/kg-day	3.0E-04	mg/kg-day	3.0E-03
				Cobalt	1.03E+01	mg/kg	5.6E-07	mg/kg-day	3.0E-04	mg/kg-day	1.9E-03
				Iron	1.87E+04	mg/kg	1.0E-03	mg/kg-day	7.0E-01	mg/kg-day	1.5E-03
				Manganese	5.98E+02	mg/kg	3.3E-05	mg/kg-day	9.6E-04	mg/kg-day	3.4E-02
				Vanadium	3.21E+01	mg/kg	1.8E-06	mg/kg-day	1.3E-04	mg/kg-day	1.3E-02
			Exp. Route Total								6.1E-02
		Exposure Point Total									2.5E-01
	Exposure Media Total										2.5E-01

Table E.1-51
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Adult Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.69E-15	mg/m^3	3.5E-15	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1016	5.72E-11	mg/m^3	5.5E-11	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1254	4.47E-11	mg/m^3	4.3E-11	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	1.81E-11	mg/m^3	1.7E-11	mg/m^3	N/A	(mg/m^3)	---
				p-chloro-m-cresol	3.75E-11	mg/m^3	3.6E-11	mg/m^3	N/A	(mg/m^3)	---
				Dibenzofuran	5.17E-11	mg/m^3	5.0E-11	mg/m^3	N/A	(mg/m^3)	---
				2,4-Dinitrotoluene	7.79E-11	mg/m^3	7.5E-11	mg/m^3	N/A	(mg/m^3)	---
				2,4,6-Trinitrotoluene	2.62E-10	mg/m^3	2.5E-10	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.86E-06	mg/m^3	5.6E-06	mg/m^3	5.0E-03	(mg/m^3)	1.1E-03
				Arsenic	2.73E-09	mg/m^3	2.6E-09	mg/m^3	3.0E-05	(mg/m^3)	8.7E-05
				Cobalt	5.08E-09	mg/m^3	4.9E-09	mg/m^3	6.0E-06	(mg/m^3)	8.1E-04
				Iron	9.22E-06	mg/m^3	8.8E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	2.95E-07	mg/m^3	2.8E-07	mg/m^3	5.0E-05	(mg/m^3)	5.7E-03
				Vanadium	1.58E-08	mg/m^3	1.5E-08	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								7.7E-03
		Exposure Point Total									7.7E-03
	Exposure Media Total										7.7E-03
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics**							
				No COPCs							0.0E+00
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											2.6E-01

Table E.1-51
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Adult Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Quotient
Groundwater	Groundwater	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	7.1E-05	mg/kg-day	1.0E-02	mg/kg-day	7.1E-03
				Inorganics							
				Arsenic	3.49E+01	µg/L	9.6E-04	mg/kg-day	3.0E-04	mg/kg-day	3.2E+00
				Cobalt	6.20E+00	µg/L	1.7E-04	mg/kg-day	3.0E-04	mg/kg-day	5.7E-01
				Iron	1.18E+04	µg/L	3.2E-01	mg/kg-day	7.0E-01	mg/kg-day	4.6E-01
				Manganese	8.35E+02	µg/L	2.3E-02	mg/kg-day	2.4E-02	mg/kg-day	9.5E-01
			Exp. Route Total								5.2E+00
			Dermal	**Organics**							
			Absorption	Tetrachloroethene	2.60E+00	µg/L	3.9E-05	mg/kg-day	1.0E-02	mg/kg-day	3.9E-03
				Inorganics							
				Arsenic	3.49E+01	µg/L	N/A	mg/kg-day	3.0E-04	mg/kg-day	NV
				Cobalt	6.20E+00	µg/L	N/A	mg/kg-day	3.0E-04	mg/kg-day	NV
				Iron	1.18E+04	µg/L	N/A	mg/kg-day	7.0E-01	mg/kg-day	NV
				Manganese	8.35E+02	µg/L	N/A	mg/kg-day	9.6E-04	mg/kg-day	NV
			Exp. Route Total								3.9E-03
		Exposure Point Total									5.2E+00
	Exposure Media Total										5.2E+00
	Air	SWMU 43	**Inhalation**	**Organics**							
			(Indoor Air)	Tetrachloroethene	9.44E-05	mg/m³	9.1E-05	mg/m³	2.7E-01	(mg/m³)	3.4E-04
			Exp. Route Total								3.4E-04
		Exposure Point Total									3.4E-04
	Exposure Media Total										3.4E-04
			Inhalation	**Organics**							
			(Shower Room)	Tetrachloroethene	3.67E-03	mg/m³	3.5E-03	mg/m³	2.7E-01	(mg/m³)	1.3E-02
			Exp. Route Total								1.3E-02
		Exposure Point Total									1.3E-02
	Exposure Media Total										1.3E-02
	Home Grown Produce	SWMU 43	**Ingestion**	**Inorganics**							
				Arsenic	3.8E-03	mg/kg	9.7E-07	mg/kg-day	3.0E-04	mg/kg-day	3.2E-03
			Exp. Route Total								3.2E-03
		Exposure Point Total									3.2E-03
	Exposure Media Total										3.2E-03
Groundwater Total											5.2E+00
										Total of Receptor Hazards Across All Media	5.5E+00

N/A = Not Applicable.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-52
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	8.2E-12	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	1.1E-06
				Aroclor 1016	1.16E-01	mg/kg	1.3E-07	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-09
				Aroclor 1254	9.07E-02	mg/kg	9.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07
				Benzo(a)pyrene	3.68E-02	mg/kg	4.0E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07
				p-chloro-m-cresol	7.61E-02	mg/kg	8.3E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	1.2E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	1.7E-07	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-07
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	5.8E-07	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-08
				Inorganics							
				Aluminum	1.19E+04	mg/kg	1.3E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	6.1E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-06
				Cobalt	1.03E+01	mg/kg	1.1E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	2.0E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	6.6E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	3.5E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.1E-05
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	6.9E-13	mg/kg-day	1.3E+05	$(mg/kg\text{-}day)^{-1}$	9.0E-08
				Aroclor 1016	1.16E-01	mg/kg	5.0E-08	mg/kg-day	7.0E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-09
				Aroclor 1254	9.07E-02	mg/kg	3.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.8E-08
				Benzo(a)pyrene	3.68E-02	mg/kg	1.5E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07
				p-chloro-m-cresol	7.61E-02	mg/kg	2.3E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Dibenzofuran	1.05E-01	mg/kg	4.2E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	4.9E-08	mg/kg-day	6.8E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-08
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	5.2E-08	mg/kg-day	3.0E-02	$(mg/kg\text{-}day)^{-1}$	1.6E-09
				Inorganics							
				Aluminum	1.19E+04	mg/kg	3.7E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Arsenic	5.53E+00	mg/kg	5.1E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-07
				Cobalt	1.03E+01	mg/kg	3.2E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.87E+04	mg/kg	5.7E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	5.98E+02	mg/kg	1.8E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Vanadium	3.21E+01	mg/kg	9.8E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.1E-06
		Exposure Point Total									1.2E-05
	Exposure Media Total										1.2E-05

Table E.1-52
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.69E-12	µg/m^3	3.0E-13	µg/m^3	3.8E+01	(µg/m^3)$^{-1}$	1.2E-11
				Aroclor 1016	5.72E-08	µg/m^3	4.7E-09	µg/m^3	2.0E-05	(µg/m^3)$^{-1}$	9.4E-14
				Aroclor 1254	4.47E-08	µg/m^3	3.7E-09	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.1E-12
				Benzo(a)pyrene	1.81E-08	µg/m^3	1.5E-09	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	1.6E-12
				p-chloro-m-cresol	3.75E-08	µg/m^3	3.1E-09	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Dibenzofuran	5.17E-08	µg/m^3	4.3E-09	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4-Dinitrotoluene	7.79E-08	µg/m^3	6.4E-09	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				2,4,6-Trinitrotoluene	2.62E-07	µg/m^3	2.2E-08	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Inorganics							
				Aluminum	5.86E-03	µg/m^3	4.8E-04	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Arsenic	2.73E-06	µg/m^3	2.2E-07	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	9.6E-10
				Cobalt	5.08E-06	µg/m^3	4.2E-07	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	3.8E-09
				Iron	9.22E-03	µg/m^3	7.6E-04	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Manganese	2.95E-04	µg/m^3	2.4E-05	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
				Vanadium	1.58E-05	µg/m^3	1.3E-06	µg/m^3	N/A	(µg/m^3)$^{-1}$	---
			Exp. Route Total								4.7E-09
		Exposure Point Total									4.7E-09
	Exposure Media Total										4.7E-09
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											1.2E-05

Table E.1-52
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Groundwater	Groundwater	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	1.4E-05	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	7.7E-06
				Inorganics							
				Arsenic	3.49E+01	µg/L	1.9E-04	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-04
				Cobalt	6.20E+00	µg/L	3.4E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	1.18E+04	µg/L	6.5E-02	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	8.35E+02	µg/L	4.6E-03	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								2.9E-04
			Dermal	**Organics**							
			Absorption	Tetrachloroethene	2.60E+00	µg/L	8.3E-06	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	4.5E-06
				Inorganics							
				Arsenic	3.49E+01	µg/L	N/A	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	NV
				Cobalt	6.20E+00	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Iron	1.18E+04	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
				Manganese	8.35E+02	µg/L	N/A	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	NV
			Exp. Route Total								4.5E-06
		Exposure Point Total									3.0E-04
	Exposure Media Total										3.0E-04
	Air	SWMU 43	**Inhalation**	**Organics**							
			(Indoor Air)	Tetrachloroethene	9.44E-02	$\mu g/m^3$	7.8E-03	$\mu g/m^3$	5.9E-06	$(\mu g/m^3)^{-1}$	4.6E-08
			Exp. Route Total								4.6E-08
		Exposure Point Total									4.6E-08
	Exposure Media Total										4.6E-08
	Home Grown Produce	SWMU 43	**Ingestion**	**Inorganics**							
				Arsenic	3.8E-03	mg/kg	3.9E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-07
			Exp. Route Total								5.9E-07
		Exposure Point Total									5.9E-07
	Exposure Media Total										5.9E-07
Groundwater Total											3.0E-04
										Total of Receptor Risks Across All Media	3.1E-04

N/A = Not Applicable.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-53
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Total Soil	SWMU 43	**Ingestion**	**Organics**							
				TCDD TE	7.49E-06	mg/kg	9.6E-11	mg/kg-day	1.0E-09	mg/kg-day	9.6E-02
				Aroclor 1016	1.16E-01	mg/kg	1.5E-06	mg/kg-day	7.0E-05	mg/kg-day	2.1E-02
				Aroclor 1254	9.07E-02	mg/kg	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	5.8E-02
				Benzo(a)pyrene	3.68E-02	mg/kg	4.7E-07	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	9.7E-07	mg/kg-day	5.0E-02	mg/kg-day	1.9E-05
				Dibenzofuran	1.05E-01	mg/kg	1.3E-06	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	2.0E-06	mg/kg-day	2.0E-03	mg/kg-day	1.0E-03
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	6.8E-06	mg/kg-day	5.0E-04	mg/kg-day	1.4E-02
				Inorganics							
				Aluminum	1.19E+04	mg/kg	1.5E-01	mg/kg-day	1.0E+00	mg/kg-day	1.5E-01
				Arsenic	5.53E+00	mg/kg	7.1E-05	mg/kg-day	3.0E-04	mg/kg-day	2.4E-01
				Cobalt	1.03E+01	mg/kg	1.3E-04	mg/kg-day	3.0E-04	mg/kg-day	4.4E-01
				Iron	1.87E+04	mg/kg	2.4E-01	mg/kg-day	7.0E-01	mg/kg-day	3.4E-01
				Manganese	5.98E+02	mg/kg	7.6E-03	mg/kg-day	2.4E-02	mg/kg-day	3.2E-01
				Vanadium	3.21E+01	mg/kg	4.1E-04	mg/kg-day	5.0E-03	mg/kg-day	8.2E-02
			Exp. Route Total								1.8E+00
			Dermal Absorption	**Organics**							
				TCDD TE	7.49E-06	mg/kg	8.0E-12	mg/kg-day	1.0E-09	mg/kg-day	8.0E-03
				Aroclor 1016	1.16E-01	mg/kg	5.8E-07	mg/kg-day	7.0E-05	mg/kg-day	8.3E-03
				Aroclor 1254	9.07E-02	mg/kg	4.5E-07	mg/kg-day	2.0E-05	mg/kg-day	2.3E-02
				Benzo(a)pyrene	3.68E-02	mg/kg	1.7E-07	mg/kg-day	N/A	mg/kg-day	---
				p-chloro-m-cresol	7.61E-02	mg/kg	2.7E-07	mg/kg-day	5.0E-02	mg/kg-day	5.4E-06
				Dibenzofuran	1.05E-01	mg/kg	4.9E-07	mg/kg-day	N/A	mg/kg-day	---
				2,4-Dinitrotoluene	1.58E-01	mg/kg	5.8E-07	mg/kg-day	2.0E-03	mg/kg-day	2.9E-04
				2,4,6-Trinitrotoluene	5.32E-01	mg/kg	6.1E-07	mg/kg-day	5.0E-04	mg/kg-day	1.2E-03
				Inorganics							
				Aluminum	1.19E+04	mg/kg	4.3E-03	mg/kg-day	1.0E+00	mg/kg-day	4.3E-03
				Arsenic	5.53E+00	mg/kg	5.9E-06	mg/kg-day	3.0E-04	mg/kg-day	2.0E-02
				Cobalt	1.03E+01	mg/kg	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	1.2E-02
				Iron	1.87E+04	mg/kg	6.7E-03	mg/kg-day	7.0E-01	mg/kg-day	9.6E-03
				Manganese	5.98E+02	mg/kg	2.1E-04	mg/kg-day	9.6E-04	mg/kg-day	2.2E-01
				Vanadium	3.21E+01	mg/kg	1.1E-05	mg/kg-day	1.3E-04	mg/kg-day	8.8E-02
			Exp. Route Total								4.0E-01
		Exposure Point Total									2.2E+00
	Exposure Media Total										2.2E+00

Table E.1-53
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Total Soil	Air (Particulates)	SWMU 43	**Inhalation**	**Organics**							
				TCDD TE	3.69E-15	mg/m^3	3.5E-15	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1016	5.72E-11	mg/m^3	5.5E-11	mg/m^3	N/A	(mg/m^3)	---
				Aroclor 1254	4.47E-11	mg/m^3	4.3E-11	mg/m^3	N/A	(mg/m^3)	---
				Benzo(a)pyrene	1.81E-11	mg/m^3	1.7E-11	mg/m^3	N/A	(mg/m^3)	---
				p-chloro-m-cresol	3.75E-11	mg/m^3	3.6E-11	mg/m^3	N/A	(mg/m^3)	---
				Dibenzofuran	5.17E-11	mg/m^3	5.0E-11	mg/m^3	N/A	(mg/m^3)	---
				2,4-Dinitrotoluene	7.79E-11	mg/m^3	7.5E-11	mg/m^3	N/A	(mg/m^3)	---
				2,4,6-Trinitrotoluene	2.62E-10	mg/m^3	2.5E-10	mg/m^3	N/A	(mg/m^3)	---
				Inorganics							
				Aluminum	5.86E-06	mg/m^3	5.6E-06	mg/m^3	5.0E-03	(mg/m^3)	1.1E-03
				Arsenic	2.73E-09	mg/m^3	2.6E-09	mg/m^3	3.0E-05	(mg/m^3)	8.7E-05
				Cobalt	5.08E-09	mg/m^3	4.9E-09	mg/m^3	6.0E-06	(mg/m^3)	8.1E-04
				Iron	9.22E-06	mg/m^3	8.8E-06	mg/m^3	N/A	(mg/m^3)	---
				Manganese	2.95E-07	mg/m^3	2.8E-07	mg/m^3	5.0E-05	(mg/m^3)	5.7E-03
				Vanadium	1.58E-08	mg/m^3	1.5E-08	mg/m^3	N/A	(mg/m^3)	---
			Exp. Route Total								7.7E-03
		Exposure Point Total									7.7E-03
	Exposure Media Total										7.7E-03
	Air (Volatiles)	SWMU 43	**Inhalation**	**Organics** No COPCs							
			Exp. Route Total								0.0E+00
		Exposure Point Total									0.0E+00
	Exposure Media Total										0.0E+00
Total Soil Total											2.2E+00

Table E.1-53
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Groundwater	Groundwater	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	1.7E-04	mg/kg-day	1.0E-02	mg/kg-day	1.7E-02
				Inorganics							
				Arsenic	3.49E+01	µg/L	2.2E-03	mg/kg-day	3.0E-04	mg/kg-day	7.4E+00
				Cobalt	6.20E+00	µg/L	4.0E-04	mg/kg-day	3.0E-04	mg/kg-day	1.3E+00
				Iron	1.18E+04	µg/L	7.5E-01	mg/kg-day	7.0E-01	mg/kg-day	1.1E+00
				Manganese	8.35E+02	µg/L	5.3E-02	mg/kg-day	2.4E-02	mg/kg-day	2.2E+00
			Exp. Route Total								1.2E+01
			Dermal Absorption	**Organics**							
				Tetrachloroethene	2.60E+00	µg/L	9.7E-05	mg/kg-day	1.0E-02	mg/kg-day	9.7E-03
				Inorganics							
				Arsenic	3.49E+01	µg/L	N/A	mg/kg-day	3.0E-04	mg/kg-day	NV
				Cobalt	6.20E+00	µg/L	N/A	mg/kg-day	3.0E-04	mg/kg-day	NV
				Iron	1.18E+04	µg/L	N/A	mg/kg-day	7.0E-01	mg/kg-day	NV
				Manganese	8.35E+02	µg/L	N/A	mg/kg-day	9.6E-04	mg/kg-day	NV
			Exp. Route Total								9.7E-03
		Exposure Point Total									1.2E+01
	Exposure Media Total										1.2E+01
	Air	SWMU 43	**Inhalation** (Indoor Air)	**Organics**							
				Tetrachloroethene	9.44E-05	mg/m³	9.1E-05	mg/m³	2.7E-01	(mg/m³)	3.4E-04
			Exp. Route Total								3.4E-04
		Exposure Point Total									3.4E-04
	Exposure Media Total										3.4E-04
	Home Grown Produce	SWMU 43	**Ingestion**	**Inorganics**							
				Arsenic	3.8E-03	mg/kg	4.5E-06	mg/kg-day	3.0E-04	mg/kg-day	1.5E-02
			Exp. Route Total								1.5E-02
		Exposure Point Total									1.5E-02
	Exposure Media Total										1.5E-02
Groundwater Total											1.2E+01
										Total of Receptor Hazards Across All Media	1.4E+01

N/A = Not Applicable.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-54
Calculation of Cancer Risks
Reasonable Maximum Exposure
Future - Adult Recreational User

Scenario Timeframe: Future
Receptor Population: Off-site Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
Surface Water	New River (swimming)	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E-03	mg/L	7.0E-08	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	3.8E-08
				Inorganics							
				Arsenic	3.49E-02	mg/L	9.4E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-06
				Cobalt	6.20E-03	mg/L	1.7E-07	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	3.23E+01	mg/L	8.7E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.30E+00	mg/L	3.5E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Sodium	2.08E+01	mg/L	5.6E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.4E-06
			Dermal Absorption	**Organics**							
				Tetrachloroethene	2.60E-03	mg/L	2.2E-06	mg/kg-day	5.4E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-06
				Inorganics							
				Arsenic	3.49E-02	mg/L	3.4E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-07
				Cobalt	6.20E-03	mg/L	6.0E-08	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Iron	3.23E+01	mg/L	3.1E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Manganese	1.30E+00	mg/L	1.3E-05	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
				Sodium	2.08E+01	mg/L	2.0E-04	mg/kg-day	N/A	$(mg/kg\text{-}day)^{-1}$	---
			Exp. Route Total								1.7E-06
		Exposure Point Total									3.1E-06
	Exposure Media Total										3.1E-06
Surface Water Total											3.1E-06
										Total of Receptor Risks Across All Media	3.1E-06

N/A = Not Applicable.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-55
Calculation of Non-cancer Hazards
Reasonable Maximum Exposure
Future - Adult Recreational User

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units	
Surface Water	New River (Swimming)	SWMU 43	**Ingestion**	**Organics**							
				Tetrachloroethene	2.60E-03	mg/L	1.6E-07	mg/kg-day	1.0E-02	mg/kg-day	1.6E-05
				Inorganics							
				Arsenic	3.49E-02	mg/L	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.3E-03
				Cobalt	6.20E-03	mg/L	3.9E-07	mg/kg-day	3.0E-04	mg/kg-day	1.3E-03
				Iron	3.23E+01	mg/L	2.0E-03	mg/kg-day	7.0E-01	mg/kg-day	2.9E-03
				Manganese	1.30E+00	mg/L	8.1E-05	mg/kg-day	2.4E-02	mg/kg-day	3.4E-03
				Sodium	2.08E+01	mg/L	1.3E-03	mg/kg-day	N/A	mg/kg-day	---
			Exp. Route Total								1.5E-02
			Dermal Absorption	**Organics**							
				Tetrachloroethene	2.60E-03	mg/L	5.2E-06	mg/kg-day	1.0E-02	mg/kg-day	5.2E-04
				Inorganics							
				Arsenic	3.49E-02	mg/L	7.9E-07	mg/kg-day	3.0E-04	mg/kg-day	2.6E-03
				Cobalt	6.20E-03	mg/L	1.4E-07	mg/kg-day	3.0E-04	mg/kg-day	4.7E-04
				Iron	3.23E+01	mg/L	7.2E-04	mg/kg-day	7.0E-01	mg/kg-day	1.0E-03
				Manganese	1.30E+00	mg/L	2.9E-05	mg/kg-day	2.4E-02	mg/kg-day	1.2E-03
				Sodium	2.08E+01	mg/L	4.7E-04	mg/kg-day	N/A	mg/kg-day	---
			Exp. Route Total								5.9E-03
		Exposure Point Total									2.1E-02
	Exposure Media Total										2.1E-02
Surface Water Total											2.1E-02
										Total of Receptor Hazards Across All Media	2.1E-02

N/A = Not Applicable.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-56
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Current - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 43										
			TCDD TE	5.2E-08		1.0E-08	6.2E-08	Developmental nervous system	1.1E-03		2.2E-04	1.3E-03
			Benzo(a)pyrene	3.2E-08		2.7E-08	5.9E-08	N/A	---		---	---
			Aluminum	---		---	---	Developmental nervous system	2.6E-03		1.7E-04	2.8E-03
			Arsenic	1.1E-06		2.2E-07	1.3E-06	Skin, Vascular Effects	6.9E-03		1.4E-03	8.3E-03
			Cobalt	---		---	---	N/A	6.9E-03		4.6E-04	7.4E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	5.4E-03		3.6E-04	5.8E-03
			Manganese	---		---	---	CNS	7.3E-03		1.2E-02	1.9E-02
			Vanadium	---		---	---	Kidney	1.4E-03		3.6E-03	5.0E-03
			Chemical Total	1.2E-06		2.6E-07	1.5E-06		0.032		0.018	0.050
		Exposure Point Total					1.5E-06					0.050
	Exposure Media Total						1.5E-06					0.050
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		7.2E-12		7.2E-12	N/A		---		---
			Benzo(a)pyrene		2.3E-12		2.3E-12	N/A		---		---
			Aluminum		---		---	N/A		2.4E-04		2.4E-04
			Arsenic		1.5E-09		1.5E-09	N/A		3.2E-05		3.2E-05
			Cobalt		3.1E-09		3.1E-09	N/A		1.6E-04		1.6E-04
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		1.6E-03		1.6E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		4.6E-09		4.6E-09			0.0021		0.0021
		Exposure Point Total					4.6E-09					0.0021
	Exposure Media Total						4.6E-09					0.0021
Surface Soil Total							1.5E-06					0.052
Groundwater	Air (Ambient Air)	SWMU 43										
			Tetrachloroethene		7.9E-12		7.9E-12	CNS		1.4E-08		1.4.E-08
			Chemical Total		7.9E-12		7.9E-12			1.4E-08		1.4.E-08
		Exposure Point Total					7.9E-12					1.4E-08
	Exposure Media Total						7.9E-12					1.4E-08
Groundwater Total							7.9E-12					1.4E-08
Receptor Total							1.5E-06					0.052

1.5E-06

Total Hazard Across All Media = 0.052

Total CNS HI Across All Media = 0.025
Total Skin HI Across All Media = 0.0083
Total Vascular Effects HI Across All Media = 0.0083
Total Blood HI Across All Media = 0.0058
Total Liver HI Across All Media = 0.0058
Total GI Irritation HI Across All Media = 0.0058
Total Kidney HI Across All Media = 0.0050

CNS = Central Nervous System.
GI = Gastrointestinal
N/A = Not Available.

Table E.1-57
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU43										
			TCDD TE	6.8E-08		1.3E-08	8.2E-08	Developmental nervous system	1.5E-03		2.9E-04	1.8E-03
			Aroclor 1016	5.7E-10		5.2E-10	1.1E-09	Reduced birth weight	3.2E-04		3.0E-04	6.2E-04
			Aroclor 1254	1.3E-08		1.2E-08	2.4E-08	Immune System, Eyes	8.9E-04		8.2E-04	1.7E-03
			Benzo(a)pyrene	1.9E-08		1.6E-08	3.5E-08	N/A	---		---	---
			p-chloro-m-cresol	---		---	---	Nervous System	3.0E-07		2.0E-07	4.9E-07
			Dibenzofuran	---		---	---	N/A	---		---	---
			2,4-Dinitrotoluene	7.5E-09		5.1E-09	1.3E-08	CNS, Blood, Liver	1.5E-05		1.0E-05	2.6E-05
			2,4,6-Trinitrotoluene	1.1E-09		2.4E-10	1.4E-09	Liver	2.1E-04		4.4E-05	2.5E-04
			Aluminum	---		---	---	Developmental nervous system	2.3E-03		1.5E-04	2.5E-03
			Arsenic	5.8E-07		1.1E-07	6.9E-07	Skin, Vascular Effects	3.6E-03		7.1E-04	4.3E-03
			Cobalt	---		---	---	N/A	6.7E-03		4.4E-04	7.2E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	5.2E-03		3.5E-04	5.6E-03
			Manganese	---		---	---	CNS	4.9E-03		8.0E-03	1.3E-02
			Vanadium	---		---	---	Kidney	1.3E-03		3.2E-03	4.4E-03
			Chemical Total	6.9E-07		1.6E-07	8.5E-07		0.027		0.014	0.041
		Exposure Point Total					8.5E-07					0.041
	Exposure Media Total						8.5E-07					0.041
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		9.3E-12		9.3E-12	N/A		---		---
			Aroclor 1016		7.6E-14		7.6E-14	N/A		---		---
			Aroclor 1254		1.7E-12		1.7E-12	N/A		---		---
			Benzo(a)pyrene		1.3E-12		1.3E-12	N/A		---		---
			p-chloro-m-cresol		---		---	N/A		---		---
			Dibenzofuran		---		---	N/A		---		---
			2,4-Dinitrotoluene		---		---	N/A		---		---
			2,4,6-Trinitrotoluene		---		---	N/A		---		---
			Aluminum		---		---	N/A		2.2E-04		2.2E-04
			Arsenic		7.8E-10		7.8E-10	N/A		1.7E-05		1.7E-05
			Cobalt		3.0E-09		3.0E-09	N/A		1.6E-04		1.6E-04
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		1.1E-03		1.1E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		3.8E-09		3.8E-09			0.0015		0.0015
		Exposure Point Total					3.8E-09					0.0015
	Exposure Media Total						3.8E-09					0.0015
Total Soil Total							8.5E-07					0.043

Table E.1-57
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 43										
			TCDD TE	5.2E-08		1.0E-08	6.2E-08	Developmental nervous system	1.1E-03		2.2E-04	1.3E-03
			Benzo(a)pyrene	3.2E-08		2.7E-08	5.9E-08	N/A	---		---	---
			Aluminum	---		---	---	Developmental nervous system	2.6E-03		1.7E-04	2.8E-03
			Arsenic	1.1E-06		2.2E-07	1.3E-06	Skin, Vascular Effects	6.9E-03		1.4E-03	8.3E-03
			Cobalt	---		---	---	N/A	6.9E-03		4.6E-04	7.4E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	5.4E-03		3.6E-04	5.8E-03
			Manganese	---		---	---	CNS	7.3E-03		1.2E-02	1.9E-02
			Vanadium	---		---	---	Kidney	1.4E-03		3.6E-03	5.0E-03
			Chemical Total	1.2E-06		2.6E-07	1.5E-06		0.032		0.018	0.050
		Exposure Point Total					1.5E-06					0.050
	Exposure Media Total						1.5E-06					0.050
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		7.2E-12		7.2E-12	N/A		---		---
			Benzo(a)pyrene		2.3E-12		2.3E-12	N/A		---		---
			Aluminum		---		---	N/A		2.4E-04		2.4E-04
			Arsenic		1.5E-09		1.5E-09	N/A		3.2E-05		3.2E-05
			Cobalt		3.1E-09		3.1E-09	N/A		1.6E-04		1.6E-04
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		1.6E-03		1.6E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		4.6E-09		4.6E-09			0.0021		0.0021
		Exposure Point Total					4.6E-09					0.0021
	Exposure Media Total						4.6E-09					0.0021
Surface Soil Total							1.5E-06					0.052
Groundwater	Air (Ambient Air)	SWMU 43										
			Tetrachloroethene		7.9E-12		7.9E-12	CNS		1.4E-08		1.4.E-08
			Chemical Total		7.9E-12		7.9E-12			1.4E-08		1.4.E-08
		Exposure Point Total					7.9E-12					1.4.E-08
	Exposure Media Total						7.9E-12					1.4.E-08
Groundwater Total							7.9E-12					1.4E-08
Receptor Total[b]							1.5E-06					0.052

Total Risk Across All Media[a] = 1.5E-06

Total Hazard Across All Media[a] = 0.052

(a) Since surface soil represents the more highly contaminated portion of soil, total risk and hazard estimates are conservatively based on this soil data grouping.

CNS = Central nervous system.
GI = Gastrointestinal.
N/A = Not Available.

Total CNS HI Across All Media =	0.025
Total Skin HI Across All Media =	0.0083
Total Vascular Effects HI Across All Media =	0.0083
Total Blood HI Across All Media =	0.0058
Total Liver HI Across All Media =	0.0058
Total GI Irritation HI Across All Media =	0.0058
Total Kidney HI Across All Media =	0.0050

Table E.1-58
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43										
			TCDD TE	3.1E-07		6.1E-08	3.7E-07	Developmental nervous system	6.6E-03		1.3E-03	7.9E-03
			Aroclor 1016	2.6E-09		2.4E-09	4.9E-09	Reduced birth weight	1.5E-03		1.3E-03	2.8E-03
			Aroclor 1254	5.7E-08		5.3E-08	1.1E-07	Immune System, Eyes	4.0E-03		3.7E-03	7.7E-03
			Benzo(a)pyrene	8.4E-08		7.2E-08	1.6E-07	N/A	---		---	---
			p-chloro-m-cresol	---		---	---	Nervous System	1.3E-06		8.8E-07	2.2E-06
			Dibenzofuran	---		---	---	N/A	---		---	---
			2,4-Dinitrotoluene	3.4E-08		2.3E-08	5.7E-08	CNS, Blood, Liver	7.0E-05		4.7E-05	1.2E-04
			2,4,6-Trinitrotoluene	5.0E-09		1.1E-09	6.1E-09	Liver	9.4E-04		2.0E-04	1.1E-03
			Aluminum	---		---	---	Developmental nervous system	1.0E-02		6.9E-04	1.1E-02
			Arsenic	2.6E-06		5.2E-07	3.1E-06	Skin, Vascular Effects	1.6E-02		3.2E-03	1.9E-02
			Cobalt	---		---	---	N/A	3.0E-02		2.0E-03	3.2E-02
			Iron	---		---	---	Blood, Liver, GI Irritation	2.4E-02		1.6E-03	2.5E-02
			Manganese	---		---	---	CNS	2.2E-02		3.6E-02	5.8E-02
			Vanadium	---		---	---	Kidney	5.7E-03		1.4E-02	2.0E-02
			Chemical Total	3.1E-06		7.3E-07	3.8E-06		0.12		0.065	0.19
		Exposure Point Total					3.8E-06					0.19
	Exposure Media Total						3.8E-06					0.19
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		4.2E-11		4.2E-11	N/A		---		---
			Aroclor 1016		3.4E-13		3.4E-13	N/A		---		---
			Aroclor 1254		7.6E-12		7.6E-12	N/A		---		---
			Benzo(a)pyrene		6.0E-12		6.0E-12	N/A		---		---
			p-chloro-m-cresol		---		---	N/A		---		---
			Dibenzofuran		---		---	N/A		---		---
			2,4-Dinitrotoluene		---		---	N/A		---		---
			2,4,6-Trinitrotoluene		---		---	N/A		---		---
			Aluminum		---		---	N/A		9.8E-04		9.8E-04
			Arsenic		3.5E-09		3.5E-09	N/A		7.6E-05		7.6E-05
			Cobalt		1.4E-08		1.4E-08	N/A		7.1E-04		7.1E-04
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		4.9E-03		4.9E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		1.7E-08		1.7E-08			0.0067		0.0067
		Exposure Point Total					1.7E-08					0.0067
	Exposure Media Total						1.7E-08					0.0067
Total Soil Total							3.8E-06					0.19

Table E.1-58
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
SurfaceSoil	Surface Soil	SWMU 43										
			TCDD TE	2.3E-07		4.6E-08	2.8E-07	Developmental nervous system	5.1E-03		1.0E-03	6.1E-03
			Benzo(a)pyrene	1.4E-07		1.2E-07	2.7E-07	N/A	---		---	---
			Aluminum	---		---	---	Developmental nervous system	1.2E-02		7.7E-04	1.2E-02
			Arsenic	5.0E-06		9.9E-07	6.0E-06	Skin, Vascular Effects	3.1E-02		6.2E-03	3.7E-02
			Cobalt	---		---	---	N/A	3.1E-02		2.1E-03	3.3E-02
			Iron	---		---	---	Blood, Liver, GI Irritation	2.4E-02		1.6E-03	2.6E-02
			Manganese	---		---	---	CNS	3.3E-02		5.4E-02	8.7E-02
			Vanadium	---		---	---	Kidney	6.3E-03		1.6E-02	2.2E-02
			Chemical Total	5.4E-06		1.2E-06	6.5E-06		0.14		0.082	0.22
		Exposure Point Total					6.5E-06					0.22
	Exposure Media Total						6.5E-06					0.22
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		3.2E-11		3.2E-11	N/A		---		---
			Benzo(a)pyrene		1.0E-11		1.0E-11	N/A		---		---
			Aluminum		---		---	N/A		1.1E-03		1.1E-03
			Arsenic		6.7E-09		6.7E-09	N/A		1.5E-04		1.5E-04
			Cobalt		1.4E-08		1.4E-08	N/A		7.3E-04		7.3E-04
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		7.4E-03		7.4E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		2.1E-08		2.1E-08			0.0094		0.0094
		Exposure Point Total					2.1E-08					0.0094
	Exposure Media Total						2.1E-08					0.0094
Surface Soil Total							6.6E-06					0.23

Table E.1-58
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	SWMU 43	Tetrachloroethene	4.4E-06			4.4E-06	Liver	2.3E-03			2.3.E-03
			Arsenic	1.6E-04			1.6E-04	Skin, Vascular Effects	1.0E+00			1.0E+00
			Cobalt	---			---	N/A	1.8E-01			1.8E-01
			Iron	---			---	Blood, Liver, GI Irritation	1.5E-01			1.5E-01
			Manganese	---			---	CNS	3.1E-01			3.1E-01
			Chemical Total	1.7E-04			1.7E-04		1.7			1.7
		Exposure Point Total					1.7E-04					1.7
	Exposure Media Total						1.7E-04					1.7
	Air (Ambient Air)	SWMU 43	Tetrachloroethene		3.6E-11		3.6E-11	CNS		6.3E-08		6.3.E-08
			Chemical Total		3.6E-11		3.6E-11			6.3E-08		6.3E-08
		Exposure Point Total					3.6E-11					6.3E-08
	Exposure Media Total						3.6E-11					6.3E-08
	Air (Indoor Air)	SWMU 43	Tetrachloroethene		1.2E-07		1.2E-07	CNS		2.2E-04		2.2.E-04
			Chemical Total		1.2E-07		1.2E-07			0.00022		0.00022
		Exposure Point Total					1.2E-07					0.00022
	Exposure Media Total						1.2E-07					0.00022
Groundwater Total							1.7E-04					1.7
Receptor Total[b]							1.8E-04					1.9

Total Risk Across All Media[a] = 1.8E-04

Total Hazard Across All Media[a] = 1.9

Total CNS HI Across All Media =	0.42
Total Skin HI Across All Media =	1.1
Total Vascular Effects HI Across All Media =	1.1
Total Blood HI Across All Media =	0.17
Total Liver HI Across All Media =	0.17
Total GI Irritation HI Across All Media =	0.17
Total Kidney HI Across All Media =	0.022

(a) Since surface soil represents the more highly contaminated portion of soil, total risk estimates are conservatively based on this soil data grouping.
Since indoor air represents the more highly contaminated portion of groundwater, total risk estimates are conservatively based on this groundwater grouping.

CNS = Central nervous system.
GI = Gastrointestinal.
NOAEL = No Observable Adverse Effects Level.
N/A = Not Available.

Table E.1-59
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43										
			TCDD TE	2.2E-08		2.0E-09	2.4E-08	Developmental nervous system	1.2E-02		1.1E-03	1.3E-02
			Aroclor 1016	1.9E-10		7.9E-11	2.7E-10	Reduced birth weight	2.7E-03		1.1E-03	3.8E-03
			Aroclor 1254	4.2E-09		1.8E-09	5.9E-09	Immune System, Eyes	7.3E-03		3.1E-03	1.0E-02
			Benzo(a)pyrene	6.2E-09		2.4E-09	8.6E-09	N/A	---		---	---
			p-chloro-m-cresol	---		---	---	Nervous System	2.5E-06		7.4E-07	3.2E-06
			Dibenzofuran	---		---	---	N/A	---		---	---
			2,4-Dinitrotoluene	2.5E-09		7.6E-10	3.2E-09	CNS, Blood, Liver	1.3E-04		3.9E-05	1.7E-04
			2,4,6-Trinitrotoluene	3.7E-10		3.5E-11	4.0E-10	Liver	1.7E-03		1.6E-04	1.9E-03
			Aluminum	---		---	---	Developmental nervous system	1.9E-02		5.8E-04	2.0E-02
			Arsenic	1.9E-07		1.7E-08	2.1E-07	Skin, Vascular Effects	3.0E-02		2.7E-03	3.2E-02
			Cobalt	---		---	---	N/A	5.5E-02		1.7E-03	5.7E-02
			Iron	---		---	---	Blood, Liver, GI Irritation	4.3E-02		1.3E-03	4.4E-02
			Manganese	---		---	---	CNS	4.0E-02		3.0E-02	7.0E-02
			Vanadium	---		---	---	Kidney	1.0E-02		1.2E-02	2.2E-02
			Chemical Total	2.3E-07		2.4E-08	2.5E-07		0.22		0.054	0.28
		Exposure Point Total					2.5E-07					0.28
	Exposure Media Total						2.5E-07					0.28
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		8.3E-11		8.3E-11	N/A		---		---
			Aroclor 1016		6.8E-13		6.8E-13	N/A		---		---
			Aroclor 1254		1.5E-11		1.5E-11	N/A		---		---
			Benzo(a)pyrene		1.2E-11		1.2E-11	N/A		---		---
			p-chloro-m-cresol		---		---	N/A		---		--
			Dibenzofuran		---		---	N/A		---		---
			2,4-Dinitrotoluene		---		---	N/A		---		---
			2,4,6-Trinitrotoluene		---		---	N/A		---		---
			Aluminum		---		---	N/A		4.9E-02		4.9E-02
			Arsenic		6.9E-09		6.9E-09	N/A		3.8E-03		3.8E-03
			Cobalt		2.7E-08		2.7E-08	N/A		3.5E-02		3.5E-02
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		2.4E-01		2.4E-01
			Vanadium		---		---	N/A		---		---
			Chemical Total		3.4E-08		3.4E-08			0.33		0.33
		Exposure Point Total					3.4E-08					0.33
	Exposure Media Total						3.4E-08					0.33
Total Soil Total							2.9E-07					0.61

Table E.1-59
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Air (Trench Air)	SWMU 43	Tetrachloroethene		7.9E-09		7.9E-09	CNS		3.5E-04		3.5.E-04
			Chemical Total		7.9E-09		7.9E-09			0.00035		0.00035
		Exposure Point Total					7.9E-09					0.00035
	Exposure Media Total						7.9E-09					0.00035
Groundwater Total							7.9E-09					0.00035
Receptor Total							2.9E-07					0.61

Total Risk Across All Media = 2.9E-07

Total Hazard Across All Media = 0.61

Total CNS HI Across All Media = 0.35
Total Reduced Birth Weight HI Across All Media = 0.0038
Total Immune System HI Across All Media = 0.010
Total Eyes HI Across All Media = 0.010
Total Blood HI Across All Media = 0.045
Total Liver HI Across All Media = 0.046
Total Skin HI Across All Media = 0.032
Total Vascular Effects HI Across All Media = 0.032
Total GI Irritation HI Across All Media = 0.044
Total Kidney HI Across All Media = 0.022

CNS = Central nervous system.
GI = Gastrointestinal.
N/A = Not Available.

Table E.1-60
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/ Lifetime

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43										
			TCDD TE	1.5E-06		1.4E-07	1.7E-06	Developmental nervous system	1.0E-02		1.2E-03	1.1E-02
			Aroclor 1016	1.3E-08		5.6E-09	1.8E-08	Reduced birth weight	2.3E-03		1.3E-03	3.5E-03
			Aroclor 1254	2.8E-07		1.3E-07	4.1E-07	Immune System, Eyes	6.2E-03		3.5E-03	9.7E-03
			Benzo(a)pyrene	1.8E-06		6.9E-07	2.5E-06	N/A	---		---	---
			p-chloro-m-cresol	---		---	---	Nervous System	2.1E-06		8.3E-07	2.9E-06
			Dibenzofuran	---		---	---	N/A	---		---	---
			2,4-Dinitrotoluene	1.7E-07		5.4E-08	2.2E-07	CNS, Blood, Liver	1.1E-04		4.4E-05	1.5E-04
			2,4,6-Trinitrotoluene	2.5E-08		2.5E-09	2.8E-08	Liver	1.5E-03		1.9E-04	1.6E-03
			Aluminum	---		---	---	Developmental nervous system	1.6E-02		6.5E-04	1.7E-02
			Arsenic	1.3E-05		1.2E-06	1.4E-05	Skin, Vascular Effects	2.5E-02		3.0E-03	2.8E-02
			Cobalt	---		---	---	N/A	4.7E-02		1.9E-03	4.9E-02
			Iron	---		---	---	Blood, Liver, GI Irritation	3.7E-02		1.5E-03	3.8E-02
			Manganese	---		---	---	CNS	3.4E-02		3.4E-02	6.8E-02
			Vanadium	---		---	---	Kidney	8.8E-03		1.3E-02	2.2E-02
			Chemical Total	1.7E-05		2.3E-06	1.9E-05		0.19		0.061	0.25
		Exposure Point Total					1.9E-05					0.25
	Exposure Media Total						1.9E-05					0.25
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		5.8E-11		5.8E-11	N/A		---		---
			Aroclor 1016		4.7E-13		4.7E-13	N/A		---		---
			Aroclor 1254		1.0E-11		1.0E-11	N/A		---		---
			Benzo(a)pyrene		2.1E-11		2.1E-11	N/A		---		---
			p-chloro-m-cresol		---		---	N/A		---		---
			Dibenzofuran		---		---	N/A		---		---
			2,4-Dinitrotoluene		---		---	N/A		---		---
			2,4,6-Trinitrotoluene		---		---	N/A		---		---
			Aluminum		---		---	N/A		1.1E-03		1.1E-03
			Arsenic		4.8E-09		4.8E-09	N/A		8.7E-05		8.7E-05
			Cobalt		1.9E-08		1.9E-08	N/A		8.1E-04		8.1E-04
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		5.7E-03		5.7E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		2.4E-08		2.4E-08			0.0077		0.0077
		Exposure Point Total					2.4E-08					0.0077
	Exposure Media Total						2.4E-08					0.0077
Total Soil Total							1.9E-05					0.26

Table E.1-60
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/ Lifetime

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	SWMU 43	Tetrachloroethene	2.1E-05		1.2E-05	3.3E-05	Liver	7.1E-03		3.9E-03	1.1E-02
			Arsenic	7.8E-04		NV	7.8E-04	Skin, Vascular Effects	3.2E+00		NV	3.2E+00
			Cobalt	---		NV	---	N/A	5.7E-01		NV	5.7E-01
			Iron	---		NV	---	Blood, Liver, GI Irritation	4.6E-01		NV	4.6E-01
			Manganese	---		NV	---	CNS	9.5E-01		NV	9.5E-01
			Chemical Total	8.0E-04		1.2E-05	8.1E-04		5.2		0.0039	5.2
		Exposure Point Total					8.1E-04					5.2
	Exposure Media Total						8.1E-04					5.2
	Air (Indoor Air)	SWMU 43	Tetrachloroethene		2.3E-07		2.3E-07	CNS		3.4E-04		3.4.E-04
			Chemical Total		2.3E-07		2.3E-07			0.00034		0.00034
		Exposure Point Total					2.3E-07					0.00034
	Exposure Media Total						2.3E-07					0.00034
	Air (Shower Room)	SWMU 43	Tetrachloroethene		7.1E-06		7.1E-06	CNS		1.3E-02		1.3E-02
			Chemical Total		7.1E-06		7.1E-06			0.013		0.013
		Exposure Point Total					7.1E-06					0.013
	Exposure Media Total						7.1E-06					0.013
	Home Grown Produce	SWMU 43	Arsenic	1.1E-06			1.1E-06	Skin, Vascular Effects	3.2E-03			3.2E-03
			Chemical Total	1.1E-06			1.1E-06		0.0032			0.0032
		Exposure Point Total					1.1E-06					0.0032
	Exposure Media Total						1.1E-06					0.0032
Groundwater Total							8.2E-04					5.2
Receptor Total							8.4E-04					5.5

Total Risk Across All Media = 8.4E-04

Total Hazard Across All Media = 5.5

Total CNS HI Across All Media =	1.1
Total Reduced Birth Weight HI Across All Media =	0.0035
Total Immune System HI Across All Media =	0.010
Total Eyes HI Across All Media =	0.010
Total Blood HI Across All Media =	0.50
Total Liver HI Across All Media =	0.51
Total Skin HI Across All Media =	3.2
Total Vascular Effects HI Across All Media =	3.2
Total GI Irritation HI Across All Media =	0.50
Total Kidney HI Across All Media =	0.022

CNS = Central nervous system.
GI = Gastrointestinal.
NOAEL = No Observable Adverse Effects Level.
N/A = Not Available.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Table E.1-61
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43										
			TCDD TE	1.1E-06		9.0E-08	1.2E-06	Developmental nervous system	9.6E-02		8.0E-03	1.0E-01
			Aroclor 1016	8.9E-09		3.5E-09	1.2E-08	Reduced birth weight	2.1E-02		8.3E-03	2.9E-02
			Aroclor 1254	2.0E-07		7.8E-08	2.8E-07	Immune System, Eyes	5.8E-02		2.3E-02	8.1E-02
			Benzo(a)pyrene	2.9E-07		1.1E-07	4.0E-07	N/A	---		---	---
			p-chloro-m-cresol	---		---	---	Nervous System	1.9E-05		5.4E-06	2.5E-05
			Dibenzofuran	---		---	---	N/A	---		---	---
			2,4-Dinitrotoluene	1.2E-07		3.4E-08	1.5E-07	CNS, Blood, Liver	1.0E-03		2.9E-04	1.3E-03
			2,4,6-Trinitrotoluene	1.7E-08		1.6E-09	1.9E-08	Liver	1.4E-02		1.2E-03	1.5E-02
			Aluminum	---		---	---	Developmental nervous system	1.5E-01		4.3E-03	1.6E-01
			Arsenic	9.1E-06		7.6E-07	9.9E-06	Skin, Vascular Effects	2.4E-01		2.0E-02	2.6E-01
			Cobalt	---		---	---	N/A	4.4E-01		1.2E-02	4.5E-01
			Iron	---		---	---	Blood, Liver, GI Irritation	3.4E-01		9.6E-03	3.5E-01
			Manganese	---		---	---	CNS	3.2E-01		2.2E-01	5.4E-01
			Vanadium	---		---	---	Kidney	8.2E-02		8.8E-02	1.7E-01
			Chemical Total	1.1E-05		1.1E-06	1.2E-05		1.8		0.40	2.2
		Exposure Point Total					1.2E-05					2.2
	Exposure Media Total						1.2E-05					2.2
	Air (Particulates and Volatiles)	SWMU 43										
			TCDD TE		1.2E-11		1.2E-11	N/A		---		---
			Aroclor 1016		9.4E-14		9.4E-14	N/A		---		---
			Aroclor 1254		2.1E-12		2.1E-12	N/A		---		---
			Benzo(a)pyrene		1.6E-12		1.6E-12	N/A		---		---
			p-chloro-m-cresol		---		---	N/A		---		---
			Dibenzofuran		---		---	N/A		---		---
			2,4-Dinitrotoluene		---		---	N/A		---		---
			2,4,6-Trinitrotoluene		---		---	N/A		---		---
			Aluminum		---		---	N/A		1.1E-03		1.1E-03
			Arsenic		9.6E-10		9.6E-10	N/A		8.7E-05		8.7E-05
			Cobalt		3.8E-09		3.8E-09	N/A		8.1E-04		8.1E-04
			Iron		---		---	N/A		---		---
			Manganese		---		---	CNS		5.7E-03		5.7E-03
			Vanadium		---		---	N/A		---		---
			Chemical Total		4.7E-09		4.7E-09			0.0077		0.0077
		Exposure Point Total					4.7E-09					0.0077
	Exposure Media Total						4.7E-09					0.0077
Total Soil Total							1.2E-05					2.2

Table E.1-61
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	SWMU 43	Tetrachloroethene	7.7E-06		4.5E-06	1.2E-05	Liver	1.7E-02		9.7E-03	2.6E-02
			Arsenic	2.9E-04		NV	2.9E-04	Skin, Vascular Effects	7.4E+00		NV	7.4E+00
			Cobalt	---		NV	---	N/A	1.3E+00		NV	1.3E+00
			Iron	---		NV	---	Blood, Liver, GI Irritation	1.1E+00		NV	1.1E+00
			Manganese	---		NV	---	CNS	2.2E+00		NV	2.2E+00
			Chemical Total	2.9E-04		4.5E-06	3.0E-04		12		0.0097	12
		Exposure Point Total					3.0E-04					12
	Exposure Media Total						3.0E-04					12
	Air (Indoor Air)	SWMU 43	Tetrachloroethene		4.6E-08		4.6E-08	CNS		3.4E-04		3.4.E-04
			Chemical Total		4.6E-08		4.6E-08			0.00034		0.00034
		Exposure Point Total					4.6E-08					0.00034
	Exposure Media Total						4.6E-08					0.00034
	Home Grown Produce	SWMU 43	Arsenic	5.9E-07			5.9E-07	Skin, Vascular Effects	1.5E-02			1.5.E-02
			Chemical Total	5.9E-07			5.9E-07		0.015			0.015
		Exposure Point Total					5.9E-07					0.015
	Exposure Media Total						5.9E-07					0.015
Groundwater Total							3.0E-04					12.1
Receptor Total							3.1E-04					14.3

Total Risk Across All Media = 3.1E-04

Total Hazard Across All Media = 14.3

(a) Chromium RfD is based on NOAEL; no target organ is identified.

CNS = Central nervous system.
GI = Gastrointestinal.
NOAEL = No Observable Adverse Effects Level.
N/A = Not Available.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Total CNS HI Across All Media =	3.0
Total Reduced Birth Weight HI Across All Media =	0.029
Total Immune System HI Across All Media =	0.081
Total Eyes HI Across All Media =	0.081
Total Blood HI Across All Media =	1.4
Total Liver HI Across All Media =	1.5
Total Skin HI Across All Media =	7.7
Total Vascular Effects HI Across All Media =	7.7
Total GI Irritation HI Across All Media =	1.4
Total Kidney HI Across All Media =	0.17

Table E.1-62
Summary of Receptor Risks and Hazards for COPCs
Reasonable Maximum Exposure
Future - Off-Site Recreational User

Scenario Timeframe: Future
Receptor Population: Off-site Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	New River (swimming)	SWMU 43	Tetrachloroethene	3.8E-08		1.2E-06	1.2E-06	Liver	1.6E-05		5.2E-04	5.3E-04
			Arsenic	1.4E-06		5.1E-07	1.9E-06	Skin, Vascular Effects	7.3E-03		2.6E-03	9.9E-03
			Cobalt	---		---			1.3E-03		4.7E-04	1.8E-03
			Iron	---		---	---	Blood, Liver, GI Irritation	2.9E-03		1.0E-03	3.9E-03
			Manganese	---		---	---	CNS	3.4E-03		1.2E-03	4.6E-03
			Sodium	---		---	---	N/A	---		---	---
			Chemical Total	1.4E-06		1.7E-06	3.1E-06		0.015		0.0059	0.021
		Exposure Point Total					3.1E-06					0.021
	Exposure Media Total						3.1E-06					0.021
Surface Water Total							3.1E-06					0.021
Receptor Total[b]							3.1E-06					0.021

Total Risk Across All Media = 3.1E-06

Total Hazard Across All Media = 0.021

Total Liver HI Across All Media =	0.0045
Total Skin HI Across All Media =	0.010
Total Vascular Effects HI Across All Media =	0.010
Total Blood HI Across All Media =	0.0039
Total GI Irritation HI Across All Media =	0.0039
Total CNS HI Across All Media =	0.0046

Table E.1-63
Risk Assessment Summary
Reasonable Maximum Exposure
Current - Maintenance Worker

Scenario Timeframe: Current
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Surface Soil	SWMU 43	Arsenic	1.1E-06		2.2E-07	1.3E-06					
			Chemical Total				1.3E-06					<1
		Exposure Point Total					1.3E-06					<1
	Exposure Media Total						1.3E-06					<1
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Surface Soil Total							1.3E-06					<1
Groundwater	Air (Ambient Air)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							<1.0E-06					
Receptor Total							1.3E-06					<1

Total Risk Across All Media = 1.3E-06

Total Hazard Across All Media = <1

Table E.1-64
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Maintenance Worker

Scenario Timeframe: Future
Receptor Population: Maintenance Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							<1.0E-06					<1
Surface Soil	Surface Soil	SWMU 43										
			Arsenic	1.1E-06		2.2E-07	1.3E-06					
			Chemical Total	1.1E-06		2.2E-07	1.3E-06					<1
		Exposure Point Total					1.3E-06					<1
	Exposure Media Total						1.3E-06					<1
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
			Radionuclide Total									
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Surface Soil Total							1.3E-06					<1
Groundwater	Air (Ambient Air)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							<1.0E-06					
Receptor Total[a]							1.3E-06					<1

Total Risk Across All Media[a] = 1.3E-06

Total Hazard Across All Media = <1

(a) Since surface soil represents the more highly contaminated portion of soil, total risk estimates are conservatively based on this soil data grouping.

Table E.1-65
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43	Arsenic	2.6E-06		5.2E-07	3.1E-06					
			Chemical Total	2.6E-06		5.2E-07	3.1E-06					<1
		Exposure Point Total					3.1E-06					<1
	Exposure Media Total						3.1E-06					<1
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							3.1E-06					<1
Surfae Soil	Surface Soil	SWMU 43	Arsenic	5.0E-06		9.9E-07	6.0E-06					
			Chemical Total	5.0E-06		9.9E-07	6.0E-06					<1
		Exposure Point Total					6.0E-06					<1
	Exposure Media Total						6.0E-06					<1
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Surface Soil Total							6.0E-06					<1

Table E.1-65
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Industrial Worker

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	SWMU 43	Tetrachloroethene	4.4E-06			4.4E-06		---			---
			Arsenic	1.6E-04			1.6E-04	Skin, Vascular Effects	1.0E+00			1.0E+00
			Chemical Total	1.7E-04			1.7E-04		1.0			1.0
		Exposure Point Total					1.7E-04					1.0
	Exposure Media Total						1.7E-04					1.0
	Air (Ambient Air)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Indoor Air)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							1.7E-04					1.0
Receptor Total[a]							1.8E-04					1.0

Total Risk Across All Media [a] = 1.8E-04

Total Hazard Across All Media = 1.0

[a] Since surface soil represents the more highly contaminated portion of soil, total risk estimates are conservatively based on this soil data grouping.

Total Skin HI Across All Media = 1.0
Total Vascular Effects HI Across All Media = 1.0

Table E.1-66
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Excavation Worker

Scenario Timeframe: Future
Receptor Population: Excavation Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							<1.0E-06					<1
Groundwater	Air (Trench Air)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							<1.0E-06					<1
Receptor Total							<1.0E-06					<1

Total Risk Across All Media = <1.0E-06

Total Hazard Across All Media [a] = <1

Table E.1-67
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Adult/ Lifetime Resident

Scenario Timeframe: Future
Receptor Population: Lifetime Resident
Receptor Age: Adult/ Lifetime

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43	TCDD TE	1.5E-06		1.4E-07	1.7E-06					
			Benzo(a)pyrene	1.8E-06		6.9E-07	2.5E-06					
			Arsenic	1.3E-05		1.2E-06	1.4E-05					
			Chemical Total	1.6E-05		2.1E-06	1.8E-05					<1
		Exposure Point Total					1.8E-05					<1
	Exposure Media Total						1.8E-05					<1
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							1.8E-05					<1
Groundwater	Groundwater	SWMU 43	Tetrachloroethene	2.1E-05		1.2E-05	3.3E-05		---		---	---
			Arsenic	7.8E-04		NV	7.8E-04	Skin, Vascular Effects	3.2E+00		NV	3.2E+00
			Chemical Total	8.0E-04		1.2E-05	8.1E-04		3.2		0.0	3.2
		Exposure Point Total					8.1E-04					3.2
	Exposure Media Total						8.1E-04					3.2
	Air (Indoor Air)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Air (Shower Room)	SWMU 43	Tetrachloroethene		7.1E-06		7.1E-06					
			Chemical Total		7.1E-06		7.1E-06					<1
		Exposure Point Total					7.1E-06					<1
	Exposure Media Total						7.1E-06					<1
	Home Grown Produce	SWMU 43	Arsenic	1.1E-06			1.1E-06					
			Chemical Total	1.1E-06			1.1E-06					<1
		Exposure Point Total					1.1E-06					<1
	Exposure Media Total						1.1E-06					<1
Groundwater Total							8.2E-04					3.2
Receptor Total							8.4E-04					3.2

Total Risk Across All Media = 8.4E-04

Total Hazard Across All Media = 3.2

NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Total Skin HI Across All Media = 3.2
Total Vascular Effects HI Across All Media = 3.2

Table E.1-68
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Child Resident

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Total Soil	Total Soil	SWMU 43	TCDD TE	1.1E-06		9.0E-08	1.2E-06					---
			Arsenic	9.1E-06		7.6E-07	9.9E-06					---
			Chemical Total	1.0E-05		8.5E-07	1.1E-05					2.2 (a)
		Exposure Point Total					1.1E-05					2.2 (a)
	Exposure Media Total						1.1E-05					2.2 (a)
	Air (Particulates and Volatiles)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Total Soil Total							1.1E-05					2.2 (a)
Groundwater	Groundwater	SWMU 43	Tetrachloroethene	7.7E-06		4.5E-06	1.2E-05		---		---	---
			Arsenic	2.9E-04		NV	2.9E-04	Skin, Vascular Effects	7.4E+00		NV	7.4E+00
			Cobalt	---		---	---	N/A	1.3E+00		NV	1.3E+00
			Iron	---		---	---	Blood, Liver, GI Irritation	1.1E+00		NV	1.1E+00
			Manganese	---		---	---	CNS	2.2E+00		NV	2.2E+00
			Chemical Total	2.9E-04		4.5E-06	3.0E-04		12.1		0.0	12.1
		Exposure Point Total					3.0E-04					12.1
	Exposure Media Total						3.0E-04					12.1
	Air (Indoor Air)	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
	Home Grown Produce	SWMU 43										
			Chemical Total				<1.0E-06					<1
		Exposure Point Total					<1.0E-06					<1
	Exposure Media Total						<1.0E-06					<1
Groundwater Total							3.0E-04					12.1
Receptor Total							3.1E-04					14.3

Total Risk Across All Media = 3.1E-04

Total Hazard Across All Media = 14.3

(a) Although the total hazard is greater than 1.0, no individual chemical exceeded 1.0.

CNS = Central nervous system.
GI = Gastrointestinal.
NV = No dermal exposure value calculated. As per USEPA Dermal Exposure spreadsheet, this chemical is not assessed.

Total Skin HI Across All Media =	7.4
Total Vascular Effects HI Across All Media =	7.4
Total Blood HI Across All Media =	1.1
Total Liver HI Across All Media =	1.1
Total GI Irritation HI Across All Media =	1.1
Total CNS HI Across All Media =	2.2

Table E.1-69
Risk Assessment Summary
Reasonable Maximum Exposure
Future - Off-Site Recreational User

Scenario Timeframe: Future
Receptor Population: Off-site Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	New River (swimming)	SWMU 43	Tetrachloroethene	3.8E-08		1.2E-06	1.2E-06					
			Arsenic	1.4E-06		5.1E-07	1.9E-06					
			Chemical Total	1.4E-06		1.7E-06	3.1E-06					<1
		Exposure Point Total					3.1E-06					<1
	Exposure Media Total						3.1E-06					<1
Surface Water Total							3.1E-06					<1
Receptor Total[a]							3.1E-06					<1

Total Risk Across All Media = 3.1E-06

Total Hazard Across All Media = <1

Appendix E-2

TCDD TE Calculations

Appendix E-2
TCDD TE Calcs
SWMU 43

Sample		HHRA Values	Units	SLERA Values	Units	Matrix	HHRA - Unit Adjusted Values		SLERA - Unit Adjusted Values	
43SB03A	TCDD-TE	5.74E+00	pg/g	6.40E+00	pg/g	SS	5.74E-06	mg/kg	6.40E-06	mg/kg
43SB08A	TCDD-TE	1.56E+00	pg/g	2.20E+00	pg/g	SS	1.56E-06	mg/kg	2.20E-06	mg/kg
43SB03B	TCDD-TE	1.07E+01	pg/g			SB	1.07E-05	mg/kg		
43SB03C	TCDD-TE	2.08E-01	pg/g			SB	2.08E-07	mg/kg		
43SB08B	TCDD-TE	6.01E+00	pg/g			SB	6.01E-06	mg/kg		
43SB08C	TCDD-TE	2.95E-02	pg/g			SB	2.95E-08	mg/kg		

Appendix E-3

ProUCL Outputs

Appendix E-3a
ProUCL Output
Surface Soil
SWMU 43

1				**General UCL Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**B(a)A (mg/kg)**											
10												
11						**General Statistics**							
12						Number of Valid Samples	10			Number of Detected Data	3		
13						Number of Unique Samples	3			Number of Non-Detect Data	7		
14										Percent Non-Detects	70.00%		
15													
16						**Raw Statistics**				**Log-transformed Statistics**			
17						Minimum Detected	0.0179			Minimum Detected	-4.023		
18						Maximum Detected	0.0888			Maximum Detected	-2.421		
19						Mean of Detected	0.0433			Mean of Detected	-3.403		
20						SD of Detected	0.0395			SD of Detected	0.86		
21						Minimum Non-Detect	0.055			Minimum Non-Detect	-2.9		
22						Maximum Non-Detect	0.062			Maximum Non-Detect	-2.781		
23													
24	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	9		
25	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	1		
26	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	90.00%		
27													
28						**UCL Statistics**							
29						**Normal Distribution Test with Detected Values Only**				**Lognormal Distribution Test with Detected Values Only**			
30						Shapiro Wilk Test Statistic	0.806			Shapiro Wilk Test Statistic	0.868		
31						5% Shapiro Wilk Critical Value	0.767			5% Shapiro Wilk Critical Value	0.767		
32						**Data appear Normal at 5% Significance Level**				**Data appear Lognormal at 5% Significance Level**			
33													
34						**Assuming Normal Distribution**				**Assuming Lognormal Distribution**			
35						DL/2 Substitution Method				DL/2 Substitution Method			
36						Mean	0.0335			Mean	-3.491		
37						SD	0.0198			SD	0.411		
38						95% DL/2 (t) UCL	0.045			95% H-Stat (DL/2) UCL	0.0528		
39													
40						Maximum Likelihood Estimate(MLE) Method	N/A			Log ROS Method			
41						**MLE method failed to converge properly**				Mean in Log Scale	-3.717		
42										SD in Log Scale	0.48		
43										Mean in Original Scale	0.0281		
44										SD in Original Scale	0.0216		
45										95% Percentile Bootstrap UCL	0.0412		
46										95% BCA Bootstrap UCL	0.0483		
47													
48						**Gamma Distribution Test with Detected Values Only**				**Data Distribution Test with Detected Values Only**			

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49				k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**						
50				Theta Star	N/A							
51				nu star	N/A							
52												
53				A-D Test Statistic	0.471	**Nonparametric Statistics**						
54				5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method		
55				K-S Test Statistic	N/A					Mean		0.0274
56				5% K-S Critical Value	N/A					SD		0.0206
57	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		0.00819
58										95% KM (t) UCL		0.0424
59	**Assuming Gamma Distribution**									95% KM (z) UCL		0.0409
60				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL		0.0412
61				Minimum	N/A					95% KM (bootstrap t) UCL		0.0778
62				Maximum	N/A					95% KM (BCA) UCL		N/A
63				Mean	N/A					95% KM (Percentile Bootstrap) UCL		N/A
64				Median	N/A					95% KM (Chebyshev) UCL		0.0631
65				SD	N/A					97.5% KM (Chebyshev) UCL		0.0785
66				k star	N/A					99% KM (Chebyshev) UCL		0.109
67				Theta star	N/A							
68				Nu star	N/A	**Potential UCLs to Use**						
69				AppChi2	N/A					95% KM (t) UCL		0.0424
70				95% Gamma Approximate UCL	N/A					95% KM (Percentile Bootstrap) UCL		N/A
71				95% Adjusted Gamma UCL	N/A							
72	**Note: DL/2 is not a recommended method.**											
73												
74												
75	**B(a)P (mg/kg)**											
76												
77	**General Statistics**											
78				Number of Valid Samples	10					Number of Detected Data		3
79				Number of Unique Samples	3					Number of Non-Detect Data		7
80										Percent Non-Detects		70.00%
81												
82	**Raw Statistics**					**Log-transformed Statistics**						
83				Minimum Detected	0.0189					Minimum Detected		-3.969
84				Maximum Detected	0.14					Maximum Detected		-1.966
85				Mean of Detected	0.0634					Mean of Detected		-3.132
86				SD of Detected	0.0666					SD of Detected		1.041
87				Minimum Non-Detect	0.055					Minimum Non-Detect		-2.9
88				Maximum Non-Detect	0.062					Maximum Non-Detect		-2.781
89												
90	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		9
91	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		1
92	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		90.00%
93												
94	**UCL Statistics**											
95	**Normal Distribution Test with Detected Values Only**					**Lognormal Distribution Test with Detected Values Only**						
96				Shapiro Wilk Test Statistic	0.826					Shapiro Wilk Test Statistic		0.925

	A	B	C	D	E	F	G	H	I	J	K	L
97					5% Shapiro Wilk Critical Value	0.767					5% Shapiro Wilk Critical Value	0.767
98	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
99												
100	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
101					DL/2 Substitution Method						DL/2 Substitution Method	
102					Mean	0.0396					Mean	-3.41
103					SD	0.0355					SD	0.528
104					95% DL/2 (t) UCL	0.0601					95% H-Stat (DL/2) UCL	0.0599
105												
106					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
107	**MLE method failed to converge properly**										Mean in Log Scale	-3.518
108											SD in Log Scale	0.584
109											Mean in Original Scale	0.037
110											SD in Original Scale	0.0366
111											95% Percentile Bootstrap UCL	0.0599
112											95% BCA Bootstrap UCL	0.0629
113												
114	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
115					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
116					Theta Star	N/A						
117					nu star	N/A						
118												
119					A-D Test Statistic	0.4	**Nonparametric Statistics**					
120					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
121					K-S Test Statistic	N/A					Mean	0.0366
122					5% K-S Critical Value	N/A					SD	0.035
123	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.0142
124											95% KM (t) UCL	0.0627
125	**Assuming Gamma Distribution**										95% KM (z) UCL	0.06
126					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0617
127					Minimum	N/A					95% KM (bootstrap t) UCL	0.103
128					Maximum	N/A					95% KM (BCA) UCL	N/A
129					Mean	N/A					95% KM (Percentile Bootstrap) UCL	N/A
130					Median	N/A					95% KM (Chebyshev) UCL	0.0986
131					SD	N/A					97.5% KM (Chebyshev) UCL	0.125
132					k star	N/A					99% KM (Chebyshev) UCL	0.178
133					Theta star	N/A						
134					Nu star	N/A	**Potential UCLs to Use**					
135					AppChi2	N/A					95% KM (t) UCL	0.0627
136					95% Gamma Approximate UCL	N/A					95% KM (Percentile Bootstrap) UCL	N/A
137					95% Adjusted Gamma UCL	N/A						
138	**Note: DL/2 is not a recommended method.**											
139												
140												
141	**B(b)F (mg/kg)**											
142												
143	**General Statistics**											
144					Number of Valid Samples	10					Number of Detected Data	3

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145					Number of Unique Samples	3					Number of Non-Detect Data	7
146											Percent Non-Detects	70.00%
147												
148	**Raw Statistics**						**Log-transformed Statistics**					
149					Minimum Detected	0.0171					Minimum Detected	-4.069
150					Maximum Detected	0.0801					Maximum Detected	-2.524
151					Mean of Detected	0.0424					Mean of Detected	-3.368
152					SD of Detected	0.0333					SD of Detected	0.782
153					Minimum Non-Detect	0.055					Minimum Non-Detect	-2.9
154					Maximum Non-Detect	0.062					Maximum Non-Detect	-2.781
155												
156	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	9
157	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	1
158	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	90.00%
159												
160	**UCL Statistics**											
161	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
162					Shapiro Wilk Test Statistic	0.895					Shapiro Wilk Test Statistic	0.975
163					5% Shapiro Wilk Critical Value	0.767					5% Shapiro Wilk Critical Value	0.767
164	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
165												
166	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
167					DL/2 Substitution Method						DL/2 Substitution Method	
168					Mean	0.0333					Mean	-3.481
169					SD	0.0169					SD	0.378
170					95% DL/2 (t) UCL	0.0431					95% H-Stat (DL/2) UCL	0.0531
171												
172					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
173	**MLE method failed to converge properly**										Mean in Log Scale	-3.66
174											SD in Log Scale	0.44
175											Mean in Original Scale	0.0288
176											SD in Original Scale	0.0185
177											95% Percentile Bootstrap UCL	0.0395
178											95% BCA Bootstrap UCL	0.0451
179												
180	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
181					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
182					Theta Star	N/A						
183					nu star	N/A						
184												
185					A-D Test Statistic	0.313	**Nonparametric Statistics**					
186					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
187					K-S Test Statistic	N/A					Mean	0.0292
188					5% K-S Critical Value	N/A					SD	0.018
189	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.00825
190											95% KM (t) UCL	0.0443
191	**Assuming Gamma Distribution**										95% KM (z) UCL	0.0427
192					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0466

193					Minimum	N/A				95% KM (bootstrap t) UCL		0.0474
194					Maximum	N/A				95% KM (BCA) UCL		N/A
195					Mean	N/A				95% KM (Percentile Bootstrap) UCL		0.0801
196					Median	N/A				95% KM (Chebyshev) UCL		0.0651
197					SD	N/A				97.5% KM (Chebyshev) UCL		0.0807
198					k star	N/A				99% KM (Chebyshev) UCL		0.111
199					Theta star	N/A						
200					Nu star	N/A				**Potential UCLs to Use**		
201					AppChi2	N/A				95% KM (t) UCL		0.0443
202					95% Gamma Approximate UCL	N/A				95% KM (Percentile Bootstrap) UCL		0.0801
203					95% Adjusted Gamma UCL	N/A						
204	**Note: DL/2 is not a recommended method.**											
205												
206												
207	**Chrysene (mg/kg)**											
208												
209					**General Statistics**							
210					Number of Valid Samples	10				Number of Detected Data		3
211					Number of Unique Samples	3				Number of Non-Detect Data		7
212										Percent Non-Detects		70.00%
213												
214					**Raw Statistics**					**Log-transformed Statistics**		
215					Minimum Detected	0.0169				Minimum Detected		-4.08
216					Maximum Detected	0.0818				Maximum Detected		-2.503
217					Mean of Detected	0.0428				Mean of Detected		-3.367
218					SD of Detected	0.0344				SD of Detected		0.799
219					Minimum Non-Detect	0.055				Minimum Non-Detect		-2.9
220					Maximum Non-Detect	0.062				Maximum Non-Detect		-2.781
221												
222	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		9
223	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		1
224	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		90.00%
225												
226					**UCL Statistics**							
227	**Normal Distribution Test with Detected Values Only**									**Lognormal Distribution Test with Detected Values Only**		
228					Shapiro Wilk Test Statistic	0.891				Shapiro Wilk Test Statistic		0.974
229					5% Shapiro Wilk Critical Value	0.767				5% Shapiro Wilk Critical Value		0.767
230	**Data appear Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
231												
232	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
233					DL/2 Substitution Method					DL/2 Substitution Method		
234					Mean	0.0334				Mean		-3.48
235					SD	0.0175				SD		0.386
236					95% DL/2 (t) UCL	0.0435				95% H-Stat (DL/2) UCL		0.0535
237												
238					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
239	**MLE method failed to converge properly**									Mean in Log Scale		-3.665
240										SD in Log Scale		0.45

241										Mean in Original Scale		0.0288
242										SD in Original Scale		0.0191
243										95% Percentile Bootstrap UCL		0.0405
244										95% BCA Bootstrap UCL		0.0463
245												
246	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
247					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
248					Theta Star	N/A						
249					nu star	N/A						
250												
251					A-D Test Statistic	0.316	**Nonparametric Statistics**					
252					5% A-D Critical Value	N/A				Kaplan-Meier (KM) Method		
253					K-S Test Statistic	N/A				Mean		0.0292
254					5% K-S Critical Value	N/A				SD		0.0186
255	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		0.00843
256										95% KM (t) UCL		0.0446
257	**Assuming Gamma Distribution**									95% KM (z) UCL		0.043
258					Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL		0.0468
259					Minimum	N/A				95% KM (bootstrap t) UCL		0.0483
260					Maximum	N/A				95% KM (BCA) UCL		N/A
261					Mean	N/A				95% KM (Percentile Bootstrap) UCL		N/A
262					Median	N/A				95% KM (Chebyshev) UCL		0.0659
263					SD	N/A				97.5% KM (Chebyshev) UCL		0.0818
264					k star	N/A				99% KM (Chebyshev) UCL		0.113
265					Theta star	N/A						
266					Nu star	N/A	**Potential UCLs to Use**					
267					AppChi2	N/A				95% KM (t) UCL		0.0446
268					95% Gamma Approximate UCL	N/A				95% KM (Percentile Bootstrap) UCL		N/A
269					95% Adjusted Gamma UCL	N/A						
270	**Note: DL/2 is not a recommended method.**											
271												
272												
273	**Aluminum (mg/kg)**											
274												
275	**General Statistics**											
276					Number of Valid Samples	10				Number of Unique Samples		7
277												
278	**Raw Statistics**						**Log-transformed Statistics**					
279					Minimum	8690				Minimum of Log Data		9.07
280					Maximum	15600				Maximum of Log Data		9.655
281					Mean	12039				Mean of log Data		9.384
282					Median	11900				SD of log Data		0.165
283					SD	1956						
284					Coefficient of Variation	0.162						
285					Skewness	0.236						
286												
287	**Relevant UCL Statistics**											
288	**Normal Distribution Test**						**Lognormal Distribution Test**					

289				Shapiro Wilk Test Statistic	0.95					Shapiro Wilk Test Statistic	0.951	
290				Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842	
291	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
292												
293	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
294				95% Student's-t UCL	13173					95% H-UCL	13345	
295	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	14777	
296				95% Adjusted-CLT UCL	13106					97.5% Chebyshev (MVUE) UCL	15961	
297				95% Modified-t UCL	13181					99% Chebyshev (MVUE) UCL	18287	
298												
299	**Gamma Distribution Test**						**Data Distribution**					
300				k star (bias corrected)	29.26		**Data appear Normal at 5% Significance Level**					
301				Theta Star	411.4							
302				nu star	585.3							
303				Approximate Chi Square Value (.05)	530.2		**Nonparametric Statistics**					
304				Adjusted Level of Significance	0.0267					95% CLT UCL	13056	
305				Adjusted Chi Square Value	521					95% Jackknife UCL	13173	
306										95% Standard Bootstrap UCL	12978	
307				Anderson-Darling Test Statistic	0.36					95% Bootstrap-t UCL	13235	
308				Anderson-Darling 5% Critical Value	0.724					95% Hall's Bootstrap UCL	13608	
309				Kolmogorov-Smirnov Test Statistic	0.204					95% Percentile Bootstrap UCL	13010	
310				Kolmogorov-Smirnov 5% Critical Value	0.266					95% BCA Bootstrap UCL	13019	
311	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	14735	
312										97.5% Chebyshev(Mean, Sd) UCL	15902	
313	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	18193	
314				95% Approximate Gamma UCL	13291							
315				95% Adjusted Gamma UCL	13524							
316												
317	**Potential UCL to Use**									Use 95% Student's-t UCL	13173	
318												
319												
320	**Arsenic (mg/kg)**											
321												
322	**General Statistics**											
323				Number of Valid Samples	10					Number of Unique Samples	9	
324												
325	**Raw Statistics**						**Log-transformed Statistics**					
326				Minimum	1.2					Minimum of Log Data	0.182	
327				Maximum	17.7					Maximum of Log Data	2.874	
328				Mean	3.79					Mean of log Data	0.977	
329				Median	2.3					SD of log Data	0.733	
330				SD	4.925							
331				Coefficient of Variation	1.3							
332				Skewness	3.071							
333												
334	**Relevant UCL Statistics**											
335	**Normal Distribution Test**						**Lognormal Distribution Test**					
336				Shapiro Wilk Test Statistic	0.485					Shapiro Wilk Test Statistic	0.758	

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337	Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842				
338	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
339												
340	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
341	95% Student's-t UCL	6.645					95% H-UCL	6.533				
342	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	6.872				
343	95% Adjusted-CLT UCL	7.968					97.5% Chebyshev (MVUE) UCL	8.391				
344	95% Modified-t UCL	6.897					99% Chebyshev (MVUE) UCL	11.37				
345												
346	**Gamma Distribution Test**						**Data Distribution**					
347	k star (bias corrected)	1.152					**Data do not follow a Discernable Distribution (0.05)**					
348	Theta Star	3.289										
349	nu star	23.05										
350	Approximate Chi Square Value (.05)	13.13					**Nonparametric Statistics**					
351	Adjusted Level of Significance	0.0267					95% CLT UCL	6.352				
352	Adjusted Chi Square Value	11.84					95% Jackknife UCL	6.645				
353							95% Standard Bootstrap UCL	6.178				
354	Anderson-Darling Test Statistic	1.565					95% Bootstrap-t UCL	19.59				
355	Anderson-Darling 5% Critical Value	0.739					95% Hall's Bootstrap UCL	20.33				
356	Kolmogorov-Smirnov Test Statistic	0.387					95% Percentile Bootstrap UCL	6.82				
357	Kolmogorov-Smirnov 5% Critical Value	0.271					95% BCA Bootstrap UCL	8.48				
358	**Data not Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	10.58				
359							97.5% Chebyshev(Mean, Sd) UCL	13.52				
360	**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	19.29				
361	95% Approximate Gamma UCL	6.654										
362	95% Adjusted Gamma UCL	7.375										
363												
364	**Potential UCL to Use**						Use 95% Chebyshev (Mean, Sd) UCL	10.58				
365												
366												
367	**Barium (mg/kg)**											
368												
369	**General Statistics**											
370	Number of Valid Samples	10					Number of Unique Samples	10				
371												
372	**Raw Statistics**						**Log-transformed Statistics**					
373	Minimum	98.9					Minimum of Log Data	4.594				
374	Maximum	199					Maximum of Log Data	5.293				
375	Mean	138.3					Mean of log Data	4.902				
376	Median	124					SD of log Data	0.244				
377	SD	35.48										
378	Coefficient of Variation	0.257										
379	Skewness	0.851										
380												
381	**Relevant UCL Statistics**											
382	**Normal Distribution Test**						**Lognormal Distribution Test**					
383	Shapiro Wilk Test Statistic	0.879					Shapiro Wilk Test Statistic	0.915				
384	Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842				

385	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
386												
387	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
388					95% Student's-t UCL	158.9					95% H-UCL	162
389	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	184.8
390					95% Adjusted-CLT UCL	160					97.5% Chebyshev (MVUE) UCL	205
391					95% Modified-t UCL	159.4					99% Chebyshev (MVUE) UCL	244.7
392												
393	**Gamma Distribution Test**						**Data Distribution**					
394					k star (bias corrected)	12.83	**Data appear Normal at 5% Significance Level**					
395					Theta Star	10.78						
396					nu star	256.6						
397					Approximate Chi Square Value (.05)	220.5	**Nonparametric Statistics**					
398					Adjusted Level of Significance	0.0267					95% CLT UCL	156.7
399					Adjusted Chi Square Value	214.7					95% Jackknife UCL	158.9
400											95% Standard Bootstrap UCL	155.8
401					Anderson-Darling Test Statistic	0.473					95% Bootstrap-t UCL	165.3
402					Anderson-Darling 5% Critical Value	0.725					95% Hall's Bootstrap UCL	161.6
403					Kolmogorov-Smirnov Test Statistic	0.21					95% Percentile Bootstrap UCL	156.3
404					Kolmogorov-Smirnov 5% Critical Value	0.266					95% BCA Bootstrap UCL	157.7
405	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	187.2
406											97.5% Chebyshev(Mean, Sd) UCL	208.4
407	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	249.9
408					95% Approximate Gamma UCL	160.9						
409					95% Adjusted Gamma UCL	165.3						
410												
411	**Potential UCL to Use**										Use 95% Student's-t UCL	158.9
412												
413												
414	**Beryllium (mg/kg)**											
415												
416	**General Statistics**											
417					Number of Valid Samples	10					Number of Unique Samples	10
418												
419	**Raw Statistics**						**Log-transformed Statistics**					
420					Minimum	0.75					Minimum of Log Data	-0.288
421					Maximum	1.3					Maximum of Log Data	0.262
422					Mean	0.955					Mean of log Data	-0.063
423					Median	0.905					SD of log Data	0.192
424					SD	0.19						
425					Coefficient of Variation	0.199						
426					Skewness	0.76						
427												
428	**Relevant UCL Statistics**											
429	**Normal Distribution Test**						**Lognormal Distribution Test**					
430					Shapiro Wilk Test Statistic	0.905					Shapiro Wilk Test Statistic	0.924
431					Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
432	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					

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433												
434	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
435					95% Student's-t UCL	1.065					95% H-UCL	1.078
436	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	1.208
437					95% Adjusted-CLT UCL	1.069					97.5% Chebyshev (MVUE) UCL	1.318
438					95% Modified-t UCL	1.068					99% Chebyshev (MVUE) UCL	1.533
439												
440	**Gamma Distribution Test**						**Data Distribution**					
441					k star (bias corrected)	20.77	**Data appear Normal at 5% Significance Level**					
442					Theta Star	0.046						
443					nu star	415.5						
444					Approximate Chi Square Value (.05)	369.2	**Nonparametric Statistics**					
445					Adjusted Level of Significance	0.0267					95% CLT UCL	1.054
446					Adjusted Chi Square Value	361.6					95% Jackknife UCL	1.065
447											95% Standard Bootstrap UCL	1.048
448					Anderson-Darling Test Statistic	0.388					95% Bootstrap-t UCL	1.084
449					Anderson-Darling 5% Critical Value	0.724					95% Hall's Bootstrap UCL	1.065
450					Kolmogorov-Smirnov Test Statistic	0.191					95% Percentile Bootstrap UCL	1.046
451					Kolmogorov-Smirnov 5% Critical Value	0.266					95% BCA Bootstrap UCL	1.054
452	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	1.217
453											97.5% Chebyshev(Mean, Sd) UCL	1.331
454	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	1.554
455					95% Approximate Gamma UCL	1.075						
456					95% Adjusted Gamma UCL	1.097						
457												
458	**Potential UCL to Use**										Use 95% Student's-t UCL	1.065
459												
460												
461	**Calcium (mg/kg)**											
462												
463	**General Statistics**											
464					Number of Valid Samples	10					Number of Unique Samples	10
465												
466	**Raw Statistics**						**Log-transformed Statistics**					
467					Minimum	1060					Minimum of Log Data	6.966
468					Maximum	15900					Maximum of Log Data	9.674
469					Mean	3204					Mean of log Data	7.658
470					Median	1765					SD of log Data	0.78
471					SD	4511						
472					Coefficient of Variation	1.408						
473					Skewness	3.037						
474												
475	**Relevant UCL Statistics**											
476	**Normal Distribution Test**						**Lognormal Distribution Test**					
477					Shapiro Wilk Test Statistic	0.489					Shapiro Wilk Test Statistic	0.741
478					Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
479	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
480												

481	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
482					95% Student's-t UCL	5819					95% H-UCL	5753
483	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	5849
484					95% Adjusted-CLT UCL	7015					97.5% Chebyshev (MVUE) UCL	7183
485					95% Modified-t UCL	6048					99% Chebyshev (MVUE) UCL	9803
486												
487	**Gamma Distribution Test**						**Data Distribution**					
488					k star (bias corrected)	1.011	**Data do not follow a Discernable Distribution (0.05)**					
489					Theta Star	3168						
490					nu star	20.22						
491					Approximate Chi Square Value (.05)	11.02	**Nonparametric Statistics**					
492					Adjusted Level of Significance	0.0267					95% CLT UCL	5551
493					Adjusted Chi Square Value	9.855					95% Jackknife UCL	5819
494											95% Standard Bootstrap UCL	5446
495					Anderson-Darling Test Statistic	1.603					95% Bootstrap-t UCL	25467
496					Anderson-Darling 5% Critical Value	0.742					95% Hall's Bootstrap UCL	18180
497					Kolmogorov-Smirnov Test Statistic	0.354					95% Percentile Bootstrap UCL	5896
498					Kolmogorov-Smirnov 5% Critical Value	0.272					95% BCA Bootstrap UCL	7393
499	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	9423
500											97.5% Chebyshev(Mean, Sd) UCL	12113
501	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	17399
502					95% Approximate Gamma UCL	5882						
503					95% Adjusted Gamma UCL	6575						
504												
505	**Potential UCL to Use**										Use 95% Chebyshev (Mean, Sd) UCL	9423
506												
507												
508	**Chromium (mg/kg)**											
509												
510	**General Statistics**											
511					Number of Valid Samples	10					Number of Unique Samples	10
512												
513	**Raw Statistics**						**Log-transformed Statistics**					
514					Minimum	14.4					Minimum of Log Data	2.667
515					Maximum	24.3					Maximum of Log Data	3.19
516					Mean	19.13					Mean of log Data	2.94
517					Median	18.6					SD of log Data	0.158
518					SD	3.012						
519					Coefficient of Variation	0.157						
520					Skewness	0.259						
521												
522	**Relevant UCL Statistics**											
523	**Normal Distribution Test**						**Lognormal Distribution Test**					
524					Shapiro Wilk Test Statistic	0.969					Shapiro Wilk Test Statistic	0.975
525					Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
526	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
527												
528	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					

529				95% Student's-t UCL	20.88					95% H-UCL	21.11
530				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	23.31
531				95% Adjusted-CLT UCL	20.78					97.5% Chebyshev (MVUE) UCL	25.11
532				95% Modified-t UCL	20.89					99% Chebyshev (MVUE) UCL	28.66
533											
534				**Gamma Distribution Test**						**Data Distribution**	
535				k star (bias corrected)	31.47					**Data appear Normal at 5% Significance Level**	
536				Theta Star	0.608						
537				nu star	629.3						
538				Approximate Chi Square Value (.05)	572.1					**Nonparametric Statistics**	
539				Adjusted Level of Significance	0.0267					95% CLT UCL	20.7
540				Adjusted Chi Square Value	562.6					95% Jackknife UCL	20.88
541										95% Standard Bootstrap UCL	20.67
542				Anderson-Darling Test Statistic	0.22					95% Bootstrap-t UCL	21.07
543				Anderson-Darling 5% Critical Value	0.724					95% Hall's Bootstrap UCL	20.95
544				Kolmogorov-Smirnov Test Statistic	0.151					95% Percentile Bootstrap UCL	20.64
545				Kolmogorov-Smirnov 5% Critical Value	0.266					95% BCA Bootstrap UCL	20.64
546				**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	23.28
547										97.5% Chebyshev(Mean, Sd) UCL	25.08
548				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	28.61
549				95% Approximate Gamma UCL	21.04						
550				95% Adjusted Gamma UCL	21.4						
551											
552				**Potential UCL to Use**						Use 95% Student's-t UCL	20.88
553											
554											
555	**Cobalt (mg/kg)**										
556											
557				**General Statistics**							
558				Number of Valid Samples	10					Number of Unique Samples	10
559											
560				**Raw Statistics**						**Log-transformed Statistics**	
561				Minimum	6.6					Minimum of Log Data	1.887
562				Maximum	12.6					Maximum of Log Data	2.534
563				Mean	9.61					Mean of log Data	2.248
564				Median	9.6					SD of log Data	0.182
565				SD	1.674						
566				Coefficient of Variation	0.174						
567				Skewness	-0.156						
568											
569				**Relevant UCL Statistics**							
570				**Normal Distribution Test**						**Lognormal Distribution Test**	
571				Shapiro Wilk Test Statistic	0.96					Shapiro Wilk Test Statistic	0.939
572				Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
573				**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**	
574											
575				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
576				95% Student's-t UCL	10.58					95% H-UCL	10.79

577	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL		12.03
578				95% Adjusted-CLT UCL		10.45				97.5% Chebyshev (MVUE) UCL		13.08
579				95% Modified-t UCL		10.58				99% Chebyshev (MVUE) UCL		15.14
580												
581	**Gamma Distribution Test**									**Data Distribution**		
582				k star (bias corrected)		24.45				**Data appear Normal at 5% Significance Level**		
583				Theta Star		0.393						
584				nu star		488.9						
585				Approximate Chi Square Value (.05)		438.6				**Nonparametric Statistics**		
586				Adjusted Level of Significance		0.0267				95% CLT UCL		10.48
587				Adjusted Chi Square Value		430.3				95% Jackknife UCL		10.58
588										95% Standard Bootstrap UCL		10.44
589				Anderson-Darling Test Statistic		0.363				95% Bootstrap-t UCL		10.54
590				Anderson-Darling 5% Critical Value		0.724				95% Hall's Bootstrap UCL		10.61
591				Kolmogorov-Smirnov Test Statistic		0.221				95% Percentile Bootstrap UCL		10.43
592				Kolmogorov-Smirnov 5% Critical Value		0.266				95% BCA Bootstrap UCL		10.42
593	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL		11.92
594										97.5% Chebyshev(Mean, Sd) UCL		12.92
595	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL		14.88
596				95% Approximate Gamma UCL		10.71						
597				95% Adjusted Gamma UCL		10.92						
598												
599	**Potential UCL to Use**									Use 95% Student's-t UCL		10.58
600												
601												
602	**Copper (mg/kg)**											
603												
604	**General Statistics**											
605				Number of Valid Samples		10				Number of Unique Samples		9
606												
607	**Raw Statistics**									**Log-transformed Statistics**		
608				Minimum		9.2				Minimum of Log Data		2.219
609				Maximum		16.8				Maximum of Log Data		2.821
610				Mean		11.75				Mean of log Data		2.447
611				Median		11.1				SD of log Data		0.19
612				SD		2.355						
613				Coefficient of Variation		0.2						
614				Skewness		1.102						
615												
616	**Relevant UCL Statistics**											
617	**Normal Distribution Test**									**Lognormal Distribution Test**		
618				Shapiro Wilk Test Statistic		0.908				Shapiro Wilk Test Statistic		0.942
619				Shapiro Wilk Critical Value		0.842				Shapiro Wilk Critical Value		0.842
620	**Data appear Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
621												
622	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
623				95% Student's-t UCL		13.12				95% H-UCL		13.24
624	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL		14.82

625				95% Adjusted-CLT UCL	13.25				97.5% Chebyshev (MVUE) UCL	16.15		
626				95% Modified-t UCL	13.16				99% Chebyshev (MVUE) UCL	18.77		
627												
628			**Gamma Distribution Test**						**Data Distribution**			
629				k star (bias corrected)	21.07				**Data appear Normal at 5% Significance Level**			
630				Theta Star	0.558							
631				nu star	421.4							
632				Approximate Chi Square Value (.05)	374.8				**Nonparametric Statistics**			
633				Adjusted Level of Significance	0.0267				95% CLT UCL	12.98		
634				Adjusted Chi Square Value	367.2				95% Jackknife UCL	13.12		
635									95% Standard Bootstrap UCL	12.92		
636				Anderson-Darling Test Statistic	0.314				95% Bootstrap-t UCL	13.61		
637				Anderson-Darling 5% Critical Value	0.724				95% Hall's Bootstrap UCL	13.97		
638				Kolmogorov-Smirnov Test Statistic	0.207				95% Percentile Bootstrap UCL	13.01		
639				Kolmogorov-Smirnov 5% Critical Value	0.266				95% BCA Bootstrap UCL	13.2		
640			**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	15		
641									97.5% Chebyshev(Mean, Sd) UCL	16.4		
642			**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	19.16		
643				95% Approximate Gamma UCL	13.21							
644				95% Adjusted Gamma UCL	13.49							
645												
646			**Potential UCL to Use**						Use 95% Student's-t UCL	13.12		
647												
648												
649	**Iron (mg/kg)**											
650												
651					**General Statistics**							
652				Number of Valid Samples	10				Number of Unique Samples	9		
653												
654			**Raw Statistics**						**Log-transformed Statistics**			
655				Minimum	12600				Minimum of Log Data	9.441		
656				Maximum	20100				Maximum of Log Data	9.908		
657				Mean	17750				Mean of log Data	9.772		
658				Median	18400				SD of log Data	0.171		
659				SD	2740							
660				Coefficient of Variation	0.154							
661				Skewness	-1.326							
662												
663					**Relevant UCL Statistics**							
664			**Normal Distribution Test**						**Lognormal Distribution Test**			
665				Shapiro Wilk Test Statistic	0.781				Shapiro Wilk Test Statistic	0.75		
666				Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842		
667			**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**			
668												
669			**Assuming Normal Distribution**						**Assuming Lognormal Distribution**			
670				95% Student's-t UCL	19339				95% H-UCL	19778		
671			**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	21964		
672				95% Adjusted-CLT UCL	18787				97.5% Chebyshev (MVUE) UCL	23781		

673				95% Modified-t UCL	19278				99% Chebyshev (MVUE) UCL	27349		
674												
675	**Gamma Distribution Test**						**Data Distribution**					
676				k star (bias corrected)	28.64		**Data do not follow a Discernable Distribution (0.05)**					
677				Theta Star	619.7							
678				nu star	572.9							
679				Approximate Chi Square Value (.05)	518.4		**Nonparametric Statistics**					
680				Adjusted Level of Significance	0.0267					95% CLT UCL	19175	
681				Adjusted Chi Square Value	509.3					95% Jackknife UCL	19339	
682										95% Standard Bootstrap UCL	19108	
683				Anderson-Darling Test Statistic	1.107					95% Bootstrap-t UCL	19003	
684				Anderson-Darling 5% Critical Value	0.724					95% Hall's Bootstrap UCL	18824	
685				Kolmogorov-Smirnov Test Statistic	0.299					95% Percentile Bootstrap UCL	19030	
686				Kolmogorov-Smirnov 5% Critical Value	0.266					95% BCA Bootstrap UCL	18820	
687	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	21527	
688										97.5% Chebyshev(Mean, Sd) UCL	23162	
689	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	26372	
690				95% Approximate Gamma UCL	19617							
691				95% Adjusted Gamma UCL	19964							
692												
693	**Potential UCL to Use**									Use 95% Student's-t UCL	19339	
694										or 95% Modified-t UCL	19278	
695												
696												
697	**Lead (mg/kg)**											
698												
699	**General Statistics**											
700				Number of Valid Samples	10					Number of Unique Samples	10	
701												
702	**Raw Statistics**						**Log-transformed Statistics**					
703				Minimum	7					Minimum of Log Data	1.946	
704				Maximum	36.2					Maximum of Log Data	3.589	
705				Mean	14.66					Mean of log Data	2.58	
706				Median	13.55					SD of log Data	0.459	
707				SD	8.222							
708				Coefficient of Variation	0.561							
709				Skewness	2.271							
710												
711	**Relevant UCL Statistics**											
712	**Normal Distribution Test**						**Lognormal Distribution Test**					
713				Shapiro Wilk Test Statistic	0.735					Shapiro Wilk Test Statistic	0.907	
714				Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842	
715	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
716												
717	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
718				95% Student's-t UCL	19.43					95% H-UCL	20.4	
719	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	23.79	
720				95% Adjusted-CLT UCL	20.93					97.5% Chebyshev (MVUE) UCL	27.81	

721				95% Modified-t UCL	19.74				99% Chebyshev (MVUE) UCL	35.72		
722												
723				**Gamma Distribution Test**					**Data Distribution**			
724				k star (bias corrected)	3.499				**Data appear Gamma Distributed at 5% Significance Level**			
725				Theta Star	4.19							
726				nu star	69.98							
727				Approximate Chi Square Value (.05)	51.72				**Nonparametric Statistics**			
728				Adjusted Level of Significance	0.0267				95% CLT UCL	18.94		
729				Adjusted Chi Square Value	49				95% Jackknife UCL	19.43		
730									95% Standard Bootstrap UCL	18.79		
731				Anderson-Darling Test Statistic	0.607				95% Bootstrap-t UCL	23.6		
732				Anderson-Darling 5% Critical Value	0.729				95% Hall's Bootstrap UCL	38.02		
733				Kolmogorov-Smirnov Test Statistic	0.244				95% Percentile Bootstrap UCL	19.09		
734				Kolmogorov-Smirnov 5% Critical Value	0.267				95% BCA Bootstrap UCL	20.69		
735				**Data appear Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	25.99		
736									97.5% Chebyshev(Mean, Sd) UCL	30.9		
737				**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL	40.53		
738				95% Approximate Gamma UCL	19.83							
739				95% Adjusted Gamma UCL	20.94							
740												
741				**Potential UCL to Use**					Use 95% Approximate Gamma UCL	19.83		
742												
743												
744	**Magnesium (mg/kg)**											
745												
746				**General Statistics**								
747				Number of Valid Samples	10				Number of Unique Samples	10		
748												
749				**Raw Statistics**					**Log-transformed Statistics**			
750				Minimum	2130				Minimum of Log Data	7.664		
751				Maximum	8180				Maximum of Log Data	9.009		
752				Mean	3306				Mean of log Data	8.02		
753				Median	2825				SD of log Data	0.388		
754				SD	1777							
755				Coefficient of Variation	0.538							
756				Skewness	2.751							
757												
758				**Relevant UCL Statistics**								
759				**Normal Distribution Test**					**Lognormal Distribution Test**			
760				Shapiro Wilk Test Statistic	0.614				Shapiro Wilk Test Statistic	0.771		
761				Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842		
762				**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**			
763												
764				**Assuming Normal Distribution**					**Assuming Lognormal Distribution**			
765				95% Student's-t UCL	4336				95% H-UCL	4287		
766				**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	5011		
767				95% Adjusted-CLT UCL	4753				97.5% Chebyshev (MVUE) UCL	5772		
768				95% Modified-t UCL	4418				99% Chebyshev (MVUE) UCL	7266		

769												
770	**Gamma Distribution Test**						**Data Distribution**					
771					k star (bias corrected)	4.36	**Data do not follow a Discernable Distribution (0.05)**					
772					Theta Star	758.2						
773					nu star	87.21						
774					Approximate Chi Square Value (.05)	66.68	**Nonparametric Statistics**					
775					Adjusted Level of Significance	0.0267					95% CLT UCL	4231
776					Adjusted Chi Square Value	63.57					95% Jackknife UCL	4336
777											95% Standard Bootstrap UCL	4207
778					Anderson-Darling Test Statistic	1.124					95% Bootstrap-t UCL	6138
779					Anderson-Darling 5% Critical Value	0.728					95% Hall's Bootstrap UCL	7754
780					Kolmogorov-Smirnov Test Statistic	0.291					95% Percentile Bootstrap UCL	4360
781					Kolmogorov-Smirnov 5% Critical Value	0.267					95% BCA Bootstrap UCL	4857
782	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	5756
783											97.5% Chebyshev(Mean, Sd) UCL	6816
784	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	8899
785					95% Approximate Gamma UCL	4324						
786					95% Adjusted Gamma UCL	4535						
787												
788	**Potential UCL to Use**										Use 95% Student's-t UCL	4336
789											or 95% Modified-t UCL	4418
790												
791												
792	**Manganese (mg/kg)**											
793												
794	**General Statistics**											
795					Number of Valid Samples	10					Number of Unique Samples	9
796												
797	**Raw Statistics**						**Log-transformed Statistics**					
798					Minimum	349					Minimum of Log Data	5.855
799					Maximum	1710					Maximum of Log Data	7.444
800					Mean	653.6					Mean of log Data	6.38
801					Median	545.5					SD of log Data	0.432
802					SD	388.1						
803					Coefficient of Variation	0.594						
804					Skewness	2.674						
805												
806	**Relevant UCL Statistics**											
807	**Normal Distribution Test**						**Lognormal Distribution Test**					
808					Shapiro Wilk Test Statistic	0.648					Shapiro Wilk Test Statistic	0.842
809					Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
810	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
811												
812	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
813					95% Student's-t UCL	878.6					95% H-UCL	879.9
814	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	1028
815					95% Adjusted-CLT UCL	966.4					97.5% Chebyshev (MVUE) UCL	1196
816					95% Modified-t UCL	895.9					99% Chebyshev (MVUE) UCL	1525

817												
818	**Gamma Distribution Test**						**Data Distribution**					
819					k star (bias corrected)	3.589	**Data appear Lognormal at 5% Significance Level**					
820					Theta Star	182.1						
821					nu star	71.78						
822					Approximate Chi Square Value (.05)	53.27	**Nonparametric Statistics**					
823					Adjusted Level of Significance	0.0267					95% CLT UCL	855.5
824					Adjusted Chi Square Value	50.51					95% Jackknife UCL	878.6
825											95% Standard Bootstrap UCL	845.8
826					Anderson-Darling Test Statistic	0.914					95% Bootstrap-t UCL	1250
827					Anderson-Darling 5% Critical Value	0.729					95% Hall's Bootstrap UCL	1674
828					Kolmogorov-Smirnov Test Statistic	0.271					95% Percentile Bootstrap UCL	869.4
829					Kolmogorov-Smirnov 5% Critical Value	0.267					95% BCA Bootstrap UCL	988.6
830	**Data not Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	1189
831											97.5% Chebyshev(Mean, Sd) UCL	1420
832	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	1875
833					95% Approximate Gamma UCL	880.7						
834					95% Adjusted Gamma UCL	928.8						
835												
836	**Potential UCL to Use**										Use 95% Student's-t UCL	878.6
837											or 95% Modified-t UCL	895.9
838											or 95% H-UCL	879.9
839												
840												
841	**Mercury (mg/kg)**											
842												
843	**General Statistics**											
844					Number of Valid Samples	10					Number of Unique Samples	10
845												
846	**Raw Statistics**						**Log-transformed Statistics**					
847					Minimum	0.035					Minimum of Log Data	-3.352
848					Maximum	0.31					Maximum of Log Data	-1.171
849					Mean	0.0916					Mean of log Data	-2.687
850					Median	0.057					SD of log Data	0.73
851					SD	0.0907						
852					Coefficient of Variation	0.99						
853					Skewness	2.045						
854												
855	**Relevant UCL Statistics**											
856	**Normal Distribution Test**						**Lognormal Distribution Test**					
857					Shapiro Wilk Test Statistic	0.657					Shapiro Wilk Test Statistic	0.812
858					Shapiro Wilk Critical Value	0.842					Shapiro Wilk Critical Value	0.842
859	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
860												
861	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
862					95% Student's-t UCL	0.144					95% H-UCL	0.167
863	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	0.176
864					95% Adjusted-CLT UCL	0.159					97.5% Chebyshev (MVUE) UCL	0.214

865				95% Modified-t UCL	0.147				99% Chebyshev (MVUE) UCL	0.29		
866												
867				**Gamma Distribution Test**					**Data Distribution**			
868				k star (bias corrected)	1.349				**Data do not follow a Discernable Distribution (0.05)**			
869				Theta Star	0.0679							
870				nu star	26.98							
871				Approximate Chi Square Value (.05)	16.13				**Nonparametric Statistics**			
872				Adjusted Level of Significance	0.0267				95% CLT UCL	0.139		
873				Adjusted Chi Square Value	14.69				95% Jackknife UCL	0.144		
874									95% Standard Bootstrap UCL	0.135		
875				Anderson-Darling Test Statistic	1.152				95% Bootstrap-t UCL	0.381		
876				Anderson-Darling 5% Critical Value	0.737				95% Hall's Bootstrap UCL	0.443		
877				Kolmogorov-Smirnov Test Statistic	0.331				95% Percentile Bootstrap UCL	0.139		
878				Kolmogorov-Smirnov 5% Critical Value	0.27				95% BCA Bootstrap UCL	0.157		
879				**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	0.217		
880									97.5% Chebyshev(Mean, Sd) UCL	0.271		
881				**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL	0.377		
882				95% Approximate Gamma UCL	0.153							
883				95% Adjusted Gamma UCL	0.168							
884												
885				**Potential UCL to Use**					Use 95% Chebyshev (Mean, Sd) UCL	0.217		
886												
887												
888	**Nickel (mg/kg)**											
889												
890				**General Statistics**								
891				Number of Valid Samples	10				Number of Unique Samples	10		
892												
893				**Raw Statistics**					**Log-transformed Statistics**			
894				Minimum	9.1				Minimum of Log Data	2.208		
895				Maximum	13.6				Maximum of Log Data	2.61		
896				Mean	11.1				Mean of log Data	2.399		
897				Median	11.3				SD of log Data	0.132		
898				SD	1.453							
899				Coefficient of Variation	0.131							
900				Skewness	0.109							
901												
902				**Relevant UCL Statistics**								
903				**Normal Distribution Test**					**Lognormal Distribution Test**			
904				Shapiro Wilk Test Statistic	0.961				Shapiro Wilk Test Statistic	0.956		
905				Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842		
906				**Data appear Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**			
907												
908				**Assuming Normal Distribution**					**Assuming Lognormal Distribution**			
909				95% Student's-t UCL	11.94				95% H-UCL	12.04		
910				**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	13.12		
911				95% Adjusted-CLT UCL	11.87				97.5% Chebyshev (MVUE) UCL	13.99		
912				95% Modified-t UCL	11.94				99% Chebyshev (MVUE) UCL	15.71		

913												
914	**Gamma Distribution Test**						**Data Distribution**					
915					k star (bias corrected)	45.2	**Data appear Normal at 5% Significance Level**					
916					Theta Star	0.246						
917					nu star	903.9						
918					Approximate Chi Square Value (.05)	835.1	**Nonparametric Statistics**					
919					Adjusted Level of Significance	0.0267					95% CLT UCL	11.86
920					Adjusted Chi Square Value	823.6					95% Jackknife UCL	11.94
921											95% Standard Bootstrap UCL	11.82
922					Anderson-Darling Test Statistic	0.242					95% Bootstrap-t UCL	11.97
923					Anderson-Darling 5% Critical Value	0.724					95% Hall's Bootstrap UCL	11.91
924					Kolmogorov-Smirnov Test Statistic	0.145					95% Percentile Bootstrap UCL	11.8
925					Kolmogorov-Smirnov 5% Critical Value	0.266					95% BCA Bootstrap UCL	11.85
926	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	13.1
927											97.5% Chebyshev(Mean, Sd) UCL	13.97
928	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	15.67
929					95% Approximate Gamma UCL	12.01						
930					95% Adjusted Gamma UCL	12.18						
931												
932	**Potential UCL to Use**										Use 95% Student's-t UCL	11.94
933												
934												
935	**Potassium (mg/kg)**											
936												
937	**General Statistics**											
938					Number of Valid Samples	7					Number of Unique Samples	7
939					Number of Missing Values	3						
940												
941	**Raw Statistics**						**Log-transformed Statistics**					
942					Minimum	856					Minimum of Log Data	6.752
943					Maximum	1440					Maximum of Log Data	7.272
944					Mean	1192					Mean of log Data	7.069
945					Median	1220					SD of log Data	0.187
946					SD	213.5						
947					Coefficient of Variation	0.179						
948					Skewness	-0.37						
949												
950	**Relevant UCL Statistics**											
951	**Normal Distribution Test**						**Lognormal Distribution Test**					
952					Shapiro Wilk Test Statistic	0.952					Shapiro Wilk Test Statistic	0.94
953					Shapiro Wilk Critical Value	0.803					Shapiro Wilk Critical Value	0.803
954	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
955												
956	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
957					95% Student's-t UCL	1349					95% H-UCL	1391
958	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	1561
959					95% Adjusted-CLT UCL	1313					97.5% Chebyshev (MVUE) UCL	1721
960					95% Modified-t UCL	1347					99% Chebyshev (MVUE) UCL	2034

Appendix E-3a
ProUCL Output
Surface Soil
SWMU 43

961												
962	**Gamma Distribution Test**						**Data Distribution**					
963					k star (bias corrected)	19.79	**Data appear Normal at 5% Significance Level**					
964					Theta Star	60.26						
965					nu star	277						
966					Approximate Chi Square Value (.05)	239.5	**Nonparametric Statistics**					
967					Adjusted Level of Significance	0.0158				95% CLT UCL	1325	
968					Adjusted Chi Square Value	228.9				95% Jackknife UCL	1349	
969										95% Standard Bootstrap UCL	1317	
970					Anderson-Darling Test Statistic	0.242				95% Bootstrap-t UCL	1344	
971					Anderson-Darling 5% Critical Value	0.707				95% Hall's Bootstrap UCL	1302	
972					Kolmogorov-Smirnov Test Statistic	0.153				95% Percentile Bootstrap UCL	1310	
973					Kolmogorov-Smirnov 5% Critical Value	0.311				95% BCA Bootstrap UCL	1303	
974	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	1544	
975										97.5% Chebyshev(Mean, Sd) UCL	1696	
976	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	1995	
977					95% Approximate Gamma UCL	1379						
978					95% Adjusted Gamma UCL	1443						
979												
980	**Potential UCL to Use**									Use 95% Student's-t UCL	1349	
981												
982												
983	**Selenium (mg.kg)**											
984												
985	**General Statistics**											
986					Number of Valid Samples	10				Number of Detected Data	8	
987					Number of Unique Samples	7				Number of Non-Detect Data	2	
988										Percent Non-Detects	20.00%	
989												
990	**Raw Statistics**						**Log-transformed Statistics**					
991					Minimum Detected	0.31				Minimum Detected	-1.171	
992					Maximum Detected	5.8				Maximum Detected	1.758	
993					Mean of Detected	3.664				Mean of Detected	0.893	
994					SD of Detected	2.45				SD of Detected	1.158	
995					Minimum Non-Detect	0.11				Minimum Non-Detect	-2.207	
996					Maximum Non-Detect	0.12				Maximum Non-Detect	-2.12	
997												
998	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	2	
999	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	8	
1000	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	20.00%	
1001												
1002	**UCL Statistics**											
1003	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1004					Shapiro Wilk Test Statistic	0.78				Shapiro Wilk Test Statistic	0.78	
1005					5% Shapiro Wilk Critical Value	0.818				5% Shapiro Wilk Critical Value	0.818	
1006	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1007												
1008	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					

1009				DL/2 Substitution Method						DL/2 Substitution Method		
1010				Mean	2.943					Mean	0.143	
1011				SD	2.642					SD	1.882	
1012				95% DL/2 (t) UCL	4.474					95% H-Stat (DL/2) UCL	60.07	
1013												
1014				Maximum Likelihood Estimate(MLE) Method						Log ROS Method		
1015				Mean	2.62					Mean in Log Scale	0.402	
1016				SD	2.992					SD in Log Scale	1.454	
1017				95% MLE (t) UCL	4.355					Mean in Original Scale	2.973	
1018				95% MLE (Tiku) UCL	4.407					SD in Original Scale	2.606	
1019										95% Percentile Bootstrap UCL	4.182	
1020										95% BCA Bootstrap UCL	4.352	
1021												
1022				**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**		
1023				k star (bias corrected)	0.943					**Data do not follow a Discernable Distribution (0.05)**		
1024				Theta Star	3.887							
1025				nu star	15.08							
1026												
1027				A-D Test Statistic	0.906					**Nonparametric Statistics**		
1028				5% A-D Critical Value	0.73					Kaplan-Meier (KM) Method		
1029				K-S Test Statistic	0.73					Mean	2.993	
1030				5% K-S Critical Value	0.3					SD	2.45	
1031				**Data not Gamma Distributed at 5% Significance Level**						SE of Mean	0.828	
1032										95% KM (t) UCL	4.511	
1033				**Assuming Gamma Distribution**						95% KM (z) UCL	4.355	
1034				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	4.47	
1035				Minimum	0.31					95% KM (bootstrap t) UCL	4.544	
1036				Maximum	5.8					95% KM (BCA) UCL	4.79	
1037				Mean	3.081					95% KM (Percentile Bootstrap) UCL	4.53	
1038				Median	2.85					95% KM (Chebyshev) UCL	6.603	
1039				SD	2.486					97.5% KM (Chebyshev) UCL	8.166	
1040				k star	0.912					99% KM (Chebyshev) UCL	11.23	
1041				Theta star	3.38							
1042				Nu star	18.23					**Potential UCLs to Use**		
1043				AppChi2	9.558					97.5% KM (Chebyshev) UCL	8.166	
1044				95% Gamma Approximate UCL	5.877							
1045				95% Adjusted Gamma UCL	6.619							
1046				**Warning: Recommended UCL exceeds the maximum observation**								
1047	**Note: DL/2 is not a recommended method.**											
1048												
1049												
1050	**Sodium (mg/kg)**											
1051												
1052				**General Statistics**								
1053				Number of Valid Samples	9					Number of Detected Data	5	
1054				Number of Unique Samples	5					Number of Non-Detect Data	4	
1055				Number of Missing Values	1					Percent Non-Detects	44.44%	
1056												

Appendix E-3a
ProUCL Output
Surface Soil
SWMU 43

	A	B	C	D	E	F	G	H	I	J	K	L
1057	**Raw Statistics**						**Log-transformed Statistics**					
1058					Minimum Detected	313					Minimum Detected	5.746
1059					Maximum Detected	523					Maximum Detected	6.26
1060					Mean of Detected	386.8					Mean of Detected	5.942
1061					SD of Detected	80.39					SD of Detected	0.193
1062					Minimum Non-Detect	26					Minimum Non-Detect	3.258
1063					Maximum Non-Detect	28					Maximum Non-Detect	3.332
1064												
1065	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	4
1066	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	5
1067	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	44.44%
1068												
1069	**UCL Statistics**											
1070	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1071					Shapiro Wilk Test Statistic	0.842					Shapiro Wilk Test Statistic	0.889
1072					5% Shapiro Wilk Critical Value	0.762					5% Shapiro Wilk Critical Value	0.762
1073	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1074												
1075	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1076					DL/2 Substitution Method						DL/2 Substitution Method	
1077					Mean	220.9					Mean	4.458
1078					SD	204.8					SD	1.766
1079					95% DL/2 (t) UCL	347.8					95% H-Stat (DL/2) UCL	1471
1080												
1081					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
1082					Mean	132.5					Mean in Log Scale	5.702
1083					SD	310.5					SD in Log Scale	0.32
1084					95% MLE (t) UCL	325					Mean in Original Scale	313.6
1085					95% MLE (Tiku) UCL	359.3					SD in Original Scale	104.3
1086											95% Percentile Bootstrap UCL	369.9
1087											95% BCA Bootstrap UCL	379.9
1088												
1089	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1090					k star (bias corrected)	13.03	**Data appear Normal at 5% Significance Level**					
1091					Theta Star	29.69						
1092					nu star	130.3						
1093												
1094					A-D Test Statistic	0.45	**Nonparametric Statistics**					
1095					5% A-D Critical Value	0.679					Kaplan-Meier (KM) Method	
1096					K-S Test Statistic	0.679					Mean	354
1097					5% K-S Critical Value	0.357					SD	64.94
1098	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	24.2
1099											95% KM (t) UCL	399
1100	**Assuming Gamma Distribution**										95% KM (z) UCL	393.8
1101					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	395.1
1102					Minimum	309.5					95% KM (bootstrap t) UCL	425.8
1103					Maximum	523					95% KM (BCA) UCL	421.7
1104					Mean	374.4					95% KM (Percentile Bootstrap) UCL	407.2

1105					Median	361.9				95% KM (Chebyshev) UCL		459.5
1106					SD	63.19				97.5% KM (Chebyshev) UCL		505.1
1107					k star	29.74				99% KM (Chebyshev) UCL		594.8
1108					Theta star	12.59						
1109					Nu star	535.3				**Potential UCLs to Use**		
1110					AppChi2	482.7				95% KM (t) UCL		399
1111				95% Gamma Approximate UCL		415.3				95% KM (Percentile Bootstrap) UCL		407.2
1112				95% Adjusted Gamma UCL		424.6						
1113	**Note: DL/2 is not a recommended method.**											
1114												
1115												
1116	**Vanadium (mg/kg)**											
1117												
1118						**General Statistics**						
1119					Number of Valid Samples	10				Number of Unique Samples		10
1120												
1121					**Raw Statistics**					**Log-transformed Statistics**		
1122					Minimum	20.4				Minimum of Log Data		3.016
1123					Maximum	42.4				Maximum of Log Data		3.747
1124					Mean	32.03				Mean of log Data		3.444
1125					Median	32.9				SD of log Data		0.23
1126					SD	6.807						
1127					Coefficient of Variation	0.213						
1128					Skewness	-0.408						
1129												
1130						**Relevant UCL Statistics**						
1131					**Normal Distribution Test**					**Lognormal Distribution Test**		
1132					Shapiro Wilk Test Statistic	0.947				Shapiro Wilk Test Statistic		0.91
1133					Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value		0.842
1134					**Data appear Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**		
1135												
1136					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
1137					95% Student's-t UCL	35.98				95% H-UCL		37.21
1138					**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL		42.26
1139					95% Adjusted-CLT UCL	35.27				97.5% Chebyshev (MVUE) UCL		46.67
1140					95% Modified-t UCL	35.93				99% Chebyshev (MVUE) UCL		55.33
1141												
1142					**Gamma Distribution Test**					**Data Distribution**		
1143					k star (bias corrected)	15.78				**Data appear Normal at 5% Significance Level**		
1144					Theta Star	2.03						
1145					nu star	315.5						
1146					Approximate Chi Square Value (.05)	275.4				**Nonparametric Statistics**		
1147					Adjusted Level of Significance	0.0267				95% CLT UCL		35.57
1148					Adjusted Chi Square Value	268.8				95% Jackknife UCL		35.98
1149										95% Standard Bootstrap UCL		35.38
1150					Anderson-Darling Test Statistic	0.422				95% Bootstrap-t UCL		35.35
1151					Anderson-Darling 5% Critical Value	0.725				95% Hall's Bootstrap UCL		35.52
1152					Kolmogorov-Smirnov Test Statistic	0.177				95% Percentile Bootstrap UCL		35.29

1153				Kolmogorov-Smirnov 5% Critical Value	0.266				95% BCA Bootstrap UCL	35.1		
1154				**Data appear Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	41.41		
1155									97.5% Chebyshev(Mean, Sd) UCL	45.47		
1156				**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL	53.45		
1157				95% Approximate Gamma UCL	36.7							
1158				95% Adjusted Gamma UCL	37.59							
1159												
1160				**Potential UCL to Use**					Use 95% Student's-t UCL	35.98		
1161												
1162												
1163	**Zinc (mg/kg)**											
1164												
1165				**General Statistics**								
1166				Number of Valid Samples	10				Number of Unique Samples	10		
1167												
1168				**Raw Statistics**					**Log-transformed Statistics**			
1169				Minimum	48.7				Minimum of Log Data	3.886		
1170				Maximum	105				Maximum of Log Data	4.654		
1171				Mean	71.23				Mean of log Data	4.233		
1172				Median	67.2				SD of log Data	0.268		
1173				SD	19.43							
1174				Coefficient of Variation	0.273							
1175				Skewness	0.534							
1176												
1177				**Relevant UCL Statistics**								
1178				**Normal Distribution Test**					**Lognormal Distribution Test**			
1179				Shapiro Wilk Test Statistic	0.926				Shapiro Wilk Test Statistic	0.942		
1180				Shapiro Wilk Critical Value	0.842				Shapiro Wilk Critical Value	0.842		
1181				**Data appear Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**			
1182												
1183				**Assuming Normal Distribution**					**Assuming Lognormal Distribution**			
1184				95% Student's-t UCL	82.49				95% H-UCL	85.05		
1185				**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	97.69		
1186				95% Adjusted-CLT UCL	82.44				97.5% Chebyshev (MVUE) UCL	109.2		
1187				95% Modified-t UCL	82.66				99% Chebyshev (MVUE) UCL	131.7		
1188												
1189				**Gamma Distribution Test**					**Data Distribution**			
1190				k star (bias corrected)	10.88				**Data appear Normal at 5% Significance Level**			
1191				Theta Star	6.55							
1192				nu star	217.5							
1193				Approximate Chi Square Value (.05)	184.4				**Nonparametric Statistics**			
1194				Adjusted Level of Significance	0.0267				95% CLT UCL	81.33		
1195				Adjusted Chi Square Value	179.1				95% Jackknife UCL	82.49		
1196									95% Standard Bootstrap UCL	80.68		
1197				Anderson-Darling Test Statistic	0.313				95% Bootstrap-t UCL	84.91		
1198				Anderson-Darling 5% Critical Value	0.725				95% Hall's Bootstrap UCL	81.53		
1199				Kolmogorov-Smirnov Test Statistic	0.174				95% Percentile Bootstrap UCL	81.34		
1200				Kolmogorov-Smirnov 5% Critical Value	0.266				95% BCA Bootstrap UCL	82.18		

Appendix E-3a
ProUCL Output
Surface Soil
SWMU 43

	A	B	C	D	E	F	G	H	I	J	K	L
1201	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL		98.01
1202										97.5% Chebyshev(Mean, Sd) UCL		109.6
1203	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL		132.4
1204					95% Approximate Gamma UCL	84.03						
1205					95% Adjusted Gamma UCL	86.52						
1206												
1207	**Potential UCL to Use**									Use 95% Student's-t UCL		82.49

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

1				**General UCL Statistics for Data Sets with Non-Detects**								
2			**User Selected Options**									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**Acetone (mg/kg)**											
10												
11						**General Statistics**							
12						Number of Valid Samples	30				Number of Detected Data	16
13						Number of Unique Samples	16				Number of Non-Detect Data	14
14											Percent Non-Detects	46.67%
15												
16				**Raw Statistics**						**Log-transformed Statistics**		
17						Minimum Detected	0.027				Minimum Detected	-3.614
18						Maximum Detected	0.0952				Maximum Detected	-2.352
19						Mean of Detected	0.0518				Mean of Detected	-3.033
20						SD of Detected	0.0213				SD of Detected	0.388
21						Minimum Non-Detect	0.044				Minimum Non-Detect	-3.124
22						Maximum Non-Detect	0.072				Maximum Non-Detect	-2.631
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	28
25	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	2
26	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	93.33%
27												
28						**UCL Statistics**							
29				**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**		
30						Shapiro Wilk Test Statistic	0.889				Shapiro Wilk Test Statistic	0.954
31						5% Shapiro Wilk Critical Value	0.887				5% Shapiro Wilk Critical Value	0.887
32				**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**		
33												
34				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
35						DL/2 Substitution Method					DL/2 Substitution Method	
36						Mean	0.041				Mean	-3.281
37						SD	0.0195				SD	0.401
38						95% DL/2 (t) UCL	0.047				95% H-Stat (DL/2) UCL	0.0519
39												
40						Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method	
41				**MLE method failed to converge properly**							Mean in Log Scale	-3.135
42											SD in Log Scale	0.307
43											Mean in Original Scale	0.0458
44											SD in Original Scale	0.0168
45											95% Percentile Bootstrap UCL	0.0506
46											95% BCA Bootstrap UCL	0.0519
47												
48				**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**		
49						k star (bias corrected)	5.756				**Data appear Normal at 5% Significance Level**	
50						Theta Star	0.009					

51					nu star	184.2						
52												
53					A-D Test Statistic	0.386	**Nonparametric Statistics**					
54					5% A-D Critical Value	0.74					Kaplan-Meier (KM) Method	
55					K-S Test Statistic	0.74					Mean	0.0456
56					5% K-S Critical Value	0.216					SD	0.0174
57	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.00356
58											95% KM (t) UCL	0.0516
59	**Assuming Gamma Distribution**										95% KM (z) UCL	0.0514
60					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0516
61					Minimum	0.027					95% KM (bootstrap t) UCL	0.0527
62					Maximum	0.0952					95% KM (BCA) UCL	0.0514
63					Mean	0.0525					95% KM (Percentile Bootstrap) UCL	0.0517
64					Median	0.0533					95% KM (Chebyshev) UCL	0.0611
65					SD	0.0156					97.5% KM (Chebyshev) UCL	0.0678
66					k star	11.3					99% KM (Chebyshev) UCL	0.081
67					Theta star	0.00465						
68					Nu star	677.9	**Potential UCLs to Use**					
69					AppChi2	618.5					95% KM (t) UCL	0.0516
70					95% Gamma Approximate UCL	0.0576					95% KM (Percentile Bootstrap) UCL	0.0517
71					95% Adjusted Gamma UCL	0.0579						
72	**Note: DL/2 is not a recommended method.**											
73												
74												
75	**Aroclor 1016 (mg/kg)**											
76												
77	**General Statistics**											
78					Number of Valid Samples	30					Number of Detected Data	4
79					Number of Unique Samples	4					Number of Non-Detect Data	26
80											Percent Non-Detects	86.67%
81												
82	**Raw Statistics**						**Log-transformed Statistics**					
83					Minimum Detected	0.0493					Minimum Detected	-3.01
84					Maximum Detected	0.694					Maximum Detected	-0.365
85					Mean of Detected	0.237					Mean of Detected	-1.99
86					SD of Detected	0.306					SD of Detected	1.144
87					Minimum Non-Detect	0.017					Minimum Non-Detect	-4.075
88					Maximum Non-Detect	0.02					Maximum Non-Detect	-3.912
89												
90	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	26
91	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	4
92	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	86.67%
93												
94	**UCL Statistics**											
95	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
96					Shapiro Wilk Test Statistic	0.718					Shapiro Wilk Test Statistic	0.897
97					5% Shapiro Wilk Critical Value	0.748					5% Shapiro Wilk Critical Value	0.748
98	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
99												
100	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

101				DL/2 Substitution Method						DL/2 Substitution Method		
102				Mean	0.0398					Mean	-4.31	
103				SD	0.126					SD	0.997	
104				95% DL/2 (t) UCL	0.0789					95% H-Stat (DL/2) UCL	0.025	
105												
106				Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method		
107				**MLE yields a negative mean**						Mean in Log Scale	-7.709	
108										SD in Log Scale	3.193	
109										Mean in Original Scale	0.0327	
110										SD in Original Scale	0.128	
111										95% Percentile Bootstrap UCL	0.0761	
112										95% BCA Bootstrap UCL	0.109	
113												
114				**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**		
115				k star (bias corrected)	0.427					**Data appear Gamma Distributed at 5% Significance Level**		
116				Theta Star	0.555							
117				nu star	3.42							
118												
119				A-D Test Statistic	0.511					**Nonparametric Statistics**		
120				5% A-D Critical Value	0.666					Kaplan-Meier (KM) Method		
121				K-S Test Statistic	0.666					Mean	0.0743	
122				5% K-S Critical Value	0.402					SD	0.116	
123				**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean	0.0244	
124										95% KM (t) UCL	0.116	
125				**Assuming Gamma Distribution**						95% KM (z) UCL	0.115	
126				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.109	
127				Minimum	0.0172					95% KM (bootstrap t) UCL	0.251	
128				Maximum	0.694					95% KM (BCA) UCL	N/A	
129				Mean	0.187					95% KM (Percentile Bootstrap) UCL	0.197	
130				Median	0.201					95% KM (Chebyshev) UCL	0.181	
131				SD	0.122					97.5% KM (Chebyshev) UCL	0.227	
132				k star	2.293					99% KM (Chebyshev) UCL	0.318	
133				Theta star	0.0816							
134				Nu star	137.6					**Potential UCLs to Use**		
135				AppChi2	111.5					95% KM (t) UCL	0.116	
136				95% Gamma Approximate UCL	0.231							
137				95% Adjusted Gamma UCL	N/A							
138	**Note: DL/2 is not a recommended method.**											
139												
140												
141	**Aroclor 1254 (mg/kg)**											
142												
143				**General Statistics**								
144				Number of Valid Samples	30					Number of Detected Data	8	
145				Number of Unique Samples	8					Number of Non-Detect Data	22	
146										Percent Non-Detects	73.33%	
147												
148				**Raw Statistics**						**Log-transformed Statistics**		
149				Minimum Detected	0.0094					Minimum Detected	-4.667	
150				Maximum Detected	0.462					Maximum Detected	-0.772	

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

	A	B	C	D	E	F	G	H	I	J	K	L
151					Mean of Detected	0.173					Mean of Detected	-2.409
152					SD of Detected	0.182					SD of Detected	1.359
153					Minimum Non-Detect	0.017					Minimum Non-Detect	-4.075
154					Maximum Non-Detect	0.02					Maximum Non-Detect	-3.912
155												
156	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	23
157	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	7
158	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	76.67%
159												
160	**UCL Statistics**											
161	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
162					Shapiro Wilk Test Statistic	0.815					Shapiro Wilk Test Statistic	0.956
163					5% Shapiro Wilk Critical Value	0.818					5% Shapiro Wilk Critical Value	0.818
164	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
165												
166	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
167					DL/2 Substitution Method						DL/2 Substitution Method	
168					Mean	0.053					Mean	-4.064
169					SD	0.116					SD	1.215
170					95% DL/2 (t) UCL	0.0889					95% H-Stat (DL/2) UCL	0.039
171												
172					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
173	**MLE yields a negative mean**										Mean in Log Scale	-4.458
174											SD in Log Scale	1.699
175											Mean in Original Scale	0.0526
176											SD in Original Scale	0.116
177											95% Percentile Bootstrap UCL	0.0898
178											95% BCA Bootstrap UCL	0.112
179												
180	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
181					k star (bias corrected)	0.643	**Data appear Gamma Distributed at 5% Significance Level**					
182					Theta Star	0.269						
183					nu star	10.29						
184												
185					A-D Test Statistic	0.266	**Nonparametric Statistics**					
186					5% A-D Critical Value	0.74					Kaplan-Meier (KM) Method	
187					K-S Test Statistic	0.74					Mean	0.053
188					5% K-S Critical Value	0.303					SD	0.114
189	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.0222
190											95% KM (t) UCL	0.0907
191	**Assuming Gamma Distribution**										95% KM (z) UCL	0.0895
192					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0835
193					Minimum	0					95% KM (bootstrap t) UCL	0.131
194					Maximum	0.502					95% KM (BCA) UCL	0.134
195					Mean	0.181					95% KM (Percentile Bootstrap) UCL	0.106
196					Median	0.139					95% KM (Chebyshev) UCL	0.15
197					SD	0.164					97.5% KM (Chebyshev) UCL	0.192
198					k star	0.251					99% KM (Chebyshev) UCL	0.274
199					Theta star	0.719						
200					Nu star	15.08	**Potential UCLs to Use**					

	A	B	C	D	E	F	G	H	I	J	K	L
201					AppChi2	7.315					95% KM (t) UCL	0.0907
202					95% Gamma Approximate UCL	0.373						
203					95% Adjusted Gamma UCL	0.389						
204	**Note: DL/2 is not a recommended method.**											
205												
206												
207	**B(a)A (mg/kg)**											
208												
209	**General Statistics**											
210					Number of Valid Samples	30					Number of Detected Data	4
211					Number of Unique Samples	4					Number of Non-Detect Data	26
212											Percent Non-Detects	86.67%
213												
214	**Raw Statistics**						**Log-transformed Statistics**					
215					Minimum Detected	0.0179					Minimum Detected	-4.023
216					Maximum Detected	0.0888					Maximum Detected	-2.421
217					Mean of Detected	0.0377					Mean of Detected	-3.521
218					SD of Detected	0.0342					SD of Detected	0.741
219					Minimum Non-Detect	0.055					Minimum Non-Detect	-2.9
220					Maximum Non-Detect	0.064					Maximum Non-Detect	-2.749
221												
222	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	29
223	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	1
224	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	96.67%
225												
226	**UCL Statistics**											
227	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
228					Shapiro Wilk Test Statistic	0.69					Shapiro Wilk Test Statistic	0.761
229					5% Shapiro Wilk Critical Value	0.748					5% Shapiro Wilk Critical Value	0.748
230	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
231												
232	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
233					DL/2 Substitution Method						DL/2 Substitution Method	
234					Mean	0.0313					Mean	-3.498
235					SD	0.0113					SD	0.241
236					95% DL/2 (t) UCL	0.0349					95% H-Stat (DL/2) UCL	0.0386
237												
238					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
239	**MLE method failed to converge properly**										Mean in Log Scale	-3.796
240											SD in Log Scale	0.399
241											Mean in Original Scale	0.0246
242											SD in Original Scale	0.0139
243											95% Percentile Bootstrap UCL	0.0292
244											95% BCA Bootstrap UCL	0.0313
245												
246	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
247					k star (bias corrected)	0.722	**Data appear Lognormal at 5% Significance Level**					
248					Theta Star	0.0522						
249					nu star	5.775						
250												

251					A-D Test Statistic	0.722	**Nonparametric Statistics**					
252					5% A-D Critical Value	0.66				Kaplan-Meier (KM) Method		
253					K-S Test Statistic	0.66				Mean		0.0229
254					5% K-S Critical Value	0.398				SD		0.0124
255	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		0.00293
256										95% KM (t) UCL		0.0279
257	**Assuming Gamma Distribution**									95% KM (z) UCL		0.0277
258				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL		0.0278
259					Minimum	0.0179				95% KM (bootstrap t) UCL		0.0321
260					Maximum	0.0888				95% KM (BCA) UCL		0.0312
261					Mean	0.0377				95% KM (Percentile Bootstrap) UCL		0.0298
262					Median	0.0376				95% KM (Chebyshev) UCL		0.0357
263					SD	0.011				97.5% KM (Chebyshev) UCL		0.0412
264					k star	14.06				99% KM (Chebyshev) UCL		0.0521
265					Theta star	0.00268						
266					Nu star	843.7	**Potential UCLs to Use**					
267					AppChi2	777.2				95% KM (t) UCL		0.0279
268				95% Gamma Approximate UCL		0.0409				95% KM (% Bootstrap) UCL		0.0298
269				95% Adjusted Gamma UCL		N/A						
270	**Note: DL/2 is not a recommended method.**											
271												
272												
273	**B(a)P (mg/kg)**											
274												
275	**General Statistics**											
276				Number of Valid Samples		30	Number of Detected Data					5
277				Number of Unique Samples		5	Number of Non-Detect Data					25
278							Percent Non-Detects					83.33%
279												
280	**Raw Statistics**						**Log-transformed Statistics**					
281					Minimum Detected	0.0152				Minimum Detected		-4.186
282					Maximum Detected	0.14				Maximum Detected		-1.966
283					Mean of Detected	0.0462				Mean of Detected		-3.45
284					SD of Detected	0.0528				SD of Detected		0.875
285					Minimum Non-Detect	0.055				Minimum Non-Detect		-2.9
286					Maximum Non-Detect	0.064				Maximum Non-Detect		-2.749
287												
288	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		29
289	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		1
290	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		96.67%
291												
292	**UCL Statistics**											
293	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
294					Shapiro Wilk Test Statistic	0.663				Shapiro Wilk Test Statistic		0.835
295					5% Shapiro Wilk Critical Value	0.762				5% Shapiro Wilk Critical Value		0.762
296	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
297												
298	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
299					DL/2 Substitution Method					DL/2 Substitution Method		
300					Mean	0.033				Mean		-3.487

301					SD	0.0205				SD		0.327
302					95% DL/2 (t) UCL	0.0394				95% H-Stat (DL/2) UCL		0.0405
303												
304					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
305					**MLE method failed to converge properly**					Mean in Log Scale		-3.72
306										SD in Log Scale		0.512
307										Mean in Original Scale		0.0285
308										SD in Original Scale		0.0232
309										95% Percentile Bootstrap UCL		0.0368
310										95% BCA Bootstrap UCL		0.039
311												
312					**Gamma Distribution Test with Detected Values Only**					**Data Distribution Test with Detected Values Only**		
313					k star (bias corrected)	0.724				**Data appear Lognormal at 5% Significance Level**		
314					Theta Star	0.0638						
315					nu star	7.241						
316												
317					A-D Test Statistic	0.689				**Nonparametric Statistics**		
318					5% A-D Critical Value	0.687				Kaplan-Meier (KM) Method		
319					K-S Test Statistic	0.687				Mean		0.0267
320					5% K-S Critical Value	0.362				SD		0.0219
321					**Data not Gamma Distributed at 5% Significance Level**					SE of Mean		0.00545
322										95% KM (t) UCL		0.0359
323					**Assuming Gamma Distribution**					95% KM (z) UCL		0.0356
324					Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL		0.0361
325					Minimum	0.0152				95% KM (bootstrap t) UCL		0.0423
326					Maximum	0.14				95% KM (BCA) UCL		0.036
327					Mean	0.0462				95% KM (Percentile Bootstrap) UCL		0.0368
328					Median	0.0459				95% KM (Chebyshev) UCL		0.0504
329					SD	0.0199				97.5% KM (Chebyshev) UCL		0.0607
330					k star	7.073				99% KM (Chebyshev) UCL		0.0809
331					Theta star	0.00653						
332					Nu star	424.4				**Potential UCLs to Use**		
333					AppChi2	377.7				95% KM (t) UCL		0.0359
334					95% Gamma Approximate UCL	0.0519				95% KM (% Bootstrap) UCL		0.0368
335					95% Adjusted Gamma UCL	0.0523						
336	**Note: DL/2 is not a recommended method.**											
337												
338												
339	**B(b)F (mg/kg)**											
340												
341						**General Statistics**						
342					Number of Valid Samples	30				Number of Detected Data		5
343					Number of Unique Samples	5				Number of Non-Detect Data		25
344										Percent Non-Detects		83.33%
345												
346					**Raw Statistics**					**Log-transformed Statistics**		
347					Minimum Detected	0.0171				Minimum Detected		-4.069
348					Maximum Detected	0.0801				Maximum Detected		-2.524
349					Mean of Detected	0.0362				Mean of Detected		-3.466
350					SD of Detected	0.025				SD of Detected		0.57

	A	B	C	D	E	F	G	H	I	J	K	L
351					Minimum Non-Detect	0.055					Minimum Non-Detect	-2.9
352					Maximum Non-Detect	0.064					Maximum Non-Detect	-2.749
353												
354	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	29
355	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	1
356	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	96.67%
357												
358	**UCL Statistics**											
359	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
360					Shapiro Wilk Test Statistic	0.734					Shapiro Wilk Test Statistic	0.869
361					5% Shapiro Wilk Critical Value	0.762					5% Shapiro Wilk Critical Value	0.762
362	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
363												
364	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
365					DL/2 Substitution Method						DL/2 Substitution Method	
366					Mean	0.0314					Mean	-3.49
367					SD	0.00961					SD	0.215
368					95% DL/2 (t) UCL	0.0343					95% H-Stat (DL/2) UCL	0.0381
369												
370					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
371	**MLE method failed to converge properly**										Mean in Log Scale	-3.642
372											SD in Log Scale	0.333
373											Mean in Original Scale	0.0279
374											SD in Original Scale	0.0119
375											95% Percentile Bootstrap UCL	0.0316
376											95% BCA Bootstrap UCL	0.0326
377												
378	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
379					k star (bias corrected)	1.55	**Data Follow Appr. Gamma Distribution at 5% Significance Level**					
380					Theta Star	0.0234						
381					nu star	15.5						
382												
383					A-D Test Statistic	0.595	**Nonparametric Statistics**					
384					5% A-D Critical Value	0.682					Kaplan-Meier (KM) Method	
385					K-S Test Statistic	0.682					Mean	0.0271
386					5% K-S Critical Value	0.359					SD	0.011
387	**Data follow Appr. Gamma Distribution at 5% Significance Level**										SE of Mean	0.00334
388											95% KM (t) UCL	0.0327
389	**Assuming Gamma Distribution**										95% KM (z) UCL	0.0326
390					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.0332
391					Minimum	0.0171					95% KM (bootstrap t) UCL	0.0324
392					Maximum	0.0801					95% KM (BCA) UCL	0.0327
393					Mean	0.0362					95% KM (Percentile Bootstrap) UCL	0.0329
394					Median	0.0365					95% KM (Chebyshev) UCL	0.0416
395					SD	0.0104					97.5% KM (Chebyshev) UCL	0.0479
396					k star	13.87					99% KM (Chebyshev) UCL	0.0603
397					Theta star	0.00261						
398					Nu star	832.4	**Potential UCLs to Use**					
399					AppChi2	766.5					95% KM (t) UCL	0.0327
400					95% Gamma Approximate UCL	0.0393						

	A	B	C	D	E	F	G	H	I	J	K	L
401					95% Adjusted Gamma UCL	0.0395						
402	**Note: DL/2 is not a recommended method.**											
403												
404												
405	**DEHP (mg/kg)**											
406												
407						**General Statistics**						
408						Number of Valid Samples	30				Number of Detected Data	4
409						Number of Unique Samples	4				Number of Non-Detect Data	26
410											Percent Non-Detects	86.67%
411												
412					**Raw Statistics**					**Log-transformed Statistics**		
413					Minimum Detected	0.373				Minimum Detected	-0.986	
414					Maximum Detected	0.707				Maximum Detected	-0.347	
415					Mean of Detected	0.518				Mean of Detected	-0.69	
416					SD of Detected	0.153				SD of Detected	0.293	
417					Minimum Non-Detect	0.34				Minimum Non-Detect	-1.079	
418					Maximum Non-Detect	0.81				Maximum Non-Detect	-0.211	
419												
420	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	30	
421	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	0	
422	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	100.00%	
423												
424						**UCL Statistics**						
425					**Normal Distribution Test with Detected Values Only**					**Lognormal Distribution Test with Detected Values Only**		
426					Shapiro Wilk Test Statistic	0.936				Shapiro Wilk Test Statistic	0.945	
427					5% Shapiro Wilk Critical Value	0.748				5% Shapiro Wilk Critical Value	0.748	
428					**Data appear Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**		
429												
430					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
431					DL/2 Substitution Method					DL/2 Substitution Method		
432					Mean	0.24				Mean	-1.511	
433					SD	0.128				SD	0.37	
434					95% DL/2 (t) UCL	0.28				95% H-Stat (DL/2) UCL	0.253	
435												
436					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
437					**MLE method failed to converge properly**					Mean in Log Scale	-1.842	
438										SD in Log Scale	0.615	
439										Mean in Original Scale	0.194	
440										SD in Original Scale	0.149	
441										95% Percentile Bootstrap UCL	0.241	
442										95% BCA Bootstrap UCL	0.249	
443												
444					**Gamma Distribution Test with Detected Values Only**					**Data Distribution Test with Detected Values Only**		
445					k star (bias corrected)	4.081				**Data appear Normal at 5% Significance Level**		
446					Theta Star	0.127						
447					nu star	32.65						
448												
449					A-D Test Statistic	0.295				**Nonparametric Statistics**		
450					5% A-D Critical Value	0.657				Kaplan-Meier (KM) Method		

451					K-S Test Statistic	0.657					Mean	0.393
452					5% K-S Critical Value	0.395					SD	0.07
453	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.015
454											95% KM (t) UCL	0.418
455	**Assuming Gamma Distribution**										95% KM (z) UCL	0.418
456					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.425
457					Minimum	0.246					95% KM (bootstrap t) UCL	0.415
458					Maximum	0.717					95% KM (BCA) UCL	0.707
459					Mean	0.523					95% KM (Percentile Bootstrap) UCL	0.587
460					Median	0.552					95% KM (Chebyshev) UCL	0.458
461					SD	0.131					97.5% KM (Chebyshev) UCL	0.487
462					k star	12.96					99% KM (Chebyshev) UCL	0.542
463					Theta star	0.0404						
464					Nu star	777.8	**Potential UCLs to Use**					
465					AppChi2	714.1					95% KM (t) UCL	0.418
466					95% Gamma Approximate UCL	0.57					95% KM (Percentile Bootstrap) UCL	0.587
467					95% Adjusted Gamma UCL	N/A						
468	**Note: DL/2 is not a recommended method.**											
469												
470												
471	**Carbon disulfide (mg/kg)**											
472												
473	**General Statistics**											
474					Number of Valid Samples	30					Number of Detected Data	5
475					Number of Unique Samples	4					Number of Non-Detect Data	25
476											Percent Non-Detects	83.33%
477												
478	**Raw Statistics**						**Log-transformed Statistics**					
479					Minimum Detected	0.0021					Minimum Detected	-6.166
480					Maximum Detected	0.0073					Maximum Detected	-4.92
481					Mean of Detected	0.0045					Mean of Detected	-5.532
482					SD of Detected	0.00232					SD of Detected	0.591
483					Minimum Non-Detect	0.0044					Minimum Non-Detect	-5.426
484					Maximum Non-Detect	0.0072					Maximum Non-Detect	-4.934
485												
486	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	29
487	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	1
488	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	96.67%
489												
490	**UCL Statistics**											
491	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
492					Shapiro Wilk Test Statistic	0.872					Shapiro Wilk Test Statistic	0.818
493					5% Shapiro Wilk Critical Value	0.762					5% Shapiro Wilk Critical Value	0.762
494	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
495												
496	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
497					DL/2 Substitution Method						DL/2 Substitution Method	
498					Mean	0.00309					Mean	-5.827
499					SD	0.00114					SD	0.29
500					95% DL/2 (t) UCL	0.00344					95% H-Stat (DL/2) UCL	0.00349

501												
502					Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
503					**MLE method failed to converge properly**					Mean in Log Scale		-5.972
504										SD in Log Scale		0.337
505										Mean in Original Scale		0.00272
506										SD in Original Scale		0.00124
507										95% Percentile Bootstrap UCL		0.0031
508										95% BCA Bootstrap UCL		0.00326
509												
510					**Gamma Distribution Test with Detected Values Only**					**Data Distribution Test with Detected Values Only**		
511					k star (bias corrected)	1.758				**Data appear Normal at 5% Significance Level**		
512					Theta Star	0.00256						
513					nu star	17.58						
514												
515					A-D Test Statistic	0.544				**Nonparametric Statistics**		
516					5% A-D Critical Value	0.681				Kaplan-Meier (KM) Method		
517					K-S Test Statistic	0.681				Mean		0.00268
518					5% K-S Critical Value	0.358				SD		0.00139
519					**Data appear Gamma Distributed at 5% Significance Level**					SE of Mean		0.0003574
520										95% KM (t) UCL		0.00329
521					**Assuming Gamma Distribution**					95% KM (z) UCL		0.00327
522					Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL		0.00325
523					Minimum	0.0021				95% KM (bootstrap t) UCL		0.00343
524					Maximum	0.0073				95% KM (BCA) UCL		0.00575
525					Mean	0.00458				95% KM (Percentile Bootstrap) UCL		0.00553
526					Median	0.00463				95% KM (Chebyshev) UCL		0.00424
527					SD	0.0009235				97.5% KM (Chebyshev) UCL		0.00492
528					k star	18.94				99% KM (Chebyshev) UCL		0.00624
529					Theta star	0.0002417						
530					Nu star	1136				**Potential UCLs to Use**		
531					AppChi2	1059				95% KM (t) UCL		0.00329
532					95% Gamma Approximate UCL	0.00491				95% KM (Percentile Bootstrap) UCL		0.00553
533					95% Adjusted Gamma UCL	0.00493						
534	**Note: DL/2 is not a recommended method.**											
535												
536												
537	**Chrysene (mg/kg)**											
538												
539						**General Statistics**						
540					Number of Valid Samples	30				Number of Detected Data		5
541					Number of Unique Samples	5				Number of Non-Detect Data		25
542										Percent Non-Detects		83.33%
543												
544					**Raw Statistics**					**Log-transformed Statistics**		
545					Minimum Detected	0.0169				Minimum Detected		-4.08
546					Maximum Detected	0.0818				Maximum Detected		-2.503
547					Mean of Detected	0.0346				Mean of Detected		-3.544
548					SD of Detected	0.0268				SD of Detected		0.617
549					Minimum Non-Detect	0.055				Minimum Non-Detect		-2.9
550					Maximum Non-Detect	0.064				Maximum Non-Detect		-2.749

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

551												
552	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	29
553	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	1
554	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	96.67%
555												
556	**UCL Statistics**											
557	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
558	Shapiro Wilk Test Statistic					0.714	Shapiro Wilk Test Statistic					0.848
559	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
560	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
561												
562	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
563	DL/2 Substitution Method						DL/2 Substitution Method					
564	Mean					0.0311	Mean					-3.503
565	SD					0.0101	SD					0.233
566	95% DL/2 (t) UCL					0.0342	95% H-Stat (DL/2) UCL					0.0386
567												
568	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
569	**MLE method failed to converge properly**						Mean in Log Scale					-3.735
570							SD in Log Scale					0.362
571							Mean in Original Scale					0.0257
572							SD in Original Scale					0.0125
573							95% Percentile Bootstrap UCL					0.0297
574							95% BCA Bootstrap UCL					0.0311
575												
576	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
577	k star (bias corrected)					1.312	**Data appear Gamma Distributed at 5% Significance Level**					
578	Theta Star					0.0263						
579	nu star					13.12						
580												
581	A-D Test Statistic					0.611	**Nonparametric Statistics**					
582	5% A-D Critical Value					0.683	Kaplan-Meier (KM) Method					
583	K-S Test Statistic					0.683	Mean					0.0247
584	5% K-S Critical Value					0.359	SD					0.0116
585	**Data appear Gamma Distributed at 5% Significance Level**						SE of Mean					0.00334
586							95% KM (t) UCL					0.0304
587	**Assuming Gamma Distribution**						95% KM (z) UCL					0.0302
588	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0308
589	Minimum					0.0169	95% KM (bootstrap t) UCL					0.0328
590	Maximum					0.0818	95% KM (BCA) UCL					0.031
591	Mean					0.0346	95% KM (Percentile Bootstrap) UCL					0.0313
592	Median					0.0348	95% KM (Chebyshev) UCL					0.0393
593	SD					0.0109	97.5% KM (Chebyshev) UCL					0.0455
594	k star					12.06	99% KM (Chebyshev) UCL					0.0579
595	Theta star					0.00287						
596	Nu star					723.3	**Potential UCLs to Use**					
597	AppChi2					661.9	95% KM (t) UCL					0.0304
598	95% Gamma Approximate UCL					0.0378						
599	95% Adjusted Gamma UCL					0.038						
600	**Note: DL/2 is not a recommended method.**											

601												
602												
603	**DnBP (mg/kg)**											
604												
605						**General Statistics**							
606						Number of Valid Samples	30				Number of Detected Data	4	
607						Number of Unique Samples	4				Number of Non-Detect Data	26	
608											Percent Non-Detects	86.67%	
609													
610						**Raw Statistics**					**Log-transformed Statistics**		
611						Minimum Detected	0.0964				Minimum Detected	-2.339	
612						Maximum Detected	2.35				Maximum Detected	0.854	
613						Mean of Detected	1.14				Mean of Detected	-0.421	
614						SD of Detected	1.026				SD of Detected	1.433	
615						Minimum Non-Detect	0.34				Minimum Non-Detect	-1.079	
616						Maximum Non-Detect	0.4				Maximum Non-Detect	-0.916	
617													
618	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	27	
619	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	3	
620	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	90.00%	
621													
622						**UCL Statistics**							
623						**Normal Distribution Test with Detected Values Only**					**Lognormal Distribution Test with Detected Values Only**		
624						Shapiro Wilk Test Statistic	0.949				Shapiro Wilk Test Statistic	0.924	
625						5% Shapiro Wilk Critical Value	0.748				5% Shapiro Wilk Critical Value	0.748	
626						**Data appear Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**		
627													
628						**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
629						DL/2 Substitution Method					DL/2 Substitution Method		
630						Mean	0.316				Mean	-1.499	
631						SD	0.466				SD	0.632	
632						95% DL/2 (t) UCL	0.461				95% H-Stat (DL/2) UCL	0.312	
633													
634						Maximum Likelihood Estimate(MLE) Method	N/A				Log ROS Method		
635						**MLE yields a negative mean**					Mean in Log Scale	-2.201	
636											SD in Log Scale	1.174	
637											Mean in Original Scale	0.254	
638											SD in Original Scale	0.492	
639											95% Percentile Bootstrap UCL	0.419	
640											95% BCA Bootstrap UCL	0.467	
641													
642						**Gamma Distribution Test with Detected Values Only**					**Data Distribution Test with Detected Values Only**		
643						k star (bias corrected)	0.427				**Data appear Normal at 5% Significance Level**		
644						Theta Star	2.669						
645						nu star	3.416						
646													
647						A-D Test Statistic	0.268				**Nonparametric Statistics**		
648						5% A-D Critical Value	0.666				Kaplan-Meier (KM) Method		
649						K-S Test Statistic	0.666				Mean	0.235	
650						5% K-S Critical Value	0.402				SD	0.481	

651	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.101
652											95% KM (t) UCL	0.408
653	**Assuming Gamma Distribution**										95% KM (z) UCL	0.402
654	Gamma ROS Statistics using Extrapolated Data										95% KM (jackknife) UCL	0.514
655	Minimum	0									95% KM (bootstrap t) UCL	0.37
656	Maximum	2.35									95% KM (BCA) UCL	N/A
657	Mean	0.914									95% KM (Percentile Bootstrap) UCL	1.65
658	Median	0.986									95% KM (Chebyshev) UCL	0.677
659	SD	0.699									97.5% KM (Chebyshev) UCL	0.868
660	k star	0.167									99% KM (Chebyshev) UCL	1.244
661	Theta star	5.487										
662	Nu star	9.999									**Potential UCLs to Use**	
663	AppChi2	3.941									95% KM (t) UCL	0.408
664	95% Gamma Approximate UCL	2.32									95% KM (Percentile Bootstrap) UCL	1.65
665	95% Adjusted Gamma UCL	N/A										
666	**Note: DL/2 is not a recommended method.**											
667												
668												
669	**m+p-Xylenes (mg/kg)**											
670												
671	**General Statistics**											
672	Number of Valid Samples	30									Number of Detected Data	3
673	Number of Unique Samples	3									Number of Non-Detect Data	27
674											Percent Non-Detects	90.00%
675												
676	**Raw Statistics**										**Log-transformed Statistics**	
677	Minimum Detected	0.00415									Minimum Detected	-5.485
678	Maximum Detected	0.0124									Maximum Detected	-4.39
679	Mean of Detected	0.00878									Mean of Detected	-4.833
680	SD of Detected	0.00422									SD of Detected	0.576
681	Minimum Non-Detect	0.0088									Minimum Non-Detect	-4.733
682	Maximum Non-Detect	0.014									Maximum Non-Detect	-4.269
683												
684	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	30
685	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
686	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
687												
688	**UCL Statistics**											
689	**Normal Distribution Test with Detected Values Only**										**Lognormal Distribution Test with Detected Values Only**	
690	Shapiro Wilk Test Statistic	0.956									Shapiro Wilk Test Statistic	0.902
691	5% Shapiro Wilk Critical Value	0.767									5% Shapiro Wilk Critical Value	0.767
692	**Data appear Normal at 5% Significance Level**										**Data appear Lognormal at 5% Significance Level**	
693												
694	**Assuming Normal Distribution**										**Assuming Lognormal Distribution**	
695	DL/2 Substitution Method										DL/2 Substitution Method	
696	Mean	0.00586									Mean	-5.17
697	SD	0.00169									SD	0.236
698	95% DL/2 (t) UCL	0.00638									95% H-Stat (DL/2) UCL	0.00657
699												
700	Maximum Likelihood Estimate(MLE) Method	N/A									Log ROS Method	

	A	B	C	D	E	F	G	H	I	J	K	L
701	**MLE method failed to converge properly**										Mean in Log Scale	-5.359
702											SD in Log Scale	0.339
703											Mean in Original Scale	0.00501
704											SD in Original Scale	0.00205
705											95% Percentile Bootstrap UCL	0.00565
706											95% BCA Bootstrap UCL	0.00578
707												
708	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
709					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
710					Theta Star	N/A						
711					nu star	N/A						
712												
713					A-D Test Statistic	0.359	**Nonparametric Statistics**					
714					5% A-D Critical Value	N/A				Kaplan-Meier (KM) Method		
715					K-S Test Statistic	N/A					Mean	0.00504
716					5% K-S Critical Value	N/A					SD	0.00226
717	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.000737
718											95% KM (t) UCL	0.00629
719	**Assuming Gamma Distribution**										95% KM (z) UCL	0.00625
720				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	0.00848
721					Minimum	N/A					95% KM (bootstrap t) UCL	0.00562
722					Maximum	N/A					95% KM (BCA) UCL	N/A
723					Mean	N/A					95% KM (Percentile Bootstrap) UCL	N/A
724					Median	N/A					95% KM (Chebyshev) UCL	0.00825
725					SD	N/A					97.5% KM (Chebyshev) UCL	0.00964
726					k star	N/A					99% KM (Chebyshev) UCL	0.0124
727					Theta star	N/A						
728					Nu star	N/A	**Potential UCLs to Use**					
729					AppChi2	N/A					95% KM (t) UCL	0.00629
730				95% Gamma Approximate UCL		N/A					95% KM (Percentile Bootstrap) UCL	N/A
731				95% Adjusted Gamma UCL		N/A						
732	**Note: DL/2 is not a recommended method.**											
733												
734												
735	**Naphthalene (mg/kg)**											
736												
737	**General Statistics**											
738					Number of Valid Samples	30	Number of Detected Data					3
739					Number of Unique Samples	3	Number of Non-Detect Data					27
740							Percent Non-Detects					90.00%
741												
742	**Raw Statistics**						**Log-transformed Statistics**					
743					Minimum Detected	0.0658	Minimum Detected					-2.721
744					Maximum Detected	0.0985	Maximum Detected					-2.318
745					Mean of Detected	0.0855	Mean of Detected					-2.475
746					SD of Detected	0.0173	SD of Detected					0.216
747					Minimum Non-Detect	0.27	Minimum Non-Detect					-1.309
748					Maximum Non-Detect	0.32	Maximum Non-Detect					-1.139
749												
750	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					30

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

	A	B	C	D	E	F	G	H	I	J	K	L
751	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	0
752	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	100.00%
753												
754	**UCL Statistics**											
755	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
756					Shapiro Wilk Test Statistic	0.889					Shapiro Wilk Test Statistic	0.87
757					5% Shapiro Wilk Critical Value	0.767					5% Shapiro Wilk Critical Value	0.767
758	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
759												
760	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
761					DL/2 Substitution Method						DL/2 Substitution Method	
762					Mean	0.145					Mean	-1.947
763					SD	0.0214					SD	0.192
764					95% DL/2 (t) UCL	0.152					95% H-Stat (DL/2) UCL	0.188
765												
766					Maximum Likelihood Estimate(MLE) Method	N/A					Log ROS Method	
767	**MLE method failed to converge properly**										Mean in Log Scale	-2.475
768											SD in Log Scale	0.213
769											Mean in Original Scale	0.086
770											SD in Original Scale	0.0182
771											95% Percentile Bootstrap UCL	0.0915
772											95% BCA Bootstrap UCL	0.0918
773												
774	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
775					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
776					Theta Star	N/A						
777					nu star	N/A						
778												
779					A-D Test Statistic	0.424	**Nonparametric Statistics**					
780					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
781					K-S Test Statistic	N/A					Mean	0.0855
782					5% K-S Critical Value	N/A					SD	0.0141
783	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.00999
784											95% KM (t) UCL	0.102
785	**Assuming Gamma Distribution**										95% KM (z) UCL	0.102
786					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.106
787					Minimum	N/A					95% KM (bootstrap t) UCL	0.105
788					Maximum	N/A					95% KM (BCA) UCL	0.0985
789					Mean	N/A					95% KM (Percentile Bootstrap) UCL	0.0985
790					Median	N/A					95% KM (Chebyshev) UCL	0.129
791					SD	N/A					97.5% KM (Chebyshev) UCL	0.148
792					k star	N/A					99% KM (Chebyshev) UCL	0.185
793					Theta star	N/A						
794					Nu star	N/A	**Potential UCLs to Use**					
795					AppChi2	N/A					95% KM (t) UCL	0.102
796					95% Gamma Approximate UCL	N/A					95% KM (Percentile Bootstrap) UCL	0.0985
797					95% Adjusted Gamma UCL	N/A						
798	**Warning: Recommended UCL exceeds the maximum observation**											
799	**Note: DL/2 is not a recommended method.**											
800												

n-Nitrosodiphenylamine (mg/kg)

General Statistics

Number of Valid Samples	30	Number of Detected Data	4
Number of Unique Samples	4	Number of Non-Detect Data	26
		Percent Non-Detects	86.67%

Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.124	Minimum Detected	-2.087
Maximum Detected	0.856	Maximum Detected	-0.155
Mean of Detected	0.486	Mean of Detected	-0.975
SD of Detected	0.341	SD of Detected	0.885
Minimum Non-Detect	0.17	Minimum Non-Detect	-1.772
Maximum Non-Detect	0.4	Maximum Non-Detect	-0.916
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	93.33%

UCL Statistics

Normal Distribution Test with Detected Values Only		**Lognormal Distribution Test with Detected Values Only**	
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk Test Statistic	0.929
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		**Data appear Lognormal at 5% Significance Level**	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.15	Mean	-2.15
SD	0.174	SD	0.567
95% DL/2 (t) UCL	0.204	95% H-Stat (DL/2) UCL	0.151
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.044
		SD in Log Scale	0.718
		Mean in Original Scale	0.174
		SD in Original Scale	0.177
		95% Percentile Bootstrap UCL	0.23
		95% BCA Bootstrap UCL	0.249
Gamma Distribution Test with Detected Values Only		**Data Distribution Test with Detected Values Only**	
k star (bias corrected)	0.7	**Data appear Normal at 5% Significance Level**	
Theta Star	0.693		
nu star	5.604		
A-D Test Statistic	0.304	**Nonparametric Statistics**	
5% A-D Critical Value	0.66	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.66	Mean	0.172
5% K-S Critical Value	0.398	SD	0.164
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0345

851											95% KM (t) UCL	0.231
852	**Assuming Gamma Distribution**										95% KM (z) UCL	0.229
853				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	0.275
854					Minimum	0					95% KM (bootstrap t) UCL	0.213
855					Maximum	0.856					95% KM (BCA) UCL	0.856
856					Mean	0.323					95% KM (Percentile Bootstrap) UCL	0.694
857					Median	0.228					95% KM (Chebyshev) UCL	0.323
858					SD	0.306					97.5% KM (Chebyshev) UCL	0.388
859					k star	0.144					99% KM (Chebyshev) UCL	0.516
860					Theta star	2.241						
861					Nu star	8.648				**Potential UCLs to Use**		
862					AppChi2	3.116					95% KM (t) UCL	0.231
863				95% Gamma Approximate UCL		0.896					95% KM (Percentile Bootstrap) UCL	0.694
864				95% Adjusted Gamma UCL		N/A						
865	**Note: DL/2 is not a recommended method.**											
866												
867												
868	**Phenanthrene (mg/kg)**											
869												
870						**General Statistics**						
871					Number of Valid Samples	30					Number of Detected Data	3
872					Number of Unique Samples	3					Number of Non-Detect Data	27
873											Percent Non-Detects	90.00%
874												
875				**Raw Statistics**						**Log-transformed Statistics**		
876					Minimum Detected	0.0645					Minimum Detected	-2.741
877					Maximum Detected	0.347					Maximum Detected	-1.058
878					Mean of Detected	0.173					Mean of Detected	-2.014
879					SD of Detected	0.152					SD of Detected	0.864
880					Minimum Non-Detect	0.27					Minimum Non-Detect	-1.309
881					Maximum Non-Detect	0.32					Maximum Non-Detect	-1.139
882												
883	Note: Data have multiple DLs - Use of KM Method is recommended										Number treated as Non-Detect	29
884	For all methods (except KM, DL/2, and ROS Methods),										Number treated as Detected	1
885	Observations < Largest ND are treated as NDs										Single DL Non-Detect Percentage	96.67%
886												
887						**UCL Statistics**						
888	**Normal Distribution Test with Detected Values Only**									**Lognormal Distribution Test with Detected Values Only**		
889					Shapiro Wilk Test Statistic	0.858					Shapiro Wilk Test Statistic	0.948
890					5% Shapiro Wilk Critical Value	0.767					5% Shapiro Wilk Critical Value	0.767
891	**Data appear Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
892												
893	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
894					DL/2 Substitution Method						DL/2 Substitution Method	
895					Mean	0.154					Mean	-1.9
896					SD	0.0409					SD	0.233
897					95% DL/2 (t) UCL	0.166					95% H-Stat (DL/2) UCL	0.187
898												
899				Maximum Likelihood Estimate(MLE) Method		N/A					Log ROS Method	
900	**MLE method failed to converge properly**										Mean in Log Scale	-2.445

901											SD in Log Scale	0.507
902											Mean in Original Scale	0.0992
903											SD in Original Scale	0.0608
904											95% Percentile Bootstrap UCL	0.118
905											95% BCA Bootstrap UCL	0.123
906												
907	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
908					k star (bias corrected)	N/A	**Data appear Normal at 5% Significance Level**					
909					Theta Star	N/A						
910					nu star	N/A						
911												
912					A-D Test Statistic	0.361	**Nonparametric Statistics**					
913					5% A-D Critical Value	N/A					Kaplan-Meier (KM) Method	
914					K-S Test Statistic	N/A					Mean	0.0941
915					5% K-S Critical Value	N/A					SD	0.0513
916	**Data not Gamma Distributed at 5% Significance Level**										SE of Mean	0.0204
917											95% KM (t) UCL	0.129
918	**Assuming Gamma Distribution**										95% KM (z) UCL	0.128
919					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	0.144
920					Minimum	N/A					95% KM (bootstrap t) UCL	0.132
921					Maximum	N/A					95% KM (BCA) UCL	0.347
922					Mean	N/A					95% KM (Percentile Bootstrap) UCL	N/A
923					Median	N/A					95% KM (Chebyshev) UCL	0.183
924					SD	N/A					97.5% KM (Chebyshev) UCL	0.222
925					k star	N/A					99% KM (Chebyshev) UCL	0.297
926					Theta star	N/A						
927					Nu star	N/A	**Potential UCLs to Use**					
928					AppChi2	N/A					95% KM (t) UCL	0.129
929					95% Gamma Approximate UCL	N/A					95% KM (Percentile Bootstrap) UCL	N/A
930					95% Adjusted Gamma UCL	N/A						
931	**Note: DL/2 is not a recommended method.**											
932												
933												
934	**Aluminum (mg/kg)**											
935												
936	**General Statistics**											
937					Number of Valid Samples	30					Number of Unique Samples	25
938												
939	**Raw Statistics**						**Log-transformed Statistics**					
940					Minimum	4620					Minimum of Log Data	8.438
941					Maximum	15600					Maximum of Log Data	9.655
942					Mean	11046					Mean of log Data	9.278
943					Median	11400					SD of log Data	0.27
944					SD	2599						
945					Coefficient of Variation	0.235						
946					Skewness	-0.501						
947												
948	**Relevant UCL Statistics**											
949	**Normal Distribution Test**						**Lognormal Distribution Test**					
950					Shapiro Wilk Test Statistic	0.964					Shapiro Wilk Test Statistic	0.902

951					Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927
952	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
953												
954	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
955					95% Student's-t UCL	11852					95% H-UCL	12131
956	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	13493
957					95% Adjusted-CLT UCL	11780					97.5% Chebyshev (MVUE) UCL	14535
958					95% Modified-t UCL	11845					99% Chebyshev (MVUE) UCL	16583
959												
960	**Gamma Distribution Test**						**Data Distribution**					
961					k star (bias corrected)	14.36	**Data appear Normal at 5% Significance Level**					
962					Theta Star	769.4						
963					nu star	861.4						
964					Approximate Chi Square Value (.05)	794.3	**Nonparametric Statistics**					
965					Adjusted Level of Significance	0.041					95% CLT UCL	11826
966					Adjusted Chi Square Value	790.6					95% Jackknife UCL	11852
967											95% Standard Bootstrap UCL	11840
968					Anderson-Darling Test Statistic	0.713					95% Bootstrap-t UCL	11800
969					Anderson-Darling 5% Critical Value	0.745					95% Hall's Bootstrap UCL	11787
970					Kolmogorov-Smirnov Test Statistic	0.141					95% Percentile Bootstrap UCL	11821
971					Kolmogorov-Smirnov 5% Critical Value	0.16					95% BCA Bootstrap UCL	11751
972	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	13114
973											97.5% Chebyshev(Mean, Sd) UCL	14008
974	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	15766
975					95% Approximate Gamma UCL	11979						
976					95% Adjusted Gamma UCL	12035						
977												
978	**Potential UCL to Use**										Use 95% Student's-t UCL	11852
979												
980												
981	**Arsenic (mg/kg)**											
982												
983	**General Statistics**											
984					Number of Valid Samples	30					Number of Unique Samples	21
985												
986	**Raw Statistics**						**Log-transformed Statistics**					
987					Minimum	1.1					Minimum of Log Data	0.0953
988					Maximum	17.7					Maximum of Log Data	2.874
989					Mean	2.998					Mean of log Data	0.847
990					Median	2.05					SD of log Data	0.616
991					SD	3.182						
992					Coefficient of Variation	1.061						
993					Skewness	3.765						
994												
995	**Relevant UCL Statistics**											
996	**Normal Distribution Test**						**Lognormal Distribution Test**					
997					Shapiro Wilk Test Statistic	0.536					Shapiro Wilk Test Statistic	0.858
998					Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927
999	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1000												

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

1001	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1002				95% Student's-t UCL	3.986					95% H-UCL	3.558	
1003	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	4.261	
1004				95% Adjusted-CLT UCL	4.381					97.5% Chebyshev (MVUE) UCL	4.893	
1005				95% Modified-t UCL	4.052					99% Chebyshev (MVUE) UCL	6.135	
1006												
1007	**Gamma Distribution Test**						**Data Distribution**					
1008				k star (bias corrected)	1.952		**Data do not follow a Discernable Distribution (0.05)**					
1009				Theta Star	1.536							
1010				nu star	117.1							
1011				Approximate Chi Square Value (.05)	93.15		**Nonparametric Statistics**					
1012				Adjusted Level of Significance	0.041					95% CLT UCL	3.954	
1013				Adjusted Chi Square Value	91.92					95% Jackknife UCL	3.986	
1014										95% Standard Bootstrap UCL	3.924	
1015				Anderson-Darling Test Statistic	2.417					95% Bootstrap-t UCL	5.182	
1016				Anderson-Darling 5% Critical Value	0.758					95% Hall's Bootstrap UCL	7.251	
1017				Kolmogorov-Smirnov Test Statistic	0.232					95% Percentile Bootstrap UCL	4.022	
1018				Kolmogorov-Smirnov 5% Critical Value	0.162					95% BCA Bootstrap UCL	4.542	
1019	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	5.531	
1020										97.5% Chebyshev(Mean, Sd) UCL	6.627	
1021	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	8.779	
1022				95% Approximate Gamma UCL	3.77							
1023				95% Adjusted Gamma UCL	3.821							
1024												
1025	**Potential UCL to Use**									Use 95% Chebyshev (Mean, Sd) UCL	5.531	
1026												
1027												
1028	**Barium (mg/kg)**											
1029												
1030	**General Statistics**											
1031				Number of Valid Samples	30					Number of Unique Samples	30	
1032												
1033	**Raw Statistics**						**Log-transformed Statistics**					
1034				Minimum	21.1					Minimum of Log Data	3.049	
1035				Maximum	199					Maximum of Log Data	5.293	
1036				Mean	103.8					Mean of log Data	4.569	
1037				Median	98					SD of log Data	0.425	
1038				SD	37.81							
1039				Coefficient of Variation	0.364							
1040				Skewness	0.622							
1041												
1042	**Relevant UCL Statistics**											
1043	**Normal Distribution Test**						**Lognormal Distribution Test**					
1044				Shapiro Wilk Test Statistic	0.946					Shapiro Wilk Test Statistic	0.888	
1045				Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927	
1046	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1047												
1048	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1049				95% Student's-t UCL	115.6					95% H-UCL	122.3	
1050	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	141.8	

1051				95% Adjusted-CLT UCL	116				97.5% Chebyshev (MVUE) UCL	157.7		
1052				95% Modified-t UCL	115.7				99% Chebyshev (MVUE) UCL	188.9		
1053												
1054			**Gamma Distribution Test**						**Data Distribution**			
1055				k star (bias corrected)	6.217				**Data appear Normal at 5% Significance Level**			
1056				Theta Star	16.7							
1057				nu star	373							
1058				Approximate Chi Square Value (.05)	329.2				**Nonparametric Statistics**			
1059				Adjusted Level of Significance	0.041				95% CLT UCL	115.2		
1060				Adjusted Chi Square Value	326.9				95% Jackknife UCL	115.6		
1061									95% Standard Bootstrap UCL	115.3		
1062				Anderson-Darling Test Statistic	0.666				95% Bootstrap-t UCL	116.9		
1063				Anderson-Darling 5% Critical Value	0.746				95% Hall's Bootstrap UCL	117.9		
1064				Kolmogorov-Smirnov Test Statistic	0.178				95% Percentile Bootstrap UCL	115.3		
1065				Kolmogorov-Smirnov 5% Critical Value	0.16				95% BCA Bootstrap UCL	116.6		
1066			**Data follow Appr. Gamma Distribution at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	133.9		
1067									97.5% Chebyshev(Mean, Sd) UCL	147		
1068			**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	172.5		
1069				95% Approximate Gamma UCL	117.7							
1070				95% Adjusted Gamma UCL	118.5							
1071												
1072			**Potential UCL to Use**						Use 95% Student's-t UCL	115.6		
1073												
1074												
1075	**Beryllium (mg/kg)**											
1076												
1077					**General Statistics**							
1078				Number of Valid Samples	28				Number of Unique Samples	24		
1079				Number of Missing Values	2							
1080												
1081			**Raw Statistics**						**Log-transformed Statistics**			
1082				Minimum	0.33				Minimum of Log Data	-1.109		
1083				Maximum	1.3				Maximum of Log Data	0.262		
1084				Mean	0.873				Mean of log Data	-0.168		
1085				Median	0.905				SD of log Data	0.277		
1086				SD	0.202							
1087				Coefficient of Variation	0.232							
1088				Skewness	-0.621							
1089												
1090					**Relevant UCL Statistics**							
1091			**Normal Distribution Test**						**Lognormal Distribution Test**			
1092				Shapiro Wilk Test Statistic	0.952				Shapiro Wilk Test Statistic	0.857		
1093				Shapiro Wilk Critical Value	0.924				Shapiro Wilk Critical Value	0.924		
1094			**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**			
1095												
1096			**Assuming Normal Distribution**						**Assuming Lognormal Distribution**			
1097				95% Student's-t UCL	0.938				95% H-UCL	0.967		
1098			**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	1.08		
1099				95% Adjusted-CLT UCL	0.931				97.5% Chebyshev (MVUE) UCL	1.168		
1100				95% Modified-t UCL	0.938				99% Chebyshev (MVUE) UCL	1.34		

1101												
1102	**Gamma Distribution Test**						**Data Distribution**					
1103					k star (bias corrected)	14.01	**Data appear Normal at 5% Significance Level**					
1104					Theta Star	0.0623						
1105					nu star	784.5						
1106					Approximate Chi Square Value (.05)	720.5	**Nonparametric Statistics**					
1107					Adjusted Level of Significance	0.0404				95% CLT UCL	0.936	
1108					Adjusted Chi Square Value	716.7				95% Jackknife UCL	0.938	
1109										95% Standard Bootstrap UCL	0.934	
1110					Anderson-Darling Test Statistic	1.071				95% Bootstrap-t UCL	0.934	
1111					Anderson-Darling 5% Critical Value	0.745				95% Hall's Bootstrap UCL	0.934	
1112					Kolmogorov-Smirnov Test Statistic	0.156				95% Percentile Bootstrap UCL	0.934	
1113					Kolmogorov-Smirnov 5% Critical Value	0.165				95% BCA Bootstrap UCL	0.931	
1114	**Data follow Appr. Gamma Distribution at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	1.04	
1115										97.5% Chebyshev(Mean, Sd) UCL	1.112	
1116	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	1.254	
1117					95% Approximate Gamma UCL	0.951						
1118					95% Adjusted Gamma UCL	0.956						
1119												
1120	**Potential UCL to Use**									Use 95% Student's-t UCL	0.938	
1121												
1122												
1123	**Calcium (mg/kg)**											
1124												
1125	**General Statistics**											
1126					Number of Valid Samples	30				Number of Unique Samples	30	
1127												
1128	**Raw Statistics**						**Log-transformed Statistics**					
1129					Minimum	633				Minimum of Log Data	6.45	
1130					Maximum	95900				Maximum of Log Data	11.47	
1131					Mean	5776				Mean of log Data	7.53	
1132					Median	1315				SD of log Data	1.114	
1133					SD	17453						
1134					Coefficient of Variation	3.022						
1135					Skewness	5.084						
1136												
1137	**Relevant UCL Statistics**											
1138	**Normal Distribution Test**						**Lognormal Distribution Test**					
1139					Shapiro Wilk Test Statistic	0.305				Shapiro Wilk Test Statistic	0.763	
1140					Shapiro Wilk Critical Value	0.927				Shapiro Wilk Critical Value	0.927	
1141	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1142												
1143	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1144					95% Student's-t UCL	11190				95% H-UCL	5899	
1145	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	6850	
1146					95% Adjusted-CLT UCL	14178				97.5% Chebyshev (MVUE) UCL	8362	
1147					95% Modified-t UCL	11683				99% Chebyshev (MVUE) UCL	11333	
1148												
1149	**Gamma Distribution Test**						**Data Distribution**					
1150					k star (bias corrected)	0.52	**Data do not follow a Discernable Distribution (0.05)**					

1151					Theta Star	11114						
1152					nu star	31.18						
1153					Approximate Chi Square Value (.05)	19.42		**Nonparametric Statistics**				
1154					Adjusted Level of Significance	0.041					95% CLT UCL	11017
1155					Adjusted Chi Square Value	18.89					95% Jackknife UCL	11190
1156											95% Standard Bootstrap UCL	10869
1157					Anderson-Darling Test Statistic	4.977					95% Bootstrap-t UCL	31446
1158					Anderson-Darling 5% Critical Value	0.805					95% Hall's Bootstrap UCL	30551
1159					Kolmogorov-Smirnov Test Statistic	0.363					95% Percentile Bootstrap UCL	11644
1160					Kolmogorov-Smirnov 5% Critical Value	0.169					95% BCA Bootstrap UCL	15683
1161				**Data not Gamma Distributed at 5% Significance Level**							95% Chebyshev(Mean, Sd) UCL	19665
1162											97.5% Chebyshev(Mean, Sd) UCL	25675
1163				**Assuming Gamma Distribution**							99% Chebyshev(Mean, Sd) UCL	37481
1164					95% Approximate Gamma UCL	9272						
1165					95% Adjusted Gamma UCL	9535						
1166												
1167				**Potential UCL to Use**							Use 99% Chebyshev (Mean, Sd) UCL	37481
1168												
1169												
1170	**Chromium (mg/kg)**											
1171												
1172						**General Statistics**							
1173					Number of Valid Samples	30					Number of Unique Samples	29
1174												
1175				**Raw Statistics**				**Log-transformed Statistics**				
1176					Minimum	8.7					Minimum of Log Data	2.163
1177					Maximum	24.3					Maximum of Log Data	3.19
1178					Mean	17.62					Mean of log Data	2.849
1179					Median	17.8					SD of log Data	0.21
1180					SD	3.382						
1181					Coefficient of Variation	0.192						
1182					Skewness	-0.323						
1183												
1184						**Relevant UCL Statistics**							
1185				**Normal Distribution Test**				**Lognormal Distribution Test**				
1186					Shapiro Wilk Test Statistic	0.982					Shapiro Wilk Test Statistic	0.934
1187					Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927
1188				**Data appear Normal at 5% Significance Level**				**Data appear Lognormal at 5% Significance Level**				
1189												
1190				**Assuming Normal Distribution**				**Assuming Lognormal Distribution**				
1191					95% Student's-t UCL	18.67					95% H-UCL	18.9
1192				**95% UCLs (Adjusted for Skewness)**							95% Chebyshev (MVUE) UCL	20.61
1193					95% Adjusted-CLT UCL	18.6					97.5% Chebyshev (MVUE) UCL	21.9
1194					95% Modified-t UCL	18.67					99% Chebyshev (MVUE) UCL	24.42
1195												
1196				**Gamma Distribution Test**				**Data Distribution**				
1197					k star (bias corrected)	22.88		**Data appear Normal at 5% Significance Level**				
1198					Theta Star	0.77						
1199					nu star	1373						
1200					Approximate Chi Square Value (.05)	1288		**Nonparametric Statistics**				

1201					Adjusted Level of Significance	0.041					95% CLT UCL	18.64
1202					Adjusted Chi Square Value	1283					95% Jackknife UCL	18.67
1203											95% Standard Bootstrap UCL	18.63
1204					Anderson-Darling Test Statistic	0.29					95% Bootstrap-t UCL	18.62
1205					Anderson-Darling 5% Critical Value	0.744					95% Hall's Bootstrap UCL	18.62
1206					Kolmogorov-Smirnov Test Statistic	0.0893					95% Percentile Bootstrap UCL	18.57
1207					Kolmogorov-Smirnov 5% Critical Value	0.16					95% BCA Bootstrap UCL	18.54
1208					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	20.32
1209											97.5% Chebyshev(Mean, Sd) UCL	21.48
1210					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	23.77
1211					95% Approximate Gamma UCL	18.79						
1212					95% Adjusted Gamma UCL	18.86						
1213												
1214					**Potential UCL to Use**						Use 95% Student's-t UCL	18.67
1215												
1216												
1217	**Cobalt (mg/kg)**											
1218												
1219					**General Statistics**							
1220					Number of Valid Samples	30					Number of Unique Samples	28
1221												
1222					**Raw Statistics**						**Log-transformed Statistics**	
1223					Minimum	3.8					Minimum of Log Data	1.335
1224					Maximum	16.5					Maximum of Log Data	2.803
1225					Mean	9.533					Mean of log Data	2.22
1226					Median	9.6					SD of log Data	0.281
1227					SD	2.409						
1228					Coefficient of Variation	0.253						
1229					Skewness	0.176						
1230												
1231					**Relevant UCL Statistics**							
1232					**Normal Distribution Test**						**Lognormal Distribution Test**	
1233					Shapiro Wilk Test Statistic	0.964					Shapiro Wilk Test Statistic	0.917
1234					Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927
1235					**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**	
1236												
1237					**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
1238					95% Student's-t UCL	10.28					95% H-UCL	10.51
1239					**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	11.73
1240					95% Adjusted-CLT UCL	10.27					97.5% Chebyshev (MVUE) UCL	12.67
1241					95% Modified-t UCL	10.28					99% Chebyshev (MVUE) UCL	14.51
1242												
1243					**Gamma Distribution Test**						**Data Distribution**	
1244					k star (bias corrected)	13.13					**Data appear Normal at 5% Significance Level**	
1245					Theta Star	0.726						
1246					nu star	787.6						
1247					Approximate Chi Square Value (.05)	723.5					**Nonparametric Statistics**	
1248					Adjusted Level of Significance	0.041					95% CLT UCL	10.26
1249					Adjusted Chi Square Value	719.9					95% Jackknife UCL	10.28
1250											95% Standard Bootstrap UCL	10.24

1251				Anderson-Darling Test Statistic	0.623					95% Bootstrap-t UCL	10.31
1252				Anderson-Darling 5% Critical Value	0.745					95% Hall's Bootstrap UCL	10.37
1253				Kolmogorov-Smirnov Test Statistic	0.132					95% Percentile Bootstrap UCL	10.24
1254				Kolmogorov-Smirnov 5% Critical Value	0.16					95% BCA Bootstrap UCL	10.25
1255	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	11.45
1256										97.5% Chebyshev(Mean, Sd) UCL	12.28
1257	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	13.91
1258				95% Approximate Gamma UCL	10.38						
1259				95% Adjusted Gamma UCL	10.43						
1260											
1261	**Potential UCL to Use**									Use 95% Student's-t UCL	10.28
1262											
1263											
1264	**Copper (mg/kg)**										
1265											
1266	**General Statistics**										
1267				Number of Valid Samples	30					Number of Unique Samples	27
1268											
1269	**Raw Statistics**						**Log-transformed Statistics**				
1270				Minimum	4					Minimum of Log Data	1.386
1271				Maximum	71.9					Maximum of Log Data	4.275
1272				Mean	16.53					Mean of log Data	2.61
1273				Median	11.88					SD of log Data	0.568
1274				SD	13.83						
1275				Coefficient of Variation	0.837						
1276				Skewness	2.837						
1277											
1278	**Relevant UCL Statistics**										
1279	**Normal Distribution Test**						**Lognormal Distribution Test**				
1280				Shapiro Wilk Test Statistic	0.61					Shapiro Wilk Test Statistic	0.841
1281				Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927
1282	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**				
1283											
1284	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**				
1285				95% Student's-t UCL	20.82					95% H-UCL	19.72
1286	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	23.47
1287				95% Adjusted-CLT UCL	22.08					97.5% Chebyshev (MVUE) UCL	26.75
1288				95% Modified-t UCL	21.04					99% Chebyshev (MVUE) UCL	33.19
1289											
1290	**Gamma Distribution Test**						**Data Distribution**				
1291				k star (bias corrected)	2.474		**Data do not follow a Discernable Distribution (0.05)**				
1292				Theta Star	6.68						
1293				nu star	148.5						
1294				Approximate Chi Square Value (.05)	121.3		**Nonparametric Statistics**				
1295				Adjusted Level of Significance	0.041					95% CLT UCL	20.68
1296				Adjusted Chi Square Value	119.9					95% Jackknife UCL	20.82
1297										95% Standard Bootstrap UCL	20.66
1298				Anderson-Darling Test Statistic	3.086					95% Bootstrap-t UCL	23.92
1299				Anderson-Darling 5% Critical Value	0.754					95% Hall's Bootstrap UCL	23.08
1300				Kolmogorov-Smirnov Test Statistic	0.307					95% Percentile Bootstrap UCL	20.93

1301					Kolmogorov-Smirnov 5% Critical Value	0.161				95% BCA Bootstrap UCL		22.23
1302					**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL		27.54
1303										97.5% Chebyshev(Mean, Sd) UCL		32.3
1304					**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL		41.66
1305					95% Approximate Gamma UCL	20.23						
1306					95% Adjusted Gamma UCL	20.47						
1307												
1308					**Potential UCL to Use**					Use 95% Chebyshev (Mean, Sd) UCL		27.54
1309												
1310												
1311	**Iron (mg/kg)**											
1312												
1313					**General Statistics**							
1314					Number of Valid Samples	30				Number of Unique Samples		28
1315												
1316					**Raw Statistics**					**Log-transformed Statistics**		
1317					Minimum	9750				Minimum of Log Data		9.185
1318					Maximum	21700				Maximum of Log Data		9.985
1319					Mean	17668				Mean of log Data		9.76
1320					Median	18150				SD of log Data		0.207
1321					SD	3245						
1322					Coefficient of Variation	0.184						
1323					Skewness	-0.914						
1324												
1325					**Relevant UCL Statistics**							
1326					**Normal Distribution Test**					**Lognormal Distribution Test**		
1327					Shapiro Wilk Test Statistic	0.912				Shapiro Wilk Test Statistic		0.863
1328					Shapiro Wilk Critical Value	0.927				Shapiro Wilk Critical Value		0.927
1329					**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**		
1330												
1331					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
1332					95% Student's-t UCL	18675				95% H-UCL		18945
1333					**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL		20643
1334					95% Adjusted-CLT UCL	18537				97.5% Chebyshev (MVUE) UCL		21917
1335					95% Modified-t UCL	18658				99% Chebyshev (MVUE) UCL		24420
1336												
1337					**Gamma Distribution Test**					**Data Distribution**		
1338					k star (bias corrected)	23.73				**Data do not follow a Discernable Distribution (0.05)**		
1339					Theta Star	744.5						
1340					nu star	1424						
1341					Approximate Chi Square Value (.05)	1337				**Nonparametric Statistics**		
1342					Adjusted Level of Significance	0.041				95% CLT UCL		18643
1343					Adjusted Chi Square Value	1333				95% Jackknife UCL		18675
1344										95% Standard Bootstrap UCL		18618
1345					Anderson-Darling Test Statistic	1.149				95% Bootstrap-t UCL		18606
1346					Anderson-Darling 5% Critical Value	0.744				95% Hall's Bootstrap UCL		18563
1347					Kolmogorov-Smirnov Test Statistic	0.185				95% Percentile Bootstrap UCL		18630
1348					Kolmogorov-Smirnov 5% Critical Value	0.16				95% BCA Bootstrap UCL		18552
1349					**Data not Gamma Distributed at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL		20250
1350										97.5% Chebyshev(Mean, Sd) UCL		21368

1351	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL		23562
1352				95% Approximate Gamma UCL		18813						
1353				95% Adjusted Gamma UCL		18881						
1354												
1355	**Potential UCL to Use**									Use 95% Student's-t UCL		18675
1356										or 95% Modified-t UCL		18658
1357												
1358												
1359	**Lead (mg/kg)**											
1360												
1361	**General Statistics**											
1362				Number of Valid Samples		30				Number of Unique Samples		28
1363												
1364	**Raw Statistics**									**Log-transformed Statistics**		
1365				Minimum		2.2				Minimum of Log Data		0.788
1366				Maximum		95.6				Maximum of Log Data		4.56
1367				Mean		14.19				Mean of log Data		2.278
1368				Median		8.3				SD of log Data		0.805
1369				SD		17.45						
1370				Coefficient of Variation		1.23						
1371				Skewness		3.794						
1372												
1373	**Relevant UCL Statistics**											
1374	**Normal Distribution Test**									**Lognormal Distribution Test**		
1375				Shapiro Wilk Test Statistic		0.575				Shapiro Wilk Test Statistic		0.969
1376				Shapiro Wilk Critical Value		0.927				Shapiro Wilk Critical Value		0.927
1377	**Data not Normal at 5% Significance Level**									**Data appear Lognormal at 5% Significance Level**		
1378												
1379	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
1380				95% Student's-t UCL		19.6				95% H-UCL		18.8
1381	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL		22.72
1382				95% Adjusted-CLT UCL		21.79				97.5% Chebyshev (MVUE) UCL		26.8
1383				95% Modified-t UCL		19.97				99% Chebyshev (MVUE) UCL		34.8
1384												
1385	**Gamma Distribution Test**									**Data Distribution**		
1386				k star (bias corrected)		1.354				**Data Follow Appr. Gamma Distribution at 5% Significance Level**		
1387				Theta Star		10.48						
1388				nu star		81.25						
1389				Approximate Chi Square Value (.05)		61.48				**Nonparametric Statistics**		
1390				Adjusted Level of Significance		0.041				95% CLT UCL		19.43
1391				Adjusted Chi Square Value		60.48				95% Jackknife UCL		19.6
1392										95% Standard Bootstrap UCL		19.36
1393				Anderson-Darling Test Statistic		1.016				95% Bootstrap-t UCL		25.55
1394				Anderson-Darling 5% Critical Value		0.764				95% Hall's Bootstrap UCL		40.44
1395				Kolmogorov-Smirnov Test Statistic		0.14				95% Percentile Bootstrap UCL		20.04
1396				Kolmogorov-Smirnov 5% Critical Value		0.163				95% BCA Bootstrap UCL		22.73
1397	**Data follow Appr. Gamma Distribution at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL		28.08
1398										97.5% Chebyshev(Mean, Sd) UCL		34.08
1399	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL		45.89
1400				95% Approximate Gamma UCL		18.75						

1401				95% Adjusted Gamma UCL	19.06							
1402												
1403	**Potential UCL to Use**									Use 95% Approximate Gamma UCL		18.75
1404												
1405												
1406	**Magnesium (mg/kg)**											
1407												
1408	**General Statistics**											
1409				Number of Valid Samples	30					Number of Unique Samples		29
1410												
1411	**Raw Statistics**						**Log-transformed Statistics**					
1412				Minimum	2130					Minimum of Log Data		7.664
1413				Maximum	58700					Maximum of Log Data		10.98
1414				Mean	5190					Mean of log Data		8.155
1415				Median	3080					SD of log Data		0.62
1416				SD	10193							
1417				Coefficient of Variation	1.964							
1418				Skewness	5.335							
1419												
1420	**Relevant UCL Statistics**											
1421	**Normal Distribution Test**						**Lognormal Distribution Test**					
1422				Shapiro Wilk Test Statistic	0.275					Shapiro Wilk Test Statistic		0.622
1423				Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value		0.927
1424	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1425												
1426	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1427				95% Student's-t UCL	8352					95% H-UCL		5333
1428	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL		6389
1429				95% Adjusted-CLT UCL	10187					97.5% Chebyshev (MVUE) UCL		7342
1430				95% Modified-t UCL	8654					99% Chebyshev (MVUE) UCL		9213
1431												
1432	**Gamma Distribution Test**						**Data Distribution**					
1433				k star (bias corrected)	1.279		**Data do not follow a Discernable Distribution (0.05)**					
1434				Theta Star	4058							
1435				nu star	76.73							
1436				Approximate Chi Square Value (.05)	57.55		**Nonparametric Statistics**					
1437				Adjusted Level of Significance	0.041					95% CLT UCL		8251
1438				Adjusted Chi Square Value	56.59					95% Jackknife UCL		8352
1439										95% Standard Bootstrap UCL		8121
1440				Anderson-Darling Test Statistic	5.593					95% Bootstrap-t UCL		30265
1441				Anderson-Darling 5% Critical Value	0.766					95% Hall's Bootstrap UCL		19257
1442				Kolmogorov-Smirnov Test Statistic	0.386					95% Percentile Bootstrap UCL		8945
1443				Kolmogorov-Smirnov 5% Critical Value	0.163					95% BCA Bootstrap UCL		12581
1444	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL		13301
1445										97.5% Chebyshev(Mean, Sd) UCL		16811
1446	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL		23706
1447				95% Approximate Gamma UCL	6919							
1448				95% Adjusted Gamma UCL	7036							
1449												
1450	**Potential UCL to Use**									Use 95% Chebyshev (Mean, Sd) UCL		13301

1451												
1452												
1453	**Manganese (mg/kg)**											
1454												
1455					**General Statistics**							
1456					Number of Valid Samples	30				Number of Unique Samples	29	
1457												
1458					**Raw Statistics**					**Log-transformed Statistics**		
1459					Minimum	84.2				Minimum of Log Data	4.433	
1460					Maximum	1710				Maximum of Log Data	7.444	
1461					Mean	508.4				Mean of log Data	6.107	
1462					Median	482.3				SD of log Data	0.527	
1463					SD	279.8						
1464					Coefficient of Variation	0.55						
1465					Skewness	2.714						
1466												
1467					**Relevant UCL Statistics**							
1468					**Normal Distribution Test**					**Lognormal Distribution Test**		
1469					Shapiro Wilk Test Statistic	0.763				Shapiro Wilk Test Statistic	0.91	
1470					Shapiro Wilk Critical Value	0.927				Shapiro Wilk Critical Value	0.927	
1471					**Data not Normal at 5% Significance Level**					**Data not Lognormal at 5% Significance Level**		
1472												
1473					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
1474					95% Student's-t UCL	595.2				95% H-UCL	625.1	
1475					**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL	739.4	
1476					95% Adjusted-CLT UCL	619.5				97.5% Chebyshev (MVUE) UCL	837.2	
1477					95% Modified-t UCL	599.4				99% Chebyshev (MVUE) UCL	1029	
1478												
1479					**Gamma Distribution Test**					**Data Distribution**		
1480					k star (bias corrected)	3.79				**Data Follow Appr. Gamma Distribution at 5% Significance Level**		
1481					Theta Star	134.2						
1482					nu star	227.4						
1483					Approximate Chi Square Value (.05)	193.5				**Nonparametric Statistics**		
1484					Adjusted Level of Significance	0.041				95% CLT UCL	592.5	
1485					Adjusted Chi Square Value	191.7				95% Jackknife UCL	595.2	
1486										95% Standard Bootstrap UCL	590.9	
1487					Anderson-Darling Test Statistic	0.856				95% Bootstrap-t UCL	637.3	
1488					Anderson-Darling 5% Critical Value	0.749				95% Hall's Bootstrap UCL	1029	
1489					Kolmogorov-Smirnov Test Statistic	0.135				95% Percentile Bootstrap UCL	594.3	
1490					Kolmogorov-Smirnov 5% Critical Value	0.161				95% BCA Bootstrap UCL	632.1	
1491					**Data follow Appr. Gamma Distribution at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL	731.1	
1492										97.5% Chebyshev(Mean, Sd) UCL	827.4	
1493					**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL	1017	
1494					95% Approximate Gamma UCL	597.5						
1495					95% Adjusted Gamma UCL	603.1						
1496												
1497					**Potential UCL to Use**					Use 95% Approximate Gamma UCL	597.5	
1498												
1499												
1500	**Mercury (mg/kg)**											

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

	A	B	C	D	E	F	G	H	I	J	K	L
1501												
1502	**General Statistics**											
1503					Number of Valid Samples	30				Number of Detected Data		28
1504					Number of Unique Samples	26				Number of Non-Detect Data		2
1505										Percent Non-Detects		6.67%
1506												
1507	**Raw Statistics**						**Log-transformed Statistics**					
1508					Minimum Detected	0.015				Minimum Detected		-4.2
1509					Maximum Detected	1.9				Maximum Detected		0.642
1510					Mean of Detected	0.214				Mean of Detected		-2.641
1511					SD of Detected	0.442				SD of Detected		1.314
1512					Minimum Non-Detect	0.011				Minimum Non-Detect		-4.51
1513					Maximum Non-Detect	0.012				Maximum Non-Detect		-4.423
1514												
1515	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		2
1516	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		28
1517	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		6.67%
1518												
1519	**UCL Statistics**											
1520	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1521					Shapiro Wilk Test Statistic	0.487				Shapiro Wilk Test Statistic		0.853
1522					5% Shapiro Wilk Critical Value	0.924				5% Shapiro Wilk Critical Value		0.924
1523	**Data not Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
1524												
1525	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1526					DL/2 Substitution Method					DL/2 Substitution Method		
1527					Mean	0.2				Mean		-2.809
1528					SD	0.43				SD		1.42
1529					95% DL/2 (t) UCL	0.334				95% H-Stat (DL/2) UCL		0.308
1530												
1531					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
1532					Mean	0.181				Mean in Log Scale		-2.838
1533					SD	0.442				SD in Log Scale		1.473
1534					95% MLE (t) UCL	0.318				Mean in Original Scale		0.2
1535					95% MLE (Tiku) UCL	0.306				SD in Original Scale		0.43
1536										95% Percentile Bootstrap UCL		0.334
1537										95% BCA Bootstrap UCL		0.391
1538												
1539	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1540					k star (bias corrected)	0.529	**Data do not follow a Discernable Distribution (0.05)**					
1541					Theta Star	0.405						
1542					nu star	29.63						
1543												
1544					A-D Test Statistic	3.108	**Nonparametric Statistics**					
1545					5% A-D Critical Value	0.804				Kaplan-Meier (KM) Method		
1546					K-S Test Statistic	0.804				Mean		0.201
1547					5% K-S Critical Value	0.174				SD		0.422
1548	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		0.0785
1549										95% KM (t) UCL		0.334
1550	**Assuming Gamma Distribution**									95% KM (z) UCL		0.33

1551	Gamma ROS Statistics using Extrapolated Data									95% KM (jackknife) UCL		0.334
1552					Minimum	0				95% KM (bootstrap t) UCL		0.613
1553					Maximum	1.9				95% KM (BCA) UCL		0.358
1554					Mean	0.2				95% KM (Percentile Bootstrap) UCL		0.335
1555					Median	0.041				95% KM (Chebyshev) UCL		0.543
1556					SD	0.43				97.5% KM (Chebyshev) UCL		0.691
1557					k star	0.299				99% KM (Chebyshev) UCL		0.982
1558					Theta star	0.67						
1559					Nu star	17.91	**Potential UCLs to Use**					
1560					AppChi2	9.326				97.5% KM (Chebyshev) UCL		0.691
1561				95% Gamma Approximate UCL		0.384						
1562				95% Adjusted Gamma UCL		0.4						
1563	**Note: DL/2 is not a recommended method.**											
1564												
1565												
1566	**Nickel (mg/kg)**											
1567												
1568	**General Statistics**											
1569	Number of Valid Samples	30		Number of Unique Samples	25							
1570												
1571	**Raw Statistics**						**Log-transformed Statistics**					
1572	Minimum	6.4					Minimum of Log Data	1.856				
1573	Maximum	16.3					Maximum of Log Data	2.791				
1574	Mean	11.33					Mean of log Data	2.413				
1575	Median	11.4					SD of log Data	0.174				
1576	SD	1.863										
1577	Coefficient of Variation	0.165										
1578	Skewness	-0.0552										
1579												
1580	**Relevant UCL Statistics**											
1581	**Normal Distribution Test**						**Lognormal Distribution Test**					
1582	Shapiro Wilk Test Statistic	0.977					Shapiro Wilk Test Statistic	0.947				
1583	Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927				
1584	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1585												
1586	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1587	95% Student's-t UCL	11.9					95% H-UCL	11.99				
1588	**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	12.91				
1589	95% Adjusted-CLT UCL	11.88					97.5% Chebyshev (MVUE) UCL	13.59				
1590	95% Modified-t UCL	11.9					99% Chebyshev (MVUE) UCL	14.93				
1591												
1592	**Gamma Distribution Test**						**Data Distribution**					
1593	k star (bias corrected)	32.41					**Data appear Normal at 5% Significance Level**					
1594	Theta Star	0.349										
1595	nu star	1945										
1596	Approximate Chi Square Value (.05)	1843					**Nonparametric Statistics**					
1597	Adjusted Level of Significance	0.041					95% CLT UCL	11.88				
1598	Adjusted Chi Square Value	1837					95% Jackknife UCL	11.9				
1599							95% Standard Bootstrap UCL	11.88				
1600	Anderson-Darling Test Statistic	0.367					95% Bootstrap-t UCL	11.89				

1601				Anderson-Darling 5% Critical Value	0.744					95% Hall's Bootstrap UCL	11.95
1602				Kolmogorov-Smirnov Test Statistic	0.0901					95% Percentile Bootstrap UCL	11.89
1603				Kolmogorov-Smirnov 5% Critical Value	0.16					95% BCA Bootstrap UCL	11.91
1604				**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	12.81
1605										97.5% Chebyshev(Mean, Sd) UCL	13.45
1606				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	14.71
1607				95% Approximate Gamma UCL	11.95						
1608				95% Adjusted Gamma UCL	11.99						
1609											
1610				**Potential UCL to Use**						Use 95% Student's-t UCL	11.9
1611											
1612											
1613	**Potassium (mg/kg)**										
1614											
1615				**General Statistics**							
1616				Number of Valid Samples	27					Number of Unique Samples	26
1617				Number of Missing Values	3						
1618											
1619				**Raw Statistics**						**Log-transformed Statistics**	
1620				Minimum	840					Minimum of Log Data	6.733
1621				Maximum	2120					Maximum of Log Data	7.659
1622				Mean	1298					Mean of log Data	7.146
1623				Median	1270					SD of log Data	0.219
1624				SD	288.3						
1625				Coefficient of Variation	0.222						
1626				Skewness	0.692						
1627											
1628				**Relevant UCL Statistics**							
1629				**Normal Distribution Test**						**Lognormal Distribution Test**	
1630				Shapiro Wilk Test Statistic	0.957					Shapiro Wilk Test Statistic	0.978
1631				Shapiro Wilk Critical Value	0.923					Shapiro Wilk Critical Value	0.923
1632				**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**	
1633											
1634				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**	
1635				95% Student's-t UCL	1393					95% H-UCL	1402
1636				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	1539
1637				95% Adjusted-CLT UCL	1398					97.5% Chebyshev (MVUE) UCL	1644
1638				95% Modified-t UCL	1394					99% Chebyshev (MVUE) UCL	1848
1639											
1640				**Gamma Distribution Test**						**Data Distribution**	
1641				k star (bias corrected)	19.34					**Data appear Normal at 5% Significance Level**	
1642				Theta Star	67.14						
1643				nu star	1044						
1644				Approximate Chi Square Value (.05)	970.3					**Nonparametric Statistics**	
1645				Adjusted Level of Significance	0.0401					95% CLT UCL	1390
1646				Adjusted Chi Square Value	965.7					95% Jackknife UCL	1393
1647										95% Standard Bootstrap UCL	1390
1648				Anderson-Darling Test Statistic	0.194					95% Bootstrap-t UCL	1406
1649				Anderson-Darling 5% Critical Value	0.744					95% Hall's Bootstrap UCL	1411
1650				Kolmogorov-Smirnov Test Statistic	0.0775					95% Percentile Bootstrap UCL	1390

1651				Kolmogorov-Smirnov 5% Critical Value	0.168					95% BCA Bootstrap UCL	1392	
1652	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	1540	
1653										97.5% Chebyshev(Mean, Sd) UCL	1645	
1654	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	1851	
1655				95% Approximate Gamma UCL	1397							
1656				95% Adjusted Gamma UCL	1404							
1657												
1658	**Potential UCL to Use**									Use 95% Student's-t UCL	1393	
1659												
1660												
1661	**Selenium (mg.kg)**											
1662												
1663					**General Statistics**							
1664				Number of Valid Samples	30					Number of Detected Data	26	
1665				Number of Unique Samples	24					Number of Non-Detect Data	4	
1666										Percent Non-Detects	13.33%	
1667												
1668				**Raw Statistics**						**Log-transformed Statistics**		
1669				Minimum Detected	0.14					Minimum Detected	-1.966	
1670				Maximum Detected	6.85					Maximum Detected	1.924	
1671				Mean of Detected	3.34					Mean of Detected	0.41	
1672				SD of Detected	2.877					SD of Detected	1.547	
1673				Minimum Non-Detect	0.11					Minimum Non-Detect	-2.207	
1674				Maximum Non-Detect	0.27					Maximum Non-Detect	-1.309	
1675												
1676	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect	10	
1677	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected	20	
1678	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage	33.33%	
1679												
1680					**UCL Statistics**							
1681	**Normal Distribution Test with Detected Values Only**									**Lognormal Distribution Test with Detected Values Only**		
1682				Shapiro Wilk Test Statistic	0.773					Shapiro Wilk Test Statistic	0.784	
1683				5% Shapiro Wilk Critical Value	0.92					5% Shapiro Wilk Critical Value	0.92	
1684	**Data not Normal at 5% Significance Level**									**Data not Lognormal at 5% Significance Level**		
1685												
1686	**Assuming Normal Distribution**									**Assuming Lognormal Distribution**		
1687				DL/2 Substitution Method						DL/2 Substitution Method		
1688				Mean	2.905					Mean	0.00103	
1689				SD	2.9					SD	1.79	
1690				95% DL/2 (t) UCL	3.804					95% H-Stat (DL/2) UCL	11.73	
1691												
1692				Maximum Likelihood Estimate(MLE) Method						Log ROS Method		
1693				Mean	2.098					Mean in Log Scale	0.0138	
1694				SD	3.907					SD in Log Scale	1.776	
1695				95% MLE (t) UCL	3.31					Mean in Original Scale	2.907	
1696				95% MLE (Tiku) UCL	3.416					SD in Original Scale	2.898	
1697										95% Percentile Bootstrap UCL	3.814	
1698										95% BCA Bootstrap UCL	3.804	
1699												
1700	**Gamma Distribution Test with Detected Values Only**									**Data Distribution Test with Detected Values Only**		

1701					k star (bias corrected)	0.69	**Data do not follow a Discernable Distribution (0.05)**					
1702					Theta Star	4.837						
1703					nu star	35.9						
1704												
1705					A-D Test Statistic	2.465	**Nonparametric Statistics**					
1706					5% A-D Critical Value	0.784				Kaplan-Meier (KM) Method		
1707					K-S Test Statistic	0.784				Mean		2.915
1708					5% K-S Critical Value	0.178				SD		2.841
1709	**Data not Gamma Distributed at 5% Significance Level**									SE of Mean		0.529
1710										95% KM (t) UCL		3.813
1711	**Assuming Gamma Distribution**									95% KM (z) UCL		3.785
1712				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL		3.809
1713					Minimum	0				95% KM (bootstrap t) UCL		3.815
1714					Maximum	6.85				95% KM (BCA) UCL		3.735
1715					Mean	2.911				95% KM (Percentile Bootstrap) UCL		3.766
1716					Median	1				95% KM (Chebyshev) UCL		5.22
1717					SD	2.894				97.5% KM (Chebyshev) UCL		6.218
1718					k star	0.249				99% KM (Chebyshev) UCL		8.178
1719					Theta star	11.67						
1720					Nu star	14.96	**Potential UCLs to Use**					
1721					AppChi2	7.236				99% KM (Chebyshev) UCL		8.178
1722				95% Gamma Approximate UCL		6.019						
1723				95% Adjusted Gamma UCL		6.288						
1724	**Warning: Recommended UCL exceeds the maximum observation**											
1725	**Note: DL/2 is not a recommended method.**											
1726												
1727												
1728	**Sodium (mg/kg)**											
1729												
1730	**General Statistics**											
1731					Number of Valid Samples	26				Number of Detected Data		15
1732					Number of Unique Samples	15				Number of Non-Detect Data		11
1733					Number of Missing Values	4				Percent Non-Detects		42.31%
1734												
1735	**Raw Statistics**						**Log-transformed Statistics**					
1736					Minimum Detected	313				Minimum Detected		5.746
1737					Maximum Detected	557				Maximum Detected		6.323
1738					Mean of Detected	426.1				Mean of Detected		6.039
1739					SD of Detected	76.93				SD of Detected		0.181
1740					Minimum Non-Detect	26				Minimum Non-Detect		3.258
1741					Maximum Non-Detect	30				Maximum Non-Detect		3.401
1742												
1743	Note: Data have multiple DLs - Use of KM Method is recommended									Number treated as Non-Detect		11
1744	For all methods (except KM, DL/2, and ROS Methods),									Number treated as Detected		15
1745	Observations < Largest ND are treated as NDs									Single DL Non-Detect Percentage		42.31%
1746												
1747	**UCL Statistics**											
1748	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
1749					Shapiro Wilk Test Statistic	0.935				Shapiro Wilk Test Statistic		0.94
1750					5% Shapiro Wilk Critical Value	0.881				5% Shapiro Wilk Critical Value		0.881

	A	B	C	D	E	F	G	H	I	J	K	L
1751	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1752												
1753	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1754					DL/2 Substitution Method						DL/2 Substitution Method	
1755					Mean	251.8					Mean	4.604
1756					SD	215.4					SD	1.714
1757					95% DL/2 (t) UCL	324					95% H-Stat (DL/2) UCL	520.9
1758												
1759					Maximum Likelihood Estimate(MLE) Method						Log ROS Method	
1760					Mean	165.7					Mean in Log Scale	5.846
1761					SD	329.6					SD in Log Scale	0.271
1762					95% MLE (t) UCL	276.1					Mean in Original Scale	358.5
1763					95% MLE (Tiku) UCL	294.2					SD in Original Scale	99.69
1764											95% Percentile Bootstrap UCL	390.4
1765											95% BCA Bootstrap UCL	394.7
1766												
1767	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
1768					k star (bias corrected)	26.37	**Data appear Normal at 5% Significance Level**					
1769					Theta Star	16.16						
1770					nu star	791						
1771												
1772					A-D Test Statistic	0.468	**Nonparametric Statistics**					
1773					5% A-D Critical Value	0.735					Kaplan-Meier (KM) Method	
1774					K-S Test Statistic	0.735					Mean	378.3
1775					5% K-S Critical Value	0.221					SD	79.43
1776	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	16.12
1777											95% KM (t) UCL	405.8
1778	**Assuming Gamma Distribution**										95% KM (z) UCL	404.8
1779					Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL	402.8
1780					Minimum	313					95% KM (bootstrap t) UCL	406.5
1781					Maximum	557					95% KM (BCA) UCL	419.2
1782					Mean	414.7					95% KM (Percentile Bootstrap) UCL	411.7
1783					Median	402.7					95% KM (Chebyshev) UCL	448.5
1784					SD	62.34					97.5% KM (Chebyshev) UCL	478.9
1785					k star	42.25					99% KM (Chebyshev) UCL	538.7
1786					Theta star	9.816						
1787					Nu star	2197	**Potential UCLs to Use**					
1788					AppChi2	2089					95% KM (t) UCL	405.8
1789					95% Gamma Approximate UCL	436.1					95% KM (Percentile Bootstrap) UCL	411.7
1790					95% Adjusted Gamma UCL	437.6						
1791	**Note: DL/2 is not a recommended method.**											
1792												
1793												
1794	**Vanadium (mg/kg)**											
1795												
1796	**General Statistics**											
1797					Number of Valid Samples	30					Number of Unique Samples	29
1798												
1799	**Raw Statistics**						**Log-transformed Statistics**					
1800					Minimum	11.1					Minimum of Log Data	2.407

1801					Maximum	42.4				Maximum of Log Data		3.747
1802					Mean	29.82				Mean of log Data		3.358
1803					Median	31.53				SD of log Data		0.294
1804					SD	7.451						
1805					Coefficient of Variation	0.25						
1806					Skewness	-0.616						
1807												
1808					**Relevant UCL Statistics**							
1809	**Normal Distribution Test**							**Lognormal Distribution Test**				
1810					Shapiro Wilk Test Statistic	0.948				Shapiro Wilk Test Statistic		0.88
1811					Shapiro Wilk Critical Value	0.927				Shapiro Wilk Critical Value		0.927
1812	**Data appear Normal at 5% Significance Level**							**Data not Lognormal at 5% Significance Level**				
1813												
1814	**Assuming Normal Distribution**							**Assuming Lognormal Distribution**				
1815					95% Student's-t UCL	32.13				95% H-UCL		33.09
1816	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL		37.08
1817					95% Adjusted-CLT UCL	31.9				97.5% Chebyshev (MVUE) UCL		40.16
1818					95% Modified-t UCL	32.11				99% Chebyshev (MVUE) UCL		46.21
1819												
1820	**Gamma Distribution Test**							**Data Distribution**				
1821					k star (bias corrected)	12.34		**Data appear Normal at 5% Significance Level**				
1822					Theta Star	2.418						
1823					nu star	740.1						
1824					Approximate Chi Square Value (.05)	678		**Nonparametric Statistics**				
1825					Adjusted Level of Significance	0.041				95% CLT UCL		32.06
1826					Adjusted Chi Square Value	674.6				95% Jackknife UCL		32.13
1827										95% Standard Bootstrap UCL		32.1
1828					Anderson-Darling Test Statistic	1.014				95% Bootstrap-t UCL		32.02
1829					Anderson-Darling 5% Critical Value	0.745				95% Hall's Bootstrap UCL		31.98
1830					Kolmogorov-Smirnov Test Statistic	0.197				95% Percentile Bootstrap UCL		31.99
1831					Kolmogorov-Smirnov 5% Critical Value	0.16				95% BCA Bootstrap UCL		31.8
1832	**Data not Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL		35.75
1833										97.5% Chebyshev(Mean, Sd) UCL		38.32
1834	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL		43.36
1835					95% Approximate Gamma UCL	32.56						
1836					95% Adjusted Gamma UCL	32.72						
1837												
1838	**Potential UCL to Use**									Use 95% Student's-t UCL		32.13
1839												
1840												
1841	**Zinc (mg/kg)**											
1842												
1843					**General Statistics**							
1844					Number of Valid Samples	30				Number of Unique Samples		30
1845												
1846	**Raw Statistics**							**Log-transformed Statistics**				
1847					Minimum	12.3				Minimum of Log Data		2.51
1848					Maximum	115				Maximum of Log Data		4.745
1849					Mean	59.2				Mean of log Data		3.99
1850					Median	55.03				SD of log Data		0.458

Appendix E-3B
ProUCL Output Total Soil
SWMU 43

1851					SD	24.67						
1852					Coefficient of Variation	0.417						
1853					Skewness	0.699						
1854												
1855	**Relevant UCL Statistics**											
1856	**Normal Distribution Test**						**Lognormal Distribution Test**					
1857					Shapiro Wilk Test Statistic	0.945					Shapiro Wilk Test Statistic	0.942
1858					Shapiro Wilk Critical Value	0.927					Shapiro Wilk Critical Value	0.927
1859	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
1860												
1861	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
1862					95% Student's-t UCL	66.85					95% H-UCL	70.56
1863	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	82.39
1864					95% Adjusted-CLT UCL	67.22					97.5% Chebyshev (MVUE) UCL	92.17
1865					95% Modified-t UCL	66.94					99% Chebyshev (MVUE) UCL	111.4
1866												
1867	**Gamma Distribution Test**						**Data Distribution**					
1868					k star (bias corrected)	5.108	**Data appear Normal at 5% Significance Level**					
1869					Theta Star	11.59						
1870					nu star	306.5						
1871					Approximate Chi Square Value (.05)	266.9	**Nonparametric Statistics**					
1872					Adjusted Level of Significance	0.041					95% CLT UCL	66.6
1873					Adjusted Chi Square Value	264.8					95% Jackknife UCL	66.85
1874											95% Standard Bootstrap UCL	66.45
1875					Anderson-Darling Test Statistic	0.293					95% Bootstrap-t UCL	67.96
1876					Anderson-Darling 5% Critical Value	0.746					95% Hall's Bootstrap UCL	67.72
1877					Kolmogorov-Smirnov Test Statistic	0.111					95% Percentile Bootstrap UCL	66.27
1878					Kolmogorov-Smirnov 5% Critical Value	0.16					95% BCA Bootstrap UCL	66.92
1879	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	78.83
1880											97.5% Chebyshev(Mean, Sd) UCL	87.32
1881	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	104
1882					95% Approximate Gamma UCL	67.97						
1883					95% Adjusted Gamma UCL	68.51						
1884												
1885	**Potential UCL to Use**										Use 95% Student's-t UCL	66.85
1886												

Appendix E-3C
ProUCL TCDD Output
Total Soil
SWMU 43

1				**General UCL Statistics for Full Data Sets**								
2			**User Selected Options**									
3			From File	WorkSheet.wst								
4			Full Precision	OFF								
5			Confidence Coefficient	95%								
6			Number of Bootstrap Operations	2000								
7												
8												
9	**TCDD-TE (pg/g)**											
10												
11						**General Statistics**							
12					Number of Valid Samples	6				Number of Unique Samples	6	
13												
14				**Raw Statistics**						**Log-transformed Statistics**		
15					Minimum	0.0295				Minimum of Log Data	-3.522	
16					Maximum	10.68				Maximum of Log Data	2.369	
17					Mean	4.039				Mean of log Data	0.21	
18					Median	3.651				SD of log Data	2.31	
19					SD	4.192						
20					Coefficient of Variation	1.038						
21					Skewness	0.692						
22												
23						**Relevant UCL Statistics**							
24				**Normal Distribution Test**						**Lognormal Distribution Test**		
25					Shapiro Wilk Test Statistic	0.891				Shapiro Wilk Test Statistic	0.88	
26					Shapiro Wilk Critical Value	0.788				Shapiro Wilk Critical Value	0.788	
27				**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**		
28												
29				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
30					95% Student's-t UCL	7.487				95% H-UCL	256627	
31				**95% UCLs (Adjusted for Skewness)**						95% Chebyshev (MVUE) UCL	32.31	
32					95% Adjusted-CLT UCL	7.37				97.5% Chebyshev (MVUE) UCL	43.12	
33					95% Modified-t UCL	7.567				99% Chebyshev (MVUE) UCL	64.35	
34												
35				**Gamma Distribution Test**						**Data Distribution**		
36					k star (bias corrected)	0.376				**Data appear Normal at 5% Significance Level**		
37					Theta Star	10.73						
38					nu star	4.517						
39					Approximate Chi Square Value (.05)	0.936				**Nonparametric Statistics**		
40					Adjusted Level of Significance	0.0122				95% CLT UCL	6.853	
41					Adjusted Chi Square Value	0.481				95% Jackknife UCL	7.487	
42										95% Standard Bootstrap UCL	6.635	
43					Anderson-Darling Test Statistic	0.344				95% Bootstrap-t UCL	8.844	
44					Anderson-Darling 5% Critical Value	0.734				95% Hall's Bootstrap UCL	6.541	
45					Kolmogorov-Smirnov Test Statistic	0.265				95% Percentile Bootstrap UCL	6.637	
46					Kolmogorov-Smirnov 5% Critical Value	0.348				95% BCA Bootstrap UCL	6.781	
47				**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	11.5	
48										97.5% Chebyshev(Mean, Sd) UCL	14.73	
49				**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	21.06	

Appendix E-3C
ProUCL TCDD Output
Total Soil
SWMU 43

	A	B	C	D	E	F	G	H	I	J	K	L
50					95% Approximate Gamma UCL	19.49						
51					95% Adjusted Gamma UCL	37.92						
52												
53				**Potential UCL to Use**						Use 95% Student's-t UCL		7.487
54												

Appendix E-3D
ProUCL Output
Groundwater
SWMU 43

1				**General UCL Statistics for Data Sets with Non-Detects**							
2		**User Selected Options**									
3		From File		H:\Risk DB\Radford\SWMU 43 - AOC P\ProUCL\43_ProUCL_input_GW.wst							
4		Full Precision		OFF							
5		Confidence Coefficient		95%							
6		Number of Bootstrap Operations		2000							
7											
8											
9	**PCE (mg/L)**										
10											
11						**General Statistics**					
12				Number of Valid Samples	6			Number of Detected Data	4		
13				Number of Unique Samples	4			Number of Non-Detect Data	2		
14								Percent Non-Detects	33.33%		
15											
16				**Raw Statistics**				**Log-transformed Statistics**			
17				Minimum Detected	0.00027			Minimum Detected	-8.217		
18				Maximum Detected	0.0026			Maximum Detected	-5.952		
19				Mean of Detected	0.00131			Mean of Detected	-7.035		
20				SD of Detected	0.00113			SD of Detected	1.097		
21				Minimum Non-Detect	0.001			Minimum Non-Detect	-6.908		
22				Maximum Non-Detect	0.001			Maximum Non-Detect	-6.908		
23											
24											
25						**UCL Statistics**					
26				**Normal Distribution Test with Detected Values Only**				**Lognormal Distribution Test with Detected Values Only**			
27				Shapiro Wilk Test Statistic	0.887			Shapiro Wilk Test Statistic	0.895		
28				5% Shapiro Wilk Critical Value	0.748			5% Shapiro Wilk Critical Value	0.748		
29				**Data appear Normal at 5% Significance Level**				**Data appear Lognormal at 5% Significance Level**			
30											
31				**Assuming Normal Distribution**				**Assuming Lognormal Distribution**			
32				DL/2 Substitution Method				DL/2 Substitution Method			
33				Mean	0.00104			Mean	-7.224		
34				SD	0.0009693			SD	0.899		
35				95% DL/2 (t) UCL	0.00183			95% H-Stat (DL/2) UCL	0.02		
36											
37				Maximum Likelihood Estimate(MLE) Method	N/A			Log ROS Method			
38				**MLE method failed to converge properly**				Mean in Log Scale	-7.329		
39								SD in Log Scale	0.993		
40								Mean in Original Scale	0.001		
41								SD in Original Scale	0.0009986		
42								95% Percentile Bootstrap UCL	0.00162		
43								95% BCA Bootstrap UCL	0.00177		
44											
45				**Gamma Distribution Test with Detected Values Only**				**Data Distribution Test with Detected Values Only**			
46				k star (bias corrected)	0.52			**Data appear Normal at 5% Significance Level**			
47				Theta Star	0.00251						
48				nu star	4.16						
49											

50					A-D Test Statistic	0.391	**Nonparametric Statistics**					
51					5% A-D Critical Value	0.663				Kaplan-Meier (KM) Method		
52					K-S Test Statistic	0.663					Mean	0.00099
53					5% K-S Critical Value	0.4					SD	0.0009165
54	**Data appear Gamma Distributed at 5% Significance Level**										SE of Mean	0.0004334
55											95% KM (t) UCL	0.00186
56	**Assuming Gamma Distribution**										95% KM (z) UCL	0.0017
57				Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL	0.00183
58					Minimum	0.00027					95% KM (bootstrap t) UCL	0.00167
59					Maximum	0.0026					95% KM (BCA) UCL	0.00213
60					Mean	0.00131					95% KM (Percentile Bootstrap) UCL	0.00213
61					Median	0.00131					95% KM (Chebyshev) UCL	0.00288
62					SD	0.0008866					97.5% KM (Chebyshev) UCL	0.0037
63					k star	1.122					99% KM (Chebyshev) UCL	0.0053
64					Theta star	0.00116						
65					Nu star	13.46	**Potential UCLs to Use**					
66					AppChi2	6.203					95% KM (t) UCL	0.00186
67					95% Gamma Approximate UCL	0.00283					95% KM (Percentile Bootstrap) UCL	0.00213
68					95% Adjusted Gamma UCL	N/A						
69	**Note: DL/2 is not a recommended method.**											
70												
71												
72	**Arsenic (mg/L)**											
73												
74						**General Statistics**							
75					Number of Valid Samples	6				Number of Detected Data		3
76					Number of Unique Samples	3				Number of Non-Detect Data		3
77										Percent Non-Detects		50.00%
78												
79				**Raw Statistics**						**Log-transformed Statistics**		
80					Minimum Detected	0.0044				Minimum Detected		-5.426
81					Maximum Detected	0.0349				Maximum Detected		-3.355
82					Mean of Detected	0.0158				Mean of Detected		-4.528
83					SD of Detected	0.0166				SD of Detected		1.063
84					Minimum Non-Detect	0.0037				Minimum Non-Detect		-5.599
85					Maximum Non-Detect	0.0037				Maximum Non-Detect		-5.599
86												
87												
88						**UCL Statistics**							
89				**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**		
90					Shapiro Wilk Test Statistic	0.842				Shapiro Wilk Test Statistic		0.95
91					5% Shapiro Wilk Critical Value	0.767				5% Shapiro Wilk Critical Value		0.767
92				**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**		
93												
94				**Assuming Normal Distribution**						**Assuming Lognormal Distribution**		
95					DL/2 Substitution Method					DL/2 Substitution Method		
96					Mean	0.00884				Mean		-5.41
97					SD	0.013				SD		1.177
98					95% DL/2 (t) UCL	0.0195				95% H-Stat (DL/2) UCL		0.0265

99												
100				Maximum Likelihood Estimate(MLE) Method						Log ROS Method		
101				Mean		0.00195				Mean in Log Scale		-6.329
102				SD		0.0188				SD in Log Scale		2.187
103				95% MLE (t) UCL		0.0174				Mean in Original Scale		0.00812
104				95% MLE (Tiku) UCL		0.0211				SD in Original Scale		0.0135
105										95% Percentile Bootstrap UCL		0.0177
106										95% BCA Bootstrap UCL		0.0197
107												
108			**Gamma Distribution Test with Detected Values Only**							**Data Distribution Test with Detected Values Only**		
109				k star (bias corrected)		N/A				**Data appear Normal at 5% Significance Level**		
110				Theta Star		N/A						
111				nu star		N/A						
112												
113				A-D Test Statistic		0.366				**Nonparametric Statistics**		
114				5% A-D Critical Value		N/A				Kaplan-Meier (KM) Method		
115				K-S Test Statistic		N/A				Mean		0.0101
116				5% K-S Critical Value		N/A				SD		0.0112
117			**Data not Gamma Distributed at 5% Significance Level**							SE of Mean		0.00558
118										95% KM (t) UCL		0.0214
119			**Assuming Gamma Distribution**							95% KM (z) UCL		0.0193
120				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL		0.0198
121				Minimum		N/A				95% KM (bootstrap t) UCL		0.0526
122				Maximum		N/A				95% KM (BCA) UCL		0.0349
123				Mean		N/A				95% KM (Percentile Bootstrap) UCL		0.0349
124				Median		N/A				95% KM (Chebyshev) UCL		0.0345
125				SD		N/A				97.5% KM (Chebyshev) UCL		0.045
126				k star		N/A				99% KM (Chebyshev) UCL		0.0657
127				Theta star		N/A						
128				Nu star		N/A				**Potential UCLs to Use**		
129				AppChi2		N/A				95% KM (t) UCL		0.0214
130				95% Gamma Approximate UCL		N/A				95% KM (Percentile Bootstrap) UCL		0.0349
131				95% Adjusted Gamma UCL		N/A						
132	**Note: DL/2 is not a recommended method.**											
133												
134												
135	**Barium (mg/L)**											
136												
137						**General Statistics**							
138				Number of Valid Samples	6					Number of Unique Samples	6	
139												
140			**Raw Statistics**							**Log-transformed Statistics**		
141				Minimum	0.0426					Minimum of Log Data	-3.156	
142				Maximum	0.226					Maximum of Log Data	-1.487	
143				Mean	0.126					Mean of log Data	-2.245	
144				Median	0.123					SD of log Data	0.678	
145				SD	0.0754							
146				Coefficient of Variation	0.597							
147				Skewness	0.184							

148												
149	**Relevant UCL Statistics**											
150	**Normal Distribution Test**						**Lognormal Distribution Test**					
151					Shapiro Wilk Test Statistic	0.893					Shapiro Wilk Test Statistic	0.902
152					Shapiro Wilk Critical Value	0.788					Shapiro Wilk Critical Value	0.788
153	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
154												
155	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
156					95% Student's-t UCL	0.188					95% H-UCL	0.353
157	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	0.281
158					95% Adjusted-CLT UCL	0.179					97.5% Chebyshev (MVUE) UCL	0.347
159					95% Modified-t UCL	0.189					99% Chebyshev (MVUE) UCL	0.478
160												
161	**Gamma Distribution Test**						**Data Distribution**					
162					k star (bias corrected)	1.605	**Data appear Normal at 5% Significance Level**					
163					Theta Star	0.0787						
164					nu star	19.26						
165					Approximate Chi Square Value (.05)	10.31	**Nonparametric Statistics**					
166					Adjusted Level of Significance	0.0122					95% CLT UCL	0.177
167					Adjusted Chi Square Value	8.054					95% Jackknife UCL	0.188
168											95% Standard Bootstrap UCL	0.173
169					Anderson-Darling Test Statistic	0.421					95% Bootstrap-t UCL	0.2
170					Anderson-Darling 5% Critical Value	0.701					95% Hall's Bootstrap UCL	0.159
171					Kolmogorov-Smirnov Test Statistic	0.267					95% Percentile Bootstrap UCL	0.173
172					Kolmogorov-Smirnov 5% Critical Value	0.335					95% BCA Bootstrap UCL	0.175
173	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	0.261
174											97.5% Chebyshev(Mean, Sd) UCL	0.319
175	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	0.433
176					95% Approximate Gamma UCL	0.236						
177					95% Adjusted Gamma UCL	0.302						
178												
179	**Potential UCL to Use**										Use 95% Student's-t UCL	0.188
180												
181												
182	**Beryllium (mg/L)**											
183												
184	**General Statistics**											
185					Number of Valid Samples	6					Number of Detected Data	4
186					Number of Unique Samples	4					Number of Non-Detect Data	2
187											Percent Non-Detects	33.33%
188												
189	**Raw Statistics**						**Log-transformed Statistics**					
190					Minimum Detected	0.0011					Minimum Detected	-6.812
191					Maximum Detected	0.002					Maximum Detected	-6.215
192					Mean of Detected	0.00145					Mean of Detected	-6.564
193					SD of Detected	0.0004042					SD of Detected	0.267
194					Minimum Non-Detect	0.001					Minimum Non-Detect	-6.908
195					Maximum Non-Detect	0.001					Maximum Non-Detect	-6.908
196												

	A	B	C	D	E	F	G	H	I	J	K	L
197												
198	**UCL Statistics**											
199	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
200					Shapiro Wilk Test Statistic	0.913				Shapiro Wilk Test Statistic		0.94
201					5% Shapiro Wilk Critical Value	0.748				5% Shapiro Wilk Critical Value		0.748
202	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
203												
204	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
205					DL/2 Substitution Method					DL/2 Substitution Method		
206					Mean	0.00113				Mean		-6.909
207					SD	0.000582				SD		0.574
208					95% DL/2 (t) UCL	0.00161				95% H-Stat (DL/2) UCL		0.00234
209												
210					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
211					Mean	0.00119				Mean in Log Scale		-6.816
212					SD	0.0004892				SD in Log Scale		0.448
213					95% MLE (t) UCL	0.00159				Mean in Original Scale		0.00119
214					95% MLE (Tiku) UCL	0.00163				SD in Original Scale		0.000514
215										95% Percentile Bootstrap UCL		0.00151
216										95% BCA Bootstrap UCL		0.00154
217												
218	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
219					k star (bias corrected)	4.753	**Data appear Normal at 5% Significance Level**					
220					Theta Star	0.0003051						
221					nu star	38.02						
222												
223					A-D Test Statistic	0.305	**Nonparametric Statistics**					
224					5% A-D Critical Value	0.657				Kaplan-Meier (KM) Method		
225					K-S Test Statistic	0.657				Mean		0.00133
226					5% K-S Critical Value	0.394				SD		0.00033
227	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean		0.0001556
228										95% KM (t) UCL		0.00165
229	**Assuming Gamma Distribution**									95% KM (z) UCL		0.00159
230					Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL		0.00162
231					Minimum	0.00101				95% KM (bootstrap t) UCL		0.0017
232					Maximum	0.002				95% KM (BCA) UCL		0.00167
233					Mean	0.00135				95% KM (Percentile Bootstrap) UCL		0.00165
234					Median	0.00124				95% KM (Chebyshev) UCL		0.00201
235					SD	0.0003605				97.5% KM (Chebyshev) UCL		0.0023
236					k star	9.572				99% KM (Chebyshev) UCL		0.00288
237					Theta star	0.0001409						
238					Nu star	114.9	**Potential UCLs to Use**					
239					AppChi2	91.12				95% KM (t) UCL		0.00165
240					95% Gamma Approximate UCL	0.0017				95% KM (Percentile Bootstrap) UCL		0.00165
241					95% Adjusted Gamma UCL	N/A						
242	**Note: DL/2 is not a recommended method.**											
243												
244												
245	**Calcium (mg/L)**											

246											
247	**General Statistics**										
248				Number of Valid Samples	6				Number of Unique Samples	6	
249											
250	**Raw Statistics**						**Log-transformed Statistics**				
251				Minimum	51.1				Minimum of Log Data	3.934	
252				Maximum	152				Maximum of Log Data	5.024	
253				Mean	99.77				Mean of log Data	4.552	
254				Median	99.4				SD of log Data	0.36	
255				SD	33.06						
256				Coefficient of Variation	0.331						
257				Skewness	0.215						
258											
259	**Relevant UCL Statistics**										
260	**Normal Distribution Test**						**Lognormal Distribution Test**				
261				Shapiro Wilk Test Statistic	0.97				Shapiro Wilk Test Statistic	0.942	
262				Shapiro Wilk Critical Value	0.788				Shapiro Wilk Critical Value	0.788	
263	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**				
264											
265	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**				
266				95% Student's-t UCL	127				95% H-UCL	148.5	
267	**95% UCLs (Adjusted for Skewness)**								95% Chebyshev (MVUE) UCL	164.2	
268				95% Adjusted-CLT UCL	123.2				97.5% Chebyshev (MVUE) UCL	191.9	
269				95% Modified-t UCL	127.2				99% Chebyshev (MVUE) UCL	246.4	
270											
271	**Gamma Distribution Test**						**Data Distribution**				
272				k star (bias corrected)	5.147		**Data appear Normal at 5% Significance Level**				
273				Theta Star	19.38						
274				nu star	61.76						
275				Approximate Chi Square Value (.05)	44.69		**Nonparametric Statistics**				
276				Adjusted Level of Significance	0.0122				95% CLT UCL	122	
277				Adjusted Chi Square Value	39.5				95% Jackknife UCL	127	
278									95% Standard Bootstrap UCL	119.9	
279				Anderson-Darling Test Statistic	0.266				95% Bootstrap-t UCL	126.6	
280				Anderson-Darling 5% Critical Value	0.698				95% Hall's Bootstrap UCL	131.4	
281				Kolmogorov-Smirnov Test Statistic	0.191				95% Percentile Bootstrap UCL	120.4	
282				Kolmogorov-Smirnov 5% Critical Value	0.332				95% BCA Bootstrap UCL	120.5	
283	**Data appear Gamma Distributed at 5% Significance Level**								95% Chebyshev(Mean, Sd) UCL	158.6	
284									97.5% Chebyshev(Mean, Sd) UCL	184	
285	**Assuming Gamma Distribution**								99% Chebyshev(Mean, Sd) UCL	234	
286				95% Approximate Gamma UCL	137.9						
287				95% Adjusted Gamma UCL	156						
288											
289	**Potential UCL to Use**								Use 95% Student's-t UCL	127	
290											
291											
292	**Chromium (mg/L)**										
293											
294	**General Statistics**										

Appendix E-3D
ProUCL Output
Groundwater
SWMU 43

295					Number of Valid Samples	6				Number of Unique Samples		6
296												
297					**Raw Statistics**					**Log-transformed Statistics**		
298					Minimum	0.0014				Minimum of Log Data		-6.571
299					Maximum	0.0109				Maximum of Log Data		-4.519
300					Mean	0.00415				Mean of log Data		-5.788
301					Median	0.0021				SD of log Data		0.814
302					SD	0.0038						
303					Coefficient of Variation	0.915						
304					Skewness	1.484						
305												
306					**Relevant UCL Statistics**							
307					**Normal Distribution Test**					**Lognormal Distribution Test**		
308					Shapiro Wilk Test Statistic	0.763				Shapiro Wilk Test Statistic		0.846
309					Shapiro Wilk Critical Value	0.788				Shapiro Wilk Critical Value		0.788
310					**Data not Normal at 5% Significance Level**					**Data appear Lognormal at 5% Significance Level**		
311												
312					**Assuming Normal Distribution**					**Assuming Lognormal Distribution**		
313					95% Student's-t UCL	0.00727				95% H-UCL		0.0161
314					**95% UCLs (Adjusted for Skewness)**					95% Chebyshev (MVUE) UCL		0.00974
315					95% Adjusted-CLT UCL	0.0077				97.5% Chebyshev (MVUE) UCL		0.0122
316					95% Modified-t UCL	0.00743				99% Chebyshev (MVUE) UCL		0.0171
317												
318					**Gamma Distribution Test**					**Data Distribution**		
319					k star (bias corrected)	1.01				**Data Follow Appr. Gamma Distribution at 5% Significance Level**		
320					Theta Star	0.00411						
321					nu star	12.13						
322					Approximate Chi Square Value (.05)	5.31				**Nonparametric Statistics**		
323					Adjusted Level of Significance	0.0122				95% CLT UCL		0.0067
324					Adjusted Chi Square Value	3.804				95% Jackknife UCL		0.00727
325										95% Standard Bootstrap UCL		0.00648
326					Anderson-Darling Test Statistic	0.666				95% Bootstrap-t UCL		0.0313
327					Anderson-Darling 5% Critical Value	0.706				95% Hall's Bootstrap UCL		0.0352
328					Kolmogorov-Smirnov Test Statistic	0.361				95% Percentile Bootstrap UCL		0.00648
329					Kolmogorov-Smirnov 5% Critical Value	0.336				95% BCA Bootstrap UCL		0.0072
330					**Data follow Appr. Gamma Distribution at 5% Significance Level**					95% Chebyshev(Mean, Sd) UCL		0.0109
331										97.5% Chebyshev(Mean, Sd) UCL		0.0138
332					**Assuming Gamma Distribution**					99% Chebyshev(Mean, Sd) UCL		0.0196
333					95% Approximate Gamma UCL	0.00948						
334					95% Adjusted Gamma UCL	0.0132						
335												
336					**Potential UCL to Use**					Use 95% Approximate Gamma UCL		0.00948
337												
338												
339	**Cobalt (mg/L)**											
340												
341					**General Statistics**							
342					Number of Valid Samples	6				Number of Detected Data		4
343					Number of Unique Samples	4				Number of Non-Detect Data		2

	A	B	C	D	E	F	G	H	I	J	K	L
344										Percent Non-Detects		33.33%
345												
346	**Raw Statistics**						**Log-transformed Statistics**					
347					Minimum Detected	0.0016				Minimum Detected		-6.438
348					Maximum Detected	0.0062				Maximum Detected		-5.083
349					Mean of Detected	0.00313				Mean of Detected		-5.907
350					SD of Detected	0.00208				SD of Detected		0.579
351					Minimum Non-Detect	0.001				Minimum Non-Detect		-6.908
352					Maximum Non-Detect	0.001				Maximum Non-Detect		-6.908
353												
354												
355	**UCL Statistics**											
356	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
357					Shapiro Wilk Test Statistic	0.778				Shapiro Wilk Test Statistic		0.876
358					5% Shapiro Wilk Critical Value	0.748				5% Shapiro Wilk Critical Value		0.748
359	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
360												
361	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
362					DL/2 Substitution Method					DL/2 Substitution Method		
363					Mean	0.00225				Mean		-6.472
364					SD	0.00211				SD		0.983
365					95% DL/2 (t) UCL	0.00398				95% H-Stat (DL/2) UCL		0.012
366												
367					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
368					Mean	0.00186				Mean in Log Scale		-6.429
369					SD	0.00243				SD in Log Scale		0.937
370					95% MLE (t) UCL	0.00387				Mean in Original Scale		0.00228
371					95% MLE (Tiku) UCL	0.00402				SD in Original Scale		0.00208
372										95% Percentile Bootstrap UCL		0.00368
373										95% BCA Bootstrap UCL		0.00402
374												
375	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
376					k star (bias corrected)	1.108	**Data appear Normal at 5% Significance Level**					
377					Theta Star	0.00282						
378					nu star	8.86						
379												
380					A-D Test Statistic	0.51	**Nonparametric Statistics**					
381					5% A-D Critical Value	0.659				Kaplan-Meier (KM) Method		
382					K-S Test Statistic	0.659				Mean		0.00262
383					5% K-S Critical Value	0.396				SD		0.00164
384	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean		0.0007719
385										95% KM (t) UCL		0.00417
386	**Assuming Gamma Distribution**									95% KM (z) UCL		0.00389
387					Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL		0.00405
388					Minimum	0.00127				95% KM (bootstrap t) UCL		0.00827
389					Maximum	0.0062				95% KM (BCA) UCL		0.00425
390					Mean	0.00265				95% KM (Percentile Bootstrap) UCL		0.00402
391					Median	0.00223				95% KM (Chebyshev) UCL		0.00598
392					SD	0.00179				97.5% KM (Chebyshev) UCL		0.00744

393					k star	1.964				99% KM (Chebyshev) UCL		0.0103
394					Theta star	0.00135						
395					Nu star	23.56	**Potential UCLs to Use**					
396					AppChi2	13.52				95% KM (t) UCL		0.00417
397					95% Gamma Approximate UCL	0.00463				95% KM (Percentile Bootstrap) UCL		0.00402
398					95% Adjusted Gamma UCL	N/A						
399	**Note: DL/2 is not a recommended method.**											
400												
401												
402	**Iron (mg/L)**											
403												
404	**General Statistics**											
405					Number of Valid Samples	6				Number of Detected Data		5
406					Number of Unique Samples	5				Number of Non-Detect Data		1
407										Percent Non-Detects		16.67%
408												
409	**Raw Statistics**						**Log-transformed Statistics**					
410					Minimum Detected	0.197				Minimum Detected		-1.625
411					Maximum Detected	11.8				Maximum Detected		2.468
412					Mean of Detected	7.283				Mean of Detected		1.351
413					SD of Detected	5.194				SD of Detected		1.742
414					Minimum Non-Detect	0.015				Minimum Non-Detect		-4.2
415					Maximum Non-Detect	0.015				Maximum Non-Detect		-4.2
416												
417												
418	**UCL Statistics**											
419	**Normal Distribution Test with Detected Values Only**						**Lognormal Distribution Test with Detected Values Only**					
420					Shapiro Wilk Test Statistic	0.843				Shapiro Wilk Test Statistic		0.744
421					5% Shapiro Wilk Critical Value	0.762				5% Shapiro Wilk Critical Value		0.762
422	**Data appear Normal at 5% Significance Level**						**Data not Lognormal at 5% Significance Level**					
423												
424	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
425					DL/2 Substitution Method					DL/2 Substitution Method		
426					Mean	6.071				Mean		0.31
427					SD	5.514				SD		2.988
428					95% DL/2 (t) UCL	10.61				95% H-Stat (DL/2) UCL		32359253
429												
430					Maximum Likelihood Estimate(MLE) Method					Log ROS Method		
431					Mean	5.55				Mean in Log Scale		0.723
432					SD	5.847				SD in Log Scale		2.19
433					95% MLE (t) UCL	10.36				Mean in Original Scale		6.084
434					95% MLE (Tiku) UCL	10.46				SD in Original Scale		5.496
435										95% Percentile Bootstrap UCL		9.45
436										95% BCA Bootstrap UCL		9.432
437												
438	**Gamma Distribution Test with Detected Values Only**						**Data Distribution Test with Detected Values Only**					
439					k star (bias corrected)	0.501	**Data appear Normal at 5% Significance Level**					
440					Theta Star	14.54						
441					nu star	5.008						

442												
443					A-D Test Statistic	0.648	**Nonparametric Statistics**					
444					5% A-D Critical Value	0.694				Kaplan-Meier (KM) Method		
445					K-S Test Statistic	0.694				Mean		6.102
446					5% K-S Critical Value	0.365				SD		4.996
447			**Data appear Gamma Distributed at 5% Significance Level**							SE of Mean		2.28
448										95% KM (t) UCL		10.7
449			**Assuming Gamma Distribution**							95% KM (z) UCL		9.853
450			Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL		10.72
451					Minimum	0.197				95% KM (bootstrap t) UCL		10.16
452					Maximum	11.8				95% KM (BCA) UCL		10.82
453					Mean	6.443				95% KM (Percentile Bootstrap) UCL		10.73
454					Median	6.76				95% KM (Chebyshev) UCL		16.04
455					SD	5.081				97.5% KM (Chebyshev) UCL		20.34
456					k star	0.592				99% KM (Chebyshev) UCL		28.79
457					Theta star	10.88						
458					Nu star	7.105	**Potential UCLs to Use**					
459					AppChi2	2.229				95% KM (t) UCL		10.7
460					95% Gamma Approximate UCL	20.54				95% KM (Percentile Bootstrap) UCL		10.73
461					95% Adjusted Gamma UCL	33.31						
462	**Note: DL/2 is not a recommended method.**											
463												
464												
465	**Magnesium (mg/L)**											
466												
467					**General Statistics**							
468					Number of Valid Samples	6				Number of Unique Samples		6
469												
470			**Raw Statistics**				**Log-transformed Statistics**					
471					Minimum	26				Minimum of Log Data		3.258
472					Maximum	64.1				Maximum of Log Data		4.16
473					Mean	41.18				Mean of log Data		3.676
474					Median	39.2				SD of log Data		0.314
475					SD	13.4						
476					Coefficient of Variation	0.325						
477					Skewness	0.97						
478												
479					**Relevant UCL Statistics**							
480			**Normal Distribution Test**				**Lognormal Distribution Test**					
481					Shapiro Wilk Test Statistic	0.938				Shapiro Wilk Test Statistic		0.981
482					Shapiro Wilk Critical Value	0.788				Shapiro Wilk Critical Value		0.788
483			**Data appear Normal at 5% Significance Level**				**Data appear Lognormal at 5% Significance Level**					
484												
485			**Assuming Normal Distribution**				**Assuming Lognormal Distribution**					
486					95% Student's-t UCL	52.2				95% H-UCL		57.25
487			**95% UCLs (Adjusted for Skewness)**							95% Chebyshev (MVUE) UCL		64.15
488					95% Adjusted-CLT UCL	52.5				97.5% Chebyshev (MVUE) UCL		74.11
489					95% Modified-t UCL	52.57				99% Chebyshev (MVUE) UCL		93.66
490												

491	**Gamma Distribution Test**						**Data Distribution**					
492					k star (bias corrected)	6.158	**Data appear Normal at 5% Significance Level**					
493					Theta Star	6.687						
494					nu star	73.9						
495					Approximate Chi Square Value (.05)	55.1	**Nonparametric Statistics**					
496					Adjusted Level of Significance	0.0122				95% CLT UCL	50.18	
497					Adjusted Chi Square Value	49.29				95% Jackknife UCL	52.2	
498										95% Standard Bootstrap UCL	49.41	
499					Anderson-Darling Test Statistic	0.214				95% Bootstrap-t UCL	57.91	
500					Anderson-Darling 5% Critical Value	0.698				95% Hall's Bootstrap UCL	59.1	
501					Kolmogorov-Smirnov Test Statistic	0.178				95% Percentile Bootstrap UCL	49.38	
502					Kolmogorov-Smirnov 5% Critical Value	0.332				95% BCA Bootstrap UCL	50.55	
503	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	65.02	
504										97.5% Chebyshev(Mean, Sd) UCL	75.34	
505	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	95.6	
506					95% Approximate Gamma UCL	55.23						
507					95% Adjusted Gamma UCL	61.75						
508												
509	**Potential UCL to Use**									Use 95% Student's-t UCL	52.2	
510												
511												
512	**Manganese (mg/L)**											
513												
514	**General Statistics**											
515					Number of Valid Samples	6				Number of Unique Samples	6	
516												
517	**Raw Statistics**						**Log-transformed Statistics**					
518					Minimum	0.0031				Minimum of Log Data	-5.776	
519					Maximum	0.835				Maximum of Log Data	-0.18	
520					Mean	0.17				Mean of log Data	-3.558	
521					Median	0.0136				SD of log Data	2.089	
522					SD	0.33						
523					Coefficient of Variation	1.948						
524					Skewness	2.314						
525												
526	**Relevant UCL Statistics**											
527	**Normal Distribution Test**						**Lognormal Distribution Test**					
528					Shapiro Wilk Test Statistic	0.603				Shapiro Wilk Test Statistic	0.906	
529					Shapiro Wilk Critical Value	0.788				Shapiro Wilk Critical Value	0.788	
530	**Data not Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
531												
532	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
533					95% Student's-t UCL	0.441				95% H-UCL	651.2	
534	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	0.539	
535					95% Adjusted-CLT UCL	0.528				97.5% Chebyshev (MVUE) UCL	0.716	
536					95% Modified-t UCL	0.463				99% Chebyshev (MVUE) UCL	1.065	
537												
538	**Gamma Distribution Test**						**Data Distribution**					
539					k star (bias corrected)	0.298	**Data appear Gamma Distributed at 5% Significance Level**					

540					Theta Star	0.57						
541					nu star	3.572						
542					Approximate Chi Square Value (.05)	0.56			**Nonparametric Statistics**			
543					Adjusted Level of Significance	0.0122					95% CLT UCL	0.391
544					Adjusted Chi Square Value	0.261					95% Jackknife UCL	0.441
545											95% Standard Bootstrap UCL	0.374
546					Anderson-Darling Test Statistic	0.63					95% Bootstrap-t UCL	9.884
547					Anderson-Darling 5% Critical Value	0.755					95% Hall's Bootstrap UCL	3.884
548					Kolmogorov-Smirnov Test Statistic	0.338					95% Percentile Bootstrap UCL	0.422
549					Kolmogorov-Smirnov 5% Critical Value	0.354					95% BCA Bootstrap UCL	0.559
550					**Data appear Gamma Distributed at 5% Significance Level**						95% Chebyshev(Mean, Sd) UCL	0.758
551											97.5% Chebyshev(Mean, Sd) UCL	1.012
552					**Assuming Gamma Distribution**						99% Chebyshev(Mean, Sd) UCL	1.512
553					95% Approximate Gamma UCL	1.081						
554					95% Adjusted Gamma UCL	2.317						
555												
556					**Potential UCL to Use**						Use 95% Adjusted Gamma UCL	2.317
557					**Recommended UCL exceeds the maximum observation**							
558												
559												
560	**Nickel (mg/L)**											
561												
562					**General Statistics**							
563					Number of Valid Samples	6			Number of Detected Data	5		
564					Number of Unique Samples	5			Number of Non-Detect Data	1		
565									Percent Non-Detects	16.67%		
566												
567					**Raw Statistics**				**Log-transformed Statistics**			
568					Minimum Detected	0.0012			Minimum Detected	-6.725		
569					Maximum Detected	0.0041			Maximum Detected	-5.497		
570					Mean of Detected	0.00286			Mean of Detected	-5.931		
571					SD of Detected	0.00106			SD of Detected	0.468		
572					Minimum Non-Detect	0.001			Minimum Non-Detect	-6.908		
573					Maximum Non-Detect	0.001			Maximum Non-Detect	-6.908		
574												
575												
576					**UCL Statistics**							
577					**Normal Distribution Test with Detected Values Only**				**Lognormal Distribution Test with Detected Values Only**			
578					Shapiro Wilk Test Statistic	0.934			Shapiro Wilk Test Statistic	0.836		
579					5% Shapiro Wilk Critical Value	0.762			5% Shapiro Wilk Critical Value	0.762		
580					**Data appear Normal at 5% Significance Level**				**Data appear Lognormal at 5% Significance Level**			
581												
582					**Assuming Normal Distribution**				**Assuming Lognormal Distribution**			
583					DL/2 Substitution Method				DL/2 Substitution Method			
584					Mean	0.00247			Mean	-6.21		
585					SD	0.00135			SD	0.8		
586					95% DL/2 (t) UCL	0.00358			95% H-Stat (DL/2) UCL	0.00517		
587												
588					Maximum Likelihood Estimate(MLE) Method				Log ROS Method			

589					Mean	0.00244				Mean in Log Scale		-6.11
590					SD	0.0013				SD in Log Scale		0.606
591					95% MLE (t) UCL	0.00351				Mean in Original Scale		0.00253
592					95% MLE (Tiku) UCL	0.00354				SD in Original Scale		0.00124
593										95% Percentile Bootstrap UCL		0.00327
594										95% BCA Bootstrap UCL		0.00323
595												
596	**Gamma Distribution Test with Detected Values Only**									**Data Distribution Test with Detected Values Only**		
597					k star (bias corrected)	2.883				**Data appear Normal at 5% Significance Level**		
598					Theta Star	0.0009922						
599					nu star	28.83						
600												
601					A-D Test Statistic	0.467				**Nonparametric Statistics**		
602					5% A-D Critical Value	0.68				Kaplan-Meier (KM) Method		
603					K-S Test Statistic	0.68				Mean		0.00258
604					5% K-S Critical Value	0.358				SD		0.00106
605	**Data appear Gamma Distributed at 5% Significance Level**									SE of Mean		0.0004855
606										95% KM (t) UCL		0.00356
607				**Assuming Gamma Distribution**						95% KM (z) UCL		0.00338
608				Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL		0.00366
609					Minimum	0.0012				95% KM (bootstrap t) UCL		0.0033
610					Maximum	0.0041				95% KM (BCA) UCL		0.00343
611					Mean	0.00259				95% KM (Percentile Bootstrap) UCL		0.0034
612					Median	0.00285				95% KM (Chebyshev) UCL		0.0047
613					SD	0.00115				97.5% KM (Chebyshev) UCL		0.00562
614					k star	2.682				99% KM (Chebyshev) UCL		0.00741
615					Theta star	0.0009672						
616					Nu star	32.19				**Potential UCLs to Use**		
617					AppChi2	20.22				95% KM (t) UCL		0.00356
618					95% Gamma Approximate UCL	0.00413				95% KM (Percentile Bootstrap) UCL		0.0034
619					95% Adjusted Gamma UCL	0.00495						
620	**Note: DL/2 is not a recommended method.**											
621												
622												
623	**Potassium (mg/L)**											
624												
625						**General Statistics**						
626					Number of Valid Samples	6				Number of Unique Samples		6
627												
628				**Raw Statistics**						**Log-transformed Statistics**		
629					Minimum	2.31				Minimum of Log Data		0.837
630					Maximum	3.6				Maximum of Log Data		1.281
631					Mean	2.797				Mean of log Data		1.017
632					Median	2.78				SD of log Data		0.162
633					SD	0.469						
634					Coefficient of Variation	0.168						
635					Skewness	0.955						
636												
637						**Relevant UCL Statistics**						

	A	B	C	D	E	F	G	H	I	J	K	L
638	**Normal Distribution Test**						**Lognormal Distribution Test**					
639					Shapiro Wilk Test Statistic	0.917					Shapiro Wilk Test Statistic	0.938
640					Shapiro Wilk Critical Value	0.788					Shapiro Wilk Critical Value	0.788
641	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
642												
643	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
644					95% Student's-t UCL	3.182					95% H-UCL	3.248
645	**95% UCLs (Adjusted for Skewness)**										95% Chebyshev (MVUE) UCL	3.602
646					95% Adjusted-CLT UCL	3.191					97.5% Chebyshev (MVUE) UCL	3.951
647					95% Modified-t UCL	3.195					99% Chebyshev (MVUE) UCL	4.636
648												
649	**Gamma Distribution Test**						**Data Distribution**					
650					k star (bias corrected)	22.58	**Data appear Normal at 5% Significance Level**					
651					Theta Star	0.124						
652					nu star	270.9						
653					Approximate Chi Square Value (.05)	233.8	**Nonparametric Statistics**					
654					Adjusted Level of Significance	0.0122					95% CLT UCL	3.111
655					Adjusted Chi Square Value	221.3					95% Jackknife UCL	3.182
656											95% Standard Bootstrap UCL	3.076
657					Anderson-Darling Test Statistic	0.288					95% Bootstrap-t UCL	3.302
658					Anderson-Darling 5% Critical Value	0.697					95% Hall's Bootstrap UCL	3.395
659					Kolmogorov-Smirnov Test Statistic	0.183					95% Percentile Bootstrap UCL	3.08
660					Kolmogorov-Smirnov 5% Critical Value	0.332					95% BCA Bootstrap UCL	3.135
661	**Data appear Gamma Distributed at 5% Significance Level**										95% Chebyshev(Mean, Sd) UCL	3.631
662											97.5% Chebyshev(Mean, Sd) UCL	3.991
663	**Assuming Gamma Distribution**										99% Chebyshev(Mean, Sd) UCL	4.7
664					95% Approximate Gamma UCL	3.241						
665					95% Adjusted Gamma UCL	3.424						
666												
667	**Potential UCL to Use**										Use 95% Student's-t UCL	3.182
668												
669												
670	**Sodium (mg/L)**											
671												
672	**General Statistics**											
673					Number of Valid Samples	6					Number of Unique Samples	6
674												
675	**Raw Statistics**						**Log-transformed Statistics**					
676					Minimum	5.35					Minimum of Log Data	1.677
677					Maximum	15					Maximum of Log Data	2.708
678					Mean	9.565					Mean of log Data	2.202
679					Median	9.345					SD of log Data	0.37
680					SD	3.46						
681					Coefficient of Variation	0.362						
682					Skewness	0.518						
683												
684	**Relevant UCL Statistics**											
685	**Normal Distribution Test**						**Lognormal Distribution Test**					
686					Shapiro Wilk Test Statistic	0.976					Shapiro Wilk Test Statistic	0.988

Appendix E-3D
ProUCL Output
Groundwater
SWMU 43

687				Shapiro Wilk Critical Value	0.788					Shapiro Wilk Critical Value	0.788	
688	**Data appear Normal at 5% Significance Level**						**Data appear Lognormal at 5% Significance Level**					
689												
690	**Assuming Normal Distribution**						**Assuming Lognormal Distribution**					
691				95% Student's-t UCL	12.41					95% H-UCL	14.42	
692	**95% UCLs (Adjusted for Skewness)**									95% Chebyshev (MVUE) UCL	15.88	
693				95% Adjusted-CLT UCL	12.21					97.5% Chebyshev (MVUE) UCL	18.61	
694				95% Modified-t UCL	12.46					99% Chebyshev (MVUE) UCL	23.97	
695												
696	**Gamma Distribution Test**						**Data Distribution**					
697				k star (bias corrected)	4.663		**Data appear Normal at 5% Significance Level**					
698				Theta Star	2.051							
699				nu star	55.96							
700				Approximate Chi Square Value (.05)	39.76		**Nonparametric Statistics**					
701				Adjusted Level of Significance	0.0122					95% CLT UCL	11.89	
702				Adjusted Chi Square Value	34.9					95% Jackknife UCL	12.41	
703										95% Standard Bootstrap UCL	11.76	
704				Anderson-Darling Test Statistic	0.158					95% Bootstrap-t UCL	12.92	
705				Anderson-Darling 5% Critical Value	0.698					95% Hall's Bootstrap UCL	13.72	
706				Kolmogorov-Smirnov Test Statistic	0.144					95% Percentile Bootstrap UCL	11.68	
707				Kolmogorov-Smirnov 5% Critical Value	0.333					95% BCA Bootstrap UCL	11.87	
708	**Data appear Gamma Distributed at 5% Significance Level**									95% Chebyshev(Mean, Sd) UCL	15.72	
709										97.5% Chebyshev(Mean, Sd) UCL	18.39	
710	**Assuming Gamma Distribution**									99% Chebyshev(Mean, Sd) UCL	23.62	
711				95% Approximate Gamma UCL	13.46							
712				95% Adjusted Gamma UCL	15.34							
713												
714	**Potential UCL to Use**									Use 95% Student's-t UCL	12.41	
715												

Appendix E-4

J&E Model

DATA ENTRY SHEET

GW-SCREEN Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION
(enter "X" in "YES" box and initial groundwater conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial groundwater conc., C_W (µg/L)	Chemical
127184	2.60E+00	Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER SCS soil type directly above water table	ENTER Average soil/ groundwater temperature, T_S (°C)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
200	655	SI	16.96	5

MORE ↓

ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)		ENTER User-defined vandose zone soil vapor permeability, k_v (cm^2)	ENTER Vadose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, ρ_b^V (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)
SI			SI	1.35	0.489	0.167

MORE ↓

ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)
1.0E-06	1	70	30	30	350

Used to calculate risk-based groundwater concentration.

END

Appendix E-5

Goodness-of-fit Test Statistics

And

Background Statistical Comparisons

Appendix E.5A
Goodness-of-Fit Test Statistics

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Arsenic (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	28	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	28	1.5	10.2	3.732	2.75	2.33

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	3.494	3.143	1.068	1.167	0.532	0.456

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.898	0.898	0.898	0.898

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.803	0.924	Data Not Normal
Lilliefors (Full: no NDs)	0.203	0.167	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.969	0.969	0.969	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	1.02	0.752	
Kolmogorov-Smirnov (Full: no NDs)	0.165	0.166	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.972	0.972	0.972	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.932	0.924	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.138	0.167	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5A
Goodness-of-Fit Test Statistics

Arsenic (mg/kg) (swmu 43 ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	10	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	10	1.2	17.7	3.79	2.3	4.925

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	1.551	1.152	2.444	0.977	0.733	0.75

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.673	0.673	0.673	0.673

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.485	0.842	Data Not Normal
Lilliefors (Full: no NDs)	0.456	0.28	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.835	0.835	0.835	0.835

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	1.565	0.739	
Kolmogorov-Smirnov (Full: no NDs)	0.387	0.271	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.853	0.853	0.853	0.853

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.758	0.842	Data Not Lognormal
Lilliefors (Full: no NDs)	0.316	0.28	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Selenium (mg.kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	2	26	92.86%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	26	N/A	N/A	N/A	N/A	N/A
Statistics (Detects Only)	2	N/A	N/A	N/A	N/A	N/A

Appendix E.5A
Goodness-of-Fit Test Statistics

Statistics (All: NDs treated as DL value)	28	N/A	N/A	N/A	N/A	N/A
Statistics (All: NDs treated as DL/2 value)	28	N/A	N/A	N/A	N/A	N/A
Statistics (Normal ROS Estimated Data)	28	N/A	N/A	N/A	N/A	N/A

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	N/A	N/A	N/A	N/A

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	N/A	N/A	
Lilliefors (Detects Only)	N/A	N/A	
Shapiro-Wilks (NDs = DL)	N/A	N/A	
Lilliefors (NDs = DL)	N/A	N/A	
Shapiro-Wilks (NDs = DL/2)	N/A	N/A	
Lilliefors (NDs = DL/2)	N/A	N/A	
Shapiro-Wilks (Normal ROS Estimates)	N/A	N/A	
Lilliefors (Normal ROS Estimates)	N/A	N/A	

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	N/A	N/A	N/A	N/A

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	N/A	N/A	
Kolmogorov-Smirnov (Detects Only)	N/A	N/A	
Anderson-Darling (NDs = DL)	N/A	N/A	
Kolmogorov-Smirnov (NDs = DL)	N/A	N/A	
Anderson-Darling (NDs = DL/2)	N/A	N/A	
Kolmogorov-Smirnov (NDs = DL/2)	N/A	N/A	
Anderson-Darling (Gamma ROS Estimates)	N/A	N/A	
Kolmogorov-Smirnov (Gamma ROS Est.)	N/A	N/A	

Note: Substitution methods such as DL or DL/2 are not recommended.

Selenium (mg.kg) (swmu 43 ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	8	2	20.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	2	0.11	0.12	0.115	0.115	0.00707
Statistics (Detects Only)	8	0.31	5.8	3.664	4.9	2.45
Statistics (All: NDs treated as DL value)	10	0.11	5.8	2.954	2.85	2.629
Statistics (All: NDs treated as DL/2 value)	10	0.055	5.8	2.943	2.85	2.642
Statistics (Normal ROS Estimated Data)	10	-1.727	5.8	2.586	2.85	3.136
Statistics (Gamma ROS Estimated Data)	10	0.31	5.8	3.081	2.85	2.486

Appendix E.5A
Goodness-of-Fit Test Statistics

Statistics (Lognormal ROS Estimated Data)	10	0.21	5.8	2.973	2.85	2.606

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.375	1.029	2.665	0.893	1.158	1.297
Statistics (NDs = DL)	0.747	0.59	3.954	0.281	1.644	5.843
Statistics (NDs = DL/2)	0.652	0.523	4.514	0.143	1.882	13.18
Statistics (Gamma ROS Estimates)	1.207	0.912	2.553	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	0.402	1.454	3.617

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.9	0.902	0.904	0.932

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.78	0.818	Data Not Normal
Lilliefors (Detects Only)	0.261	0.313	Data Appear Normal
Shapiro-Wilks (NDs = DL)	0.778	0.842	Data Not Normal
Lilliefors (NDs = DL)	0.235	0.28	Data Appear Normal
Shapiro-Wilks (NDs = DL/2)	0.781	0.842	Data Not Normal
Lilliefors (NDs = DL/2)	0.233	0.28	Data Appear Normal
Shapiro-Wilks (Normal ROS Estimates)	0.839	0.842	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.219	0.28	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.758	0.778	0.764	0.82

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	0.906	0.73	
Kolmogorov-Smirnov (Detects Only)	0.318	0.3	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	0.82	0.757	
Kolmogorov-Smirnov (NDs = DL)	0.273	0.276	Data appear Approximate Gamma Distribution
Anderson-Darling (NDs = DL/2)	0.787	0.765	
Kolmogorov-Smirnov (NDs = DL/2)	0.275	0.278	Data appear Approximate Gamma Distribution
Anderson-Darling (Gamma ROS Estimates)	0.956	0.745	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.263	0.273	Data appear Approximate Gamma Distribution

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.891	0.921	0.916	0.916

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Detects Only)	0.78	0.818	Data Not Lognormal
Lilliefors (Detects Only)	0.32	0.313	Data Not Lognormal

Appendix E.5A
Goodness-of-Fit Test Statistics

Shapiro-Wilks (NDs = DL)	0.821	0.842	Data Not Lognormal
Lilliefors (NDs = DL)	0.267	0.28	Data Appear Lognormal
Shapiro-Wilks (NDs = DL/2)	0.814	0.842	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.262	0.28	Data Appear Lognormal
Shapiro-Wilks (Lognormal ROS Estimates)	0.805	0.842	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.271	0.28	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Zinc (mg/kg) (rfaap bkgrd-ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	28	0	28	28	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	28	7.1	216	41.21	29.7	40.24

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	1.826	1.654	22.56	3.421	0.761	0.223

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.798	0.798	0.798	0.798

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.665	0.924	Data Not Normal
Lilliefors (Full: no NDs)	0.203	0.167	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.913	0.913	0.913	0.913

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.54	0.76	
Kolmogorov-Smirnov (Full: no NDs)	0.105	0.168	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.985	0.985	0.985	0.985

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.975	0.924	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.1	0.167	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5A
Goodness-of-Fit Test Statistics

Zinc (mg/kg) (swmu 43 ss)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	10	0	10	10	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	10	48.7	105	71.23	67.2	19.43

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	15.44	10.88	4.613	4.233	0.268	0.0634

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.971	0.971	0.971	0.971

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.926	0.842	Data Appear Normal
Lilliefors (Full: no NDs)	0.166	0.28	Data Appear Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.981	0.981	0.981	0.981

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.313	0.725	
Kolmogorov-Smirnov (Full: no NDs)	0.174	0.266	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.98	0.98	0.98	0.98

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.942	0.842	Data Appear Lognormal
Lilliefors (Full: no NDs)	0.159	0.28	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5A
RFAAP SWMU 43 Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Arsenic (mg/kg)(swmu 43 ss)
Background Data: Arsenic (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	9	24
Minimum	1.2	1.5
Maximum	17.7	10.2
Mean	3.79	3.732
Median	2.3	2.75
SD	4.925	2.33
SE of Mean	1.558	0.44

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	159
WMW Test U-Stat	104
WMW Critical Value (0.050)	217
Approximate P-Value	0.887

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

Appendix E.5A
RFAAP SWMU 43 Surface Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Selenium (mg.kg)(swmu 43 ss)
Background Data: Selenium (mg.kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Data	10	28
Number of Non-Detect Data	2	26
Number of Detect Data	8	2
Minimum Non-Detect	0.11	0.14
Maximum Non-Detect	0.12	0.36
Percent Non detects	20.00%	92.86%
Minimum Detected	0.31	0.64
Maximum Detected	5.8	0.77
Mean of Detected Data	3.664	0.705
Median of Detected Data	4.9	0.705
SD of Detected Data	2.45	0.0919

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	4.559
Critical z (0.95)	1.645
P-Value	2.57E-06

Conclusion with Alpha = 0.05
Reject H0, Conclude Site > Background
P-Value < alpha (0.05)

Appendix E.5A
RFAAP SWMU 43 Surface Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_SS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Zinc (mg/kg)(swmu 43 ss)
Background Data: Zinc (mg/kg)(rfaap bkgrd-ss)

Raw Statistics

	Site	Background
Number of Valid Observations	10	28
Number of Distinct Observations	10	28
Minimum	48.7	7.1
Maximum	105	216
Mean	71.23	41.21
Median	67.2	29.7
SD	19.43	40.24
SE of Mean	6.143	7.605

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	294
WMW Test U-Stat	239
WMW Critical Value (0.050)	217
Approximate P-Value	5.47E-04

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

Appendix E.5B
Goodness-of-Fit Test Statistics

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Arsenic (mg/kg) (rfaap bkgrd ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	79	0	79	76	3	3.80%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	3	0.09	0.12	0.103	0.1	0.0153
Statistics (Detects Only)	76	1.2	35.9	4.989	3.2	5.36
Statistics (All: NDs treated as DL value)	79	0.09	35.9	4.804	3.1	5.339
Statistics (All: NDs treated as DL/2 value)	79	0.045	35.9	4.802	3.1	5.341
Statistics (Normal ROS Estimated Data)	79	-5.169	35.9	4.604	3.1	5.608
Statistics (Gamma ROS Estimated Data)	79	1E-09	35.9	4.8	3.1	5.343
Statistics (Lognormal ROS Estimated Data)	79	0.728	35.9	4.828	3.1	5.32

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.819	1.759	2.742	1.308	0.692	0.529
Statistics (NDs = DL)	1.401	1.356	3.429	1.172	0.968	0.826
Statistics (NDs = DL/2)	1.323	1.281	3.631	1.146	1.067	0.932
Statistics (Gamma ROS Estimates)	0.568	0.555	8.454	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	1.246	0.748	0.6

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.765	0.778	0.778	0.817

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.282	0.102	Data Not Normal
Lilliefors (NDs = DL)	0.279	0.0997	Data Not Normal
Lilliefors (NDs = DL/2)	0.279	0.0997	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.263	0.0997	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.916	0.932	0.935	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	4.409	0.766	
Kolmogorov-Smirnov (Detects Only)	0.213	0.104	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	3.469	0.772	
Kolmogorov-Smirnov (NDs = DL)	0.182	0.102	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	3.587	0.774	
Kolmogorov-Smirnov (NDs = DL/2)	0.176	0.103	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	10.23	0.812	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.332	0.106	Data Not Gamma Distributed

Appendix E.5B
Goodness-of-Fit Test Statistics

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.958	0.919	0.886	0.974

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.151	0.102	Data Not Lognormal
Lilliefors (NDs = DL)	0.159	0.0997	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.187	0.0997	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.134	0.0997	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Arsenic (mg/kg) (swmu 43 ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	30	0	30	30	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	30	1.1	17.7	2.998	2.05	3.182

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	2.145	1.952	1.398	0.847	0.616	0.727

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.711	0.711	0.711	0.711

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.536	0.927	Data Not Normal
Lilliefors (Full: no NDs)	0.321	0.162	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.857	0.857	0.857	0.857

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	2.417	0.758	
Kolmogorov-Smirnov (Full: no NDs)	0.232	0.162	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.922	0.922	0.922	0.922

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.858	0.927	Data Not Lognormal
Lilliefors (Full: no NDs)	0.182	0.162	Data Not Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5B
Goodness-of-Fit Test Statistics

Goodness-of-Fit Test Statistics for Full Data Sets without Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Aluminum (mg/kg) (rfaap bkgrd ts)

Raw Statistics

Number of Valid Observations	79
Number of Distinct Observations	75
Minimum	3620
Maximum	47900
Mean of Raw Data	14204
Standard Deviation of Raw Data	9433
Kstar	2.689
Mean of Log Transformed Data	9.371
Standard Deviation of Log Transformed Data	0.618

Normal Distribution Test Results

Correlation Coefficient R	0.923
Lilliefors Test Statistic	0.15
Lilliefors Critical (0.95) Value	0.0997

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.988
A-D Test Statistic	0.604
A-D Critical (0.95) Value	0.76
K-S Test Statistic	0.0772
K-S Critical(0.95) Value	0.101

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.995
Lilliefors Test Statistic	0.0626
Lilliefors Critical (0.95) Value	0.0997

Data appear Lognormal at (0.05) Significance Level

Aluminum (mg/kg) (swmu 43 ts)

Raw Statistics

Number of Valid Observations	30
Number of Distinct Observations	25
Minimum	4620
Maximum	15600
Mean of Raw Data	11046
Standard Deviation of Raw Data	2599
Kstar	14.36
Mean of Log Transformed Data	9.278

Appendix E.5B
Goodness-of-Fit Test Statistics

Standard Deviation of Log Transformed Data	0.27

Normal Distribution Test Results

Correlation Coefficient R	0.983
Shapiro Wilk Test Statistic	0.964
Shapiro Wilk Critical (0.95) Value	0.927
Lilliefors Test Statistic	0.108
Lilliefors Critical (0.95) Value	0.162

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.963
A-D Test Statistic	0.713
A-D Critical (0.95) Value	0.745
K-S Test Statistic	0.141
K-S Critical(0.95) Value	0.16

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.946
Shapiro Wilk Test Statistic	0.902
Shapiro Wilk Critical (0.95) Value	0.927
Lilliefors Test Statistic	0.158
Lilliefors Critical (0.95) Value	0.162

Data not Lognormal at (0.05) Significance Level

Iron (mg/kg) (rfaap bkgrd ts)

Raw Statistics

Number of Valid Observations	79
Number of Distinct Observations	72
Minimum	7250
Maximum	67700
Mean of Raw Data	26963
Standard Deviation of Raw Data	11990
Kstar	4.441
Mean of Log Transformed Data	10.09
Standard Deviation of Log Transformed Data	0.508

Normal Distribution Test Results

Correlation Coefficient R	0.979
Lilliefors Test Statistic	0.0648
Lilliefors Critical (0.95) Value	0.0997

Data appear Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.984
A-D Test Statistic	0.831
A-D Critical (0.95) Value	0.755

Appendix E.5B
Goodness-of-Fit Test Statistics

K-S Test Statistic	0.082
K-S Critical(0.95) Value	0.101

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.97
Lilliefors Test Statistic	0.115
Lilliefors Critical (0.95) Value	0.0997

Data not Lognormal at (0.05) Significance Level

Iron (mg/kg) (swmu 43 ts)

Raw Statistics

Number of Valid Observations	30
Number of Distinct Observations	28
Minimum	9750
Maximum	21700
Mean of Raw Data	17668
Standard Deviation of Raw Data	3245
Kstar	23.73
Mean of Log Transformed Data	9.76
Standard Deviation of Log Transformed Data	0.207

Normal Distribution Test Results

Correlation Coefficient R	0.96
Shapiro Wilk Test Statistic	0.912
Shapiro Wilk Critical (0.95) Value	0.927
Lilliefors Test Statistic	0.158
Lilliefors Critical (0.95) Value	0.162

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.934
A-D Test Statistic	1.149
A-D Critical (0.95) Value	0.744
K-S Test Statistic	0.185
K-S Critical(0.95) Value	0.16

Data not Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.931
Shapiro Wilk Test Statistic	0.863
Shapiro Wilk Critical (0.95) Value	0.927
Lilliefors Test Statistic	0.196
Lilliefors Critical (0.95) Value	0.162

Data not Lognormal at (0.05) Significance Level

Manganese (mg/kg) (rfaap bkgrd ts)

Raw Statistics

Appendix E.5B
Goodness-of-Fit Test Statistics

Number of Valid Observations	79
Number of Distinct Observations	78
Minimum	16.7
Maximum	2040
Mean of Raw Data	471.4
Standard Deviation of Raw Data	467.1
Kstar	1.087
Mean of Log Transformed Data	5.647
Standard Deviation of Log Transformed Data	1.118

Normal Distribution Test Results

Correlation Coefficient R	0.894
Lilliefors Test Statistic	0.165
Lilliefors Critical (0.95) Value	0.0997

Data not Normal at (0.05) Significance Level

Gamma Distribution Test Results

Correlation Coefficient R	0.982
A-D Test Statistic	0.359
A-D Critical (0.95) Value	0.779
K-S Test Statistic	0.0515
K-S Critical(0.95) Value	0.103

Data appear Gamma Distributed at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.985
Lilliefors Test Statistic	0.093
Lilliefors Critical (0.95) Value	0.0997

Data appear Lognormal at (0.05) Significance Level

Manganese (mg/kg) (swmu 43 ts)

Raw Statistics

Number of Valid Observations	30
Number of Distinct Observations	29
Minimum	84.2
Maximum	1710
Mean of Raw Data	508.4
Standard Deviation of Raw Data	279.8
Kstar	3.79
Mean of Log Transformed Data	6.107
Standard Deviation of Log Transformed Data	0.527

Normal Distribution Test Results

Correlation Coefficient R	0.853
Shapiro Wilk Test Statistic	0.763
Shapiro Wilk Critical (0.95) Value	0.927
Lilliefors Test Statistic	0.196
Lilliefors Critical (0.95) Value	0.162

Data not Normal at (0.05) Significance Level

Appendix E.5B
Goodness-of-Fit Test Statistics

Gamma Distribution Test Results

Correlation Coefficient R	0.905
A-D Test Statistic	0.856
A-D Critical (0.95) Value	0.749
K-S Test Statistic	0.135
K-S Critical(0.95) Value	0.161

Data follow Appr. Gamma Distribution at (0.05) Significance Level

Lognormal Distribution Test Results

Correlation Coefficient R	0.939
Shapiro Wilk Test Statistic	0.91
Shapiro Wilk Critical (0.95) Value	0.927
Lilliefors Test Statistic	0.16
Lilliefors Critical (0.95) Value	0.162

Data not Lognormal at (0.05) Significance Level

Goodness-of-Fit Test Statistics for Data Sets with Non-Detects

User Selected Options

From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	0.95

Cobalt (mg/kg) (rfaap bkgrd ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	79	0	79	56	23	29.11%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Non-Detects Only)	23	0.11	0.84	0.587	0.73	0.286
Statistics (Detects Only)	56	5.9	130	22.23	13.3	23.94
Statistics (All: NDs treated as DL value)	79	0.11	130	15.93	11.4	22.41
Statistics (All: NDs treated as DL/2 value)	79	0.055	130	15.84	11.4	22.47
Statistics (Normal ROS Estimated Data)	79	-40.83	130	8.784	11.4	29.44
Statistics (Gamma ROS Estimated Data)	79	1E-09	130	17.57	11.9	21.54
Statistics (Lognormal ROS Estimated Data)	79	1.86	130	16.76	11.4	21.87

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Detects Only)	1.78	1.721	12.49	2.795	0.701	0.251
Statistics (NDs = DL)	0.61	0.595	26.11	1.758	1.787	1.017
Statistics (NDs = DL/2)	0.523	0.511	30.31	1.556	2.08	1.337
Statistics (Gamma ROS Estimates)	0.504	0.494	34.83	--	--	--
Statistics (Lognormal ROS Estimates)	--	--	--	2.331	0.947	0.406

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.767	0.788	0.789	0.923

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.263	0.118	Data Not Normal

Appendix E.5B
Goodness-of-Fit Test Statistics

Lilliefors (NDs = DL)	0.24	0.0997	Data Not Normal
Lilliefors (NDs = DL/2)	0.241	0.0997	Data Not Normal
Lilliefors (Normal ROS Estimates)	0.17	0.0997	Data Not Normal

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.914	0.965	0.969	0.961

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Detects Only)	3.203	0.765	
Kolmogorov-Smirnov (Detects Only)	0.162	0.121	Data Not Gamma Distributed
Anderson-Darling (NDs = DL)	2.127	0.807	
Kolmogorov-Smirnov (NDs = DL)	0.155	0.105	Data Not Gamma Distributed
Anderson-Darling (NDs = DL/2)	2.851	0.816	
Kolmogorov-Smirnov (NDs = DL/2)	0.171	0.106	Data Not Gamma Distributed
Anderson-Darling (Gamma ROS Estimates)	9.036	0.818	
Kolmogorov-Smirnov (Gamma ROS Est.)	0.36	0.106	Data Not Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.956	0.941	0.924	0.986

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Lilliefors (Detects Only)	0.13	0.118	Data Not Lognormal
Lilliefors (NDs = DL)	0.213	0.0997	Data Not Lognormal
Lilliefors (NDs = DL/2)	0.251	0.0997	Data Not Lognormal
Lilliefors (Lognormal ROS Estimates)	0.0915	0.0997	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Cobalt (mg/kg) (swmu 43 ts)

	Num Obs	Num Miss	Num Valid	Detects	NDs	% NDs
Raw Statistics	30	0	30	30	0	0.00%

	Number	Minimum	Maximum	Mean	Median	SD
Statistics (Full: no NDs)	30	3.8	16.5	9.533	9.6	2.409

	K Hat	K Star	Theta Hat	Log Mean	Log Stdv	Log CV
Statistics (Full: no NDs)	14.56	13.13	0.655	2.22	0.281	0.126

Normal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Normal ROS
Correlation Coefficient R	0.972	0.972	0.972	0.972

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.964	0.927	Data Appear Normal
Lilliefors (Full: no NDs)	0.0963	0.162	Data Appear Normal

Appendix E.5B
Goodness-of-Fit Test Statistics

Gamma Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Gamma ROS
Correlation Coefficient R	0.969	0.969	0.969	0.969

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Anderson-Darling (Full: no NDs)	0.623	0.745	
Kolmogorov-Smirnov (Full: no NDs)	0.132	0.16	Data Appear Gamma Distributed

Lognormal Distribution Test Results

	No NDs	NDs = DL	NDs = DL/2	Log ROS
Correlation Coefficient R	0.947	0.947	0.947	0.947

	Test value	Crit. (0.05)	Conclusion with Alpha(0.05)
Shapiro-Wilks (Full: no NDs)	0.917	0.927	Data Not Lognormal
Lilliefors (Full: no NDs)	0.152	0.162	Data Appear Lognormal

Note: Substitution methods such as DL or DL/2 are not recommended.

Appendix E.5B
RFAAP SWMU 43 Total Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Arsenic (mg/kg)(swmu 43 ts)
Background Data: Arsenic (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Data	30	79
Number of Non-Detect Data	0	3
Number of Detect Data	30	76
Minimum Non-Detect	N/A	0.09
Maximum Non-Detect	N/A	0.12
Percent Non detects	0.00%	3.80%
Minimum Detected	1.1	1.2
Maximum Detected	17.7	35.9
Mean of Detected Data	2.998	4.989
Median of Detected Data	2.05	3.2
SD of Detected Data	3.182	5.36

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	-3.155
Critical z (0.95)	1.645
P-Value	0.999

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5B
RFAAP SWMU 43 Total Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Aluminum (mg/kg)(swmu 43 ts)
Background Data: Aluminum (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Observations	30	79
Number of Distinct Observations	25	75
Minimum	4620	3620
Maximum	15600	47900
Mean	11046	14204
Median	11400	12100
SD	2599	9433
SE of Mean	474.4	1061

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1525
WMW Test U-Stat	-0.855
WMW Critical Value (0.050)	1.645
P-Value	0.804

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5B
RFAAP SWMU 43 Total Soil vs Background Statistical Comparisons

Wilcoxon-Mann-Whitney Site vs Background Comparison Test for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Manganese (mg/kg)(swmu 43 ts)
Background Data: Manganese (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Observations	30	79
Number of Distinct Observations	29	78
Minimum	84.2	16.7
Maximum	1710	2040
Mean	508.4	471.4
Median	482.3	359
SD	279.8	467.1
SE of Mean	51.08	52.55

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Site or AOC <= Mean/Median of Background

Site Rank Sum W-Stat	1926
WMW Test U-Stat	1.866
WMW Critical Value (0.050)	1.645
P-Value	0.031

Conclusion with Alpha = 0.05

Reject H0, Conclude Site > Background

P-Value < alpha (0.05)

Appendix E.5B
RFAAP SWMU 43 Total Soil vs Background Statistical Comparisons

Gehan Site vs Background Comparison Hypothesis Test for Data Sets with Non-Detects

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0
Selected Null Hypothesis	Site or AOC Mean/Median Less Than or Equal to Background Mean/Median (Form 1)
Alternative Hypothesis	Site or AOC Mean/Median Greater Than Background Mean/Median

Area of Concern Data: Cobalt (mg/kg)(swmu 43 ts)
Background Data: Cobalt (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Data	30	79
Number of Non-Detect Data	0	23
Number of Detect Data	30	56
Minimum Non-Detect	N/A	0.11
Maximum Non-Detect	N/A	0.84
Percent Non detects	0.00%	29.11%
Minimum Detected	3.8	5.9
Maximum Detected	16.5	130
Mean of Detected Data	9.533	22.23
Median of Detected Data	9.6	13.3
SD of Detected Data	2.409	23.94

Site vs Background Gehan Test

H0: Mean/Median of Site or AOC <= Mean/Median of background

Gehan z Test Value	-0.9
Critical z (0.95)	1.645
P-Value	0.816

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Site <= Background

P-Value >= alpha (0.05)

Appendix E.5B
RFAAP SWMU 43 Total Soil vs Background Statistical Comparisons

t-Test Site vs Background Comparison for Full Data Sets without NDs

User Selected Options	
From File	H:\Risk DB\Radford\SWMU 43 - AOC P\Background\SWMU 43_ProUCL_input_TS_for BKG.wst
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference (S)	0
Selected Null Hypothesis	Site or AOC Mean Less Than or Equal to Background Mean (Form 1)
Alternative Hypothesis	Site or AOC Mean Greater Than the Background Mean

Area of Concern Data: Iron (mg/kg)(swmu 43 ts)
Background Data: Iron (mg/kg)(rfaap bkgrd ts)

Raw Statistics

	Site	Background
Number of Valid Observations	30	79
Number of Distinct Observations	28	72
Minimum	9750	7250
Maximum	21700	67700
Mean	17668	26963
Median	18150	25200
SD	3245	11990
SE of Mean	592.4	1349

Site vs Background Two-Sample t-Test

H0: Mu of Site - Mu of Background <= 0

Method	DF	t-Test Value	Critical t (0.050)	P-Value
Pooled (Equal Variance)	107	-4.177	1.659	1
Satterthwaite (Unequal Variance)	100.9	-6.309	1.66	1

Pooled SD 10375.241
Conclusion with Alpha = 0.050
*** Student t (Pooled) Test: Do Not Reject H0, Conclude Site <= Background**
*** Satterthwaite Test: Do Not Reject H0, Conclude Site <= Background**

Test of Equality of Variances

Numerator DF	Denominator DF	F-Test Value	P-Value
78	29	13.656	0

Conclusion with Alpha = 0.05
* Two variances are not equal

Appendix F

SLERA

Appendix F-1

Site Reconnaissance Photos

Photo F-1. SWMU 43 Facing North (New River visible beyond fence line).

Photo F-2. SWMU 43 Facing West.

Photo F-3. SWMU 43 Facing East.

Photo F-4. Stored trailers/truck beds at SWMU 43.

Photo F-5. Stored trailers/truck beds at SWMU 43.

Appendix F-2

SLERA Supporting Information

Table F-1
Data Used to Model Exposure[a] in the Indicator Wildlife Species

Indicator Species	Body Weight Range (average) (kg)	Average Home Range (ha) [ac]	Maximum Dietary Intake[b] (kg[dw]/day)	Average Dietary Intake[c] (kg[dw]/day)	Soil/Sed. Intake[d] (%Diet) (Avg – Max) (kg[dw]/day)	Maximum Water Intake[b] (L/day)	Average Water Intake[c] (L/day)	Trophic Level	Dietary Composition
Meadow vole (*Microtus pennsylvanicus*)	0.0170-0.0524 (0.037)	0.036 [0.089]	0.010	0.0080	(2.4%) 0.00019-0.00024	0.0070	0.0051	Herbivore	Plants: 100%
Short-tailed shrew *(Blarina brevicauda)*	0.0125-0.0225 (0.015)	0.39 [0.96]	0.0030	0.0022	(10.4%) 0.00023-0.00031	0.0033	0.0023	Insectivore	Terr. Inverts: 100%
American robin *(Turdus migratorius)*	0.0635-0.103 (0.0773)	0.48 [1.2]	0.020	0.016	(4%) 0.00064-0.00080	0.013	0.011	Omnivore	Plants: 62% Terr Inverts: 38%
Red-tailed hawk (*Buteo jamaicensis*)	0.957-1.235 (1.134)	842 [2081]	0.063	0.059	(0%)	0.068	0.064	Carnivore	Mammals: 76% Birds: 24%
Red fox *(Vulpes vulpes)*	2.95-7.04 (4.53)	892 [2204]	0.34	0.24	(2.8%) 0.0067-0.0095	0.57	0.39	Carnivore	Mammals: 65% Birds: 14% Plants: 17% Terr. Inverts: 4%
Great blue heron (*Ardea herodias*)	2.20-2.58 (2.34)	8.4 [21]	0.11	0.10	(2%) 0.0020-0.0022	0.11	0.10	Piscivore	Fish: 96% Aq. Inverts: 4%
Mink *(Mustela vison)*	0.55-1.73 (1.02)	14.1 [35]	0.11	0.070	(2%) 0.0014-0.0022	0.16	0.10	Omnivore	Plants: 18% Fish: 65% Aq. Inverts: 12% Birds: 2.5% Mammals: 2.5%

[a] From USEPA (1993), except as noted.
[b] Maximum dietary and water intake based on appropriate allometric equation using maximum body weight.
[c] Average dietary and water intake based on appropriate allometric equation using average body weight.
[d] Soil/sediment ingestion rate based on estimated percent soil in diet (dry weight), and maximum or average dietary intake.

Allometric equations for mammals and birds from USEPA (1993), as follows, where FI = food ingestion (dry weight [dw]), WI = water ingestion, Wt = body weight, kg = kilogram, L = liter, and g = gram:

Table F-1.1 (Continued)

FI (kg/day) = 0.0687 $Wt^{0.822}$ for mammals (shrew, red fox, and mink),
FI (g/day) = 0.577 $Wt^{0.727}$ for herbivores (meadow vole),
FI (g/day) = 0.301 $Wt^{0.751}$ for non-passerine birds (red-tail hawk, great blue heron),
FI (g/day) = 0.398 $Wt^{0.850}$ for passerine birds (American robin).
WI (L/day) = 0.099 $Wt^{0.90}$ (Wt in kg) for mammals,
WI (L/day) = 0.059 $Wt^{0.67}$ (Wt in kg) for birds.

ha = hectare
ac = acre, and a hectare = 2.471 acres.

Notes:
The soil ingestion rate for the shrew set equal to the rate for the American woodcock (10.4% of diet), as both species feed predominantly on earthworms.
The soil ingestion rate for the American robin set equal to 48% of the American woodcock value (0.38 x 10.4% = 4%), based on a robin diet of 38% invertebrates (earthworms).

Table
Wildlife EEQ Hazard Summary for SWMU 43

Receptor	Tier 1[a]		Tier 2[b]	
	NOAEL-Based EEQ	LOAEL-Based EEQ	NOAEL-Based EEQ	LOAEL-Based EEQ
Meadow vole	72	31	23	11
Hazard Driver(s)[c]:				
Short-tailed shrew	733	107	90	23
Hazard Driver(s)[c]:				
American robin	136	36	42	12
Hazard Driver(s)[c]:				
Red-tailed hawk	8	2.1	0.01	0.002
Hazard Driver(s)[c]:				
Red fox	40	10	0.02	0.005
Hazard Driver(s)[c]:				
Mink	327	45	2.98	0.46
Hazard Driver(s)[c]:				
Great blue heron	5	1.6	0.19	0.07
Hazard Driver(s)[c]:				

[a] Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
[b] Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR less than or equal to 1.
[c] Hazard drivers are those chemicals contributing the most to the total estimated EEQ, and the primary route of exposure associated with this driver.

Notes:
EEQ = Ecological Effects Quotient
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
FHR = Fraction home range
BW = Body weight
BAF/BCF = Bioaccumulation Factor/Bioconcentration Factor
EPC = Exposure point concentration

TABLE F-2
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR MEADOW VOLES AT SWMU 43

Hazard Estimate - Tier 1
Meadow Vole

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	4.21E+01	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	9.04E-08	NA	NA	0.00E+00	1.46E-08	0.00E+00	0.00E+00	1.05E-07	4	1.00E-06	2.50E-07	4.20E-01	1.00E-05	2.50E-06	4.20E-02
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	7.12E-02	mg/kg	NA	NA	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	1.01E-03	NA	NA	0.00E+00	1.50E-04	0.00E+00	0.00E+00	1.16E-03	8	1.40E-01	1.75E-02	6.60E-02	6.80E-01	8.50E-02	1.36E-02
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	8.88E-02	mg/kg	NA	NA	1.59E+00	1.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.25E-03	NA	NA	0.00E+00	9.30E-03	0.00E+00	0.00E+00	1.06E-02	4	6.15E-01	1.54E-01	6.86E-02	3.07E+00	7.68E-01	1.38E-02
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.40E-01	mg/kg	NA	NA	1.33E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.98E-03	NA	NA	0.00E+00	1.10E-02	0.00E+00	0.00E+00	1.30E-02	4	1.00E+00	2.50E-01	5.19E-02	1.00E+01	2.50E+00	5.19E-03
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-03	NA	NA	0.00E+00	1.46E-02	0.00E+00	0.00E+00	1.57E-02	4	6.15E-01	1.54E-01	1.02E-01	3.07E+00	7.68E-01	2.05E-02
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	6.55E-02	mg/kg	NA	NA	2.94E+00	2.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.25E-04	NA	NA	0.00E+00	9.22E-03	0.00E+00	0.00E+00	1.01E-02	4	6.15E-01	1.54E-01	6.60E-02	3.07E+00	7.68E-01	1.32E-02
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	9.35E-02	mg/kg	NA	NA	2.60E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-03	NA	NA	0.00E+00	8.87E-03	0.00E+00	0.00E+00	1.02E-02	4	6.15E-01	1.54E-01	6.63E-02	3.07E+00	7.68E-01	1.33E-02
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	8.18E-02	mg/kg	NA	NA	2.29E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-03	NA	NA	0.00E+00	8.86E-03	0.00E+00	0.00E+00	1.00E-02	4	6.15E-01	1.54E-01	6.51E-02	3.07E+00	7.68E-01	1.30E-02
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.80E-04	NA	NA	0.00E+00	2.04E-02	0.00E+00	0.00E+00	2.14E-02	4	6.15E-01	1.54E-01	1.39E-01	3.07E+00	7.68E-01	2.79E-02
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	7.28E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-03	NA	NA	0.00E+00	4.71E-03	0.00E+00	0.00E+00	5.74E-03	4	6.15E-01	1.54E-01	3.73E-02	3.07E+00	7.68E-01	7.48E-03
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E-03	NA	NA	0.00E+00	5.00E-02	0.00E+00	0.00E+00	5.16E-02	4	6.15E-01	1.54E-01	3.36E-01	3.07E+00	7.68E-01	6.73E-02
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.77E+01	mg/kg	1.75E+03	NA	1.04E-01	3.75E-02	4.66E-03	4.66E-03	6.26E-03	0.00E+00	2.50E-01	0.00E+00	NA	0.00E+00	3.91E-01	0.00E+00	0.00E+00	6.47E-01	4	1.26E-01	3.15E-02	2.05E+01	1.26E+00	3.15E-01	2.05E+00
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	9.30E-01	mg/kg	NA	NA	8.41E+00	6.43E-01	2.96E-01	2.96E-01	0.00E+00	0.00E+00	1.31E-02	NA	NA	0.00E+00	3.52E-01	0.00E+00	0.00E+00	3.65E-01	4	1.00E+00	2.50E-01	1.46E+00	1.00E+01	2.50E+00	1.46E-01
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.43E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	9.93E-02	9.93E-02	0.00E+00	0.00E+00	3.43E-01	NA	NA	0.00E+00	5.86E-01	0.00E+00	0.00E+00	9.29E-01	4	2.74E+03	6.84E+02	1.36E-03	1.37E+04	3.42E+03	2.71E-04
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.68E+01	mg/kg	NA	NA	5.15E-01	3.53E-01	6.89E-01	6.89E-01	0.00E+00	0.00E+00	2.37E-01	NA	NA	0.00E+00	3.49E+00	0.00E+00	0.00E+00	3.72E+00	8	1.17E+01	1.46E+00	2.55E+00	1.51E+01	1.89E+00	1.97E+00
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	3.62E+01	mg/kg	NA	NA	4.02E-01	5.48E-02	1.46E-01	1.46E-01	0.00E+00	0.00E+00	5.11E-01	NA	NA	0.00E+00	1.17E+00	0.00E+00	0.00E+00	1.68E+00	4	8.00E+00	2.00E+00	8.39E-01	8.00E+01	2.00E+01	8.39E-02
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	3.10E-01	mg/kg	NA	NA	3.30E+01	6.30E-01	1.05E+00	1.05E+00	0.00E+00	0.00E+00	4.38E-03	NA	NA	0.00E+00	1.15E-01	0.00E+00	0.00E+00	1.19E-01	8	1.00E+00	1.25E-01	9.55E-01	5.00E+00	6.25E-01	1.91E-01
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.36E+01	mg/kg	NA	NA	7.80E+00	5.61E-02	1.94E-01	1.94E-01	0.00E+00	0.00E+00	1.92E-01	NA	NA	0.00E+00	4.49E-01	0.00E+00	0.00E+00	6.41E-01	4	4.00E+01	1.00E+01	6.41E-02	8.00E+01	2.00E+01	3.20E-02
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	8.19E-02	NA	NA	0.00E+00	2.08E+00	0.00E+00	0.00E+00	2.16E+00	4	2.00E-01	5.00E-02	4.33E+01	3.30E-01	8.25E-02	2.62E+01
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	1.05E+02	mg/kg	NA	NA	3.75E+00	6.06E-01	1.04E+00	1.04E+00	0.00E+00	0.00E+00	1.48E+00	NA	NA	0.00E+00	3.74E+01	0.00E+00	0.00E+00	3.89E+01	4	1.60E+02	4.00E+01	9.73E-01	3.20E+02	8.00E+01	4.86E-01
																						Hazard Index (Total EEQ):			7.2E+01			3.1E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	1	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00024	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.01	kg/d
Body weight =	0.017	kg
Home range =	0.089	acres
Water intake rate =	0.007	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-3
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR MEADOW VOLES AT SWMU 43

Hazard Estimate - Tier 2
Meadow Vole

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	3.96E+00	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	3.29E-08	NA	NA	0.00E+00	5.36E-09	0.00E+00	0.00E+00	3.82E-08	4	1.00E-06	2.50E-07	1.53E-01	1.00E-05	2.50E-06	1.53E-02
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	2.18E-02	mg/kg	NA	NA	1.97E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	1.12E-04	NA	NA	0.00E+00	1.68E-05	0.00E+00	0.00E+00	1.29E-04	8	1.40E-01	1.75E-02	7.36E-03	6.80E-01	8.50E-02	1.51E-03
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	4.24E-02	mg/kg	NA	NA	1.59E+00	2.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.18E-04	NA	NA	0.00E+00	2.20E-03	0.00E+00	0.00E+00	2.42E-03	4	6.15E-01	1.54E-01	1.57E-02	3.07E+00	7.68E-01	3.15E-03
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	6.27E-02	mg/kg	NA	NA	1.33E+00	1.36E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.22E-04	NA	NA	0.00E+00	1.85E-03	0.00E+00	0.00E+00	2.17E-03	4	1.00E+00	2.50E-01	8.68E-03	1.00E+01	2.50E+00	8.68E-04
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E-04	NA	NA	0.00E+00	5.37E-03	0.00E+00	0.00E+00	5.78E-03	4	6.15E-01	1.54E-01	3.76E-02	3.07E+00	7.68E-01	7.53E-03
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	4.09E-02	mg/kg	NA	NA	2.94E+00	2.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.10E-04	NA	NA	0.00E+00	1.94E-03	0.00E+00	0.00E+00	2.15E-03	4	6.15E-01	1.54E-01	1.40E-02	3.07E+00	7.68E-01	2.80E-03
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	4.44E-02	mg/kg	NA	NA	2.60E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.28E-04	NA	NA	0.00E+00	1.72E-03	0.00E+00	0.00E+00	1.95E-03	4	6.15E-01	1.54E-01	1.27E-02	3.07E+00	7.68E-01	2.53E-03
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	4.46E-02	mg/kg	NA	NA	2.29E+00	2.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.29E-04	NA	NA	0.00E+00	2.27E-03	0.00E+00	0.00E+00	2.50E-03	4	6.15E-01	1.54E-01	1.63E-02	3.07E+00	7.68E-01	3.26E-03
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.56E-04	NA	NA	0.00E+00	7.50E-03	0.00E+00	0.00E+00	7.86E-03	4	6.15E-01	1.54E-01	5.11E-02	3.07E+00	7.68E-01	1.02E-02
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	4.10E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.11E-04	NA	NA	0.00E+00	9.76E-04	0.00E+00	0.00E+00	1.19E-03	4	6.15E-01	1.54E-01	7.72E-03	3.07E+00	7.68E-01	1.55E-03
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.06E-04	NA	NA	0.00E+00	1.84E-02	0.00E+00	0.00E+00	1.90E-02	4	6.15E-01	1.54E-01	1.23E-01	3.07E+00	7.68E-01	2.47E-02
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.06E+01	mg/kg	5.70E+02	NA	1.21E-01	3.75E-02	5.12E-03	5.12E-03	2.10E-03	0.00E+00	5.43E-02	0.00E+00	NA	0.00E+00	8.58E-02	0.00E+00	0.00E+00	1.42E-01	4	1.26E-01	3.15E-02	4.52E+00	1.26E+00	3.15E-01	4.52E-01
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	3.53E-01	mg/kg	NA	NA	1.03E+01	9.98E-01	4.93E-01	4.93E-01	0.00E+00	0.00E+00	1.81E-03	NA	NA	0.00E+00	7.61E-02	0.00E+00	0.00E+00	7.79E-02	4	1.00E+00	2.50E-01	3.12E-01	1.00E+01	2.50E+00	3.12E-02
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.09E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	1.03E-01	1.03E-01	0.00E+00	0.00E+00	1.07E-01	NA	NA	0.00E+00	1.85E-01	0.00E+00	0.00E+00	2.92E-01	4	2.74E+03	6.84E+02	4.27E-04	1.37E+04	3.42E+03	8.54E-05
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.31E+01	mg/kg	NA	NA	5.15E-01	4.10E-01	8.51E-01	8.51E-01	0.00E+00	0.00E+00	6.74E-02	NA	NA	0.00E+00	1.16E+00	0.00E+00	0.00E+00	1.23E+00	8	1.17E+01	1.46E+00	8.41E-01	1.51E+01	1.89E+00	6.52E-01
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	1.98E+01	mg/kg	NA	NA	4.52E-01	7.14E-02	2.04E-01	2.04E-01	0.00E+00	0.00E+00	1.02E-01	NA	NA	0.00E+00	3.06E-01	0.00E+00	0.00E+00	4.08E-01	4	8.00E+00	2.00E+00	2.04E-01	8.00E+01	2.00E+01	2.04E-02
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	2.17E-01	mg/kg	NA	NA	3.01E+00	7.43E-01	1.92E-01	1.92E-01	0.00E+00	0.00E+00	1.11E-03	NA	NA	0.00E+00	3.49E-02	0.00E+00	0.00E+00	3.60E-02	8	1.00E+00	1.25E-01	2.88E-01	5.00E+00	6.25E-01	5.76E-02
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.19E+01	mg/kg	NA	NA	2.08E+00	5.80E-02	2.08E-01	2.08E-01	0.00E+00	0.00E+00	6.13E-02	NA	NA	0.00E+00	1.50E-01	0.00E+00	0.00E+00	2.11E-01	4	4.00E+01	1.00E+01	2.11E-02	8.00E+01	2.00E+01	1.05E-02
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	2.98E-02	NA	NA	0.00E+00	7.65E-01	0.00E+00	0.00E+00	7.95E-01	4	2.00E-01	5.00E-02	1.59E+01	3.30E-01	8.25E-02	9.63E+00
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	8.25E+01	mg/kg	NA	NA	4.41E+00	6.75E-01	1.30E+00	1.30E+00	0.00E+00	0.00E+00	4.24E-01	NA	NA	0.00E+00	1.20E+01	0.00E+00	0.00E+00	1.25E+01	4	1.60E+02	4.00E+01	3.12E-01	3.20E+02	8.00E+01	1.56E-01

Hazard Index (Total EEQ): 2.3E+01 1.1E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	1	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00019	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.008	kg/d
Body weight =	0.037	kg
Home range =	0.089	acres
Water intake rate =	0.0051	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-4
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR SHORT-TAILED SHREWS AT SWMU 43

Hazard Estimate - Tier 1
Short-tailed Shrew

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	4.21E+01	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	1.59E-07	NA	NA	6.46E-05	0.00E+00	0.00E+00	0.00E+00	6.48E-05	8	1.00E-06	1.25E-07	5.18E+02	1.00E-05	1.25E-06	5.18E+01
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	7.12E-02	mg/kg	NA	NA	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	1.77E-03	NA	NA	1.11E+00	0.00E+00	0.00E+00	0.00E+00	1.12E+00	8	1.40E-01	1.75E-02	6.38E+01	6.80E-01	8.50E-02	1.31E+01
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	8.88E-02	mg/kg	NA	NA	1.59E+00	1.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.20E-03	NA	NA	3.39E-02	0.00E+00	0.00E+00	0.00E+00	3.61E-02	8	6.15E-01	7.69E-02	4.69E-01	3.07E+00	3.84E-01	9.40E-02
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.40E-01	mg/kg	NA	NA	1.33E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-03	NA	NA	4.47E-02	0.00E+00	0.00E+00	0.00E+00	4.82E-02	8	1.00E+00	1.25E-01	3.85E-01	1.00E+01	1.25E+00	3.85E-02
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.99E-03	NA	NA	5.00E-02	0.00E+00	0.00E+00	0.00E+00	5.20E-02	8	6.15E-01	7.69E-02	6.76E-01	3.07E+00	3.84E-01	1.35E-01
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	6.55E-02	mg/kg	NA	NA	2.94E+00	2.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.62E-03	NA	NA	4.62E-02	0.00E+00	0.00E+00	0.00E+00	4.78E-02	8	6.15E-01	7.69E-02	6.22E-01	3.07E+00	3.84E-01	1.25E-01
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	9.35E-02	mg/kg	NA	NA	2.60E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.32E-03	NA	NA	5.83E-02	0.00E+00	0.00E+00	0.00E+00	6.07E-02	8	6.15E-01	7.69E-02	7.89E-01	3.07E+00	3.84E-01	1.58E-01
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	8.18E-02	mg/kg	NA	NA	2.29E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-03	NA	NA	4.50E-02	0.00E+00	0.00E+00	0.00E+00	4.70E-02	8	6.15E-01	7.69E-02	6.11E-01	3.07E+00	3.84E-01	1.22E-01
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.72E-03	NA	NA	5.06E-02	0.00E+00	0.00E+00	0.00E+00	5.24E-02	8	6.15E-01	7.69E-02	6.81E-01	3.07E+00	3.84E-01	1.36E-01
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	7.28E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-03	NA	NA	5.00E-02	0.00E+00	0.00E+00	0.00E+00	5.18E-02	8	6.15E-01	7.69E-02	6.74E-01	3.07E+00	3.84E-01	1.35E-01
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.93E-03	NA	NA	4.96E-02	0.00E+00	0.00E+00	0.00E+00	5.25E-02	8	6.15E-01	7.69E-02	6.83E-01	3.07E+00	3.84E-01	1.37E-01
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.77E+01	mg/kg	1.75E+03	NA	1.04E-01	3.75E-02	4.66E-03	4.66E-03	4.01E-03	0.00E+00	4.39E-01	0.00E+00	NA	4.41E-01	0.00E+00	0.00E+00	0.00E+00	8.84E-01	8	1.26E-01	1.58E-02	5.61E+01	1.26E+00	1.58E-01	5.61E+00
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	9.30E-01	mg/kg	NA	NA	8.41E+00	6.43E-01	2.96E-01	2.96E-01	0.00E+00	0.00E+00	2.31E-02	NA	NA	1.88E+00	0.00E+00	0.00E+00	0.00E+00	1.90E+00	8	1.00E+00	1.25E-01	1.52E+01	1.00E+01	1.25E+00	1.52E+00
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.43E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	9.93E-02	9.93E-02	0.00E+00	0.00E+00	6.03E-01	NA	NA	1.78E+00	0.00E+00	0.00E+00	0.00E+00	2.39E+00	8	2.74E+03	3.42E+02	6.98E-03	1.37E+04	1.71E+03	1.40E-03
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.68E+01	mg/kg	NA	NA	5.15E-01	3.53E-01	6.89E-01	6.89E-01	0.00E+00	0.00E+00	4.17E-01	NA	NA	2.08E+00	0.00E+00	0.00E+00	0.00E+00	2.49E+00	8	1.17E+01	1.46E+00	1.70E+00	1.51E+01	1.89E+00	1.32E+00
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	3.62E+01	mg/kg	NA	NA	4.02E-01	5.48E-02	1.46E-01	1.46E-01	0.00E+00	0.00E+00	8.98E-01	NA	NA	3.49E+00	0.00E+00	0.00E+00	0.00E+00	4.39E+00	8	8.00E+00	1.00E+00	4.39E+00	8.00E+01	1.00E+01	4.39E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	3.10E-01	mg/kg	NA	NA	3.30E+01	6.30E-01	1.05E+00	1.05E+00	0.00E+00	0.00E+00	7.69E-03	NA	NA	2.46E+00	0.00E+00	0.00E+00	0.00E+00	2.46E+00	8	1.00E+00	1.25E-01	1.97E+01	5.00E+00	6.25E-01	3.94E+00
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.36E+01	mg/kg	NA	NA	7.80E+00	5.61E-02	1.94E-01	1.94E-01	0.00E+00	0.00E+00	3.37E-01	NA	NA	2.55E+01	0.00E+00	0.00E+00	0.00E+00	2.58E+01	8	4.00E+01	5.00E+00	5.16E+00	8.00E+01	1.00E+01	2.58E+00
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	1.44E-01	NA	NA	8.08E-01	0.00E+00	0.00E+00	0.00E+00	9.52E-01	8	2.00E-01	2.50E-02	3.81E+01	3.30E-01	4.13E-02	2.31E+01
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	1.05E+02	mg/kg	NA	NA	3.75E+00	6.06E-01	1.04E+00	1.04E+00	0.00E+00	0.00E+00	2.60E+00	NA	NA	9.45E+01	0.00E+00	0.00E+00	0.00E+00	9.71E+01	8	1.60E+02	2.00E+01	4.85E+00	3.20E+02	4.00E+01	2.43E+00
																						Hazard Index (Total EEQ):			7.3E+02			1.1E+02

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	1	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00031	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.003	kg/d
Body weight =	0.0125	kg
Home range =	0.96	acres
Water intake rate =	0.0033	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-5
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR SHORT-TAILED SHREWS AT SWMU 43

Hazard Estimate - Tier 2
Short-tailed Shrew

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	3.96E+00	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	9.82E-08	NA	NA	3.72E-06	0.00E+00	0.00E+00	0.00E+00	3.82E-06	8	1.00E-06	1.25E-07	3.06E+01	1.00E-05	1.25E-06	3.06E+00
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	2.18E-02	mg/kg	NA	NA	1.97E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	3.34E-04	NA	NA	6.31E-03	0.00E+00	0.00E+00	0.00E+00	6.64E-03	8	1.40E-01	1.75E-02	3.80E-01	6.80E-01	8.50E-02	7.81E-02
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	4.24E-02	mg/kg	NA	NA	1.59E+00	2.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.50E-04	NA	NA	9.89E-03	0.00E+00	0.00E+00	0.00E+00	1.05E-02	8	6.15E-01	7.69E-02	1.37E-01	3.07E+00	3.84E-01	2.75E-02
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	6.27E-02	mg/kg	NA	NA	1.33E+00	1.36E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.61E-04	NA	NA	1.22E-02	0.00E+00	0.00E+00	0.00E+00	1.32E-02	8	1.00E+00	1.25E-01	1.06E-01	1.00E+01	1.25E+00	1.06E-02
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-03	NA	NA	3.05E-02	0.00E+00	0.00E+00	0.00E+00	3.18E-02	8	6.15E-01	7.69E-02	4.13E-01	3.07E+00	3.84E-01	8.28E-02
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	4.09E-02	mg/kg	NA	NA	2.94E+00	2.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.27E-04	NA	NA	1.76E-02	0.00E+00	0.00E+00	0.00E+00	1.83E-02	8	6.15E-01	7.69E-02	2.37E-01	3.07E+00	3.84E-01	4.76E-02
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	4.44E-02	mg/kg	NA	NA	2.60E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.80E-04	NA	NA	1.69E-02	0.00E+00	0.00E+00	0.00E+00	1.76E-02	8	6.15E-01	7.69E-02	2.29E-01	3.07E+00	3.84E-01	4.59E-02
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	4.46E-02	mg/kg	NA	NA	2.29E+00	2.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.84E-04	NA	NA	1.50E-02	0.00E+00	0.00E+00	0.00E+00	1.57E-02	8	6.15E-01	7.69E-02	2.04E-01	3.07E+00	3.84E-01	4.08E-02
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-03	NA	NA	3.09E-02	0.00E+00	0.00E+00	0.00E+00	3.20E-02	8	6.15E-01	7.69E-02	4.16E-01	3.07E+00	3.84E-01	8.34E-02
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	4.10E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.29E-04	NA	NA	1.72E-02	0.00E+00	0.00E+00	0.00E+00	1.78E-02	8	6.15E-01	7.69E-02	2.32E-01	3.07E+00	3.84E-01	4.65E-02
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.81E-03	NA	NA	3.03E-02	0.00E+00	0.00E+00	0.00E+00	3.21E-02	8	6.15E-01	7.69E-02	4.18E-01	3.07E+00	3.84E-01	8.36E-02
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.06E+01	mg/kg	5.70E+02	NA	1.21E-01	3.75E-02	5.12E-03	5.12E-03	2.33E-03	0.00E+00	1.62E-01	0.00E+00	NA	1.87E-01	0.00E+00	0.00E+00	0.00E+00	3.52E-01	8	1.26E-01	1.58E-02	2.23E+01	1.26E+00	1.58E-01	2.23E+00
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	3.53E-01	mg/kg	NA	NA	1.03E+01	9.98E-01	4.93E-01	4.93E-01	0.00E+00	0.00E+00	5.41E-03	NA	NA	5.31E-01	0.00E+00	0.00E+00	0.00E+00	5.36E-01	8	1.00E+00	1.25E-01	4.29E+00	1.00E+01	1.25E+00	4.29E-01
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.09E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	1.03E-01	1.03E-01	0.00E+00	0.00E+00	3.20E-01	NA	NA	9.37E-01	0.00E+00	0.00E+00	0.00E+00	1.26E+00	8	2.74E+03	3.42E+02	3.67E-03	1.37E+04	1.71E+03	7.35E-04
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.31E+01	mg/kg	NA	NA	5.15E-01	4.10E-01	8.51E-01	8.51E-01	0.00E+00	0.00E+00	2.01E-01	NA	NA	9.91E-01	0.00E+00	0.00E+00	0.00E+00	1.19E+00	8	1.17E+01	1.46E+00	8.15E-01	1.51E+01	1.89E+00	6.32E-01
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	1.98E+01	mg/kg	NA	NA	4.52E-01	7.14E-02	2.04E-01	2.04E-01	0.00E+00	0.00E+00	3.04E-01	NA	NA	1.31E+00	0.00E+00	0.00E+00	0.00E+00	1.62E+00	8	8.00E+00	1.00E+00	1.62E+00	8.00E+01	1.00E+01	1.62E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	2.17E-01	mg/kg	NA	NA	3.01E+00	7.43E-01	1.92E-01	1.92E-01	0.00E+00	0.00E+00	3.33E-03	NA	NA	9.58E-02	0.00E+00	0.00E+00	0.00E+00	9.91E-02	8	1.00E+00	1.25E-01	7.93E-01	5.00E+00	6.25E-01	1.59E-01
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.19E+01	mg/kg	NA	NA	2.08E+00	5.80E-02	2.08E-01	2.08E-01	0.00E+00	0.00E+00	1.83E-01	NA	NA	3.64E+00	0.00E+00	0.00E+00	0.00E+00	3.82E+00	8	4.00E+01	5.00E+00	7.64E-01	8.00E+01	1.00E+01	3.82E-01
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	8.89E-02	NA	NA	4.94E-01	0.00E+00	0.00E+00	0.00E+00	5.83E-01	8	2.00E-01	2.50E-02	2.33E+01	3.30E-01	4.13E-02	1.41E+01
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	8.25E+01	mg/kg	NA	NA	4.41E+00	6.75E-01	1.30E+00	1.30E+00	0.00E+00	0.00E+00	1.26E+00	NA	NA	5.33E+01	0.00E+00	0.00E+00	0.00E+00	5.46E+01	8	1.60E+02	2.00E+01	2.73E+00	3.20E+02	4.00E+01	1.37E+00
																						Hazard Index (Total EEQ):			9.0E+01			2.3E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	1	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00023	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.0022	kg/d
Body weight =	0.015	kg
Home range =	0.96	acres
Water intake rate =	0.0023	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-6
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR AMERICAN ROBINS AT SWMU 43

Hazard Estimate - Tier 1
American Robin

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	4.21E+01	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	8.07E-08	NA	NA	3.22E-05	4.84E-09	0.00E+00	0.00E+00	3.23E-05	8	1.40E-05	1.75E-06	1.85E+01	1.40E-04	1.75E-05	1.85E+00
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	7.12E-02	mg/kg	NA	NA	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	8.97E-04	NA	NA	5.56E-01	4.97E-05	0.00E+00	0.00E+00	5.57E-01	8	1.80E-01	2.25E-02	2.47E+01	1.80E+00	2.25E-01	2.47E+00
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	8.88E-02	mg/kg	NA	NA	1.59E+00	1.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.12E-03	NA	NA	1.69E-02	3.09E-03	0.00E+00	0.00E+00	2.11E-02	8	5.53E+02	6.91E+01	3.05E-04	2.77E+03	3.46E+02	6.11E-05
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.40E-01	mg/kg	NA	NA	1.33E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.76E-03	NA	NA	2.23E-02	3.65E-03	0.00E+00	0.00E+00	2.77E-02	8	5.53E+02	6.91E+01	4.01E-04	2.77E+03	3.46E+02	8.02E-05
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.01E-03	NA	NA	2.49E-02	4.85E-03	0.00E+00	0.00E+00	3.08E-02	8	5.53E+02	6.91E+01	4.45E-04	2.77E+03	3.46E+02	8.91E-05
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	6.55E-02	mg/kg	NA	NA	2.94E+00	2.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.25E-04	NA	NA	2.30E-02	3.06E-03	0.00E+00	0.00E+00	2.69E-02	8	5.53E+02	6.91E+01	3.90E-04	2.77E+03	3.46E+02	7.79E-05
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	9.35E-02	mg/kg	NA	NA	2.60E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-03	NA	NA	2.91E-02	2.94E-03	0.00E+00	0.00E+00	3.32E-02	8	5.53E+02	6.91E+01	4.81E-04	2.77E+03	3.46E+02	9.61E-05
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	8.18E-02	mg/kg	NA	NA	2.29E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.03E-03	NA	NA	2.24E-02	2.94E-03	0.00E+00	0.00E+00	2.64E-02	8	5.53E+02	6.91E+01	3.82E-04	2.77E+03	3.46E+02	7.64E-05
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.74E-04	NA	NA	2.53E-02	6.78E-03	0.00E+00	0.00E+00	3.29E-02	8	5.53E+02	6.91E+01	4.76E-04	2.77E+03	3.46E+02	9.52E-05
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	7.28E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.17E-04	NA	NA	2.49E-02	1.56E-03	0.00E+00	0.00E+00	2.74E-02	8	5.53E+02	6.91E+01	3.96E-04	2.77E+03	3.46E+02	7.93E-05
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.49E-03	NA	NA	2.47E-02	1.66E-02	0.00E+00	0.00E+00	4.28E-02	8	5.53E+02	6.91E+01	6.19E-04	2.77E+03	3.46E+02	1.24E-04
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.77E+01	mg/kg	1.75E+03	NA	1.04E-01	3.75E-02	4.66E-03	4.66E-03	3.11E-03	0.00E+00	2.23E-01	0.00E+00	NA	2.20E-01	1.30E-01	0.00E+00	0.00E+00	5.76E-01	8	5.14E+00	6.43E-01	8.96E-01	1.28E+01	1.61E+00	3.59E-01
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	9.30E-01	mg/kg	NA	NA	8.41E+00	6.43E-01	2.96E-01	2.96E-01	0.00E+00	0.00E+00	1.17E-02	NA	NA	9.36E-01	1.17E-01	0.00E+00	0.00E+00	1.06E+00	8	1.45E+00	1.81E-01	5.87E+00	2.00E+01	2.50E+00	4.26E-01
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.43E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	9.93E-02	9.93E-02	0.00E+00	0.00E+00	3.06E-01	NA	NA	8.90E-01	1.95E-01	0.00E+00	0.00E+00	1.39E+00	8	2.66E+00	3.33E-01	4.18E+00	2.78E+00	3.48E-01	4.00E+00
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.68E+01	mg/kg	NA	NA	5.15E-01	3.53E-01	6.89E-01	6.89E-01	0.00E+00	0.00E+00	2.12E-01	NA	NA	1.04E+00	1.16E+00	0.00E+00	0.00E+00	2.40E+00	8	4.70E+01	5.88E+00	4.09E-01	6.20E+01	7.75E+00	3.10E-01
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	3.62E+01	mg/kg	NA	NA	4.02E-01	5.48E-02	1.46E-01	1.46E-01	0.00E+00	0.00E+00	4.56E-01	NA	NA	1.74E+00	3.88E-01	0.00E+00	0.00E+00	2.59E+00	8	3.85E+00	4.81E-01	5.37E+00	1.93E+01	2.41E+00	1.07E+00
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	3.10E-01	mg/kg	NA	NA	3.30E+01	6.30E-01	1.05E+00	1.05E+00	0.00E+00	0.00E+00	3.91E-03	NA	NA	1.22E+00	3.82E-02	0.00E+00	0.00E+00	1.27E+00	8	4.50E-01	5.63E-02	2.25E+01	9.00E-01	1.13E-01	1.13E+01
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.36E+01	mg/kg	NA	NA	7.80E+00	5.61E-02	1.94E-01	1.94E-01	0.00E+00	0.00E+00	1.71E-01	NA	NA	1.27E+01	1.49E-01	0.00E+00	0.00E+00	1.30E+01	8	7.74E+01	9.68E+00	1.35E+00	1.07E+02	1.34E+01	9.73E-01
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	7.31E-02	NA	NA	4.03E-01	6.91E-01	0.00E+00	0.00E+00	1.17E+00	8	5.00E-01	6.25E-02	1.87E+01	1.00E+00	1.25E-01	9.33E+00
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	1.05E+02	mg/kg	NA	NA	3.75E+00	6.06E-01	1.04E+00	1.04E+00	0.00E+00	0.00E+00	1.32E+00	NA	NA	4.71E+01	1.24E+01	0.00E+00	0.00E+00	6.09E+01	8	1.45E+01	1.81E+00	3.36E+01	1.31E+02	1.64E+01	3.72E+00
																						Hazard Index (Total EEQ):			1.4E+02			3.6E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.62	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.38	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.0008	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.02	kg/d
Body weight =	0.0635	kg
Home range =	1.2	acres
Water intake rate =	0.013	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-7
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR AMERICAN ROBINS AT SWMU 43

Hazard Estimate - Tier 2
American Robin

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	3.96E+00	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	5.30E-08	NA	NA	2.00E-06	3.18E-09	0.00E+00	0.00E+00	2.05E-06	8	1.40E-05	1.75E-06	1.17E+00	1.40E-04	1.75E-05	1.17E-01
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	2.18E-02	mg/kg	NA	NA	1.97E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	1.80E-04	NA	NA	3.38E-03	1.00E-05	0.00E+00	0.00E+00	3.57E-03	8	1.80E-01	2.25E-02	1.59E-01	1.80E+00	2.25E-01	1.59E-02
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	4.24E-02	mg/kg	NA	NA	1.59E+00	2.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.51E-04	NA	NA	5.30E-03	1.31E-03	0.00E+00	0.00E+00	6.96E-03	8	5.53E+02	6.91E+01	1.01E-04	2.77E+03	3.46E+02	2.01E-05
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	6.27E-02	mg/kg	NA	NA	1.33E+00	1.36E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.19E-04	NA	NA	6.56E-03	1.10E-03	0.00E+00	0.00E+00	8.18E-03	8	5.53E+02	6.91E+01	1.18E-04	2.77E+03	3.46E+02	2.37E-05
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.63E-04	NA	NA	1.64E-02	3.19E-03	0.00E+00	0.00E+00	2.02E-02	8	5.53E+02	6.91E+01	2.93E-04	2.77E+03	3.46E+02	5.85E-05
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	4.09E-02	mg/kg	NA	NA	2.94E+00	2.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.38E-04	NA	NA	9.45E-03	1.15E-03	0.00E+00	0.00E+00	1.09E-02	8	5.53E+02	6.91E+01	1.58E-04	2.77E+03	3.46E+02	3.17E-05
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	4.44E-02	mg/kg	NA	NA	2.60E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.67E-04	NA	NA	9.07E-03	1.02E-03	0.00E+00	0.00E+00	1.05E-02	8	5.53E+02	6.91E+01	1.51E-04	2.77E+03	3.46E+02	3.03E-05
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	4.46E-02	mg/kg	NA	NA	2.29E+00	2.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.69E-04	NA	NA	8.03E-03	1.35E-03	0.00E+00	0.00E+00	9.75E-03	8	5.53E+02	6.91E+01	1.41E-04	2.77E+03	3.46E+02	2.82E-05
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.75E-04	NA	NA	1.66E-02	4.45E-03	0.00E+00	0.00E+00	2.16E-02	8	5.53E+02	6.91E+01	3.13E-04	2.77E+03	3.46E+02	6.26E-05
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	4.10E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.40E-04	NA	NA	9.23E-03	5.79E-04	0.00E+00	0.00E+00	1.01E-02	8	5.53E+02	6.91E+01	1.47E-04	2.77E+03	3.46E+02	2.94E-05
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.77E-04	NA	NA	1.62E-02	1.09E-02	0.00E+00	0.00E+00	2.81E-02	8	5.53E+02	6.91E+01	4.07E-04	2.77E+03	3.46E+02	8.14E-05
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.06E+01	mg/kg	5.70E+02	NA	1.21E-01	3.75E-02	5.12E-03	5.12E-03	2.16E-03	0.00E+00	8.76E-02	0.00E+00	NA	1.00E-01	5.09E-02	0.00E+00	0.00E+00	2.41E-01	8	5.14E+00	6.43E-01	3.75E-01	1.28E+01	1.61E+00	1.50E-01
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	3.53E-01	mg/kg	NA	NA	1.03E+01	9.98E-01	4.93E-01	4.93E-01	0.00E+00	0.00E+00	2.92E-03	NA	NA	2.85E-01	4.52E-02	0.00E+00	0.00E+00	3.33E-01	8	1.45E+00	1.81E-01	1.84E+00	2.00E+01	2.50E+00	1.33E-01
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.09E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	1.03E-01	1.03E-01	0.00E+00	0.00E+00	1.73E-01	NA	NA	5.03E-01	1.10E-01	0.00E+00	0.00E+00	7.85E-01	8	2.66E+00	3.33E-01	2.36E+00	2.78E+00	3.48E-01	2.26E+00
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.31E+01	mg/kg	NA	NA	5.15E-01	4.10E-01	8.51E-01	8.51E-01	0.00E+00	0.00E+00	1.09E-01	NA	NA	5.31E-01	6.90E-01	0.00E+00	0.00E+00	1.33E+00	8	4.70E+01	5.88E+00	2.26E-01	6.20E+01	7.75E+00	1.72E-01
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	1.98E+01	mg/kg	NA	NA	4.52E-01	7.14E-02	2.04E-01	2.04E-01	0.00E+00	0.00E+00	1.64E-01	NA	NA	7.05E-01	1.82E-01	0.00E+00	0.00E+00	1.05E+00	8	3.85E+00	4.81E-01	2.18E+00	1.93E+01	2.41E+00	4.37E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	2.17E-01	mg/kg	NA	NA	3.01E+00	7.43E-01	1.92E-01	1.92E-01	0.00E+00	0.00E+00	1.80E-03	NA	NA	5.14E-02	2.07E-02	0.00E+00	0.00E+00	7.38E-02	8	4.50E-01	5.63E-02	1.31E+00	9.00E-01	1.13E-01	6.56E-01
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.19E+01	mg/kg	NA	NA	2.08E+00	5.80E-02	2.08E-01	2.08E-01	0.00E+00	0.00E+00	9.89E-02	NA	NA	1.95E+00	8.88E-02	0.00E+00	0.00E+00	2.14E+00	8	7.74E+01	9.68E+00	2.21E-01	1.07E+02	1.34E+01	1.60E-01
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	4.80E-02	NA	NA	2.65E-01	4.54E-01	0.00E+00	0.00E+00	7.67E-01	8	5.00E-01	6.25E-02	1.23E+01	1.00E+00	1.25E-01	6.13E+00
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	8.25E+01	mg/kg	NA	NA	4.41E+00	6.75E-01	1.30E+00	1.30E+00	0.00E+00	0.00E+00	6.83E-01	NA	NA	2.86E+01	7.15E+00	0.00E+00	0.00E+00	3.64E+01	8	1.45E+01	1.81E+00	2.01E+01	1.31E+02	1.64E+01	2.23E+00

Hazard Index (Total EEQ): 4.2E+01 1.2E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.62	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.38	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0.00064	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.016	kg/d
Body weight =	0.0773	kg
Home range =	1.2	acres
Water intake rate =	0.011	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-8
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR RED-TAILED HAWKS AT SWMU 43

Hazard Estimate - Tier 1
Red-tailed Hawk

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	4.21E+01	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	7.05E-07	2.23E-07	9.27E-07	8	1.40E-05	1.75E-06	5.30E-01	1.40E-04	1.75E-05	5.30E-02
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	7.12E-02	mg/kg	NA	NA	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	3.56E-03	1.12E-03	4.69E-03	8	1.80E-01	2.25E-02	2.08E-01	1.80E+00	2.25E-01	2.08E-02
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	8.88E-02	mg/kg	NA	NA	1.59E+00	1.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.40E-01	mg/kg	NA	NA	1.33E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	6.55E-02	mg/kg	NA	NA	2.94E+00	2.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	9.35E-02	mg/kg	NA	NA	2.60E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	8.18E-02	mg/kg	NA	NA	2.29E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	7.28E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.77E+01	mg/kg	1.75E+03	NA	1.04E-01	3.75E-02	4.66E-03	4.66E-03	1.08E-03	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	4.13E-03	1.30E-03	6.52E-03	8	5.14E+00	6.43E-01	1.01E-02	1.28E+01	1.61E+00	4.06E-03
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	9.30E-01	mg/kg	NA	NA	8.41E+00	6.43E-01	2.96E-01	2.96E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.38E-02	4.34E-03	1.81E-02	8	1.45E+00	1.81E-01	9.98E-02	2.00E+01	2.50E+00	7.24E-03
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.43E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	9.93E-02	9.93E-02	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.21E-01	3.81E-02	1.59E-01	8	2.66E+00	3.33E-01	4.78E-01	2.78E+00	3.48E-01	4.57E-01
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.68E+01	mg/kg	NA	NA	5.15E-01	3.53E-01	6.89E-01	6.89E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	5.79E-01	1.83E-01	7.62E-01	8	4.70E+01	5.88E+00	1.30E-01	6.20E+01	7.75E+00	9.83E-02
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	3.62E+01	mg/kg	NA	NA	4.02E-01	5.48E-02	1.46E-01	1.46E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	2.64E-01	8.34E-02	3.47E-01	8	3.85E+00	4.81E-01	7.22E-01	1.93E+01	2.41E+00	1.44E-01
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	3.10E-01	mg/kg	NA	NA	3.30E+01	6.30E-01	1.05E+00	1.05E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.62E-02	5.12E-03	2.13E-02	8	4.50E-01	5.63E-02	3.79E-01	9.00E-01	1.13E-01	1.90E-01
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.36E+01	mg/kg	NA	NA	7.80E+00	5.61E-02	1.94E-01	1.94E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.32E-01	4.17E-02	1.74E-01	8	7.74E+01	9.68E+00	1.79E-02	1.07E+02	1.34E+01	1.30E-02
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	6.40E-02	2.02E-02	8.42E-02	8	5.00E-01	6.25E-02	1.35E+00	1.00E+00	1.25E-01	6.73E-01
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	1.05E+02	mg/kg	NA	NA	3.75E+00	6.06E-01	1.04E+00	1.04E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	5.46E+00	1.72E+00	7.18E+00	8	1.45E+01	1.81E+00	3.96E+00	1.31E+02	1.64E+01	4.38E-01
																						Hazard Index (Total EEQ):			7.9E+00			2.1E+00

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.76	unitless
Bird diet fraction =	0.24	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.063	kg/d
Body weight =	0.957	kg
Home range =	2081	acres
Water intake rate =	0.068	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-9
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR RED -TAILED HAWKS AT SWMU 43

Hazard Estimate - Tier 2
Red-tailed Hawk

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	3.96E+00	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	8.14E-10	2.57E-10	1.07E-09	8	1.40E-05	1.75E-06	6.12E-04	1.40E-04	1.75E-05	6.12E-05
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	2.18E-02	mg/kg	NA	NA	1.97E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	6.29E-07	1.99E-07	8.28E-07	8	1.80E-01	2.25E-02	3.68E-05	1.80E+00	2.25E-01	3.68E-06
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	4.24E-02	mg/kg	NA	NA	1.59E+00	2.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	6.27E-02	mg/kg	NA	NA	1.33E+00	1.36E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	4.09E-02	mg/kg	NA	NA	2.94E+00	2.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	4.44E-02	mg/kg	NA	NA	2.60E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	4.46E-02	mg/kg	NA	NA	2.29E+00	2.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	4.10E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	5.53E+02	6.91E+01	0.00E+00	2.77E+03	3.46E+02	0.00E+00
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.06E+01	mg/kg	5.70E+02	NA	1.21E-01	3.75E-02	5.00E-03	5.00E-03	1.25E-06	0.00E+00	0.00E+00	0.00E+00	NA	0.00E+00	0.00E+00	3.06E-06	9.66E-07	5.28E-06	8	5.14E+00	6.43E-01	8.21E-06	1.28E+01	1.61E+00	3.29E-06
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	3.53E-01	mg/kg	NA	NA	1.03E+01	9.98E-01	4.93E-01	4.93E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.00E-05	3.17E-06	1.32E-05	8	1.45E+00	1.81E-01	7.29E-05	2.00E+01	2.50E+00	5.29E-06
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.09E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	1.03E-01	1.03E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.25E-04	3.94E-05	1.64E-04	8	2.66E+00	3.33E-01	4.94E-04	2.78E+00	3.48E-01	4.72E-04
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.31E+01	mg/kg	NA	NA	5.15E-01	4.10E-01	8.51E-01	8.51E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	6.45E-04	2.04E-04	8.49E-04	8	4.70E+01	5.88E+00	1.44E-04	6.20E+01	7.75E+00	1.09E-04
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	1.98E+01	mg/kg	NA	NA	4.52E-01	7.14E-02	2.04E-01	2.04E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	2.34E-04	7.38E-05	3.07E-04	8	3.85E+00	4.81E-01	6.39E-04	1.93E+01	2.41E+00	1.28E-04
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	2.17E-01	mg/kg	NA	NA	3.01E+00	7.43E-01	1.92E-01	1.92E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	2.41E-06	7.60E-07	3.17E-06	8	4.50E-01	5.63E-02	5.63E-05	9.00E-01	1.13E-01	2.81E-05
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.19E+01	mg/kg	NA	NA	2.08E+00	5.80E-02	2.08E-01	2.08E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	1.43E-04	4.53E-05	1.89E-04	8	7.74E+01	9.68E+00	1.95E-05	1.07E+02	1.34E+01	1.41E-05
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	7.39E-05	2.33E-05	9.72E-05	8	5.00E-01	6.25E-02	1.56E-03	1.00E+00	1.25E-01	7.78E-04
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	8.25E+01	mg/kg	NA	NA	4.41E+00	6.75E-01	1.30E+00	1.30E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	6.19E-03	1.96E-03	8.15E-03	8	1.45E+01	1.81E+00	4.50E-03	1.31E+02	1.64E+01	4.98E-04

Hazard Index (Total EEQ): 8.1E-03 2.1E-03

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.76	unitless
Bird diet fraction =	0.24	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.059	kg/d
Body weight =	1.134	kg
Home range =	2081	acres
Water intake rate =	0.064	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.46E-03	unitless

TABLE F-10
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR RED FOXES AT SWMU 43

Hazard Estimate - Tier 1
Red Fox

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	4.21E+01	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	2.06E-08	NA	NA	1.24E-06	4.86E-10	1.06E-06	2.27E-07	2.55E-06	8	1.00E-06	1.25E-07	2.04E+01	1.00E-05	1.25E-06	2.04E+00
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	7.12E-02	mg/kg	NA	NA	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	2.29E-04	NA	NA	2.14E-02	4.99E-06	5.33E-03	1.15E-03	2.81E-02	8	1.40E-01	1.75E-02	1.61E+00	6.80E-01	8.50E-02	3.31E-01
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	8.88E-02	mg/kg	NA	NA	1.59E+00	1.78E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.86E-04	NA	NA	6.51E-04	3.10E-04	0.00E+00	0.00E+00	1.25E-03	8	6.15E-01	7.69E-02	1.62E-02	3.07E+00	3.84E-01	3.25E-03
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.40E-01	mg/kg	NA	NA	1.33E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.51E-04	NA	NA	8.58E-04	3.67E-04	0.00E+00	0.00E+00	1.68E-03	8	1.00E+00	1.25E-01	1.34E-02	1.00E+01	1.25E+00	1.34E-03
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.58E-04	NA	NA	9.60E-04	4.87E-04	0.00E+00	0.00E+00	1.70E-03	8	6.15E-01	7.69E-02	2.22E-02	3.07E+00	3.84E-01	4.44E-03
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	6.55E-02	mg/kg	NA	NA	2.94E+00	2.39E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.11E-04	NA	NA	8.88E-04	3.07E-04	0.00E+00	0.00E+00	1.41E-03	8	6.15E-01	7.69E-02	1.83E-02	3.07E+00	3.84E-01	3.66E-03
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	9.35E-02	mg/kg	NA	NA	2.60E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.01E-04	NA	NA	1.12E-03	2.95E-04	0.00E+00	0.00E+00	1.72E-03	8	6.15E-01	7.69E-02	2.23E-02	3.07E+00	3.84E-01	4.47E-03
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	8.18E-02	mg/kg	NA	NA	2.29E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.63E-04	NA	NA	8.64E-04	2.95E-04	0.00E+00	0.00E+00	1.42E-03	8	6.15E-01	7.69E-02	1.85E-02	3.07E+00	3.84E-01	3.71E-03
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.23E-04	NA	NA	9.73E-04	6.80E-04	0.00E+00	0.00E+00	1.88E-03	8	6.15E-01	7.69E-02	2.44E-02	3.07E+00	3.84E-01	4.89E-03
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	7.28E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.34E-04	NA	NA	9.60E-04	1.57E-04	0.00E+00	0.00E+00	1.35E-03	8	6.15E-01	7.69E-02	1.76E-02	3.07E+00	3.84E-01	3.52E-03
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.80E-04	NA	NA	9.52E-04	1.66E-03	0.00E+00	0.00E+00	3.00E-03	8	6.15E-01	7.69E-02	3.90E-02	3.07E+00	3.84E-01	7.81E-03
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.77E+01	mg/kg	1.75E+03	NA	1.04E-01	3.75E-02	4.66E-03	4.66E-03	2.94E-03	0.00E+00	5.70E-02	0.00E+00	NA	8.47E-03	1.30E-02	6.19E-03	1.33E-03	8.89E-02	8	1.26E-01	1.58E-02	5.65E+00	1.26E+00	1.58E-01	5.65E-01
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	9.30E-01	mg/kg	NA	NA	8.41E+00	6.43E-01	2.96E-01	2.96E-01	0.00E+00	0.00E+00	2.99E-03	NA	NA	3.60E-02	1.17E-02	2.06E-02	4.44E-03	7.58E-02	8	1.00E+00	1.25E-01	6.06E-01	1.00E+01	1.25E+00	6.06E-02
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.43E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	9.93E-02	9.93E-02	0.00E+00	0.00E+00	7.83E-02	NA	NA	3.43E-02	1.95E-02	1.81E-01	3.90E-02	3.52E-01	8	2.74E+03	3.42E+02	1.03E-03	1.37E+04	1.71E+03	2.06E-04
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.68E+01	mg/kg	NA	NA	5.15E-01	3.53E-01	6.89E-01	6.89E-01	0.00E+00	0.00E+00	5.41E-02	NA	NA	3.99E-02	1.16E-01	8.67E-01	1.87E-01	1.26E+00	8	1.17E+01	1.46E+00	8.64E-01	1.51E+01	1.89E+00	6.69E-01
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	3.62E+01	mg/kg	NA	NA	4.02E-01	5.48E-02	1.46E-01	1.46E-01	0.00E+00	0.00E+00	1.17E-01	NA	NA	6.71E-02	3.89E-02	3.95E-01	8.51E-02	7.03E-01	8	8.00E+00	1.00E+00	7.03E-01	8.00E+01	1.00E+01	7.03E-02
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	3.10E-01	mg/kg	NA	NA	3.30E+01	6.30E-01	1.05E+00	1.05E+00	0.00E+00	0.00E+00	9.98E-04	NA	NA	4.72E-02	3.83E-03	2.43E-02	5.23E-03	8.15E-02	8	1.00E+00	1.25E-01	6.52E-01	5.00E+00	6.25E-01	1.30E-01
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.36E+01	mg/kg	NA	NA	7.80E+00	5.61E-02	1.94E-01	1.94E-01	0.00E+00	0.00E+00	4.38E-02	NA	NA	4.89E-01	1.49E-02	1.98E-01	4.25E-02	7.88E-01	8	4.00E+01	5.00E+00	1.58E-01	8.00E+01	1.00E+01	7.88E-02
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	1.87E-02	NA	NA	1.55E-02	6.93E-02	9.58E-02	2.06E-02	2.20E-01	8	2.00E-01	2.50E-02	8.80E+00	3.30E-01	4.13E-02	5.33E+00
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	1.05E+02	mg/kg	NA	NA	3.75E+00	6.06E-01	1.04E+00	1.04E+00	0.00E+00	0.00E+00	3.38E-01	NA	NA	1.81E+00	1.25E+00	8.17E+00	1.76E+00	1.33E+01	8	1.60E+02	2.00E+01	6.66E-01	3.20E+02	4.00E+01	3.33E-01
																						Hazard Index (Total EEQ):			4.0E+01			9.6E+00

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.17	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.04	unitless
Mammal diet fraction =	0.65	unitless
Bird diet fraction =	0.14	unitless
Soil ingestion rate =	0.0095	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.34	kg/d
Body weight =	2.95	kg
Home range =	2204	acres
Water intake rate =	0.57	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-11
TIER 2 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR RED FOXES AT SWMU 43

Hazard Estimate - Tier 2
Red Fox

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	0.00E+00	mg/kg	6.40E-06	mg/kg	NA	NA	3.96E+00	3.87E-03	2.20E+00	2.20E+00	0.00E+00	0.00E+00	1.31E-11	NA	NA	7.42E-11	3.08E-13	6.69E-10	1.44E-10	9.01E-10	8	1.00E-06	1.25E-07	7.21E-03	1.00E-05	1.25E-06	7.21E-04
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	2.18E-02	mg/kg	NA	NA	1.97E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	4.44E-08	NA	NA	1.26E-07	9.68E-10	5.17E-07	1.11E-07	8.00E-07	8	1.40E-01	1.75E-02	4.57E-05	6.80E-01	8.50E-02	9.41E-06
Benzo(a)anthracene	0.00E+00	mg/L	0.00E+00	mg/kg	4.24E-02	mg/kg	NA	NA	1.59E+00	2.40E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.65E-08	NA	NA	1.97E-07	1.27E-07	0.00E+00	0.00E+00	4.10E-07	8	6.15E-01	7.69E-02	5.34E-06	3.07E+00	3.84E-01	1.07E-06
Benzo(a)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	6.27E-02	mg/kg	NA	NA	1.33E+00	1.36E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.28E-07	NA	NA	2.44E-07	1.06E-07	0.00E+00	0.00E+00	4.78E-07	8	1.00E+00	1.25E-01	3.82E-06	1.00E+01	1.25E+00	3.82E-07
Benzo(b)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	8.01E-02	mg/kg	NA	NA	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.63E-07	NA	NA	6.09E-07	3.08E-07	0.00E+00	0.00E+00	1.08E-06	8	6.15E-01	7.69E-02	1.41E-05	3.07E+00	3.84E-01	2.82E-06
Benzo(g,h,i)perylene	0.00E+00	mg/L	0.00E+00	mg/kg	4.09E-02	mg/kg	NA	NA	2.94E+00	2.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.34E-08	NA	NA	3.51E-07	1.12E-07	0.00E+00	0.00E+00	5.46E-07	8	6.15E-01	7.69E-02	7.11E-06	3.07E+00	3.84E-01	1.42E-06
Benzo(k)fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	4.44E-02	mg/kg	NA	NA	2.60E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.05E-08	NA	NA	3.37E-07	9.87E-08	0.00E+00	0.00E+00	5.26E-07	8	6.15E-01	7.69E-02	6.85E-06	3.07E+00	3.84E-01	1.37E-06
Chrysene	0.00E+00	mg/L	0.00E+00	mg/kg	4.46E-02	mg/kg	NA	NA	2.29E+00	2.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.10E-08	NA	NA	2.99E-07	1.30E-07	0.00E+00	0.00E+00	5.20E-07	8	6.15E-01	7.69E-02	6.76E-06	3.07E+00	3.84E-01	1.35E-06
Fluoranthene	0.00E+00	mg/L	0.00E+00	mg/kg	6.94E-02	mg/kg	NA	NA	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-07	NA	NA	6.17E-07	4.31E-07	0.00E+00	0.00E+00	1.19E-06	8	6.15E-01	7.69E-02	1.55E-05	3.07E+00	3.84E-01	3.10E-06
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	4.10E-02	mg/kg	NA	NA	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.37E-08	NA	NA	3.43E-07	5.61E-08	0.00E+00	0.00E+00	4.83E-07	8	6.15E-01	7.69E-02	6.28E-06	3.07E+00	3.84E-01	1.26E-06
Pyrene	0.00E+00	mg/L	0.00E+00	mg/kg	1.18E-01	mg/kg	NA	NA	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.41E-07	NA	NA	6.04E-07	1.06E-06	0.00E+00	0.00E+00	1.90E-06	8	6.15E-01	7.69E-02	2.47E-05	3.07E+00	3.84E-01	4.95E-06
Arsenic	1.52E-02	mg/L	0.00E+00	mg/kg	1.06E+01	mg/kg	5.70E+02	NA	1.21E-01	3.75E-02	5.00E-03	5.00E-03	1.80E-06	0.00E+00	2.16E-05	0.00E+00	NA	3.73E-06	4.93E-06	2.52E-06	5.42E-07	3.51E-05	8	1.26E-01	1.58E-02	2.23E-03	1.26E+00	1.58E-01	2.23E-04
Cadmium	0.00E+00	mg/L	0.00E+00	mg/kg	3.53E-01	mg/kg	NA	NA	1.03E+01	9.98E-01	4.93E-01	4.93E-01	0.00E+00	0.00E+00	7.20E-07	NA	NA	1.06E-05	4.37E-06	8.26E-06	1.78E-06	2.57E-05	8	1.00E+00	1.25E-01	2.06E-04	1.00E+01	1.25E+00	2.06E-05
Chromium	0.00E+00	mg/L	0.00E+00	mg/kg	2.09E+01	mg/kg	NA	NA	3.06E-01	4.10E-02	1.03E-01	1.03E-01	0.00E+00	0.00E+00	4.26E-05	NA	NA	1.87E-05	1.06E-05	1.03E-04	2.21E-05	1.97E-04	8	2.74E+03	3.42E+02	5.75E-07	1.37E+04	1.71E+03	1.15E-07
Copper	0.00E+00	mg/L	0.00E+00	mg/kg	1.31E+01	mg/kg	NA	NA	5.15E-01	4.10E-01	8.51E-01	8.51E-01	0.00E+00	0.00E+00	2.68E-05	NA	NA	1.98E-05	6.68E-05	5.30E-04	1.14E-04	7.58E-04	8	1.17E+01	1.46E+00	5.18E-04	1.51E+01	1.89E+00	4.01E-04
Lead	0.00E+00	mg/L	0.00E+00	mg/kg	1.98E+01	mg/kg	NA	NA	4.52E-01	7.14E-02	2.04E-01	2.04E-01	0.00E+00	0.00E+00	4.05E-05	NA	NA	2.62E-05	1.76E-05	1.92E-04	4.14E-05	3.18E-04	8	8.00E+00	1.00E+00	3.18E-04	8.00E+01	1.00E+01	3.18E-05
Mercury	0.00E+00	mg/L	0.00E+00	mg/kg	2.17E-01	mg/kg	NA	NA	3.01E+00	7.43E-01	1.92E-01	1.92E-01	0.00E+00	0.00E+00	4.43E-07	NA	NA	1.91E-06	2.00E-06	1.98E-06	4.26E-07	6.76E-06	8	1.00E+00	1.25E-01	5.41E-05	5.00E+00	6.25E-01	1.08E-05
Nickel	0.00E+00	mg/L	0.00E+00	mg/kg	1.19E+01	mg/kg	NA	NA	2.08E+00	5.80E-02	2.08E-01	2.08E-01	0.00E+00	0.00E+00	2.44E-05	NA	NA	7.25E-05	8.60E-06	1.18E-04	2.54E-05	2.49E-04	8	4.00E+01	5.00E+00	4.97E-05	8.00E+01	1.00E+01	2.49E-05
Selenium	0.00E+00	mg/L	0.00E+00	mg/kg	5.80E+00	mg/kg	NA	NA	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	0.00E+00	1.18E-05	NA	NA	9.84E-06	4.40E-05	6.07E-05	1.31E-05	1.39E-04	8	2.00E-01	2.50E-02	5.58E-03	3.30E-01	4.13E-02	3.38E-03
Zinc	0.00E+00	mg/L	0.00E+00	mg/kg	8.25E+01	mg/kg	NA	NA	4.41E+00	6.75E-01	1.30E+00	1.30E+00	0.00E+00	0.00E+00	1.68E-04	NA	NA	1.06E-03	6.92E-04	5.09E-03	1.10E-03	8.11E-03	8	1.60E+02	2.00E+01	4.06E-04	3.20E+02	4.00E+01	2.03E-04

Hazard Index (Total EEQ): 1.7E-02 5.0E-03

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.17	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.04	unitless
Mammal diet fraction =	0.65	unitless
Bird diet fraction =	0.14	unitless
Soil ingestion rate =	0.0067	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.24	kg/d
Body weight =	4.53	kg
Home range =	2204	acres
Water intake rate =	0.39	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.38E-03	unitless

TABLE F-12
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR MINKS AT SWMU 43

Hazard Estimate - Tier 1
Mink

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	6.28E-06	mg/kg	6.40E-06	mg/kg	2.12E+04	4.21E+01	4.21E+01	3.87E-03	2.20E+00	2.20E+00	0.00E+00	2.51E-08	0.00E+00	0.00E+00	6.34E-06	0.00E+00	8.93E-10	7.04E-08	7.04E-08	6.51E-06	8	1.00E-06	1.25E-07	5.21E+01	1.00E-05	1.25E-06	5.21E+00
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	7.12E-02	mg/kg	NA	NA	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	9.17E-06	3.56E-04	3.56E-04	7.21E-04	1	1.40E-01	1.40E-01	5.15E-03	6.80E-01	6.80E-01	1.06E-03
Benzo(a)anthracene	0.00E+00	mg/L	6.70E-02	mg/kg	8.88E-02	mg/kg	NA	1.59E+00	1.59E+00	1.78E-01	0.00E+00	0.00E+00	0.00E+00	2.68E-04	0.00E+00	NA	2.56E-03	0.00E+00	5.69E-04	0.00E+00	0.00E+00	3.39E-03	8	6.15E-01	7.69E-02	4.41E-02	3.07E+00	3.84E-01	8.84E-03
Benzo(a)pyrene	0.00E+00	mg/L	7.90E-02	mg/kg	1.40E-01	mg/kg	NA	1.33E+00	1.33E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	3.16E-04	0.00E+00	NA	2.52E-03	0.00E+00	6.74E-04	0.00E+00	0.00E+00	3.51E-03	8	1.00E+00	1.25E-01	2.81E-02	1.00E+01	1.25E+00	2.81E-03
Benzo(b)fluoranthene	0.00E+00	mg/L	1.20E-01	mg/kg	8.01E-02	mg/kg	NA	2.60E+00	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	4.80E-04	0.00E+00	NA	7.49E-03	0.00E+00	8.94E-04	0.00E+00	0.00E+00	8.86E-03	8	6.15E-01	7.69E-02	1.15E-01	3.07E+00	3.84E-01	2.31E-02
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.00E-01	mg/kg	6.55E-02	mg/kg	NA	2.94E+00	2.94E+00	2.39E-01	0.00E+00	0.00E+00	0.00E+00	4.00E-04	0.00E+00	NA	7.06E-03	0.00E+00	5.64E-04	0.00E+00	0.00E+00	8.02E-03	8	6.15E-01	7.69E-02	1.04E-01	3.07E+00	3.84E-01	2.09E-02
Benzo(k)fluoranthene	0.00E+00	mg/L	6.69E-01	mg/kg	9.35E-02	mg/kg	NA	2.60E+00	2.60E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00	2.68E-03	0.00E+00	NA	4.17E-02	0.00E+00	5.43E-04	0.00E+00	0.00E+00	4.50E-02	8	6.15E-01	7.69E-02	5.85E-01	3.07E+00	3.84E-01	1.17E-01
Chrysene	0.00E+00	mg/L	9.82E-02	mg/kg	8.18E-02	mg/kg	NA	2.29E+00	2.29E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	3.93E-04	0.00E+00	NA	5.40E-03	0.00E+00	5.42E-04	0.00E+00	0.00E+00	6.33E-03	8	6.15E-01	7.69E-02	8.24E-02	3.07E+00	3.84E-01	1.65E-02
Fluoranthene	0.00E+00	mg/L	2.00E-01	mg/kg	6.94E-02	mg/kg	NA	3.04E+00	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	8.00E-04	0.00E+00	NA	1.46E-02	0.00E+00	1.25E-03	0.00E+00	0.00E+00	1.66E-02	8	6.15E-01	7.69E-02	2.16E-01	3.07E+00	3.84E-01	4.34E-02
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	6.71E-02	mg/kg	7.28E-02	mg/kg	NA	2.86E+00	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	2.68E-04	0.00E+00	NA	4.61E-03	0.00E+00	2.88E-04	0.00E+00	0.00E+00	5.16E-03	8	6.15E-01	7.69E-02	6.72E-02	3.07E+00	3.84E-01	1.35E-02
Pyrene	0.00E+00	mg/L	1.50E-01	mg/kg	1.18E-01	mg/kg	NA	1.75E+00	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	6.00E-04	0.00E+00	NA	6.30E-03	0.00E+00	3.06E-03	0.00E+00	0.00E+00	9.96E-03	8	6.15E-01	7.69E-02	1.30E-01	3.07E+00	3.84E-01	2.60E-02
Arsenic	1.52E-02	mg/L	1.80E+01	mg/kg	1.77E+01	mg/kg	1.75E+03	6.90E-01	1.04E-01	3.75E-02	4.66E-03	4.66E-03	4.42E-03	7.20E-02	0.00E+00	3.46E+00	2.98E-01	0.00E+00	2.39E-02	4.13E-04	4.13E-04	3.86E+00	8	1.26E-01	1.58E-02	2.45E+02	1.26E+00	1.58E-01	2.45E+01
Cadmium	0.00E+00	mg/L	2.20E+00	mg/kg	9.30E-01	mg/kg	NA	7.99E+00	8.41E+00	6.43E-01	2.96E-01	2.96E-01	0.00E+00	8.80E-03	0.00E+00	NA	4.22E-01	0.00E+00	2.15E-02	1.37E-03	1.37E-03	4.55E-01	8	1.00E+00	1.25E-01	3.64E+00	1.00E+01	1.25E+00	3.64E-01
Chromium	0.00E+00	mg/L	3.30E+01	mg/kg	2.43E+01	mg/kg	7.75E+02	4.68E-01	3.06E-01	4.10E-02	9.93E-02	9.93E-02	0.00E+00	1.32E-01	0.00E+00	0.00E+00	3.71E-01	0.00E+00	3.59E-02	1.21E-02	1.21E-02	5.63E-01	8	2.74E+03	3.42E+02	1.64E-03	1.37E+04	1.71E+03	3.29E-04
Copper	0.00E+00	mg/L	2.60E+01	mg/kg	1.68E+01	mg/kg	NA	5.25E+00	5.15E-01	3.53E-01	6.89E-01	6.89E-01	0.00E+00	1.04E-01	0.00E+00	NA	3.28E+00	0.00E+00	2.13E-01	5.78E-02	5.78E-02	3.71E+00	1	1.17E+01	1.17E+01	3.17E-01	1.51E+01	1.51E+01	2.46E-01
Lead	0.00E+00	mg/L	3.50E+01	mg/kg	3.62E+01	mg/kg	8.95E+02	6.07E-01	4.02E-01	5.48E-02	1.46E-01	1.46E-01	0.00E+00	1.40E-01	0.00E+00	0.00E+00	5.10E-01	0.00E+00	7.14E-02	2.64E-02	2.64E-02	7.74E-01	8	8.00E+00	1.00E+00	7.74E-01	8.00E+01	1.00E+01	7.74E-02
Mercury	0.00E+00	mg/L	3.30E-02	mg/kg	3.10E-01	mg/kg	NA	2.87E+00	3.30E+01	6.30E-01	1.05E+00	1.05E+00	0.00E+00	1.32E-04	0.00E+00	NA	2.27E-03	0.00E+00	7.04E-03	1.62E-03	1.62E-03	1.27E-02	1	1.00E+00	1.00E+00	1.27E-02	5.00E+00	5.00E+00	2.54E-03
Nickel	0.00E+00	mg/L	2.50E+01	mg/kg	1.36E+01	mg/kg	NA	2.32E+00	7.80E+00	5.61E-02	1.94E-01	1.94E-01	0.00E+00	1.00E-01	0.00E+00	NA	1.39E+00	0.00E+00	2.75E-02	1.32E-02	1.32E-02	1.55E+00	8	4.00E+01	5.00E+00	3.09E-01	8.00E+01	1.00E+01	1.55E-01
Selenium	0.00E+00	mg/L	7.70E+00	mg/kg	5.80E+00	mg/kg	NA	2.10E+00	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	3.08E-02	0.00E+00	NA	3.88E-01	0.00E+00	1.27E-01	6.39E-03	6.39E-03	5.59E-01	8	2.00E-01	2.50E-02	2.24E+01	3.30E-01	4.13E-02	1.36E+01
Zinc	0.00E+00	mg/L	1.21E+02	mg/kg	1.05E+02	mg/kg	1.03E+04	7.53E+00	3.75E+00	6.06E-01	1.04E+00	1.04E+00	0.00E+00	4.84E-01	0.00E+00	0.00E+00	2.19E+01	0.00E+00	2.29E+00	5.45E-01	5.45E-01	2.57E+01	8	1.60E+02	2.00E+01	1.29E+00	3.20E+02	4.00E+01	6.43E-01
																						Hazard Index (Total EEQ):			3.3E+02			4.5E+01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.18	unitless
Fish diet fraction =	0.65	unitless
Aq. Invert diet fraction =	0.12	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.025	unitless
Bird diet fraction =	0.025	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.0022	kg/d
Food ingestion rate =	0.11	kg/d
Body weight =	0.55	kg
Home range =	35	acres
Water intake rate =	0.16	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-13
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR MINKS AT SWMU 43

Hazard Estimate - Tier 2
Mink

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	6.28E-06	mg/kg	6.40E-06	mg/kg	7.68E+03	3.95E+00	3.96E+00	3.87E-03	2.20E+00	2.20E+00	0.00E+00	7.49E-10	0.00E+00	0.00E+00	1.77E-08	0.00E+00	2.66E-11	2.10E-09	2.10E-09	2.27E-08	8	1.00E-06	1.25E-07	1.82E-01	1.00E-05	1.25E-06	1.82E-02
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	2.18E-02	mg/kg	NA	NA	1.97E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	8.36E-08	1.62E-06	1.62E-06	3.33E-06	1	1.40E-01	1.40E-01	2.38E-05	6.80E-01	6.80E-01	4.90E-06
Benzo(a)anthracene	0.00E+00	mg/L	6.70E-02	mg/kg	4.24E-02	mg/kg	NA	1.59E+00	1.59E+00	2.40E-01	0.00E+00	0.00E+00	0.00E+00	7.99E-06	0.00E+00	NA	7.62E-05	0.00E+00	1.09E-05	0.00E+00	0.00E+00	9.51E-05	8	6.15E-01	7.69E-02	1.24E-03	3.07E+00	3.84E-01	2.48E-04
Benzo(a)pyrene	0.00E+00	mg/L	7.90E-02	mg/kg	6.27E-02	mg/kg	NA	1.33E+00	1.33E+00	1.36E-01	0.00E+00	0.00E+00	0.00E+00	9.42E-06	0.00E+00	NA	7.52E-05	0.00E+00	9.18E-06	0.00E+00	0.00E+00	9.37E-05	8	1.00E+00	1.25E-01	7.50E-04	1.00E+01	1.25E+00	7.50E-05
Benzo(b)fluoranthene	0.00E+00	mg/L	1.20E-01	mg/kg	8.01E-02	mg/kg	NA	2.60E+00	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	1.43E-05	0.00E+00	NA	2.23E-04	0.00E+00	2.66E-05	0.00E+00	0.00E+00	2.64E-04	8	6.15E-01	7.69E-02	3.44E-03	3.07E+00	3.84E-01	6.88E-04
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.00E-01	mg/kg	4.09E-02	mg/kg	NA	2.94E+00	2.94E+00	2.20E-01	0.00E+00	0.00E+00	0.00E+00	1.19E-05	0.00E+00	NA	2.10E-04	0.00E+00	9.63E-06	0.00E+00	0.00E+00	2.32E-04	8	6.15E-01	7.69E-02	3.02E-03	3.07E+00	3.84E-01	6.04E-04
Benzo(k)fluoranthene	0.00E+00	mg/L	6.69E-01	mg/kg	4.44E-02	mg/kg	NA	2.60E+00	2.60E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	7.98E-05	0.00E+00	NA	1.24E-03	0.00E+00	8.52E-06	0.00E+00	0.00E+00	1.33E-03	8	6.15E-01	7.69E-02	1.73E-02	3.07E+00	3.84E-01	3.47E-03
Chrysene	0.00E+00	mg/L	9.82E-02	mg/kg	4.46E-02	mg/kg	NA	2.29E+00	2.29E+00	2.35E-01	0.00E+00	0.00E+00	0.00E+00	1.17E-05	0.00E+00	NA	1.61E-04	0.00E+00	1.13E-05	0.00E+00	0.00E+00	1.84E-04	8	6.15E-01	7.69E-02	2.39E-03	3.07E+00	3.84E-01	4.79E-04
Fluoranthene	0.00E+00	mg/L	2.00E-01	mg/kg	6.94E-02	mg/kg	NA	3.04E+00	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	2.38E-05	0.00E+00	NA	4.35E-04	0.00E+00	3.72E-05	0.00E+00	0.00E+00	4.96E-04	8	6.15E-01	7.69E-02	6.45E-03	3.07E+00	3.84E-01	1.29E-03
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	6.71E-02	mg/kg	4.10E-02	mg/kg	NA	2.86E+00	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	8.00E-06	0.00E+00	NA	1.37E-04	0.00E+00	4.84E-06	0.00E+00	0.00E+00	1.50E-04	8	6.15E-01	7.69E-02	1.95E-03	3.07E+00	3.84E-01	3.91E-04
Pyrene	0.00E+00	mg/L	1.50E-01	mg/kg	1.18E-01	mg/kg	NA	1.75E+00	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	1.79E-05	0.00E+00	NA	1.88E-04	0.00E+00	9.12E-05	0.00E+00	0.00E+00	2.97E-04	8	6.15E-01	7.69E-02	3.86E-03	3.07E+00	3.84E-01	7.73E-04
Arsenic	1.52E-02	mg/L	1.80E+01	mg/kg	1.06E+01	mg/kg	5.70E+02	1.43E-01	1.21E-01	3.75E-02	5.12E-03	5.12E-03	1.29E-04	2.15E-03	0.00E+00	3.36E-02	1.84E-03	0.00E+00	4.26E-04	8.07E-06	8.07E-06	3.81E-02	8	1.26E-01	1.58E-02	2.42E+00	1.26E+00	1.58E-01	2.42E-01
Cadmium	0.00E+00	mg/L	2.20E+00	mg/kg	3.53E-01	mg/kg	NA	6.00E-01	1.03E+01	9.98E-01	4.93E-01	4.93E-01	0.00E+00	2.62E-04	0.00E+00	NA	9.44E-04	0.00E+00	3.78E-04	2.59E-05	2.59E-05	1.64E-03	8	1.00E+00	1.25E-01	1.31E-02	1.00E+01	1.25E+00	1.31E-03
Chromium	0.00E+00	mg/L	3.30E+01	mg/kg	2.09E+01	mg/kg	9.50E+01	1.00E-01	3.06E-01	4.10E-02	1.03E-01	1.03E-01	0.00E+00	3.93E-03	0.00E+00	0.00E+00	2.36E-03	0.00E+00	9.19E-04	3.22E-04	3.22E-04	7.86E-03	8	2.74E+03	3.42E+02	2.30E-05	1.37E+04	1.71E+03	4.59E-06
Copper	0.00E+00	mg/L	2.60E+01	mg/kg	1.31E+01	mg/kg	NA	1.56E+00	5.15E-01	4.10E-01	8.51E-01	8.51E-01	0.00E+00	3.10E-03	0.00E+00	NA	2.89E-02	0.00E+00	5.77E-03	1.66E-03	1.66E-03	4.11E-02	1	1.17E+01	1.17E+01	3.52E-03	1.51E+01	1.51E+01	2.72E-03
Lead	0.00E+00	mg/L	3.50E+01	mg/kg	1.98E+01	mg/kg	4.50E-01	7.10E-02	4.52E-01	7.14E-02	2.04E-01	2.04E-01	0.00E+00	4.17E-03	0.00E+00	0.00E+00	1.78E-03	0.00E+00	1.52E-03	6.03E-04	6.03E-04	8.67E-03	8	8.00E+00	1.00E+00	8.67E-03	8.00E+01	1.00E+01	8.67E-04
Mercury	0.00E+00	mg/L	3.30E-02	mg/kg	2.17E-01	mg/kg	NA	1.14E+00	3.01E+00	7.43E-01	1.92E-01	1.92E-01	0.00E+00	3.93E-06	0.00E+00	NA	2.68E-05	0.00E+00	1.73E-04	6.21E-06	6.21E-06	2.16E-04	1	1.00E+00	1.00E+00	2.16E-04	5.00E+00	5.00E+00	4.32E-05
Nickel	0.00E+00	mg/L	2.50E+01	mg/kg	1.19E+01	mg/kg	NA	4.86E-01	2.08E+00	5.80E-02	2.08E-01	2.08E-01	0.00E+00	2.98E-03	0.00E+00	NA	8.69E-03	0.00E+00	7.43E-04	3.70E-04	3.70E-04	1.32E-02	8	4.00E+01	5.00E+00	2.63E-03	8.00E+01	1.00E+01	1.32E-03
Selenium	0.00E+00	mg/L	7.70E+00	mg/kg	5.80E+00	mg/kg	NA	4.20E-01	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	9.18E-04	0.00E+00	NA	2.31E-03	0.00E+00	3.80E-03	1.91E-04	1.91E-04	7.41E-03	8	2.00E-01	2.50E-02	2.96E-01	3.30E-01	4.13E-02	1.80E-01
Zinc	0.00E+00	mg/L	1.21E+02	mg/kg	8.25E+01	mg/kg	1.00E+03	1.94E+00	4.41E+00	6.75E-01	1.30E+00	1.30E+00	0.00E+00	1.44E-02	0.00E+00	0.00E+00	1.68E-01	0.00E+00	5.97E-02	1.60E-02	1.60E-02	2.74E-01	8	1.60E+02	2.00E+01	1.37E-02	3.20E+02	4.00E+01	6.84E-03
																						Hazard Index (Total EEQ):				3.0E+00			4.6E-01

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0.18	unitless
Fish diet fraction =	0.65	unitless
Aq. Invert diet fraction =	0.12	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0.025	unitless
Bird diet fraction =	0.025	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.0014	kg/d
Food ingestion rate =	0.07	kg/d
Body weight =	1.02	kg
Home range =	35	acres
Water intake rate =	0.1	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	8.69E-02	unitless

TABLE F-14
TIER 1 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR GREAT BLUE HERONS AT SWMU 43

Hazard Estimate - Tier 1
Great Blue Heron

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	6.28E-06	mg/kg	6.40E-06	mg/kg	2.12E+04	4.21E+01	4.21E+01	3.87E-03	2.20E+00	2.20E+00	0.00E+00	6.28E-09	0.00E+00	0.00E+00	5.28E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.35E-07	8	1.40E-05	1.75E-06	3.06E-01	1.40E-04	1.75E-05	3.06E-02
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	7.12E-02	mg/kg	NA	NA	6.52E+01	3.58E-03	1.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	1.80E-01	2.25E-02	0.00E+00	1.80E+00	2.25E-01	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	6.70E-02	mg/kg	8.88E-02	mg/kg	NA	1.59E+00	1.59E+00	1.78E-01	0.00E+00	0.00E+00	0.00E+00	6.70E-05	0.00E+00	NA	2.13E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.80E-04	8	5.53E+02	6.91E+01	4.05E-06	2.77E+03	3.46E+02	8.10E-07
Benzo(a)pyrene	0.00E+00	mg/L	7.90E-02	mg/kg	1.40E-01	mg/kg	NA	1.33E+00	1.33E+00	1.34E-01	0.00E+00	0.00E+00	0.00E+00	7.90E-05	0.00E+00	NA	2.10E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.89E-04	8	5.53E+02	6.91E+01	4.18E-06	2.77E+03	3.46E+02	8.37E-07
Benzo(b)fluoranthene	0.00E+00	mg/L	1.20E-01	mg/kg	8.01E-02	mg/kg	NA	2.60E+00	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	1.20E-04	0.00E+00	NA	6.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.44E-04	8	5.53E+02	6.91E+01	1.08E-05	2.77E+03	3.46E+02	2.15E-06
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.00E-01	mg/kg	6.55E-02	mg/kg	NA	2.94E+00	2.94E+00	2.39E-01	0.00E+00	0.00E+00	0.00E+00	1.00E-04	0.00E+00	NA	5.88E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.88E-04	8	5.53E+02	6.91E+01	9.95E-06	2.77E+03	3.46E+02	1.99E-06
Benzo(k)fluoranthene	0.00E+00	mg/L	6.69E-01	mg/kg	9.35E-02	mg/kg	NA	2.60E+00	2.60E+00	1.61E-01	0.00E+00	0.00E+00	0.00E+00	6.69E-04	0.00E+00	NA	3.48E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.15E-03	8	5.53E+02	6.91E+01	6.00E-05	2.77E+03	3.46E+02	1.20E-05
Chrysene	0.00E+00	mg/L	9.82E-02	mg/kg	8.18E-02	mg/kg	NA	2.29E+00	2.29E+00	1.84E-01	0.00E+00	0.00E+00	0.00E+00	9.82E-05	0.00E+00	NA	4.50E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.48E-04	8	5.53E+02	6.91E+01	7.93E-06	2.77E+03	3.46E+02	1.59E-06
Fluoranthene	0.00E+00	mg/L	2.00E-01	mg/kg	6.94E-02	mg/kg	NA	3.04E+00	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	2.00E-04	0.00E+00	NA	1.22E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.42E-03	8	5.53E+02	6.91E+01	2.05E-05	2.77E+03	3.46E+02	4.10E-06
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	6.71E-02	mg/kg	7.28E-02	mg/kg	NA	2.86E+00	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	6.71E-05	0.00E+00	NA	3.84E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.51E-04	8	5.53E+02	6.91E+01	6.52E-06	2.77E+03	3.46E+02	1.30E-06
Pyrene	0.00E+00	mg/L	1.50E-01	mg/kg	1.18E-01	mg/kg	NA	1.75E+00	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	1.50E-04	0.00E+00	NA	5.25E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.75E-04	8	5.53E+02	6.91E+01	9.76E-06	2.77E+03	3.46E+02	1.95E-06
Arsenic	1.52E-02	mg/L	1.80E+01	mg/kg	1.77E+01	mg/kg	1.75E+03	6.90E-01	1.04E-01	3.75E-02	4.66E-03	4.66E-03	7.60E-04	1.80E-02	0.00E+00	1.28E+00	2.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E+00	8	5.14E+00	6.43E-01	2.06E+00	1.28E+01	1.61E+00	8.23E-01
Cadmium	0.00E+00	mg/L	2.20E+00	mg/kg	9.30E-01	mg/kg	NA	7.99E+00	8.41E+00	6.43E-01	2.96E-01	2.96E-01	0.00E+00	2.20E-03	0.00E+00	NA	3.52E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.74E-02	8	1.45E+00	1.81E-01	2.06E-01	2.00E+01	2.50E+00	1.49E-02
Chromium	0.00E+00	mg/L	3.30E+01	mg/kg	2.43E+01	mg/kg	7.75E+02	4.68E-01	3.06E-01	4.10E-02	9.93E-02	9.93E-02	0.00E+00	3.30E-02	0.00E+00	0.00E+00	3.09E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.39E-02	8	2.66E+00	3.33E-01	1.92E-01	2.78E+00	3.48E-01	1.84E-01
Copper	0.00E+00	mg/L	2.60E+01	mg/kg	1.68E+01	mg/kg	NA	5.25E+00	5.15E-01	3.53E-01	6.89E-01	6.89E-01	0.00E+00	2.60E-02	0.00E+00	NA	2.73E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.99E-01	8	4.70E+01	5.88E+00	5.09E-02	6.20E+01	7.75E+00	3.86E-02
Lead	0.00E+00	mg/L	3.50E+01	mg/kg	3.62E+01	mg/kg	8.95E+02	6.07E-01	4.02E-01	5.48E-02	1.46E-01	1.46E-01	0.00E+00	3.50E-02	0.00E+00	0.00E+00	4.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.75E-02	8	3.85E+00	4.81E-01	1.61E-01	1.93E+01	2.41E+00	3.22E-02
Mercury	0.00E+00	mg/L	3.30E-02	mg/kg	3.10E-01	mg/kg	NA	2.87E+00	3.30E+01	6.30E-01	1.05E+00	1.05E+00	0.00E+00	3.30E-05	0.00E+00	NA	1.89E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.22E-04	8	4.50E-01	5.63E-02	3.95E-03	9.00E-01	1.13E-01	1.98E-03
Nickel	0.00E+00	mg/L	2.50E+01	mg/kg	1.36E+01	mg/kg	NA	2.32E+00	7.80E+00	5.61E-02	1.94E-01	1.94E-01	0.00E+00	2.50E-02	0.00E+00	NA	1.16E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.41E-01	8	7.74E+01	9.68E+00	1.46E-02	1.07E+02	1.34E+01	1.05E-02
Selenium	0.00E+00	mg/L	7.70E+00	mg/kg	5.80E+00	mg/kg	NA	2.10E+00	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	7.70E-03	0.00E+00	NA	3.23E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.00E-02	8	5.00E-01	6.25E-02	6.41E-01	1.00E+00	1.25E-01	3.20E-01
Zinc	0.00E+00	mg/L	1.21E+02	mg/kg	1.05E+02	mg/kg	1.03E+04	7.53E+00	3.75E+00	6.06E-01	1.04E+00	1.04E+00	0.00E+00	1.21E-01	0.00E+00	0.00E+00	1.82E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E+00	8	1.45E+01	1.81E+00	1.07E+00	1.31E+02	1.64E+01	1.19E-01
																						Hazard Index (Total EEQ):			4.7E+00			1.6E+00

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): [n] See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used a default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0.96	unitless
Aq. Invert diet fraction =	0.04	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.0022	kg/d
Food ingestion rate =	0.11	kg/d
Body weight =	2.2	kg
Home range =	21	acres
Water intake rate =	0.11	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.00E+00	unitless

TABLE F-15
TIER 2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN EEQs AND HAZARD INDICES FOR GREAT BLUE HERONS AT SWMU 43

Hazard Estimate - Tier 2
Great Blue Heron

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF	PDE Surface Water	PDE Sediment	PDE Soil	PDE Fish	PDE Aq. Invert.	PDE Terr. Invert.	PDE Plants	PDE Mammals	PDE Birds	Total PDE	Chemical-Specific Toxicity Value UF	NOAEL	Adjusted NOAEL	EEQ N	LOAEL	Adjusted LOAEL	EEQ L
							---------- unitless ----------						mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d		mg/kg-d	mg/kg-d	
2,3,7,8-TCDD-TE	0.00E+00	mg/L	6.28E-06	mg/kg	6.40E-06	mg/kg	7.68E+03	3.95E+00	3.96E+00	3.87E-03	2.20E+00	2.20E+00	0.00E+00	7.77E-10	0.00E+00	0.00E+00	6.14E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.92E-09	8	1.40E-05	1.75E-06	3.95E-03	1.40E-04	1.75E-05	3.95E-04
Aroclor 1254	0.00E+00	mg/L	0.00E+00	mg/kg	2.18E-02	mg/kg	NA	NA	1.97E+00	3.58E-03	5.00E-01	5.00E-01	0.00E+00	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8	1.80E-01	2.25E-02	0.00E+00	1.80E+00	2.25E-01	0.00E+00
Benzo(a)anthracene	0.00E+00	mg/L	6.70E-02	mg/kg	4.24E-02	mg/kg	NA	1.59E+00	1.59E+00	2.40E-01	0.00E+00	0.00E+00	0.00E+00	8.29E-06	0.00E+00	NA	2.64E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-05	8	5.53E+02	6.91E+01	5.01E-07	2.77E+03	3.46E+02	1.00E-07
Benzo(a)pyrene	0.00E+00	mg/L	7.90E-02	mg/kg	6.27E-02	mg/kg	NA	1.33E+00	1.33E+00	1.36E-01	0.00E+00	0.00E+00	0.00E+00	9.77E-06	0.00E+00	NA	2.60E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.58E-05	8	5.53E+02	6.91E+01	5.18E-07	2.77E+03	3.46E+02	1.04E-07
Benzo(b)fluoranthene	0.00E+00	mg/L	1.20E-01	mg/kg	8.01E-02	mg/kg	NA	2.60E+00	2.60E+00	3.10E-01	0.00E+00	0.00E+00	0.00E+00	1.48E-05	0.00E+00	NA	7.72E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.21E-05	8	5.53E+02	6.91E+01	1.33E-06	2.77E+03	3.46E+02	2.66E-07
Benzo(g,h,i)perylene	0.00E+00	mg/L	1.00E-01	mg/kg	4.09E-02	mg/kg	NA	2.94E+00	2.94E+00	2.20E-01	0.00E+00	0.00E+00	0.00E+00	1.24E-05	0.00E+00	NA	7.28E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.51E-05	8	5.53E+02	6.91E+01	1.23E-06	2.77E+03	3.46E+02	2.46E-07
Benzo(k)fluoranthene	0.00E+00	mg/L	6.69E-01	mg/kg	4.44E-02	mg/kg	NA	2.60E+00	2.60E+00	1.79E-01	0.00E+00	0.00E+00	0.00E+00	8.28E-05	0.00E+00	NA	4.30E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.13E-04	8	5.53E+02	6.91E+01	7.42E-06	2.77E+03	3.46E+02	1.48E-06
Chrysene	0.00E+00	mg/L	9.82E-02	mg/kg	4.46E-02	mg/kg	NA	2.29E+00	2.29E+00	2.35E-01	0.00E+00	0.00E+00	0.00E+00	1.22E-05	0.00E+00	NA	5.56E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.78E-05	8	5.53E+02	6.91E+01	9.81E-07	2.77E+03	3.46E+02	1.96E-07
Fluoranthene	0.00E+00	mg/L	2.00E-01	mg/kg	6.94E-02	mg/kg	NA	3.04E+00	3.04E+00	5.00E-01	0.00E+00	0.00E+00	0.00E+00	2.47E-05	0.00E+00	NA	1.50E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E-04	8	5.53E+02	6.91E+01	2.53E-06	2.77E+03	3.46E+02	5.07E-07
Indeno(1,2,3-cd)pyrene	0.00E+00	mg/L	6.71E-02	mg/kg	4.10E-02	mg/kg	NA	2.86E+00	2.86E+00	1.10E-01	0.00E+00	0.00E+00	0.00E+00	8.30E-06	0.00E+00	NA	4.75E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.58E-05	8	5.53E+02	6.91E+01	8.07E-07	2.77E+03	3.46E+02	1.61E-07
Pyrene	0.00E+00	mg/L	1.50E-01	mg/kg	1.18E-01	mg/kg	NA	1.75E+00	1.75E+00	7.20E-01	0.00E+00	0.00E+00	0.00E+00	1.86E-05	0.00E+00	NA	6.50E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.35E-05	8	5.53E+02	6.91E+01	1.21E-06	2.77E+03	3.46E+02	2.42E-07
Arsenic	1.52E-02	mg/L	1.80E+01	mg/kg	1.06E+01	mg/kg	5.70E+02	1.43E-01	1.21E-01	3.75E-02	5.12E-03	5.12E-03	9.40E-05	2.23E-03	0.00E+00	5.15E-02	6.37E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.44E-02	8	5.14E+00	6.43E-01	8.47E-02	1.28E+01	1.61E+00	3.39E-02
Cadmium	0.00E+00	mg/L	2.20E+00	mg/kg	3.53E-01	mg/kg	NA	6.00E-01	1.03E+01	9.98E-01	4.93E-01	4.93E-01	0.00E+00	2.72E-04	0.00E+00	NA	3.27E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.99E-04	8	1.45E+00	1.81E-01	3.30E-03	2.00E+01	2.50E+00	2.40E-04
Chromium	0.00E+00	mg/L	3.30E+01	mg/kg	2.09E+01	mg/kg	9.50E+01	1.00E-01	3.06E-01	4.10E-02	1.03E-01	1.03E-01	0.00E+00	4.08E-03	0.00E+00	0.00E+00	8.17E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.90E-03	8	2.66E+00	3.33E-01	1.47E-02	2.78E+00	3.48E-01	1.41E-02
Copper	0.00E+00	mg/L	2.60E+01	mg/kg	1.31E+01	mg/kg	NA	1.56E+00	5.15E-01	4.10E-01	8.51E-01	8.51E-01	0.00E+00	3.22E-03	0.00E+00	NA	1.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.32E-02	8	4.70E+01	5.88E+00	2.25E-03	6.20E+01	7.75E+00	1.71E-03
Lead	0.00E+00	mg/L	3.50E+01	mg/kg	1.98E+01	mg/kg	4.50E-01	7.10E-02	4.52E-01	7.14E-02	2.04E-01	2.04E-01	0.00E+00	4.33E-03	0.00E+00	0.00E+00	6.15E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.95E-03	8	3.85E+00	4.81E-01	1.03E-02	1.93E+01	2.41E+00	2.06E-03
Mercury	0.00E+00	mg/L	3.30E-02	mg/kg	2.17E-01	mg/kg	NA	1.14E+00	3.01E+00	7.43E-01	1.92E-01	1.92E-01	0.00E+00	4.08E-06	0.00E+00	NA	9.28E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-05	8	4.50E-01	5.63E-02	2.38E-04	9.00E-01	1.13E-01	1.19E-04
Nickel	0.00E+00	mg/L	2.50E+01	mg/kg	1.19E+01	mg/kg	NA	4.86E-01	2.08E+00	5.80E-02	2.08E-01	2.08E-01	0.00E+00	3.09E-03	0.00E+00	NA	3.01E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.10E-03	8	7.74E+01	9.68E+00	6.30E-04	1.07E+02	1.34E+01	4.56E-04
Selenium	0.00E+00	mg/L	7.70E+00	mg/kg	5.80E+00	mg/kg	NA	4.20E-01	5.80E-01	6.10E-01	2.20E-01	2.20E-01	0.00E+00	9.53E-04	0.00E+00	NA	8.00E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E-03	8	5.00E-01	6.25E-02	2.80E-02	1.00E+00	1.25E-01	1.40E-02
Zinc	0.00E+00	mg/L	1.21E+02	mg/kg	8.25E+01	mg/kg	1.00E+03	1.94E+00	4.41E+00	6.75E-01	1.30E+00	1.30E+00	0.00E+00	1.50E-02	0.00E+00	0.00E+00	5.80E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.29E-02	8	1.45E+01	1.81E+00	4.02E-02	1.31E+02	1.64E+01	4.45E-03
																						Hazard Index (Total EEQ):		1.9E-01				7.1E-02

Intake Equation:

$$Ej = \left(\frac{A}{HR} \left[\sum_{i=1}^{m} \left(\frac{IRi \, x \, Cij}{BW} \right) \right] \right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box): n See appropriate text tables for equations.
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

Species-Specific Factors

Plant diet fraction =	0	unitless
Fish diet fraction =	0.96	unitless
Aq. Invert diet fraction =	0.04	unitless
Terr. Invert diet fraction =	0	unitless
Mammal diet fraction =	0	unitless
Bird diet fraction =	0	unitless
Soil ingestion rate =	0	kg/d
Sediment ingestion rate =	0.002	kg/d
Food ingestion rate =	0.1	kg/d
Body weight =	2.34	kg
Home range =	21	acres
Water intake rate =	0.1	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	1.45E-01	unitless

TABLE F-16
TIER 2 CHEMICALS OF POTENTIAL CONCERN EEQs AND HAZARD INDICES FOR RED FOXES AT SWMU 43 (EXAMPLE CALCULATION)

Hazard Estimate - Tier 2
Red Fox (Example Calculation)

Chemical	Surface Water Exposure Point Concentration	Units	Sediment Exposure Point Concentration	Units	Soil Exposure Point Concentration	Units	Fish BAF	Aq. Invert. BAF	Terr. Invert. BAF	Plant BAF	Mammal BAF	Bird BAF
									------ unitless ------			
2,3,7,8-TCDD-TE	0	mg/L	0	mg/kg	0.00000640271	mg/kg	NA	NA	=EXP(1.18*LN(F8)+3.53)/F8	0.00387471710547971	2.2	2.2
Aroclor 1254	0	mg/L	0	mg/kg	0.0217845953206772	mg/kg	NA	NA	=EXP(1.29*LN(F9)+1.79)/F9	0.00357733819916289	0.5	0.5
Benzo(a)anthracene	0	mg/L	0	mg/kg	0.0424	mg/kg	NA	NA	1.59	=EXP(0.5944*LN(F10)-2.7078)/F10	0	0
Benzo(a)pyrene	0	mg/L	0	mg/kg	0.0627	mg/kg	NA	NA	1.33	=EXP(0.975*LN(F11)-2.0615)/F11	0	0
Benzo(b)fluoranthene	0	mg/L	0	mg/kg	0.0801	mg/kg	NA	NA	2.6	0.31	0	0
Benzo(g,h,i)perylene	0	mg/L	0	mg/kg	0.0408820339850084	mg/kg	NA	NA	2.94	=EXP(1.1829*LN(F13)-0.9313)/F13	0	0
Benzo(k)fluoranthene	0	mg/L	0	mg/kg	0.0443630650431665	mg/kg	NA	NA	2.6	=EXP(0.8595*LN(F14)-2.1579)/F14	0	0
Chrysene	0	mg/L	0	mg/kg	0.0446	mg/kg	NA	NA	2.29	=EXP(0.5944*LN(F15)-2.7078)/F15	0	0
Fluoranthene	0	mg/L	0	mg/kg	0.0694	mg/kg	NA	NA	3.04	0.5	0	0
Indeno(1,2,3-cd)pyrene	0	mg/L	0	mg/kg	0.0410232667506591	mg/kg	NA	NA	2.86	0.11	0	0
Pyrene	0	mg/L	0	mg/kg	0.118	mg/kg	NA	NA	1.75	0.72	0	0
Arsenic	0.0152	mg/L	0	mg/kg	10.58	mg/kg	570	NA	=EXP(0.706*LN(F19)-1.421)/F19	0.03752	0.00500476367585271	0.00500476367585271
Cadmium	0	mg/L	0	mg/kg	0.352838139052078	mg/kg	NA	NA	=EXP(0.795*LN(F20)+2.114)/F20	=EXP(0.546*LN(F20)-0.475)/F20	=EXP(0.4723*LN(F20)-1.2571)/F20	=EXP(0.4723*LN(F20)-1.2571)/F20
Chromium	0	mg/L	0	mg/kg	20.88	mg/kg	NA	NA	0.306	0.041	=EXP(0.7338*LN(F21)-1.4599)/F21	=EXP(0.7338*LN(F21)-1.4599)/F21
Copper	0	mg/L	0	mg/kg	13.12	mg/kg	NA	NA	0.515	=EXP(0.394*LN(F22)+0.668)/F22	=EXP(0.144*LN(F22)+2.042)/F22	=EXP(0.144*LN(F22)+2.042)/F22
Lead	0	mg/L	0	mg/kg	19.83	mg/kg	NA	NA	=EXP(0.807*LN(F23)-0.218)/F23	=EXP(0.561*LN(F23)-1.328)/F23	=EXP(0.4422*LN(F23)+0.0761)/F23	=EXP(0.4422*LN(F23)+0.0761)/F23
Mercury	0	mg/L	0	mg/kg	0.217	mg/kg	NA	NA	=EXP(0.33*LN(F24)+0.078)/F24	=EXP(0.54*LN(F24)-1)/F24	0.192	0.192
Nickel	0	mg/L	0	mg/kg	11.94	mg/kg	NA	NA	=EXP(-1.54*LN(F25)+7.03)/F25	=EXP(0.748*LN(F25)-2.223)/F25	=EXP(0.4658*LN(F25)-0.2462)/F25	=EXP(0.4658*LN(F25)-0.2462)/F25
Selenium	0	mg/L	0	mg/kg	5.8	mg/kg	NA	NA	=EXP(0.733*LN(F26)-0.075)/F26	=EXP(1.104*LN(F26)-0.677)/F26	=EXP(0.3764*LN(F26)-0.4158)/F26	=EXP(0.3764*LN(F26)-0.4158)/F26
Zinc	0	mg/L	0	mg/kg	82.49	mg/kg	NA	NA	=EXP(0.328*LN(F27)+4.449)/F27	=EXP(0.554*LN(F27)+1.575)/F27	=EXP(0.0706*LN(F27)+4.3632)/F27	=EXP(0.0706*LN(F27)+4.3632)/F27

Chemical	PDE Surface Water mg/kg-d	PDE Sediment mg/kg-d	PDE Soil mg/kg-d	PDE Fish mg/kg-d	PDE Aq. Invert. mg/kg-d	PDE Terr. Invert. mg/kg-d	PDE Plants mg/kg-d	PDE Mammals mg/kg-d	PDE Birds mg/kg-d
2,3,7,8-TCDD-TE	=$AA$45*B8*$AA$47/$AA$43	=$AA$41*D8*$AA$47/$AA$43	=$AA$40*F8*$AA$47/$AA$43	=IF(H8="NA","NA",$AA$35*B8*H8*$AA$42*$AA$47/$AA$43)	=IF(I8="NA","NA",$AA$36*D8*I8*$AA$42*$AA$47/$AA$43)	=IF(J8="NA","NA",$AA$37*F8*J8*$AA$42*$AA$47/$AA$43)	=IF(K8="NA","NA",$AA$34*F8*K8*$AA$42*$AA$47/$AA$43)	=IF(L8="NA","NA",$AA$38*F8*L8*$AA$42*$AA$47/$AA$43)	=IF(M8="NA","NA",$AA$39*F8*M8*$AA$42*$AA$47/$AA$43)
Aroclor 1254	=$AA$45*B9*$AA$47/$AA$43	=$AA$41*D9*$AA$47/$AA$43	=$AA$40*F9*$AA$47/$AA$43	=IF(H9="NA","NA",$AA$35*B9*H9*$AA$42*$AA$47/$AA$43)	=IF(I9="NA","NA",$AA$36*D9*I9*$AA$42*$AA$47/$AA$43)	=IF(J9="NA","NA",$AA$37*F9*J9*$AA$42*$AA$47/$AA$43)	=IF(K9="NA","NA",$AA$34*F9*K9*$AA$42*$AA$47/$AA$43)	=IF(L9="NA","NA",$AA$38*F9*L9*$AA$42*$AA$47/$AA$43)	=IF(M9="NA","NA",$AA$39*F9*M9*$AA$42*$AA$47/$AA$43)
Benzo(a)anthracene	=$AA$45*B10*$AA$47/$AA$43	=$AA$41*D10*$AA$47/$AA$43	=$AA$40*F10*$AA$47/$AA$43	=IF(H10="NA","NA",$AA$35*B10*H10*$AA$42*$AA$47/$AA$43)	=IF(I10="NA","NA",$AA$36*D10*I10*$AA$42*$AA$47/$AA$43)	=IF(J10="NA","NA",$AA$37*F10*J10*$AA$42*$AA$47/$AA$43)	=IF(K10="NA","NA",$AA$34*F10*K10*$AA$42*$AA$47/$AA$43)	=IF(L10="NA","NA",$AA$38*F10*L10*$AA$42*$AA$47/$AA$43)	=IF(M10="NA","NA",$AA$39*F10*M10*$AA$42*$AA$47/$AA$43)
Benzo(a)pyrene	=$AA$45*B11*$AA$47/$AA$43	=$AA$41*D11*$AA$47/$AA$43	=$AA$40*F11*$AA$47/$AA$43	=IF(H11="NA","NA",$AA$35*B11*H11*$AA$42*$AA$47/$AA$43)	=IF(I11="NA","NA",$AA$36*D11*I11*$AA$42*$AA$47/$AA$43)	=IF(J11="NA","NA",$AA$37*F11*J11*$AA$42*$AA$47/$AA$43)	=IF(K11="NA","NA",$AA$34*F11*K11*$AA$42*$AA$47/$AA$43)	=IF(L11="NA","NA",$AA$38*F11*L11*$AA$42*$AA$47/$AA$43)	=IF(M11="NA","NA",$AA$39*F11*M11*$AA$42*$AA$47/$AA$43)
Benzo(b)fluoranthene	=$AA$45*B12*$AA$47/$AA$43	=$AA$41*D12*$AA$47/$AA$43	=$AA$40*F12*$AA$47/$AA$43	=IF(H12="NA","NA",$AA$35*B12*H12*$AA$42*$AA$47/$AA$43)	=IF(I12="NA","NA",$AA$36*D12*I12*$AA$42*$AA$47/$AA$43)	=IF(J12="NA","NA",$AA$37*F12*J12*$AA$42*$AA$47/$AA$43)	=IF(K12="NA","NA",$AA$34*F12*K12*$AA$42*$AA$47/$AA$43)	=IF(L12="NA","NA",$AA$38*F12*L12*$AA$42*$AA$47/$AA$43)	=IF(M12="NA","NA",$AA$39*F12*M12*$AA$42*$AA$47/$AA$43)
Benzo(g,h,i)perylene	=$AA$45*B13*$AA$47/$AA$43	=$AA$41*D13*$AA$47/$AA$43	=$AA$40*F13*$AA$47/$AA$43	=IF(H13="NA","NA",$AA$35*B13*H13*$AA$42*$AA$47/$AA$43)	=IF(I13="NA","NA",$AA$36*D13*I13*$AA$42*$AA$47/$AA$43)	=IF(J13="NA","NA",$AA$37*F13*J13*$AA$42*$AA$47/$AA$43)	=IF(K13="NA","NA",$AA$34*F13*K13*$AA$42*$AA$47/$AA$43)	=IF(L13="NA","NA",$AA$38*F13*L13*$AA$42*$AA$47/$AA$43)	=IF(M13="NA","NA",$AA$39*F13*M13*$AA$42*$AA$47/$AA$43)
Benzo(k)fluoranthene	=$AA$45*B14*$AA$47/$AA$43	=$AA$41*D14*$AA$47/$AA$43	=$AA$40*F14*$AA$47/$AA$43	=IF(H14="NA","NA",$AA$35*B14*H14*$AA$42*$AA$47/$AA$43)	=IF(I14="NA","NA",$AA$36*D14*I14*$AA$42*$AA$47/$AA$43)	=IF(J14="NA","NA",$AA$37*F14*J14*$AA$42*$AA$47/$AA$43)	=IF(K14="NA","NA",$AA$34*F14*K14*$AA$42*$AA$47/$AA$43)	=IF(L14="NA","NA",$AA$38*F14*L14*$AA$42*$AA$47/$AA$43)	=IF(M14="NA","NA",$AA$39*F14*M14*$AA$42*$AA$47/$AA$43)
Chrysene	=$AA$45*B15*$AA$47/$AA$43	=$AA$41*D15*$AA$47/$AA$43	=$AA$40*F15*$AA$47/$AA$43	=IF(H15="NA","NA",$AA$35*B15*H15*$AA$42*$AA$47/$AA$43)	=IF(I15="NA","NA",$AA$36*D15*I15*$AA$42*$AA$47/$AA$43)	=IF(J15="NA","NA",$AA$37*F15*J15*$AA$42*$AA$47/$AA$43)	=IF(K15="NA","NA",$AA$34*F15*K15*$AA$42*$AA$47/$AA$43)	=IF(L15="NA","NA",$AA$38*F15*L15*$AA$42*$AA$47/$AA$43)	=IF(M15="NA","NA",$AA$39*F15*M15*$AA$42*$AA$47/$AA$43)
Fluoranthene	=$AA$45*B16*$AA$47/$AA$43	=$AA$41*D16*$AA$47/$AA$43	=$AA$40*F16*$AA$47/$AA$43	=IF(H16="NA","NA",$AA$35*B16*H16*$AA$42*$AA$47/$AA$43)	=IF(I16="NA","NA",$AA$36*D16*I16*$AA$42*$AA$47/$AA$43)	=IF(J16="NA","NA",$AA$37*F16*J16*$AA$42*$AA$47/$AA$43)	=IF(K16="NA","NA",$AA$34*F16*K16*$AA$42*$AA$47/$AA$43)	=IF(L16="NA","NA",$AA$38*F16*L16*$AA$42*$AA$47/$AA$43)	=IF(M16="NA","NA",$AA$39*F16*M16*$AA$42*$AA$47/$AA$43)
Indeno(1,2,3-cd)pyrene	=$AA$45*B17*$AA$47/$AA$43	=$AA$41*D17*$AA$47/$AA$43	=$AA$40*F17*$AA$47/$AA$43	=IF(H17="NA","NA",$AA$35*B17*H17*$AA$42*$AA$47/$AA$43)	=IF(I17="NA","NA",$AA$36*D17*I17*$AA$42*$AA$47/$AA$43)	=IF(J17="NA","NA",$AA$37*F17*J17*$AA$42*$AA$47/$AA$43)	=IF(K17="NA","NA",$AA$34*F17*K17*$AA$42*$AA$47/$AA$43)	=IF(L17="NA","NA",$AA$38*F17*L17*$AA$42*$AA$47/$AA$43)	=IF(M17="NA","NA",$AA$39*F17*M17*$AA$42*$AA$47/$AA$43)
Pyrene	=$AA$45*B18*$AA$47/$AA$43	=$AA$41*D18*$AA$47/$AA$43	=$AA$40*F18*$AA$47/$AA$43	=IF(H18="NA","NA",$AA$35*B18*H18*$AA$42*$AA$47/$AA$43)	=IF(I18="NA","NA",$AA$36*D18*I18*$AA$42*$AA$47/$AA$43)	=IF(J18="NA","NA",$AA$37*F18*J18*$AA$42*$AA$47/$AA$43)	=IF(K18="NA","NA",$AA$34*F18*K18*$AA$42*$AA$47/$AA$43)	=IF(L18="NA","NA",$AA$38*F18*L18*$AA$42*$AA$47/$AA$43)	=IF(M18="NA","NA",$AA$39*F18*M18*$AA$42*$AA$47/$AA$43)
Arsenic	=$AA$45*B19*$AA$47/$AA$43	=$AA$41*D19*$AA$47/$AA$43	=$AA$40*F19*$AA$47/$AA$43	=IF(H19="NA","NA",$AA$35*B19*H19*$AA$42*$AA$47/$AA$43)	=IF(I19="NA","NA",$AA$36*D19*I19*$AA$42*$AA$47/$AA$43)	=IF(J19="NA","NA",$AA$37*F19*J19*$AA$42*$AA$47/$AA$43)	=IF(K19="NA","NA",$AA$34*F19*K19*$AA$42*$AA$47/$AA$43)	=IF(L19="NA","NA",$AA$38*F19*L19*$AA$42*$AA$47/$AA$43)	=IF(M19="NA","NA",$AA$39*F19*M19*$AA$42*$AA$47/$AA$43)
Cadmium	=$AA$45*B20*$AA$47/$AA$43	=$AA$41*D20*$AA$47/$AA$43	=$AA$40*F20*$AA$47/$AA$43	=IF(H20="NA","NA",$AA$35*B20*H20*$AA$42*$AA$47/$AA$43)	=IF(I20="NA","NA",$AA$36*D20*I20*$AA$42*$AA$47/$AA$43)	=IF(J20="NA","NA",$AA$37*F20*J20*$AA$42*$AA$47/$AA$43)	=IF(K20="NA","NA",$AA$34*F20*K20*$AA$42*$AA$47/$AA$43)	=IF(L20="NA","NA",$AA$38*F20*L20*$AA$42*$AA$47/$AA$43)	=IF(M20="NA","NA",$AA$39*F20*M20*$AA$42*$AA$47/$AA$43)
Chromium	=$AA$45*B21*$AA$47/$AA$43	=$AA$41*D21*$AA$47/$AA$43	=$AA$40*F21*$AA$47/$AA$43	=IF(H21="NA","NA",$AA$35*B21*H21*$AA$42*$AA$47/$AA$43)	=IF(I21="NA","NA",$AA$36*D21*I21*$AA$42*$AA$47/$AA$43)	=IF(J21="NA","NA",$AA$37*F21*J21*$AA$42*$AA$47/$AA$43)	=IF(K21="NA","NA",$AA$34*F21*K21*$AA$42*$AA$47/$AA$43)	=IF(L21="NA","NA",$AA$38*F21*L21*$AA$42*$AA$47/$AA$43)	=IF(M21="NA","NA",$AA$39*F21*M21*$AA$42*$AA$47/$AA$43)
Copper	=$AA$45*B22*$AA$47/$AA$43	=$AA$41*D22*$AA$47/$AA$43	=$AA$40*F22*$AA$47/$AA$43	=IF(H22="NA","NA",$AA$35*B22*H22*$AA$42*$AA$47/$AA$43)	=IF(I22="NA","NA",$AA$36*D22*I22*$AA$42*$AA$47/$AA$43)	=IF(J22="NA","NA",$AA$37*F22*J22*$AA$42*$AA$47/$AA$43)	=IF(K22="NA","NA",$AA$34*F22*K22*$AA$42*$AA$47/$AA$43)	=IF(L22="NA","NA",$AA$38*F22*L22*$AA$42*$AA$47/$AA$43)	=IF(M22="NA","NA",$AA$39*F22*M22*$AA$42*$AA$47/$AA$43)
Lead	=$AA$45*B23*$AA$47/$AA$43	=$AA$41*D23*$AA$47/$AA$43	=$AA$40*F23*$AA$47/$AA$43	=IF(H23="NA","NA",$AA$35*B23*H23*$AA$42*$AA$47/$AA$43)	=IF(I23="NA","NA",$AA$36*D23*I23*$AA$42*$AA$47/$AA$43)	=IF(J23="NA","NA",$AA$37*F23*J23*$AA$42*$AA$47/$AA$43)	=IF(K23="NA","NA",$AA$34*F23*K23*$AA$42*$AA$47/$AA$43)	=IF(L23="NA","NA",$AA$38*F23*L23*$AA$42*$AA$47/$AA$43)	=IF(M23="NA","NA",$AA$39*F23*M23*$AA$42*$AA$47/$AA$43)
Mercury	=$AA$45*B24*$AA$47/$AA$43	=$AA$41*D24*$AA$47/$AA$43	=$AA$40*F24*$AA$47/$AA$43	=IF(H24="NA","NA",$AA$35*B24*H24*$AA$42*$AA$47/$AA$43)	=IF(I24="NA","NA",$AA$36*D24*I24*$AA$42*$AA$47/$AA$43)	=IF(J24="NA","NA",$AA$37*F24*J24*$AA$42*$AA$47/$AA$43)	=IF(K24="NA","NA",$AA$34*F24*K24*$AA$42*$AA$47/$AA$43)	=IF(L24="NA","NA",$AA$38*F24*L24*$AA$42*$AA$47/$AA$43)	=IF(M24="NA","NA",$AA$39*F24*M24*$AA$42*$AA$47/$AA$43)
Nickel	=$AA$45*B25*$AA$47/$AA$43	=$AA$41*D25*$AA$47/$AA$43	=$AA$40*F25*$AA$47/$AA$43	=IF(H25="NA","NA",$AA$35*B25*H25*$AA$42*$AA$47/$AA$43)	=IF(I25="NA","NA",$AA$36*D25*I25*$AA$42*$AA$47/$AA$43)	=IF(J25="NA","NA",$AA$37*F25*J25*$AA$42*$AA$47/$AA$43)	=IF(K25="NA","NA",$AA$34*F25*K25*$AA$42*$AA$47/$AA$43)	=IF(L25="NA","NA",$AA$38*F25*L25*$AA$42*$AA$47/$AA$43)	=IF(M25="NA","NA",$AA$39*F25*M25*$AA$42*$AA$47/$AA$43)
Selenium	=$AA$45*B26*$AA$47/$AA$43	=$AA$41*D26*$AA$47/$AA$43	=$AA$40*F26*$AA$47/$AA$43	=IF(H26="NA","NA",$AA$35*B26*H26*$AA$42*$AA$47/$AA$43)	=IF(I26="NA","NA",$AA$36*D26*I26*$AA$42*$AA$47/$AA$43)	=IF(J26="NA","NA",$AA$37*F26*J26*$AA$42*$AA$47/$AA$43)	=IF(K26="NA","NA",$AA$34*F26*K26*$AA$42*$AA$47/$AA$43)	=IF(L26="NA","NA",$AA$38*F26*L26*$AA$42*$AA$47/$AA$43)	=IF(M26="NA","NA",$AA$39*F26*M26*$AA$42*$AA$47/$AA$43)
Zinc	=$AA$45*B27*$AA$47/$AA$43	=$AA$41*D27*$AA$47/$AA$43	=$AA$40*F27*$AA$47/$AA$43	=IF(H27="NA","NA",$AA$35*B27*H27*$AA$42*$AA$47/$AA$43)	=IF(I27="NA","NA",$AA$36*D27*I27*$AA$42*$AA$47/$AA$43)	=IF(J27="NA","NA",$AA$37*F27*J27*$AA$42*$AA$47/$AA$43)	=IF(K27="NA","NA",$AA$34*F27*K27*$AA$42*$AA$47/$AA$43)	=IF(L27="NA","NA",$AA$38*F27*L27*$AA$42*$AA$47/$AA$43)	=IF(M27="NA","NA",$AA$39*F27*M27*$AA$42*$AA$47/$AA$43)

Chemical	Total PDE mg/kg-d	Chemical-Specific Toxicity Value UF	NOAEL mg/kg-d	Adjusted NOAEL mg/kg-d	EEQ N	LOAEL mg/kg-d	Adjusted LOAEL mg/kg-d	EEQ L
2,3,7,8-TCDD-TE	=SUM(N8:V8)	8	0.000001	=IF(Y8="NA","NA",Y8/X8)	=IF(Y8="NA","NA",W8/Z8)	0.00001	=IF(AB8="NA","NA",AB8/X8)	=IF(AB8="NA","NA",W8/AC8)
Aroclor 1254	=SUM(N9:V9)	8	0.14	=IF(Y9="NA","NA",Y9/X9)	=IF(Y9="NA","NA",W9/Z9)	0.68	=IF(AB9="NA","NA",AB9/X9)	=IF(AB9="NA","NA",W9/AC9)
Benzo(a)anthracene	=SUM(N10:V10)	8	0.615	=IF(Y10="NA","NA",Y10/X10)	=IF(Y10="NA","NA",W10/Z10)	3.07	=IF(AB10="NA","NA",AB10/X10)	=IF(AB10="NA","NA",W10/AC10)
Benzo(a)pyrene	=SUM(N11:V11)	8	1	=IF(Y11="NA","NA",Y11/X11)	=IF(Y11="NA","NA",W11/Z11)	10	=IF(AB11="NA","NA",AB11/X11)	=IF(AB11="NA","NA",W11/AC11)
Benzo(b)fluoranthene	=SUM(N12:V12)	8	0.615	=IF(Y12="NA","NA",Y12/X12)	=IF(Y12="NA","NA",W12/Z12)	3.07	=IF(AB12="NA","NA",AB12/X12)	=IF(AB12="NA","NA",W12/AC12)
Benzo(g,h,i)perylene	=SUM(N13:V13)	8	0.615	=IF(Y13="NA","NA",Y13/X13)	=IF(Y13="NA","NA",W13/Z13)	3.07	=IF(AB13="NA","NA",AB13/X13)	=IF(AB13="NA","NA",W13/AC13)
Benzo(k)fluoranthene	=SUM(N14:V14)	8	0.615	=IF(Y14="NA","NA",Y14/X14)	=IF(Y14="NA","NA",W14/Z14)	3.07	=IF(AB14="NA","NA",AB14/X14)	=IF(AB14="NA","NA",W14/AC14)
Chrysene	=SUM(N15:V15)	8	0.615	=IF(Y15="NA","NA",Y15/X15)	=IF(Y15="NA","NA",W15/Z15)	3.07	=IF(AB15="NA","NA",AB15/X15)	=IF(AB15="NA","NA",W15/AC15)
Fluoranthene	=SUM(N16:V16)	8	0.615	=IF(Y16="NA","NA",Y16/X16)	=IF(Y16="NA","NA",W16/Z16)	3.07	=IF(AB16="NA","NA",AB16/X16)	=IF(AB16="NA","NA",W16/AC16)
Indeno(1,2,3-cd)pyrene	=SUM(N17:V17)	8	0.615	=IF(Y17="NA","NA",Y17/X17)	=IF(Y17="NA","NA",W17/Z17)	3.07	=IF(AB17="NA","NA",AB17/X17)	=IF(AB17="NA","NA",W17/AC17)
Pyrene	=SUM(N18:V18)	8	0.615	=IF(Y18="NA","NA",Y18/X18)	=IF(Y18="NA","NA",W18/Z18)	3.07	=IF(AB18="NA","NA",AB18/X18)	=IF(AB18="NA","NA",W18/AC18)
Arsenic	=SUM(N19:V19)	8	0.126	=IF(Y19="NA","NA",Y19/X19)	=IF(Y19="NA","NA",W19/Z19)	1.26	=IF(AB19="NA","NA",AB19/X19)	=IF(AB19="NA","NA",W19/AC19)
Cadmium	=SUM(N20:V20)	8	1	=IF(Y20="NA","NA",Y20/X20)	=IF(Y20="NA","NA",W20/Z20)	10	=IF(AB20="NA","NA",AB20/X20)	=IF(AB20="NA","NA",W20/AC20)
Chromium	=SUM(N21:V21)	8	2737	=IF(Y21="NA","NA",Y21/X21)	=IF(Y21="NA","NA",W21/Z21)	13690	=IF(AB21="NA","NA",AB21/X21)	=IF(AB21="NA","NA",W21/AC21)
Copper	=SUM(N22:V22)	8	11.7	=IF(Y22="NA","NA",Y22/X22)	=IF(Y22="NA","NA",W22/Z22)	15.1	=IF(AB22="NA","NA",AB22/X22)	=IF(AB22="NA","NA",W22/AC22)
Lead	=SUM(N23:V23)	8	8	=IF(Y23="NA","NA",Y23/X23)	=IF(Y23="NA","NA",W23/Z23)	80	=IF(AB23="NA","NA",AB23/X23)	=IF(AB23="NA","NA",W23/AC23)
Mercury	=SUM(N24:V24)	8	1	=IF(Y24="NA","NA",Y24/X24)	=IF(Y24="NA","NA",W24/Z24)	5	=IF(AB24="NA","NA",AB24/X24)	=IF(AB24="NA","NA",W24/AC24)
Nickel	=SUM(N25:V25)	8	40	=IF(Y25="NA","NA",Y25/X25)	=IF(Y25="NA","NA",W25/Z25)	80	=IF(AB25="NA","NA",AB25/X25)	=IF(AB25="NA","NA",W25/AC25)
Selenium	=SUM(N26:V26)	8	0.2	=IF(Y26="NA","NA",Y26/X26)	=IF(Y26="NA","NA",W26/Z26)	0.33	=IF(AB26="NA","NA",AB26/X26)	=IF(AB26="NA","NA",W26/AC26)
Zinc	=SUM(N27:V27)	8	160	=IF(Y27="NA","NA",Y27/X27)	=IF(Y27="NA","NA",W27/Z27)	320	=IF(AB27="NA","NA",AB27/X27)	=IF(AB27="NA","NA",W27/AC27)
			Hazard Index (Total EEQ):		=SUM(AA8:AA27)			=SUM(AD8:AD27)

Intake Equation:

$$Ej = \left(\frac{A}{HR}\left[\sum_{i=1}^{m}\left(\frac{IRi\,x\,Cij}{BW}\right)\right]\right)$$

Where:
Ej = Total Exposure to Chemical
A = Site Area
HR = Home Range
m = Total number of ingested media
i = counter
IRi = Consumption Rate for Medium
Cij = Chemical concentration (j) in medium (I) (mg/kg or mg/L)
BW = Body Weight

Notes:
Tier 1 = Max EEQ using max EPC, max BAF/BCF, max Intake Rates, min BW, and FHR =1.
Tier 2 = EEQ using 95% EPC, non-max BAF/BCF, avg Intake Rates, avg BW and calculated FHR.
BAF = Bioaccumulation Factor (may be BCF if this is the only value available)
EEQ = Ecological Effects Quotient.
L = LOAEL based; N = NOAEL based
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NA = Not applicable/Not available
PDE = Predicted Daily Exposure
BAF (or BCF) values from appropriate text tables (BCF = bioconcentration factor)
Some BAF (or BCF) values based on media regression equations (value in box):
If BAF/BCF regression equation produced Tier 2 value exceeding maximum Tier 1 BAF/BCF value, Tier 1 value used as default.
LOAEL and NOAEL values from appropriate toxicity summary tables in the text.
UF = Uncertainty Factor for toxicity factor extrapolation, and Adjusted LOAEL or NOAEL = LOAEL/UF or NOAEL/UF
A "0" entry in the exposure concentration column indicates this chemical not selected as a COPEC for this medium.
Receptor diet data and home range data from appropriate text table.
Exposure point concentrations (EPCs) from appropriate text tables.

n See appropriate text tables for equations.

Species-Specific Factors

Plant diet fraction =	0.17	unitless
Fish diet fraction =	0	unitless
Aq. Invert diet fraction =	0	unitless
Terr. Invert diet fraction =	0.04	unitless
Mammal diet fraction =	0.65	unitless
Bird diet fraction =	0.14	unitless
Soil ingestion rate =	0.0067	kg/d
Sediment ingestion rate =	0	kg/d
Food ingestion rate =	0.24	kg/d
Body weight =	4.53	kg
Home range =	2204	acres
Water intake rate =	0.39	L/d
Site Area =	3.04	acres
Frac. home range (FHR) =	=IF(((AA46/AA44)>1),1,(AA46/AA44))	unitless

Table F-17
Recommended Bioaccumulation/Bioconcentration Factors or Regression Equations Utilized for the Soil-to-Plant Pathway at SWMU 43

Constituent	USEPA (2007) Eco-SSL Uptake Equation [a]	Alternate Regression Equation [b, c]	Alternate BAF/BCF	Recommended Tier 1 BAF/BCF	Rationale for Recommended Tier 1 BAF/BCF	Recommended Tier 2 BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
2,3,7,8-TCDD-TE	--[d]	Log (PC)= -0.578(Log[Kow])+1.588	--	0.0039	Travis & Arms K_{ow} Regression Eq.	0.0039	Travis & Arms K_{ow} Regression Eq.
Aroclor 1254	--	Log (PC)= -0.578(Log[Kow])+1.588	--	0.0036	Travis & Arms K_{ow} Regression Eq.	0.0036	Travis & Arms K_{ow} Regression Eq.
Benzo(a)anthracene	ln (Pc)= 0.5944(ln[soil])-2.7078	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Benzo(a)pyrene	ln (Pc)= 0.9750(ln[soil])-2.0615	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Benzo(b)fluoranthene	Pc= 0.31(soil)	--	--	0.31	Recommended BAF from USEPA (2007)	0.31	Recommended BAF from USEPA (2007)
Benzo(g,h,i)perylene	ln (Pc)= 1.1829(ln[soil])-0.9313	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Benzo(k)fluoranthene	ln (Pc)= 0.8595(ln[soil])-2.1579	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Chrysene	ln (Pc)= 0.5944(ln[soil])-2.7078	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Fluoranthene	Pc= 0.50(soil)	--	--	0.50	Recommended BAF from USEPA (2007)	0.50	Recommended BAF from USEPA (2007)
Indeno(1,2,3-cd)pyrene	Pc= 0.11(soil)	--	--	0.11	Recommended BAF from USEPA (2007)	0.11	Recommended BAF from USEPA (2007)
Pyrene	Pc= 0.72(soil)	--	--	0.72	Recommended BAF from USEPA (2007)	0.72	Recommended BAF from USEPA (2007)
Arsenic	Pc= 0.03752(soil)	--	--	0.038	Recommended BAF from USEPA (2007)	0.038	Recommended BAF from USEPA (2007)
Cadmium	ln (Pc)= 0.546(ln[soil])-0.475	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Chromium	Pc= 0.041(soil)	--	--	0.041	Recommended BAF from USEPA (2007)	0.041	Recommended BAF from USEPA (2007)
Copper	ln (Pc)= 0.394(ln[soil])+0.668	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Lead	ln (Pc)= 0.561(ln[soil])-1.328	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Mercury	--	ln (Pc)=0.54(ln[soil])-1.00	--	Regression Eq.	Efroymson, et al. Regression Equation	Regression Eq.	Efroymson, et al. Regression Equation
Nickel	ln (Pc)= 0.748(ln[soil])-2.223	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Selenium	ln (Pc)= 1.104(ln[soil])-0.677	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Silver	Pc= 0.014(soil)	--	--	0.014	Recommended BAF from USEPA (2007)	0.014	Recommended BAF from USEPA (2007)
Zinc	ln (Pc)= 0.554(ln[soil])+1.575	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)

Notes: Pc (plant tissue concentration [mg/kg d.w.]); soil (concentration in soil [mg/kg d.w.]); BAF/BCF (bioaccumulation/bioconcentration factor); log K_{ow} (octanol/water partition coefficient).

If a soil to plant BAF/BCF was not available from USEPA, 2007, Ecological Soil Screening Level Guidance, an alternate value was used (see below).

[a] USEPA, 2007, Ecological Soil Screening Level Guidance, Soil to Plant Uptake Equations, OSWER Directive 9285.7-55.

[b] for organic chemicals: BAF estimated using Travis and Arms (1988) K_{ow} regression equation, with the log K_{ow} from USEPA, 2007, Estimation Programs Interface (EPI) Suite, v3.20 (Tier 2).

Constituent	Tier 1 and Tier 2 Log K_{ow}	Reference
2,3,7,8-TCDD TE	6.92	USEPA EPI Suite, 2007
Aroclor 1254	6.98	USEPA EPI Suite, 2007

[c] for inorganic chemicals: Efroymson, R.A., et. al., 2001, Uptake of Inorganic Chemicals from Soil by Plant Leaves: Regressions of Field Data, Environ. Tox. Chem., 20:2561-2571.

[d] -- indicates that a BAF/BCF or regression equation is not available or not applicable.

Table F-18
Recommended Bioaccumulation/Bioconcentration Factors or Regression Equations Utilized for the Soil-to-Earthworm Pathway at SWMU 43

Constituent	USEPA (2007) Eco-SSL Uptake Equation [a]	Sample, et al. 1998 [b]			Sample et al. 1999 [c]	Recommended Tier 1 BAF/BCF	Rationale for Recommended Tier 1 BAF/BCF	Recommended Tier 2 BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
		Median BAF/BCF	90th Percentile BAF/BCF	Maximum BAF/BCF	Regression Equation				
2,3,7,8-TCDD-TE	-- [d]	11.011	22.229	42.068	ln (EW)=1.18(ln[soil])+3.53	42.068	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Aroclor 1254	--	6.67	15.909	65.227	ln (EW)=1.29(ln[soil])+1.79	65.227	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Benzo(a)anthracene	(EW)= 1.59(soil)	--	--	--	--	1.59	Recommended BAF (USEPA 2007)	1.59	Recommended BAF (USEPA 2007)
Benzo(a)pyrene	(EW)= 1.33(soil)	--	--	--	--	1.33	Recommended BAF (USEPA 2007)	1.33	Recommended BAF (USEPA 2007)
Benzo(b)fluoranthene	(EW)= 2.6(soil)	--	--	--	--	2.6	Recommended BAF (USEPA 2007)	2.6	Recommended BAF (USEPA 2007)
Benzo(g,h,i)perylene	(EW)= 2.94(soil)	--	--	--	--	2.94	Recommended BAF (USEPA 2007)	2.94	Recommended BAF (USEPA 2007)
Benzo(k)fluoranthene	(EW)= 2.6(soil)	--	--	--	--	2.6	Recommended BAF (USEPA 2007)	2.6	Recommended BAF (USEPA 2007)
Chrysene	(EW)= 2.29(soil)	--	--	--	--	2.29	Recommended BAF (USEPA 2007)	2.29	Recommended BAF (USEPA 2007)
Fluoranthene	(EW)= 3.04(soil)	--	--	--	--	3.04	Recommended BAF (USEPA 2007)	3.04	Recommended BAF (USEPA 2007)
Indeno(1,2,3-cd)pyrene	(EW)= 2.86(soil)	--	--	--	--	2.86	Recommended BAF (USEPA 2007)	2.86	Recommended BAF (USEPA 2007)
Pyrene	(EW)= 1.75(soil)	--	--	--	--	1.75	Recommended BAF (USEPA 2007)	1.75	Recommended BAF (USEPA 2007)
Arsenic	ln (EW)= 0.706(ln[soil])-1.421	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Cadmium	ln (EW)= 0.795(ln[soil])+2.114	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Chromium	(EW)= 0.306(soil)	--	--	--	--	0.306	Recommended BAF (USEPA 2007)	0.306	Recommended BAF (USEPA 2007)
Copper	(EW)= 0.515(soil)	--	--	--	--	0.515	Recommended BAF (USEPA 2007)	0.515	Recommended BAF (USEPA 2007)
Lead	ln (EW)= 0.807(ln[soil])-0.218	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Mercury	--	1.693	20.625	33	ln (EW)=0.33(ln[soil])+0.078	33	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Nickel	--	1.059	4.73	7.8	ln (EW)= -1.54(ln[soil])+7.03	7.8	Maximum value	Regression Eq.	Chemical-specific Regression Eq.
Selenium	ln (EW)= 0.733(ln[soil])-0.075	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)
Silver	(EW)= 2.045(soil)	--	--	--	--	2.045	Recommended BAF (USEPA 2007)	2.045	Recommended BAF (USEPA 2007)
Zinc	ln (EW)= 0.328(ln[soil])+4.449	--	--	--	--	Regression Eq.	Recommended Equation (USEPA 2007)	Regression Eq.	Recommended Equation (USEPA 2007)

Notes: EW (earthworm tissue concentration [mg/kg d.w.]); soil (concentration in soil [mg/kg d.w.]); BAF/BCF (bioaccumulation/bioconcentration factor); log Kow (octanol/water partition coefficient); -- indicates that a BAF/BCF or regression equation is not available or not applicable.
Hierarchy for Selection of BAFs:

[a] USEPA, 2007, Ecological Soil Screening Level Guidance (Eco-SSL), Soil to Earthworm Uptake Equations, OSWER Directive 9285.7-55.

[b] Sample, B. E, et. al., 1998. Development and Validation of Bioaccumulation Models for Earthworms, ES/ER/TM-220.

[c] Sample, B.E, et. al., 1999, Literature-Derived Bioaccumulation Models for Earthworms: Development and Validation, Environ. Toxicol. Chem., 18(9): 2110-2120 (models from Table 3 of publication).

Table F-19
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Soil-to-Small Mammal and Bird Pathways at SWMU 43

Constituent	USEPA (2007) Eco-SSL Uptake Equation [a]	Sample et al., 1998 [b]						Recommended Tier 1 BAF/BCF	Rationale for Recommended Tier 1 BAF/BCF	Recommended Tier 2 BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
		Insectivore Median BAF/BCF	Herbivore Median BAF/BCF	Omnivore Median BAF/BCF	General [c] Median BAF/BCF	General [c] Maximum BAF/BCF	General [c] 90th percentile BAF/BCF				
2,3,7,8-TCDD-TE	--[d]	--	1.2857	0.7783	1.07	2.2	2.2	2.2	General maximum value	2.2	General 90th percentile value
Aroclor 1254	--	--	--	--	--	--	--	1 [f]	Conservative value for Tier 2 organics see footnote "f"	0.5 [f]	Conservative value for Tier 2 organics see footnote "f"
Benzo(a)anthracene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(a)pyrene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(b)fluoranthene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(g,h,i)perylene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Benzo(k)fluoranthene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Chrysene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Fluoranthene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Indeno(1,2,3-cd)pyrene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Pyrene	Mam = 0	--	--	--	--	--	--	0	Uptake assumed to be negligible (USEPA 2007)	0	Uptake assumed to be negligible (USEPA 2007)
Arsenic	ln(mam)= 0.8188(ln[soil])-4.8471	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Cadmium	ln(mam)= 0.4723(ln[soil])-1.2571	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Chromium	ln(mam)= 0.7338(ln[soil])-1.4599	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Copper	ln(mam)= 0.144(ln[soil])+2.042	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Lead	ln(mam)= 0.4422(ln[soil])+0.0761	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Mercury	--	1.046 [g]	0.0239 [g]	0.0543	0.0543	1.046	0.192	1.046	General maximum value	0.192	General 90th percentile value
Nickel	ln(mam)= 0.4658(ln[soil])-0.2462	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Selenium	ln(mam)= 0.3764(ln[soil])-0.4158	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)
Silver	(mam)= 0.004(soil)	--	--	--	--	--	--	0.004	Recommended BAF (USEPA 2007)	0.004	Recommended BAF (USEPA 2007)
Zinc	ln(mam)= 0.0706(ln[soil])+4.3632	--	--	--	--	--	--	Regression Eq.	Recommended Regression Eq. (USEPA 2007)	Regression Eq.	Recommended Regression Eq. (USEPA 2007)

Notes: mam (mammal or bird tissue concentration [mg/kg d.w.]); diet (concentration in diet [mg/kg d.w.] assuming 100% earthworm consumption); soil (concentration in soil [mg/kg d.w.]); BAF/BCF (bioaccumulation/bioconcentration factor).

Bird BAF/BCF values were based on the recommended small mammal BAF/BCF values, as bird uptake values are not readily available.

[a] USEPA, 2007, Ecological Soil Screening Level Guidance, Soil to Small Mammal Uptake Equations, OSWER Directive 9285.7-55.

[b] Sample et al., 1998, Development and Validation of Bioaccumulation Models for Small Mammals, ES/ER/TM-219.

[c] General = combination dataset used for insectivore, herbivore, and omnivore receptors to estimate a "general" receptor BAF/BCF value.

[d] "--" indicates that a BAF/BCF is not available or not applicable.

[e] Uptake assumed to be negligible (USEPA 2005).

[f] Known bioaccumulative organics (TCDD and TCDF) have BAFs/BCFs of 1.1 and 0.13 (median) and 2.2 and 0.16 (maximum) from Sample et al. (1998).

Conservative BAF/BCF default values of 1 and 0.5 were selected for other organics at the site, as they are not expected to be as bioaccumulative as TCDD/TCDF.

[g] Only one BAF/BCF value available for exposure to mercury in soil (median is also 90th percentile value and maximum value).

Table F-20
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Sediment-to-Aquatic Invertebrate Pathway at SWMU 43

Constituent	Bechtel Jacobs [a]			Recommended Tier 1 BAF/BCF [b, c]	Recommended Tier 2 BAF/BCF [b, c]	Rationale for Recommended Tier 2 BAF/BCF
	Median BAF/BCF	90th Percentile BAF/BCF	Maximum BAF/BCF			
2,3,7,8-TCDD-TE	--[d]	--	--	42.07	ln (EW)=1.18(ln[sed])+3.53	Soil Tier 2 BAF/BCF
Aroclor 1254	4.67	21.89	51.31	21.89	4.67	Median sediment BAF/BCF
Aroclor 1260	4.67	21.89	51.31	21.89	4.67	Median sediment BAF/BCF
Benzo(a)anthracene	--	--	--	1.59	1.59	Soil Tier 2 BAF/BCF
Benzo(a)pyrene	--	--	--	1.33	1.33	Soil Tier 2 BAF/BCF
Benzo(b)fluoranthene	--	--	--	2.60	2.60	Soil Tier 2 BAF/BCF
Benzo(g,h,i)perylene	--	--	--	2.94	2.94	Soil Tier 2 BAF/BCF
Benzo(k)fluoranthene	--	--	--	2.60	2.60	Soil Tier 2 BAF/BCF
Chrysene	--	--	--	2.29	2.29	Soil Tier 2 BAF/BCF
Indeno(1,2,3-cd)pyrene	--	--	--	2.86	2.86	Soil Tier 2 BAF/BCF
Arsenic	0.143	0.69	4.33	0.69	0.14	Median sediment BAF/BCF
Cadmium	0.6	7.99	41.55	7.99	0.6	Median sediment BAF/BCF
Chromium	0.1	0.468	1.101	0.47	0.1	Median sediment BAF/BCF
Copper	1.556	5.25	23.87	5.25	1.56	Median sediment BAF/BCF
Lead	0.071	0.607	7.08	0.61	0.071	Median sediment BAF/BCF
Nickel	0.486	2.32	5.746	2.32	0.49	Median sediment BAF/BCF
Selenium	--	--	--	2.1	0.42	Geo. mean of medians (Bechtel, 1998)
Zinc	1.936	7.527	14.512	7.53	1.94	Median sediment BAF/BCF

Notes:

[a] Bechtel Jacobs Company LLC, 1998. Biota Sediment Accumulation Factors for Invertebrates: Review and Recommendations for the Oak Ridge Reservation, BJC/OR-112. (Depurated and nondepurated results used). 90th percentile value for Tier 1, median value for Tier 2.

[b] If a sediment BAF/BCF was not available for an inorganic constituent, the geometric mean of the available sediment inorganic BAFs/BCFs were used. The 90th percentile (2.1) was used for Tier 1 and the median (0.42) was used for Tier 2.

[c] If a sediment BAF/BCF was not available for an organic constituent, soil-to-invertebrate BAFs/BCFs were used. See soil-to-earthworm BAF/BCF appendix table for derivation of alternate BAF/BCF values.

[d] -- indicates that a BAF/BCF is not available.

Notes:

Geometric means for 90th percentile and median inorganic BAF/BCFs were calculated using the data provided below from Bechtel (1998):

	90th Percentile	Median
Arsenic	0.69	0.143
Cadmium	7.99	0.6
Chromium	0.468	0.1
Copper	5.25	1.556
Lead	0.607	0.071
Mercury	2.868	1.136
Nickel	2.32	0.486
Zinc	7.527	1.936
Geom. Mean	**2.1**	**0.42**

Table F-20
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Sediment-to-Aquatic Invertebrate Pathway at SWMU 43

Constituent	Bechtel Jacobs [a]			Recommended Tier 1 BAF/BCF [b, c]	Recommended Tier 2 BAF/BCF [b, c]	Rationale for Recommended Tier 2 BAF/BCF
	Median BAF/BCF	90th Percentile BAF/BCF	Maximum BAF/BCF			

Table F-21
Recommended Bioaccumulation/Bioconcentration Factors Utilized for the Water-to-Fish Pathway at SMWU 43

Constituent	IAEA [a] (Recommended Value and Range)	Bintein and Devillers [b]	USEPA, 1999 [c]	USEPA, 1989 [d]	Recommended Tier 1 (Maximum) BAF/BCF	Recommended Tier 2 (RME) BAF/BCF	Rationale for Recommended Tier 2 BAF/BCF
Arsenic	-- [e]	--	570	1750	1750	570	Lowest value

[a] International Atomic Energy Agency (IAEA), 1994, *Handbook of Parameter Values for the Protection of Radionuclide Transfer in Temperate Environments* , Technical Reports Series No. 364.

[b] Bintein, S. and J. Devillers, 1993, *Nonlinear Dependence of Fish Bioconcentration on n-Octanol/'Water Partition Coefficient,* in SAR and QSAR in Environmental Research, Vol. 1, pp. 29-39, Gordon and Branch Science Publishers. See details below.

[c] USEPA, 1999, *Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities, EPA530-D-99-001A (Peer Review Draft),* Appendix C - Media-to-Receptor BCFs (water to fish). Wet weight BCFs converted to dry weight BCFs by multiplying by 5 (fish moisture content = 80%).

[d] USEPA, 1989, *Assessing Human Health Risks from Contaminated Fish and Shellfish: A Guidance Manual* , EPA-503/8-89-002. Wet weight BCFs converted to dry weight BCFs by multiplying by 5 (fish moisture content = 80%).

[e] -- indicates that a BAF/BCF is not available.

Table F-22
NOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at SWMU 43

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference
Organics								
2,3,7,8-TCDD-TE	--	1.00E-06	rat	Sample, et. al. (1996)	--	1.40E-05	ring-necked pheasant	Sample, et al. (1996)
Aroclor 1254	--	1.40E-01	mink	Sample, et. al. (1996)	--	1.80E-01	ring-necked pheasant	Sample, et. al. (1996)
Aroclor 1260	--	1.40E-01	mink	Based on Aroclor 1254, Sample, et. al. (1996)	--	1.80E-01	ring-necked pheasant	Based on Aroclor 1254, Sample, et. al. (1996)
Benzo(a)anthracene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(a)pyrene	--	1.00E+00	mouse	Sample, et. al. (1996)	--	5.53E+02	mallard duck	Eisler (1987)
Benzo(b)fluoranthene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(g,h,i)perylene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(k)fluoranthene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Chrysene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Fluoranthene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Indeno(1,2,3-cd)pyrene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Pyrene	--	6.15E-01	mouse	EcoSSL (EPA, 2007)	--	5.53E+02	mallard duck	Based on B(a)P, Eisler (1987)
Inorganics								
Arsenic	--	1.26E-01	mouse	Sample, et. al. (1996)	--	5.14E+00	mallard duck	Sample, et al. (1996)
Cadmium	--	1.00E+00	rat	Sample, et. al. (1996)	--	1.45E+00	mallard duck	Sample, et. al. (1996)
Chromium	--	2.74E+03	rat	Sample, et al. (1996)	--	2.66E+00	chicken, black duck, turkey	EcoSSL (EPA, 2007)
Copper	--	1.17E+01	mink	Sample, et. al. (1996)	--	4.70E+01	chicks	Sample, et al. (1996)
Lead	--	8.00E+00	rat	Sample, et. al. (1996)	--	3.85E+00	American kestrel	Sample, et al. (1996)
Mercury	--	1.00E+00	mink	Sample, et. al. (1996)	--	4.50E-01	Japanese quail	Sample, et al. (1996)
Nickel	--	4.00E+01	rat	Sample, et. al. (1996)	--	7.74E+01	mallard duck	Sample, et al. (1996)
Selenium	--	2.00E-01	rat	Sample, et. al. (1996)	--	5.00E-01	mallard duck	Sample, et al. (1996)
Silver	222 (LOAEL)	2.22E+01	rat	ATSDR (1990)	--	1.78E+02	mallard duck	Terr. Tox. Database (USACHPPM, 2002)
Zinc	--	1.60E+02	rat	Sample, et. al. (1996)	--	1.45E+01	hens	Sample, et al. (1996)

N/A indicates that the information is not available.

As recommended by Wentsel, et. al. (1996), Tri-Service Procedural Guidelines for Ecological Risk Assessments, the following adjustments were made to toxicity data when NOAEL or LOAEL data were not available:

- Subchronic LOAELs were converted to chronic NOAELs by dividing by a factor of 20.
- Chronic NOAELs were converted to chronic LOAELs by multiplying by a factor of 5.0.
- Subchronic NOAELs/LOAELs were converted to chronic NOAELs/LOAELs by dividing by a factor of 10.
- Chronic LOAELs were converted to chronic NOAELs by dividing by a factor of 10.
- LD_{50} concentrations were converted to chronic NOAELs by dividing by a factor of 100.
- LD_{50} concentrations were converted to chronic LOAELs by dividing by a factor of 20.

Methodology for Selection of TRVs:
(1) Sample, et al., 1996, Toxicological Benchmarks for Wildlife.
(2) USEPA, 2007, Ecological Screening Levels (Eco-SSL). Low molecular weight (LMW) PAH NOAELs based on Verschuuren et al., 1976; high molecular weight (HMW) PAH NOAELs based on Culp, et al., 1998;

Table F-22
NOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at SWMU 43

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	NOAEL (mg/kg/d)	Test Species	Reference

LMW LOAELs based on Murata et al., 1997; HMW PAH LOAELs based on Culp, et al., 1998.

(3) LANL (2005). Ecorisk Database, Release 2.2, September 2005, Los Alamos National Laboratory.

(4) Others as listed below:

ATSDR, 1990, Toxicological Profile for Silver, U.S. Public Health Service.

Eisler, 1987, PAH Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review.

USACHPPM, 2002, Terrestrial Toxicity Database.

USEPA, 2007, Ecological Soil Screening Level Guidance (Eco-SSL), OSWER Directive 9285.7-55.

Table F-23
LOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at SWMU 43

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference
Organics								
2,3,7,8-TCDD-TE	--	1.00E-05	rat	Sample, et al. (1996)	--	1.40E-04	ring-necked pheasant	Sample, et al. (1996)
Aroclor 1254	--	6.80E-01	mouse	Sample, et. al. (1996)	--	1.80E+00	ring-necked pheasant	Sample, et. al. (1996)
Aroclor 1260	--	6.80E-01	mouse	Based on Aroclor 1254, Sample, et. al. (1996)	--	1.80E+00	ring-necked pheasant	Based on Aroclor 1254, Sample, et. al. (1996)
Benzo(a)anthracene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(a)pyrene	--	1.00E+01	mouse	Sample, et. al. (1996)	553 (NOAEL)	2.77E+03	mallard duck	Eisler (1987)
Benzo(b)fluoranthene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(g,h,i)perylene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Benzo(k)fluoranthene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Chrysene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Fluoranthene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Indeno(1,2,3-cd)pyrene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Pyrene	--	3.07E+00	mouse	EcoSSL (EPA, 2007)	553 (NOAEL)	2.77E+03	mallard duck	Based on B(a)P, Eisler (1987)
Inorganics								
Arsenic	--	1.26E+00	mouse	Sample, et al. (1996)	--	1.28E+01	mallard duck	Sample, et al. (1996)
Cadmium	--	1.00E+01	rat	Sample, et. al. (1996)	--	2.00E+01	mallard duck	Sample, et. al. (1996)
Chromium	2,737 (NOAEL)	1.37E+04	rat	Sample, et al. (1996)	--	2.78E+00	chicken, black duck, turkey	EcoSSL (EPA, 2007)
Copper	--	1.51E+01	mink	Sample, et al. (1996)	--	6.20E+01	chicks	Sample, et al. (1996)
Lead	--	8.00E+01	rat	Sample, et al. (1996)	3.85 (NOAEL)	1.93E+01	American kestrel	Sample, et al. (1996)
Mercury	1.0 (NOAEL)	5.00E+00	mink	Sample, et al. (1996)	--	9.00E-01	Japanese quail	Sample, et al. (1996)
Nickel	--	8.00E+01	rat	Sample, et al. (1996)	--	1.07E+02	mallard duck	Sample, et al. (1996)
Selenium	--	3.30E-01	rat	Sample, et. al. (1996)	--	1.00E+00	mallard duck	Sample, et. al. (1996)
Silver	--	2.22E+02	rat	ATSDR (1990)	178 (NOAEL)	8.90E+02	mallard duck	Terr. Tox. Database (USACHPPM, 2002)
Zinc	--	3.20E+02	rat	Sample, et al. (1996)	--	1.31E+02	hens	Sample et al. (1996)

N/A indicates that the information is not available.

As recommended by Wentsel, et. al. (1996), Tri-Service Procedural Guidelines for Ecological Risk Assessments, the following adjustments were made to toxicity data when NOAEL or LOAEL data were not available:

- Subchronic LOAELs were converted to chronic NOAELs by dividing by a factor of 20.
- Chronic NOAELs were converted to chronic LOAELs by multiplying by a factor of 5.0.
- Subchronic NOAELs/LOAELs were converted to chronic NOAELs/LOAELs by dividing by a factor of 10.
- Chronic LOAELs were converted to chronic NOAELs by dividing by a factor of 10.
- LD_{50} concentrations were converted to chronic NOAELs by dividing by a factor of 100.
- LD_{50} concentrations were converted to chronic LOAELs by dividing by a factor of 20.

Methodology for Selection of TRVs:
(1) Sample, et al., 1996, Toxicological Benchmarks for Wildlife.
(2) USEPA, 2007, Ecological Screening Levels (Eco-SSL). Low molecular weight (LMW) PAH NOAELs based on Verschuuren et al., 1976; high molecular weight (HMW) PAH NOAELs based on Culp, et al., 1998;

Table F-23
LOAEL Toxicity Reference Values Used to Derive
Wildlife Toxicity Benchmarks for COPECs at SWMU 43

COPEC	Mammalian Data				Avian Data			
	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference	Toxicity Value	LOAEL (mg/kg/d)	Test Species	Reference

LMW LOAELs based on Murata et al., 1997; HMW PAH LOAELs based on Culp, et al., 1998.

(3) LANL (2005). Ecorisk Database, Release 2.2, September 2005, Los Alamos National Laboratory.

(4) Others as listed below:

ATSDR, 1990, Toxicological Profile for Silver, U.S. Public Health Service.

Eisler, 1987, PAH Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review.

USACHPPM, 2002, Terrestrial Toxicity Database.

USEPA, 2007, Ecological Soil Screening Level Guidance (Eco-SSL), OSWER Directive 9285.7-55.

Table F-24
Uncertainty Factors[a] for Ecological TRV[b] Extrapolations[c] at SWMU 43
(Page 1 of 2)

Laboratory Animals (toxicity data base)		Selected Site Receptor Species	
Rat	G: *Rattus* F: Muridae O: Rodentia	Meadow vole	G: *Microtus* F: Muridae O: Rodentia
Mouse	G: *Mus* F: Muridae O: Rodentia	Short-tailed shrew	G: *Blarina* F: Soricidae O: Insectivora
Mink	G: *Mustela* F: Mustelidae O: Carnivora	American robin	G: *Turdus* F: Muscicapidae O: Passeriformes
Pheasant	G: *Phasianus* F: Phasianidae O: Galliformes	Red-tailed hawk	G: *Buteo* F: Accipitridae O: Ciconiiformes
American kestrel	G: *Falco* F: Falconidae O: Ciconiiformes	Red fox	G: *Vulpes* F: Canidae O: Carnivora
Chick, Hens Poultry	G: *Gallus* F: Phasianidae O: Galliformes	Great blue heron	G: *Ardea* F: Ardeidae O: Ciconiiformes
Black duck, Mallard	G: *Anas* F: Anatidae O: Anseriformes	Mink	G: *Mustela* F: Mustelidae O: Carnivora
Japanese quail	G: *Coturnix* F: Phasianidae O: Galliformes		
Turkey	G: *Meleagris* F: Meleagrididae O: Galliformes		

[a] From ***Tri-Service Procedural Guidelines for Ecological Risk Assessment*** (Wentsel et al. 1996)
[b] TRV = Toxicity Reference Value
[c] Interclass extrapolations not performed; only within bird class or within mammal class.

The Uncertainty Factors Used for TRV Extrapolations are Summarized Below:

- Extrapolation between two different species = uncertainty factor of 2
- Extrapolation between two different genera (G) = uncertainty factor of 4

Table F-24
Uncertainty Factors[a] for Ecological TRV[b] Extrapolations[c] at SWMU 43

- Extrapolation between two different families (F) or orders (O) = uncertainty factor of 8
- Thus, for all extrapolations used in the SLERA food chain model an uncertainty factor of 8 was used, except for:
    - rat or mouse toxicity values extrapolated to the meadow vole where an uncertainty factor of 4 was used; and

Table F-25
Selection of Ecological Soil Screening Toxicity Values for SWMU 43

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
Inorganic Compounds					
Aluminum	NVA	NVA	NVA	pH Dependant	pH Dependant
Antimony	$0.27_{(mammal)}$	$5_{(plant)}$	1.42E-01	--	2.70E-01
Arsenic	$18_{(plant)}$	$9.9_{(mammal, plant)}$	5.70E+00	--	9.90E+00
Barium	$330_{(earthworm)}$	2.83E+02	1.04E+00	--	2.83E+02
Beryllium	$21_{(mammal)}$	1.00E+01	1.06E+00	--	1.00E+01
Cadmium	$0.36_{(mammal)}$	$4_{(plant, bird)}$	2.22E-03	--	3.60E-01
Calcium	NVA	NVA	NVA	NVA	Nutrient
Chromium	$26_{(bird)}$	$0.4_{(earthworm)}$	4.00E-01	--	4.00E-01
Cobalt	$13_{(plant)}$	$20_{(plant)}$	1.40E-01	--	1.30E+01
Copper	$28_{(bird)}$	$60_{(earthworm)}$	3.13E-01	--	2.80E+01
Iron	NVA	NVA	NVA	NVA	NVA
Lead	$11_{(bird)}$	4.05E+01	5.37E-02	--	1.10E+01
Magnesium	NVA	NVA	NVA	NVA	Nutrient
Manganese	$220_{(plant)}$	NVA	NVA	50[f]	2.20E+02
Mercury	NVA	5.10E-04	1.00E-01	--	5.10E-04
Nickel	$38_{(plant)}$	3.00E+01	1.36E+01	--	3.00E+01
Potassium	NVA	NVA	NVA	NVA	Nutrient
Selenium	$0.52_{(plant)}$	2.10E-01	2.77E-02	--	2.10E-01
Silver	$4.2_{(bird)}$	$2_{(plant)}$	4.04E+00	--	2.00E+00
Sodium	NVA	NVA	NVA	NVA	Nutrient
Thallium	NVA	1.00E+00	5.69E-02	--	1.00E+00
Vanadium	$7.8_{(bird)}$	2.00E+00	1.59E+00	--	2.00E+00
Zinc	$46_{(bird)}$	$8.5_{(bird)}$	6.62E+00	--	8.50E+00
Total Organic Carbon	NVA	NVA	NVA	NVA	NVA
Organic Compounds					
1,1,1,2-Tetrachloroethane	NVA	NVA	2.25E+02	--	2.25E+02
1,1,1-Trichloroethane	NVA	NVA	2.98E+01	--	2.98E+01
1,1,2,2-Tetrachloroethane	NVA	NVA	1.27E-01	--	1.27E-01
1,1,2-Trichloroethane	NVA	NVA	2.86E+01	--	2.86E+01
1,1-Dichloroethane	NVA	NVA	2.01E+01	--	2.01E+01
1,1-Dichloroethene	NVA	NVA	8.28E+00	--	8.28E+00
1,1-Dichloropropene	NVA	NVA	NVA	NVA	NVA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3,4,7,8-Hexachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3,6,7,8-Hexachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	NVA	NVA	1.99E-07	--	1.99E-07
1,2,3-Trichlorobenzene	NVA	NVA	NVA	NVA	NVA
1,2,3-Trichloropropane	NVA	NVA	3.36E+00	--	3.36E+00
1,2,4,5-Tetrachlorobenzene	NVA	NVA	2.02E+00	--	2.02E+00
1,2,4-Trichlorobenzene	NVA	$20_{(earthworm)}$	1.11E+01	--	2.00E+01
1,2,4-Trimethylbenzene	NVA	NVA	NVA	NVA	NVA
1,2-Dibromo-3-chloropropane	NVA	NVA	3.52E-02	--	3.52E-01
1,2-Dibromoethane	NVA	NVA	1.23E+00	--	1.23E+00
1,2-Dichlorobenzene	NVA	NVA	2.96E+00	--	2.96E+00
1,2-Dichloroethane	NVA	NVA	2.12E+01	--	2.12E+01

Table F-25
Selection of Ecological Soil Screening Toxicity Values for SWMU 43

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
1,2-Dichloroethene (total)	NVA	NVA	7.84E-01	--	7.84E-01
1,2-Dichloropropane	NVA	NVA	3.27E+01	--	3.27E+01
1,2-Diphenylhydrazine	NVA	NVA	NVA	NVA	NVA
1,3,5-Trimethylbenzene	NVA	NVA	NVA	NVA	NVA
1,3,5-Trinitrobenzene	NVA	NVA	3.76E-01	--	3.76E-01
1,3,5-Trinitrobenzene	NVA	NVA	3.76E-01	--	3.76E-01
1,3-Dichlorobenzene	NVA	NVA	3.77E+01	--	3.77E+01
1,3-Dichloropropane	NVA	NVA	NVA	NVA	NVA
1,3-Dinitrobenzene	NVA	NVA	6.55E-01	--	6.55E-01
1,3-Dinitrobenzene	NVA	NVA	6.55E-01	--	6.55E-01
1,4-Dichlorobenzene	NVA	$20_{(earthworm)}$	5.46E-01	--	2.00E+01
1-Methylnaphthalene	NVA	NVA	3.24E+00	--	3.24E+00
2,2-Dichloropropane	NVA	NVA	NVA	NVA	NVA
2,3,7,8-Tetrachlorodibenzo-p-dioxin	NVA	3.15E-06	1.99E-07	--	3.15E-06
2,4,5-T	NVA	NVA	5.96E-01	--	5.96E-01
2,4,5-TP (Silvex)	NVA	NVA	1.09E-01	--	1.09E-01
2,4,5-Trichlorophenol	NVA	$9_{(earthworm)}$	1.41E+01	--	9.00E+00
2,4,6-Trichlorophenol	NVA	$4_{(plant)}$	9.94E+00	--	4.00E+00
2,4,6-Trinitrotoluene	NVA	NVA	NVA	6.40E+00	6.40E+00
2,4-D	NVA	NVA	2.73E-02	--	2.73E-02
2,4-DB	NVA	NVA	NVA	NVA	NVA
2,4-Dichlorophenol	NVA	NVA	8.75E+01	--	8.75E+01
2,4-Dimethylphenol	NVA	NVA	1.00E-02	--	1.00E-02
2,4-Dinitrophenol	NVA	$20_{(plant)}$	6.09E-02	--	2.00E+01
2,4-Dinitrotoluene	NVA	NVA	1.28E+00	--	1.28E+00
2,6-Dinitrotoluene	NVA	NVA	3.28E-02	--	3.28E-02
2-amino-4,6-Dinitrotoluene	NVA	NVA	NVA	2.10E+00	2.10E+00
2-Butanone	NVA	NVA	8.96E+01	--	8.96E+01
2-Chloroethyl vinyl ether	NVA	NVA	NVA	NVA	NVA
2-Chloronaphthalene	NVA	NVA	1.22E-02	--	1.22E-02
2-Chlorophenol	NVA	NVA	2.43E-01	--	2.43E-01
2-Chlorotoluene	NVA	NVA	NVA	NVA	NVA
2-Hexanone	NVA	NVA	1.26E+01	--	1.26E+01
2-Methylnaphthalene	NVA	NVA	3.24E+00	--	3.24E+00
2-Nitroaniline	NVA	NVA	7.41E+01	--	7.41E+01
2-Nitrophenol	NVA	NVA	1.60E+00	--	1.60E+00
2-Nitrotoluene	NVA	NVA	NVA	2.00E+00	2.00E+00
2-sec-butyl-4,6-dinitrophenol	NVA	NVA	2.18E-02	--	2.18E-02
3&4-Methylphenol	NVA	NVA	4.04E+01	--	4.04E+01
3,3'-Dichlorobenzidine	NVA	NVA	6.46E-01	--	6.46E-01
3-Nitroaniline	NVA	NVA	3.16E+00	--	3.16E+00
3-Nitrotoluene	NVA	NVA	NVA	2.40E+00	2.40E+00
4,4'-DDD	$0.021_{(mammal)}$	NVA	7.58E-01	--	2.10E-02
4,4'-DDE	$0.021_{(mammal)}$	NVA	5.96E-01	--	2.10E-02
4,4'-DDT	$0.021_{(mammal)}$	NVA	1.75E-02	--	2.10E-02
4,6-Dinitro-o-cresol	NVA	NVA	1.44E-01	--	1.44E-01
4-amino-2,6-Dinitrotoluene	NVA	NVA	NVA	7.30E-01	7.30E-01
4-Bromophenyl phenylether	NVA	NVA	NVA	NVA	NVA
4-Chlorophenyl phenylether	NVA	NVA	NVA	NVA	NVA
4-Methyl-2-pentanone	NVA	NVA	4.43E+02	--	4.43E+02
4-Nitroaniline	NVA	NVA	2.19E+01	--	2.19E+01

Table F-25
Selection of Ecological Soil Screening Toxicity Values for SWMU 43

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
4-Nitrophenol	NVA	$7_{(earthworm)}$	5.12E+00	--	7.00E+00
4-Nitrotoluene	NVA	NVA	NVA	4.40E+00	4.40E+00
Acenaphthene	$29_{(earthworm)}$	$20_{(plant)}$	6.82E+02	--	2.00E+01
Acenaphthylene	$29_{(earthworm)}$	NVA	6.82E+02	--	2.90E+01
Acetone	NVA	NVA	2.50E+00	--	2.50E+00
Acetonitrile	NVA	NVA	1.37E+00	--	1.37E+00
Acetophenone	NVA	NVA	3.00E+02	--	3.00E+02
Acraldehyde	NVA	NVA	5.27E+00	--	5.27E+00
Acrylonitrile	NVA	NVA	2.39E-02	--	2.39E-02
Aldrin	NVA	NVA	3.32E-03	--	3.32E-03
alpha-BHC	NVA	NVA	9.94E-02	--	9.94E-02
alpha-Chlordane	NVA	NVA	2.24E-01	--	2.24E-01
Anthracene	$29_{(earthworm)}$	NVA	1.48E+03	--	2.90E+01
Aroclor 1016	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1221	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1232	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1242	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1248	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1254	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Aroclor 1260	NVA	$0.371_{(mammal)}$	3.32E-04	--	3.71E-01
Atrazine	NVA	NVA	NVA	NVA	NVA
Benzaldehyde	NVA	NVA	NVA	NVA	NVA
Benzene	NVA	NVA	2.55E-01	--	2.55E-01
Benzidine	NVA	NVA	NVA	NVA	NVA
Benzo(a)anthracene	$1.1_{(mammal)}$	NVA	5.21E+00	--	1.10E+00
Benzo(a)pyrene	$1.1_{(mammal)}$	NVA	1.52E+00	--	1.10E+00
Benzo(b)fluoranthene	$1.1_{(mammal)}$	NVA	5.98E+01	--	1.10E+00
Benzo(g,h,i)perylene	$1.1_{(mammal)}$	NVA	1.19E+02	--	1.10E+00
Benzo(k)fluoranthene	$1.1_{(mammal)}$	NVA	1.48E+02	--	1.10E+00
Benzoic acid	NVA	NVA	NVA	1.00E+00	1.00E+00
Benzyl alcohol	NVA	NVA	6.58E+01	--	6.58E+01
beta-BHC	NVA	NVA	3.98E-03	--	3.98E-03
Biphenyl	NVA	60(plant)	NVA	--	6.00E+01
bis(2-Chloroethoxy)methane	NVA	NVA	3.02E-01	--	3.02E-01
bis(2-Chloroethyl)ether	NVA	NVA	2.37E+01	--	2.37E+01
bis(2-Chloroisopropyl)ether	NVA	NVA	1.99E+01	--	1.99E+01
bis(2-Ethylhexyl) phthalate	NVA	NVA	9.26E-01	--	9.26E-01
Bromobenzene	NVA	NVA	NVA	NVA	NVA
Bromodichloromethane	NVA	NVA	5.40E-01	--	5.40E-01
Bromomethane	NVA	NVA	2.35E-01	--	2.35E-01
Butyl benzyl phthalate	NVA	NVA	2.39E-01	--	2.39E-01
Caprolactam	NVA	NVA	NVA	NVA	NVA
Carbazole	NVA	NVA	NVA	NVA	NVA
Carbon disulfide	NVA	NVA	9.41E-02	--	9.41E-02
Carbon tetrachloride	NVA	NVA	2.98E+00	--	2.98E+00
Chlorobenzene	NVA	$40_{(earthworm)}$	1.31E+01	--	4.00E+01
Chlorobromomethane	NVA	NVA	NVA	NVA	NVA
Chloroethane	NVA	NVA	NVA	NVA	NVA
Chloroform	NVA	NVA	1.19E+00	--	1.19E+00

Table F-25
Selection of Ecological Soil Screening Toxicity Values for SWMU 43

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
Chloromethane	NVA	NVA	1.04E+01	--	1.04E+01
Chrysene	$1.1_{(mammal)}$	NVA	4.73E+00	--	1.10E+00
cis-1,2-Dichloroethene	NVA	NVA	7.84E-01	--	7.84E-01
cis-1,3-Dichloro-1-propene	NVA	NVA	3.98E-01	--	3.98E-01
Cyclohexane	NVA	NVA	NVA	NVA	NVA
Cyclonite	NVA	NVA	NVA	7.50E+00	7.50E+00
Dalapon	NVA	NVA	NVA	NVA	NVA
delta-BHC	NVA	NVA	9.94E+00	--	9.94E+00
Dibenz(a,h)anthracene	$1.1_{(mammal)}$	NVA	1.84E+01	--	1.10E+00
Dibenzofuran	NVA	NVA	NVA	6.10E+00	6.10E+00
Dibromochloromethane	NVA	NVA	2.05E+00	--	2.05E+00
Dibromomethane	NVA	NVA	NVA	NVA	NVA
Dicamba	NVA	NVA	NVA	NVA	NVA
Dichlorodifluoromethane	NVA	NVA	NVA	NVA	NVA
Dichloroprop	NVA	NVA	NVA	NVA	NVA
Dieldrin	$0.0049_{(mammal)}$	NVA	2.38E-03	--	4.90E-03
Diethyl phthalate	NVA	$100_{(plant)}$	2.48E+01	--	1.00E+02
Dimethylphthalate	NVA	NVA	7.34E+02	--	7.34E+02
Di-n-butyl phthalate	NVA	$200_{(plant)}$	1.50E-01	--	2.00E+02
Di-n-octyl phthalate	NVA	NVA	7.09E+02	--	7.09E+02
Endosulfan I	NVA	NVA	1.19E-01	--	1.19E-01
Endosulfan II	NVA	NVA	1.19E-01	--	1.19E-01
Endosulfan sulfate	NVA	NVA	3.58E-02	--	3.58E-02
Endrin	NVA	NVA	1.01E-02	--	1.01E-02
Endrin Aldehyde	NVA	NVA	1.05E-02	--	1.05E-02
Endrin ketone	NVA	NVA	NVA	NVA	NVA
Ethanol	NVA	NVA	NVA	NVA	NVA
Ethylbenzene	NVA	NVA	5.16E+00	--	5.16E+00
Fluoranthene	$1.1_{(mammal)}$	NVA	1.22E+02	--	1.10E+00
Fluorene	$29_{(earthworm)}$	NVA	1.22E+02	--	2.90E+01
Freon 113	NVA	NVA	NVA	NVA	NVA
gamma-BHC (Lindane)	NVA	NVA	5.00E-03	--	5.00E-03
gamma-Chlordane	NVA	NVA	2.24E-01	--	2.24E-01
Heptachlor	NVA	NVA	5.98E-03	--	5.98E-03
Heptachlor epoxide	NVA	NVA	1.52E-01	--	1.52E-01
Hexachlorobenzene	NVA	NVA	1.99E-01	--	1.99E-01
Hexachlorobutadiene	NVA	NVA	3.98E-02	--	3.98E-02
Hexachlorocyclopentadiene	NVA	$10_{(plant)}$	7.55E-01	--	1.00E+01
Hexachloroethane	NVA	NVA	5.96E-01	--	5.96E-01
HMX	NVA	NVA	NVA	2.70E+01	2.70E+01
Indeno(1,2,3-cd)pyrene	$1.1_{(mammal)}$	NVA	1.09E+02	--	1.10E+00
Isophorone	NVA	NVA	1.39E+02	--	1.39E+02
Isopropylbenzene	NVA	NVA	NVA	NVA	NVA
m+p-Xylenes	NVA	NVA	1.00E+01	--	1.00E+01
MCPA	NVA	NVA	NVA	NVA	NVA
MCPP	NVA	NVA	NVA	NVA	NVA
Methoxychlor	NVA	NVA	1.99E-02	--	1.99E-02
Methyl Acetate	NVA	NVA	NVA	NVA	NVA
Methyl tert-butyl ether	NVA	NVA	NVA	NVA	NVA
Methylene chloride	NVA	NVA	4.05E+00	--	4.05E+00

Table F-25
Selection of Ecological Soil Screening Toxicity Values for SWMU 43

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)
Naphthalene	$29_{(earthworm)}$	NVA	9.94E-02	--	2.90E+01
n-Butylbenzene	NVA	NVA	NVA	NVA	NVA
Nitrobenzene	NVA	NVA	1.31E+00	--	1.31E+00
Nitroglycerin	NVA	NVA	NVA	7.10E+01	7.10E+01
n-Nitroso-di-n-propylamine	NVA	NVA	5.44E-01	--	5.44E-01
n-Nitrosodimethylamine	NVA	NVA	3.21E-05	--	3.21E-05
n-Nitrosodiphenylamine	NVA	NVA	5.45E-01	--	5.45E-01
n-Propylbenzene	NVA	NVA	NVA	NVA	NVA
o-Cresol	NVA	NVA	4.04E+01	--	4.04E+01
Octachlorodibenzodioxin	NVA	NVA	1.99E-07	--	1.99E-07
Octachlorodibenzofuran	NVA	NVA	3.86E-05	--	3.86E-05
o-Xylene	NVA	NVA	1.00E+01	--	1.00E+01
p-Chloroaniline	NVA	NVA	1.10E+00	--	1.10E+00
p-Chloro-m-cresol	NVA	NVA	7.95E+00	--	7.95E+00
p-Chlorotoluene	NVA	NVA	NVA	NVA	NVA
p-Cresol	NVA	NVA	1.63E+02	--	1.63E+02
p-Cymene	NVA	NVA	NVA	NVA	NVA
Pentachlorophenol	$2.1_{(bird)}$	$3_{(plant)}$	1.19E-01	--	2.10E+00
Pentaerythritol tetranitrate (PETN)	NVA	NVA	NVA	8.60E+03	8.60E+03
Phenanthrene	$29_{(earthworm)}$	NVA	4.57E+01	--	2.90E+01
Phenol	NVA	$30_{(earthworm)}$	1.20E+02	--	3.00E+01
Pyrene	$1.1_{(mammal)}$	NVA	7.85E+01	--	1.10E+00
Pyridine	NVA	NVA	1.03E+00	--	1.03E+00
sec-Butylbenzene	NVA	NVA	NVA	NVA	NVA
Styrene	NVA	$300_{(plant)}$	4.69E+00	--	3.00E+02
TCDD TE	NVA	3.15E-06	1.99E-07	--	3.15E-06
tert-Butylbenzene	NVA	NVA	NVA	NVA	NVA
Tetrachloroethene	NVA	NVA	9.92E+00	--	9.92E+00
Tetryl	NVA	NVA	NVA	9.90E-01	9.90E-01
Toluene	NVA	$200_{(plant)}$	5.45E+00	--	2.00E+02
Total HPCDD	NVA	NVA	1.99E-07		1.99E-07
Total HPCDF	NVA	NVA	3.86E-05		3.86E-05
Total HXCDD	NVA	NVA	1.99E-07		1.99E-07
Total HXCDF	NVA	NVA	3.86E-05		3.86E-05
Total PECDF	NVA	NVA	3.86E-05		3.86E-05
Total Petroleum Hydrocarbons	NVA	NVA	NVA	NVA	NVA
Toxaphene	NVA	NVA	1.19E-01	--	1.19E-01
trans-1,2-Dichloroethene	NVA	NVA	7.84E-01	--	7.84E-01
trans-1,3-Dichloropropene	NVA	NVA	3.98E-01	--	3.98E-01
Tribromomethane	NVA	NVA	1.59E+01	--	1.59E+01
Trichloroethene	NVA	NVA	1.24E+01	--	1.24E+01
Trichlorofluoromethane	NVA	NVA	1.64E+01	--	1.64E+01
Trichloromethane	NVA	NVA	1.19E+00	--	1.19E+00
Vinyl Acetate	NVA	NVA	1.27E+01	--	1.27E+01
Vinyl Chloride	NVA	NVA	6.46E-01	--	6.46E-01
Xylenes (total)	NVA	NVA	1.00E+01	--	1.00E+01

a USEPA (2009), Ecological Soil Screening Level Guidance. Available on-line: http://www.epa.gov/ecotox/ecossl/

b Preliminary Remediation Goals for Ecological Endpoints, R. A. Efroymson, et. al., August 1997.

c Ecological Data Quality Levels, U.S.EPA Region 5, October 1999.

Table F-25
Selection of Ecological Soil Screening Toxicity Values for SWMU 43

Parameter	Ecological Soil Screening Levels[a] (mg/kg)	Ecological Preliminary Remediation Goals[b] (mg/kg)	Ecological Data Quality Levels[c] (mg/kg)	Other Ecological Soil Screening Levels[d] (mg/kg)	Selected Ecological Screening Toxicity Value[e] (mg/kg)

d LANL (2005). Ecorisk Database Release 2.2, Los Alamos National Laboratory, September.

e The following hierarchy was utilized to select the final Ecological Screening Toxicity Values for this assessment:

1. The lower value of either the Ecological Soil Screening Level Guidance or the Preliminary Remediation Goals for Ecological Endpoints.
2. Ecological Data Quality Levels, U.S.EPA Region 5
3. If no other value is available, the selected ESL is from LANL, 2005.

NVA = No Value Available

Table F-26
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	71-55-6	1,1,1-Trichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.98E+01	3.00E-01	No
Surface Soil	79-34-5	1,1,2,2-Tetrachloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	1.27E-01	3.00E-01	No
	79-00-5	1,1,2-Trichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.86E+01	3.00E-01	No
	75-34-3	1,1-Dichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.01E+01	3.00E-01	No
	75-35-4	1,1-Dichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	8.28E+00	NVA	No
	120-82-1	1,2,4-Trichlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	2.00E+01	1.00E-01	Yes
	95-50-1	1,2-Dichlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	2.96E+00	1.00E-01	Yes
	107-06-2	1,2-Dichloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.12E+01	8.70E+02	No
	78-87-5	1,2-Dichloropropane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	3.27E+01	3.00E-01	No
	99-35-4	1,3,5-Trinitrobenzene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	3.76E-01	NVA	No
	541-73-1	1,3-Dichlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	3.77E+01	NVA	No
	99-65-0	1,3-Dinitrobenzene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	6.55E-01	NVA	No
	106-46-7	1,4-Dichlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	2.00E+01	1.00E-01	Yes
	90-12-0	1-Methylnaphthalene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	3.24E+00	NVA	No
	93-76-5	2,4,5-T			mg/kg		0/10	6.90E-03 - 7.60E-03	7.60E-03	5.96E-01	NVA	No
	93-72-1	2,4,5-TP (Silvex)			mg/kg		0/10	1.40E-02 - 1.50E-02	1.50E-02	1.09E-01	NVA	No
	95-95-4	2,4,5-Trichlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	9.00E+00	1.00E-01	Yes
	88-06-2	2,4,6-Trichlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	4.00E+00	1.00E-01	Yes
	118-96-7	2,4,6-Trinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	6.40E+00	NVA	No
	94-75-7	2,4-D			mg/kg		0/10	3.40E-02 - 3.80E-02	3.80E-02	2.73E-02	NVA	Yes
	94-82-6	2,4-DB			mg/kg		0/10	6.90E-02 - 7.60E-02	7.60E-02	NVA	NVA	No
	120-83-2	2,4-Dichlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	8.75E+01	1.00E-01	Yes
	105-67-9	2,4-Dimethylphenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.00E-02	1.00E-01	Yes
	51-28-5	2,4-Dinitrophenol			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	2.00E+01	1.00E-01	Yes
	121-14-2	2,4-Dinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	1.28E+00	NVA	No
	606-20-2	2,6-Dinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	3.28E-02	NVA	Yes
	35572-78-2	2-amino-4,6-Dinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	2.10E+00	NVA	No
	78-93-3	2-Butanone			mg/kg		0/10	2.20E-02 - 3.60E-02	3.60E-02	8.96E+01	NVA	No
	91-58-7	2-Chloronaphthalene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.22E-02	NVA	Yes
	95-57-8	2-Chlorophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	2.43E-01	1.00E-01	Yes
	591-78-6	2-Hexanone			mg/kg		0/10	2.20E-02 - 3.60E-02	3.60E-02	1.26E+01	NVA	No
	91-57-6	2-Methylnaphthalene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	3.24E+00	NVA	No
	88-74-4	2-Nitroaniline			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	7.41E+01	NVA	No

Table F-26
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
Surface Soil	88-75-5	2-Nitrophenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.60E+00	1.00E-01	Yes
	88-72-2	2-Nitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	2.00E+00	NVA	No
	88-85-7	2-sec-butyl-4,6-dinitrophenol			mg/kg		0/10	6.90E-03 - 7.60E-03	7.60E-03	2.18E-02	NVA	No
	N/A	3&4-Methylphenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	4.04E+01	1.00E-01	Yes
	91-94-1	3,3'-Dichlorobenzidine			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	6.46E-01	NVA	No
	99-09-2	3-Nitroaniline			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	3.16E+00	NVA	No
	99-08-1	3-Nitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	2.40E+00	NVA	No
	72-54-8	4,4'-DDD			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	2.10E-02	1.00E-01	No
	72-55-9	4,4'-DDE			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	2.10E-02	1.00E-01	No
	50-29-3	4,4'-DDT			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	2.10E-02	1.00E-01	No
	534-52-1	4,6-Dinitro-o-cresol			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	1.44E-01	NVA	Yes
	19406-51-0	4-amino-2,6-Dinitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	7.30E-01	NVA	No
	101-55-3	4-Bromophenyl phenylether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	NVA	NVA	No
	7005-72-3	4-Chlorophenyl phenylether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	NVA	NVA	No
	108-10-1	4-Methyl-2-pentanone			mg/kg		0/10	2.20E-02 - 3.60E-02	3.60E-02	4.43E+02	1.00E+02	No
	100-01-6	4-Nitroaniline			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	2.19E+01	NVA	No
	100-02-7	4-Nitrophenol			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	7.00E+00	1.00E-01	Yes
	99-99-0	4-Nitrotoluene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	4.40E+00	NVA	No
	83-32-9	Acenaphthene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	2.00E+01	1.00E-01	Yes
	208-96-8	Acenaphthylene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	2.90E+01	1.00E-01	Yes
	309-00-2	Aldrin			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	3.32E-03	1.00E-01	No
	319-84-6	alpha-BHC			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	9.94E-02	NVA	No
	5103-71-9	alpha-Chlordane			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	2.24E-01	1.00E-01	No
	120-12-7	Anthracene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	2.90E+01	1.00E-01	Yes
	7440-36-0	Antimony			mg/kg		0/10	2.00E-01 - 3.10E-01	3.10E-01	2.70E-01	4.80E-01	Yes
	12674-11-2	Aroclor 1016			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	3.71E-01	1.00E-01	No
	11104-28-2	Aroclor 1221			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	3.71E-01	1.00E-01	No
	11141-16-5	Aroclor 1232			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	3.71E-01	1.00E-01	No
	53469-21-9	Aroclor 1242			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	3.71E-01	1.00E-01	No
	12672-29-6	Aroclor 1248			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	3.71E-01	1.00E-01	No
	11096-82-5	Aroclor 1260			mg/kg		0/10	1.70E-02 - 1.90E-02	1.90E-02	3.71E-01	1.00E-01	No
	71-43-2	Benzene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.55E-01	1.00E-01	No
Surface Soil	65-85-0	Benzoic Acid			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	1.00E+00	NVA	No

Table F-26
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	100-51-6	Benzyl alcohol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	6.58E+01	NVA	No
	319-85-7	beta-BHC			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	3.98E-03	NVA	No
	111-91-1	bis(2-Chloroethoxy)methane			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	3.02E-01	NVA	No
	111-44-4	bis(2-Chloroethyl)ether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	2.37E+01	NVA	No
	108-60-1	bis(2-Chloroisopropyl)ether			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.99E+01	NVA	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	9.26E-01	NVA	No
	75-27-4	Bromodichloromethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	5.40E-01	4.50E+02	No
	74-83-9	Bromomethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.35E-01	NVA	No
	85-68-7	Butyl benzyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	2.39E-01	NVA	Yes
	86-74-8	Carbazole			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	NVA	NVA	No
	56-23-5	Carbon tetrachloride			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.98E+00	3.00E-01	No
	108-90-7	Chlorobenzene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	4.00E+01	1.00E-01	No
	75-00-3	Chloroethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	NVA	NVA	No
	67-66-3	Chloroform			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	1.19E+00	3.00E-01	No
	74-87-3	Chloromethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	1.04E+01	NVA	No
	156-59-2	cis-1,2-Dichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	7.84E-01	3.00E-01	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	3.98E-01	3.00E-01	No
	121-82-4	Cyclonite			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	7.50E+00	NVA	No
	75-99-0	Dalapon			mg/kg		0/10	3.40E-02 - 3.80E-02	3.80E-02	NVA	NVA	No
	319-86-8	delta-BHC			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	9.94E+00	NVA	No
	53-70-3	Dibenz(a,h)anthracene			mg/kg		0/10	5.50E-02 - 6.20E-02	6.20E-02	1.10E+00	1.00E-01	No
	132-64-9	Dibenzofuran			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	6.10E+00	NVA	No
	124-48-1	Dibromochloromethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.05E+00	NVA	No
	120-36-5	Dichloroprop			mg/kg		0/10	3.40E-02 - 3.80E-02	3.80E-02	NVA	NVA	No
	60-57-1	Dieldrin			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	4.90E-03	1.00E-01	No
	84-66-2	Diethyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	1.00E+02	NVA	No
	131-11-3	Dimethylphthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	7.34E+02	NVA	No
	84-74-2	Di-n-butyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	2.00E+02	NVA	No
	117-84-0	Di-n-octyl phthalate			mg/kg		0/10	3.40E-01 - 3.90E-01	3.90E-01	7.09E+02	NVA	No
	959-98-8	Endosulfan I			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	1.19E-01	NVA	No
	33213-65-9	Endosulfan II			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	1.19E-01	NVA	No
Surface Soil	1031-07-8	Endosulfan sulfate			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	3.58E-02	NVA	No
	72-20-8	Endrin			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	1.01E-02	1.00E-01	No

Table F-26
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	7421-93-4	Endrin aldehyde			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	1.05E-02	NVA	No
	53494-70-5	Endrin ketone			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	NVA	NVA	No
	100-41-4	Ethylbenzene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	5.16E+00	1.00E-01	No
	86-73-7	Fluorene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	2.90E+01	1.00E-01	Yes
	58-89-9	gamma-BHC (Lindane)			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	5.00E-03	1.00E-01	No
	5103-74-2	gamma-Chlordane			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	2.24E-01	1.00E-01	No
	76-44-8	Heptachlor			mg/kg		0/10	1.70E-03 - 9.50E-03	9.50E-03	5.98E-03	NVA	Yes
	1024-57-3	Heptachlor epoxide			mg/kg		0/10	1.70E-03 - 1.90E-03	1.90E-03	1.52E-01	1.00E-01	No
	118-74-1	Hexachlorobenzene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.99E-01	NVA	No
	87-68-3	Hexachlorobutadiene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	3.98E-02	NVA	Yes
	77-47-4	Hexachlorocyclopentadiene			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.00E+01	NVA	No
	67-72-1	Hexachloroethane			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	5.96E-01	NVA	No
	2691-41-0	HMX			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	2.70E+01	NVA	No
	78-59-1	Isophorone			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.39E+02	NVA	No
	N/A	m+p-Xylenes			mg/kg		0/10	9.00E-03 - 1.40E-02	1.40E-02	1.00E+01	1.00E-01	No
	94-74-6	MCPA			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	NVA	NVA	No
	93-65-2	MCPP			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	NVA	NVA	No
	72-43-5	Methoxychlor			mg/kg		0/10	3.40E-03 - 3.80E-03	3.80E-03	1.99E-02	1.00E-01	No
	75-09-2	Methylene chloride			mg/kg		0/10	9.00E-03 - 1.40E-02	1.40E-02	4.05E+00	3.00E-01	No
	91-20-3	Naphthalene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	2.90E+01	1.00E-01	Yes
	98-95-3	Nitrobenzene			mg/kg		0/10	1.90E-01 - 2.50E-01	2.50E-01	1.31E+00	NVA	No
	55-63-0	Nitroglycerin			mg/kg		0/10	1.50E+00 - 2.00E+00	2.00E+00	7.10E+01	NVA	No
	621-64-7	n-Nitroso-di-n-propylamine			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	5.44E-01	NVA	No
	86-30-6	n-Nitrosodiphenylamine			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	5.45E-01	NVA	No
	95-48-7	o-Cresol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	4.04E+01	1.00E-01	Yes
	95-47-6	o-Xylene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	1.00E+01	1.00E-01	No
	106-47-8	p-Chloroaniline			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	1.10E+00	NVA	No
	59-50-7	p-Chloro-m-cresol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	7.95E+00	NVA	No
	87-86-5	Pentachlorophenol			mg/kg		0/10	8.50E-01 - 9.70E-01	9.70E-01	2.10E+00	1.00E-01	Yes
	78-11-5	Pentaerythritol tetranitrate			mg/kg		0/10	1.50E+00 - 2.00E+00	2.00E+00	8.60E+03	NVA	No
Surface Soil	85-01-8	Phenanthrene			mg/kg		0/10	2.70E-01 - 3.10E-01	3.10E-01	2.90E+01	1.00E-01	Yes
	108-95-2	Phenol			mg/kg		0/10	1.70E-01 - 1.90E-01	1.90E-01	3.00E+01	1.00E-01	Yes
	7440-22-4	Silver			mg/kg		0/10	4.70E-02 - 7.70E-02	7.70E-02	2.00E+00	9.80E-06	Yes

Table F-26
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Soil at SWMU 43

Scenario Timeframe: Current/Future

Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Ecological Screening Value (2)	Region III BTAG Screening Levels (3)	Above Screening Value (Y/N)
	100-42-5	Styrene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	3.00E+02	1.00E-01	No
	127-18-4	Tetrachloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	9.92E+00	3.00E-01	No
	479-45-8	Tetryl			mg/kg		0/10	3.80E-01 - 5.00E-01	5.00E-01	9.90E-01	NVA	No
	7440-28-0	Thallium			mg/kg		0/10	2.60E-01 - 1.20E+01	1.20E+01	1.00E+00	1.00E-03	Yes
	108-88-3	Toluene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	2.00E+02	1.00E-01	No
	8001-35-2	Toxaphene			mg/kg		0/10	8.60E-02 - 9.50E-02	9.50E-02	1.19E-01	NVA	No
	156-60-5	trans-1,2-Dichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	7.84E-01	3.00E-01	No
	10061-02-6	trans-1,3-Dichloropropene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	3.98E-01	3.00E-01	No
	75-25-2	Tribromomethane			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	1.59E+01	1.15E+03	No
	79-01-6	Trichloroethene			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	1.24E+01	3.00E-01	No
	75-01-4	Vinyl Chloride			mg/kg		0/10	4.50E-03 - 7.20E-03	7.20E-03	6.46E-01	3.00E-01	No

(1) Maximum non-detect limit value used for screening.

(2) Screening toxicity values from USEPA Eco SSLs (2009); Efroymson et al., PRGs (1997); and USEPA Region 5 EDQLs (1999); and other sources. See text for derivation.

(3) Screening toxicity values from USEPA Region III BTAG Screening Table (September 1995).

Definitions: N/A = Not Applicable or Not Available
NVA = No Value Available

Table F-27
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future

Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
Surface Water	71-55-6	1,1,1-Trichloroethane			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	1.10E-02	No
	79-34-5	1,1,2,2-Tetrachloroethane			mg/l		0/2	5.10E-04 - 5.10E-04	5.10E-04	6.10E-01	No
	79-00-5	1,1,2-Trichloroethane			mg/l		0/2	1.20E-03 - 1.20E-03	1.20E-03	1.20E+00	No
	75-34-3	1,1-Dichloroethane			mg/l		0/2	6.80E-04 - 6.80E-04	6.80E-04	4.70E-02	No
	75-35-4	1,1-Dichloroethene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	2.50E-02	No
	120-82-1	1,2,4-Trichlorobenzene			mg/l		0/2	1.80E-03 - 1.80E-03	1.80E-03	2.40E-02	No
	95-50-1	1,2-Dichlorobenzene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	7.00E-04	Yes
	107-06-2	1,2-Dichloroethane			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	1.00E-01	No
	540-59-0	1,2-Dichloroethene (total)			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	5.90E-01	No
	78-87-5	1,2-Dichloropropane			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	NVA	No
	122-66-7	1,2-Diphenylhydrazine			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	NVA	No
	541-73-1	1,3-Dichlorobenzene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	1.50E-01	No
	106-46-7	1,4-Dichlorobenzene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	2.60E-02	No
	95-95-4	2,4,5-Trichlorophenol			mg/l		0/2	5.20E-03 - 5.20E-03	5.20E-03	4.90E-03	Yes
	88-06-2	2,4,6-Trichlorophenol			mg/l		0/2	4.20E-03 - 4.20E-03	4.20E-03	4.90E-03	No
	120-83-2	2,4-Dichlorophenol			mg/l		0/2	2.90E-03 - 2.90E-03	2.90E-03	1.10E-02	No
	105-67-9	2,4-Dimethylphenol			mg/l		0/2	5.80E-03 - 5.80E-03	5.80E-03	NVA	No
	51-28-5	2,4-Dinitrophenol			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	NVA	No
	121-14-2	2,4-Dinitrotoluene			mg/l		0/2	4.50E-03 - 4.50E-03	4.50E-03	4.40E-02	No
	606-20-2	2,6-Dinitrotoluene			mg/l		0/2	7.90E-04 - 7.90E-04	7.90E-04	8.10E-02	No
	78-93-3	2-Butanone			mg/l		0/2	6.40E-03 - 6.40E-03	6.40E-03	1.40E+01	No
	110-75-8	2-Chloroethyl vinyl ether			mg/l		0/2	7.10E-04 - 7.10E-04	7.10E-04	NVA	No
	91-58-7	2-Chloronaphthalene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	NVA	No
	95-57-8	2-Chlorophenol			mg/l		0/2	9.90E-04 - 9.90E-04	9.90E-04	2.40E-02	No
	591-78-6	2-Hexanone			mg/l		0/2	3.60E-03 - 3.60E-03	3.60E-03	9.90E-02	No
	91-57-6	2-Methylnaphthalene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	4.70E-03	No
	88-74-4	2-Nitroaniline			mg/l		0/2	4.30E-03 - 4.30E-03	4.30E-03	NVA	No
	88-75-5	2-Nitrophenol			mg/l		0/2	3.70E-03 - 3.70E-03	3.70E-03	1.92E+00	No
	91-94-1	3,3'-Dichlorobenzidine			mg/l		0/2	1.20E-02 - 1.20E-02	1.20E-02	4.50E-03	Yes
	99-09-2	3-Nitroaniline			mg/l		0/2	4.90E-03 - 4.90E-03	4.90E-03	NVA	No

Table F-27
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future

Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
Surface Water	72-54-8	4,4'-DDD			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	1.10E-05	Yes
	72-55-9	4,4'-DDE			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	5.00E-07	Yes
	50-29-3	4,4'-DDT			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	5.00E-07	Yes
	534-52-1	4,6-Dinitro-o-cresol			mg/l		0/2	1.70E-02 - 1.70E-02	1.70E-02	NVA	No
	101-55-3	4-Bromophenyl phenylether			mg/l		0/2	4.20E-03 - 4.20E-03	4.20E-03	1.50E-03	Yes
	7005-72-3	4-Chlorophenyl phenylether			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	NVA	No
	108-10-1	4-Methyl-2-pentanone			mg/l		0/2	3.00E-03 - 3.00E-03	3.00E-03	1.70E-01	No
	100-01-6	4-Nitroaniline			mg/l		0/2	5.20E-03 - 5.20E-03	5.20E-03	NVA	No
	100-02-7	4-Nitrophenol			mg/l		0/2	1.20E-02 - 1.20E-02	1.20E-02	6.00E-02	No
	83-32-9	Acenaphthene			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	5.80E-03	No
	208-96-8	Acenaphthylene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	NVA	No
	67-64-1	Acetone			mg/l		0/2	1.30E-02 - 1.30E-02	1.30E-02	1.50E+00	No
	107-02-8	Acraldehyde			mg/l		0/2	1.00E-01 - 1.00E-01	1.00E-01	NVA	No
	107-13-1	Acrylonitrile			mg/l		0/2	1.00E-01 - 1.00E-01	1.00E-01	NVA	No
	309-00-2	Aldrin			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	3.00E-03	Yes
	319-84-6	alpha-BHC			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	2.20E-03	Yes
	5103-71-9	alpha-Chlordane			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	2.20E-06	Yes
	120-12-7	Anthracene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	1.20E-05	Yes
	7440-36-0	Antimony			mg/l		0/2	2.00E-04 - 2.20E-04	2.20E-04	3.00E-02	No
	12674-11-2	Aroclor 1016			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	7.40E-08	Yes
	11104-28-2	Aroclor 1221			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	7.40E-08	Yes
	11141-16-5	Aroclor 1232			mg/l		0/2	2.10E-02 - 2.10E-02	2.10E-02	7.40E-08	Yes
	53469-21-9	Aroclor 1242			mg/l		0/2	3.00E-02 - 3.00E-02	3.00E-02	7.40E-08	Yes
	12672-29-6	Aroclor 1248			mg/l		0/2	3.00E-02 - 3.00E-02	3.00E-02	7.40E-08	Yes
	11097-69-1	Aroclor 1254			mg/l		0/2	3.60E-02 - 3.60E-02	3.60E-02	7.40E-08	Yes
	11096-82-5	Aroclor 1260			mg/l		0/2	3.60E-02 - 3.60E-02	3.60E-02	7.40E-08	Yes
	71-43-2	Benzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	3.70E-01	No
	92-87-5	Benzidine			mg/l		0/2	1.00E-02 - 1.00E-02	1.00E-02	3.90E-03	Yes
	56-55-3	Benzo(a)anthracene			mg/l		0/2	1.60E-03 - 1.60E-03	1.60E-03	1.80E-05	Yes
	50-32-8	Benzo(a)pyrene			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	1.50E-05	Yes

Table F-27
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future

Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
Surface Water	205-99-2	Benzo(b)fluoranthene			mg/l		0/2	5.40E-03 - 5.40E-03	5.40E-03	NVA	No
	191-24-2	Benzo(g,h,i)perylene			mg/l		0/2	6.10E-03 - 6.10E-03	6.10E-03	NVA	No
	207-08-9	Benzo(k)fluoranthene			mg/l		0/2	8.70E-04 - 8.70E-04	8.70E-04	NVA	No
	65-85-0	Benzoic Acid			mg/l		0/2	1.30E-02 - 1.30E-02	1.30E-02	4.20E-02	No
	100-51-6	Benzyl alcohol			mg/l		0/2	7.20E-04 - 7.20E-04	7.20E-04	8.60E-03	No
	7440-41-7	Beryllium			mg/l		0/2	5.00E-03 - 5.00E-03	5.00E-03	6.60E-04	Yes
	319-85-7	beta-BHC			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	2.20E-03	Yes
	111-91-1	bis(2-Chloroethoxy)methane			mg/l		0/2	1.50E-03 - 1.50E-03	1.50E-03	NVA	No
	111-44-4	bis(2-Chloroethyl)ether			mg/l		0/2	1.90E-03 - 1.90E-03	1.90E-03	NVA	No
	108-60-1	bis(2-Chloroisopropyl)ether			mg/l		0/2	5.30E-03 - 5.30E-03	5.30E-03	NVA	No
	117-81-7	bis(2-Ethylhexyl) phthalate			mg/l		0/2	4.80E-03 - 4.80E-03	4.80E-03	1.60E-02	No
	75-27-4	Bromodichloromethane			mg/l		0/2	5.90E-04 - 5.90E-04	5.90E-04	NVA	No
	74-83-9	Bromomethane			mg/l		0/2	5.80E-03 - 5.80E-03	5.80E-03	NVA	No
	85-68-7	Butyl benzyl phthalate			mg/l		0/2	3.40E-03 - 3.40E-03	3.40E-03	1.90E-02	No
	7440-43-9	Cadmium			mg/l		0/2	4.01E-03 - 4.01E-03	4.01E-03	2.50E-04	Yes
	56-23-5	Carbon tetrachloride			mg/l		0/2	5.80E-04 - 5.80E-04	5.80E-04	1.33E-02	No
	108-90-7	Chlorobenzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	1.30E-03	No
	75-00-3	Chloroethane			mg/l		0/2	1.90E-03 - 1.90E-03	1.90E-03	NVA	No
	67-66-3	Chloroform			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	1.80E-03	No
	74-87-3	Chloromethane			mg/l		0/2	3.20E-03 - 3.20E-03	3.20E-03	NVA	No
	7440-47-3	Chromium			mg/l		0/2	6.02E-03 - 6.02E-03	6.02E-03	8.50E-02	No
	218-01-9	Chrysene			mg/l		0/2	2.40E-03 - 2.40E-03	2.40E-03	NVA	No
	10061-01-5	cis-1,3-Dichloro-1-propene			mg/l		0/2	5.80E-04 - 5.80E-04	5.80E-04	5.50E-05	Yes
	7440-48-4	Cobalt			mg/l		0/2	2.50E-02 - 2.50E-02	2.50E-02	2.30E-02	Yes
	7440-50-8	Copper			mg/l		0/2	8.09E-03 - 8.09E-03	8.09E-03	9.00E-03	No
	319-86-8	delta-BHC			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	1.41E-01	No
	53-70-3	Dibenz(a,h)anthracene			mg/l		0/2	6.50E-03 - 6.50E-03	6.50E-03	NVA	No
	132-64-9	Dibenzofuran			mg/l		0/2	1.70E-03 - 1.70E-03	1.70E-03	3.70E-03	No
	124-48-1	Dibromochloromethane			mg/l		0/2	6.70E-04 - 6.70E-04	6.70E-04	NVA	No
	60-57-1	Dieldrin			mg/l		0/2	4.70E-03 - 4.70E-03	4.70E-03	5.60E-05	Yes

Table F-27
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future

Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
Surface Water	84-66-2	Diethyl phthalate			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	2.10E-01	No
	131-11-3	Dimethylphthalate			mg/l		0/2	1.50E-03 - 1.50E-03	1.50E-03	NVA	No
	84-74-2	Di-n-butyl phthalate			mg/l		0/2	3.70E-03 - 3.70E-03	3.70E-03	1.90E-02	No
	117-84-0	Di-n-octyl phthalate			mg/l		0/2	1.50E-02 - 1.50E-02	1.50E-02	2.20E-02	No
	959-98-8	Endosulfan I			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	5.10E-05	Yes
	33213-65-9	Endosulfan II			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	5.10E-05	Yes
	1031-07-8	Endosulfan sulfate			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	5.10E-05	Yes
	72-20-8	Endrin			mg/l		0/2	7.60E-03 - 7.60E-03	7.60E-03	3.60E-05	Yes
	7421-93-4	Endrin aldehyde			mg/l		0/2	8.00E-03 - 8.00E-03	8.00E-03	3.60E-05	Yes
	53494-70-5	Endrin ketone			mg/l		0/2	8.00E-03 - 8.00E-03	8.00E-03	3.60E-05	Yes
	100-41-4	Ethylbenzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	9.00E-02	No
	206-44-0	Fluoranthene			mg/l		0/2	3.30E-03 - 3.30E-03	3.30E-03	4.00E-05	Yes
	86-73-7	Fluorene			mg/l		0/2	3.70E-03 - 3.70E-03	3.70E-03	3.00E-03	Yes
	58-89-9	gamma-BHC (Lindane)			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	1.00E-05	Yes
	5103-74-2	gamma-Chlordane			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	2.20E-06	Yes
	76-44-8	Heptachlor			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	1.90E-06	Yes
	1024-57-3	Heptachlor epoxide			mg/l		0/2	5.00E-03 - 5.00E-03	5.00E-03	1.90E-06	Yes
	118-74-1	Hexachlorobenzene			mg/l		0/2	1.60E-03 - 1.60E-03	1.60E-03	3.00E-07	Yes
	87-68-3	Hexachlorobutadiene			mg/l		0/2	3.40E-03 - 3.40E-03	3.40E-03	1.30E-03	Yes
	77-47-4	Hexachlorocyclopentadiene			mg/l		0/2	8.60E-03 - 8.60E-03	8.60E-03	NVA	No
	67-72-1	Hexachloroethane			mg/l		0/2	1.50E-03 - 1.50E-03	1.50E-03	1.20E-02	No
	193-39-5	Indeno(1,2,3-cd)pyrene			mg/l		0/2	8.60E-03 - 8.60E-03	8.60E-03	NVA	No
	78-59-1	Isophorone			mg/l		0/2	4.80E-03 - 4.80E-03	4.80E-03	NVA	No
	7439-92-1	Lead			mg/l		0/2	1.26E-03 - 1.26E-03	1.26E-03	2.50E-03	No
	7439-97-6	Mercury			mg/l		0/2	2.43E-04 - 2.43E-04	2.43E-04	2.60E-05	Yes
	72-43-5	Methoxychlor			mg/l		0/2	5.10E-03 - 5.10E-03	5.10E-03	1.90E-05	Yes
	75-09-2	Methylene chloride			mg/l		0/2	2.30E-03 - 2.30E-03	2.30E-03	9.81E-02	No
	91-20-3	Naphthalene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	1.10E-03	No
	7440-02-0	Nickel			mg/l		0/2	3.43E-02 - 3.43E-02	3.43E-02	5.20E-02	No
	98-95-3	Nitrobenzene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	NVA	No

Table F-27
Summary of Screening for Non-Detected Chemicals
Current/Future - Surface Water at SWMU 43

Scenario Timeframe: Current/Future

Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Region III BTAG Screening Levels (2)	Above Screening Value (Y/N)
Surface Water	62-75-9	N-Nitrosodimethylamine			mg/l		0/2	2.00E-03 - 2.00E-03	2.00E-03	1.17E-01	No
	621-64-7	n-Nitroso-di-n-propylamine			mg/l		0/2	4.40E-03 - 4.40E-03	4.40E-03	NVA	No
	86-30-6	n-Nitrosodiphenylamine			mg/l		0/2	3.00E-03 - 3.00E-03	3.00E-03	2.10E-01	No
	95-48-7	o-Cresol			mg/l		0/2	3.90E-03 - 3.90E-03	3.90E-03	1.30E-02	No
	106-47-8	p-Chloroaniline			mg/l		0/2	7.30E-03 - 7.30E-03	7.30E-03	2.32E-01	No
	59-50-7	p-Chloro-m-cresol			mg/l		0/2	4.00E-03 - 4.00E-03	4.00E-03	NVA	No
	106-44-5	p-Cresol			mg/l		0/2	5.20E-04 - 5.20E-04	5.20E-04	5.43E-01	No
	87-86-5	Pentachlorophenol			mg/l		0/2	1.80E-02 - 1.80E-02	1.80E-02	5.00E-04	Yes
	85-01-8	Phenanthrene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	4.00E-04	Yes
	108-95-2	Phenol			mg/l		0/2	9.20E-03 - 9.20E-03	9.20E-03	4.00E-03	Yes
	129-00-0	Pyrene			mg/l		0/2	2.80E-03 - 2.80E-03	2.80E-03	2.50E-05	Yes
	7782-49-2	Selenium			mg/l		0/2	3.02E-03 - 3.02E-03	3.02E-03	1.00E-03	Yes
	7440-22-4	Silver			mg/l		0/2	2.50E-04 - 2.50E-04	2.50E-04	3.20E-03	No
	100-42-5	Styrene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	7.20E-02	No
	127-18-4	Tetrachloroethene			mg/l		0/2	1.60E-03 - 1.60E-03	1.60E-03	1.11E-01	No
	7440-28-0	Thallium			mg/l		0/2	6.99E-03 - 6.99E-03	6.99E-03	8.00E-04	Yes
	108-88-3	Toluene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	2.00E-03	No
	NA	Total Organic Halogens			mg/l		0/2	1.00E-02 - 1.00E-02	1.00E-02	NVA	No
	8001-35-2	Toxaphene			mg/l		0/2	3.60E-02 - 3.60E-02	3.60E-02	2.00E-07	Yes
	10061-02-6	trans-1,3-Dichloropropene			mg/l		0/2	7.00E-04 - 7.00E-04	7.00E-04	5.50E-05	Yes
	75-25-2	Tribromomethane			mg/l		0/2	2.60E-03 - 2.60E-03	2.60E-03	3.20E-01	No
	79-01-6	Trichloroethene			mg/l		0/2	5.00E-04 - 5.00E-04	5.00E-04	2.10E-02	No
	75-69-4	Trichlorofluoromethane			mg/l		0/2	1.40E-03 - 1.40E-03	1.40E-03	NVA	No
	108-05-4	Vinyl acetate			mg/l		0/2	8.30E-03 - 8.30E-03	8.30E-03	1.60E-02	No
	75-01-4	Vinyl Chloride			mg/l		0/2	2.60E-03 - 2.60E-03	2.60E-03	9.30E-01	No
	1330-20-7	Xylenes (total)			mg/l		0/2	8.40E-04 - 8.40E-04	8.40E-04	1.30E-02	No
	7440-66-6	Zinc			mg/l		0/2	2.11E-02 - 2.11E-02	2.11E-02	1.20E-01	No

(1) Maximum non-detect limit value used for screening.

(2) Screening toxicity values from USEPA Region III BTAG Screening Table (January 2009).

Definitions: N/A = Not Applicable or Not Available

NVA = No Value Available