Data Validation Summary Report
for the Site Investigation Performed at the
Smoke Area BVZ (Parcel FTA-124)
Fort McClellan, Calhoun County, Alabama

1.0 Introduction

Level III data validation was performed on 100 percent of the environmental samples collected at Parcel FTA-124. The analytical data consisted of four sample delivery groups (SDGs), PK612401 through PK612404, which were analyzed by Quanterra Incorporated. Both soil and water matrices were validated. In addition, an evaluation of the field split (FS) data, which was analyzed by the U.S. Army Corps of Engineers-South Atlantic Division laboratory is included in this report. The chemical parameters for which the samples were analyzed, are identified below:

Parameter (Method)
Target Compound List(TCL) Volatile Organics by Gas Chromotography (GC)/Mass Spectrometry SW-846 8260B
TCL Semivolatiles by GC SW-846 8270C
Metals by SW-846 6010B and 7471A/7470A
Wet Chemistry -Total Organic Carbon by SW-846-9060

2.0 Procedures

The sample data were validated following the logic identified in the 1994 U.S. Environmental Protection Agency (EPA) *Contract Laboratory Program National Functional Guidelines For Inorganic Data Review* and 1994 EPA *Contract Laboratory Program National Functional Guidelines For Organic Review* for all areas except blanks. *Region III Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) and *Region III National Functional Guidelines for Organic Data Review* (June 1992) were applied to the areas associated with blank contamination. Specific quality control (QC) criteria, as identified in the quality assurance plan (QAP), analytical methods, and laboratory standard operating procedures (SOPs) were applied to all sample results. As the result of the use of Update III SW-846 test methods for the analytical data and the application of the Contract Laboratory Program (CLP) guidelines during the validation process, there were instances where specific QC requirements for all target compounds were not defined. This primarily occurred in the organic, gas chromatography (GC) and GC/mass spectrometry calibration areas and is due to the fact that the

analytical methods are "performance-based," and allows the use of average calibration responses in lieu of individual responses, which are defined by CLP protocol. In light of applying CLP guidelines to SW-846 methods and evaluating the usability of the data during the validation process, specific QC criteria were determined to address all target compounds and are identified in this report for each parameter, as well as, in the validation checklists, which function as worksheets. All completed validation checklists are on file in the Knoxville office. For those analytical methods not addressed by the CLP and Region III guidelines, the validation was based on the method requirements (i. e. SW-846, Code of Federal Regulations, SOPs, QAP) and technical judgement following the logic of the CLP validation guidelines.

3.0 Summary of Data Validation Findings

The overall quality of the data was determined to be acceptable. The only rejected data ('R' qualified) was due to "poor performing" volatile compounds (ketones, some halogenated hydrocarbons, e.g.), which exhibited poor calibration responses in the associated calibration data.

Individual validation reports have been prepared for each parameter in each SDG and the overall results of the validation findings are summarized in this report. The validation qualifier data entry verification report (Attachment A) is also provided. This is a complete listing of all of the analytical results and the validation qualifiers assigned for FTA-124 sites. It also identifies the 'use' column, which indicates which result to use in the event of a reanalysis. A listing of the validation qualifiers and the reason codes, along with their definitions is also found in Attachment A. The following section highlights the key findings of the data validation for each analysis.

4.0 Analysis-Specific Data Validation Summaries

4.1 Volatile Organics by GC/Mass Spectrometry SW-846-8260B

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria, with the exceptions of the following:

- The following demonstrated relative response factor (RRF) below 0.1 in the ICAL and/or CCAL: Non-detect results were rejected (qualified 'R') Positive results were estimated (qualified 'J'); unless 'B' qualified due to blank contamination.

SDG/SDGs	Samples Affected	Analyte / Analytes	Validation Qualifier
PK612401	FU0001, FU0002	Dibromomethane, Acetone, 2-Butanone, Bromomethane	*B/**R/J
PK612401	FU0003, FU0004, FU0006	Acetone, 2-Butanone	*B/**R/J
PK612402	FU0007, FU0008	Dibromomethane, Bromomethane, Acetone, 2-Butanone, 1,2-Dibromo-3-Chloropropane, Bromochloromethane	*B/**R/J
PK612403	FU1001, FU1002, FU1003	Acetone, 2-Butanone, Bromochloromethane	*B/**R
PK612404	FU2001, FU2002, FU2004, FU2005	Dibromomethane, Acetone, 2-Butanone, 1,2-Dibromo-3-Chloropropane, Bromochloromethane	**R

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

** 'R' qualifiers take precedence over estimating qualifiers.

- The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20: Non-detect results were estimated (qualified 'UJ') unless rejected (qualified 'R') due to ICAL/CCAL minimum RRF criteria not met Positive results were estimated (qualified 'J') unless 'B' qualified due to blank contamination.

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK612401	FU0001, FU0002	Naphthalene, Bromomethane, Methylene Chloride, 2-Chlorotoluene, 1,1,2,2-Tetrachloroethane, Bromobenzene, n-Propylbenzene, cis-1,2-Dichloroethene, m-Xylene & p-Xylene	*B/UJ/J
PK612402	FU0007, FU0008	Naphthalene, Methylene Chloride	*B/UJ
PK612403	FU1001, FU1002, FU1003	Methylene Chloride	*B
PK612404	FU2001, FU2002, FU2004, FU2005	Naphthalene, Methylene Chloride, 1,2,3-Trichlorobenzene	UJ

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses, trip blanks, and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK612401	FU0001,	Methylene Chloride, 2-Butanone	Method/ER
PK612401	FU0004, FU0006	Methylene Chloride	Method
PK612401	FU0002, FU0003	Acetone, Methylene Chloride	Method/ER
PK612402	FU0007	Methylene Chloride, 2-Butanone	Method/ER
PK612402	FU0008	Methylene Chloride	Method
PK612403	FU1001, FU1002	Acetone, Methylene Chloride	Method

SDG	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK612403	FU1003	Methylene Chloride	Method

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Surrogate Recoveries

All surrogate recoveries are within acceptable QC ranges for the surrogates applied.

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) was performed for the project samples and all QC criteria were met with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK612401	FU0001, FU0002, FU0003, FU0006	Acetone	*B/J

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Laboratory Control Sample

All QC criteria was met for the laboratory control sample (LCS) associated with the project sample analyses.

Field Duplicates

Original and field duplicate (FD) results were evaluated and no problems were noted.

Internal Standards

All internal standards met criteria with the exception of the following:

- All compounds associated with the internal standards listed in the table below were qualified as indicated.

SDG	Samples Affected	Internal Standard Outside QC Limits	Validation Qualifier
PK612401	FU0001	1,4-Dichlorobenzene-d4	UJ/J
PK612402	FU0007	1,4-Dichlorobenzene-d4	**R/UJ
PK612403	FU1001, FU1002	1,4-Dichlorobenzene-d4	UJ/J

** 'R' qualifiers take precedence over estimating qualifiers.

Quantitation

Results quantified between the maximum detection limit (MDL) and the reporting limit (RL), which the lab qualified as 'J', were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.2 Target Compound List Semivolatiles by GC/Mass Spectrometry SW-846 8270C

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria with the exceptions of the following:

The following exhibited individual ICAL %RSD>30 and/or CCAL %D>20:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK612401	FU0001, FU0002, FU0003, FU0004, FU0006	n-Nitrosodi-n-propylamine	UJ
PK612401	FU0006	4,6-Dinitro-2-methylphenol, 2,4-Dinitrophenol, 4-Nitrophenol, Hexachlorocyclopentadiene	UJ
PK612402	FU0007, FU0008	3-Nitroaniline	UJ
PK612402	FU0007	2,4-Dinitrophenol	UJ
PK612402	FU0008	Hexachlorocyclopentadiene	UJ
PK612404	FU2001, FU2002, FU2004, FU2005	3,3'-Dichlorobenzidine, Benzo(ghi)perylene, Indeno(1,2,3-cd)pyrene	UJ

Blanks

The 5X/10X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable with the exception of the following:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG/SDGs	Samples Affected	Analyte/Analytes	Associated Blank Contamination
PK612401	FU0001, FU0002, FU0003, FU0004, FU0006	Bis(2-ethylhexyl)phthalate	Method
PK612403	FU1001, FU1002, FU1003	Bis(2-ethylhexyl)phthalate	Method

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Surrogate Recoveries

All surrogate recoveries met QC criteria.

Matrix Spike/Matrix Spike Duplicate

MS/MSD was performed for the project samples and all QC criteria were met with the exception of the following:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK612404	FU2001, FU2002, FU2004, FU2005	1,4-Dichlorobenzene, 2-Chlorophenol	UJ

Laboratory Control Sample

All QC criteria was met for the LCS associated with the project sample analyses.

Field Duplicates

Original and FD results were evaluated and the following exceeded the 35 percent relative percent difference (RPD) QC criteria:

SDG	Samples Affected	Analyte/Analytes	Validation Qualifier
PK612404	FU2001 (original), FU2002 (field duplicate)	Butyl Benzyl Phthalate	J

Internal Standards

All internal standards met criteria with the exception of the following:

- All compounds associated with the internal standards listed in the table below were qualified as indicated.

SDG	Samples Affected	Internal Standard Outside QC Limits	Validation Qualifier
PK612403	FU1001, FU1003	Perylene-d12	UJ/J

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J', were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results

rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

4.3 Metals by SW-846 6010B/7471A/7470A

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing calibrations

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinse, calibration, and method blanks was applied to all sample results. All were acceptable with the exceptions noted below:

Note: 'B' Qualifiers were applied to all of the following sample results.

SDG	Samples Affected	Element/Elements	Associated Blank Contamination
PK612403	FU1001, FU1002, FU1003	Arsenic, Mercury, Sodium	Method/Calibration/ER
PK612403	FU1002, FU1003	Chromium	Calibration
PK612404	FU2001, FU2002, FU2004, FU2005	Aluminum, Iron, Manganese, Sodium	Method/Calibration

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Matrix Spike/Matrix Spike Duplicate

Batch QC was performed for the project samples and all QC criteria were met, with the following exceptions:

SDG	Samples Affected	Element/Elements	Validation Qualifier
PK612401	FU0001, FU0002, FU0003, FU0004, FU0006	Antimony, Lead, Mercury, Zinc	UJ/J

Laboratory Control Sample

All QC criteria were met for the LCS associated with the project sample analyses.

Interference Check Sample

All interference check sample percent recoveries, where applicable, were acceptable.

Inductively Coupled Plasma Serial Dilutions

All QC criteria were met for the associated project sample analyses.

Field Duplicates

Original and FD results were evaluated and the following exceeded the 35 percent RPD criteria for waters or 50 percent RPD criteria for soils.

SDG	Samples Affected	Element/Elements	Validation Qualifier
PK612401	FU0003 (original), FU0004 (duplicate)	Barium, Calcium, Magnesium	J
PK612404	FU2001 (original), FU2002 (duplicate)	Calcium, Magnesium, Sodium	*B/J

* 'B' qualifiers assigned to designate blank contamination, which are identification qualifiers, take precedence over estimating qualifiers, assigned due to quantitation.

Note: High RPDs are most likely due to matrix interferences and/or sample nonhomogeneity.

Sample Quantitation

Results quantified between the instrument detection limit and the RL ('B' flagged by the laboratory) were qualified as estimated (J).

4.4 Wet Chemistry - Total Organic Carbon by SW-846-9060

Overall, the data are of good quality and are usable as reported by the laboratory with the exceptions noted below. Data were reviewed for the following:

Holding Times

Technical holding time criteria were met for all samples.

Initial and Continuing Calibration

All initial and continuing calibrations associated with the project samples met QC criteria.

Blanks

The 5X rule for contaminants found in the associated equipment rinses and method blanks was applied to all sample results. All were found to be acceptable.

Matrix Spike/Matrix Spike Duplicate

MS/MSD and LCS was performed for the project samples and all QC criteria were met.

Field Duplicates

Original and FD results were evaluated and no problems were noted.

Quantitation

Results quantified between the MDL and the RL, which the lab qualified as 'J,' were qualified as estimated 'J' unless blank contamination was present or the results were rejected. Results rejected in favor of a preferred result (e.g., due to dilution or reanalysis) were qualified as rejected 'R'.

5.0 Quality Assurance Field Split Sample Data Evaluation

Data from the quality assurance split samples supplied to IT Corporation by the U.S. Army Corps of Engineers were reviewed for comparability to the original and FD results. Relative percent differences were calculated and the results are summarized in this section.

Field split data for SDG PK612401

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
FU0003	FU0004	FU0005

Comments:

- Metals: Majority of the same metals were detected at comparable concentrations for all three samples. Barium, chromium, iron, manganese, nickel, and zinc have RPDs above the 50 percent QC criteria. Metals not detected in original and reported in the FS were at or below the RL for the original sample. Potassium and sodium were detected in the FS, but not in the original or the FD.

- Volatiles: No volatiles were detected in the FS. Acetone, methylene chloride, and isopropylbenzene were detected in the original, but not in the FD or FS. Differences attributed to lack of homogeneity in soil samples and/or FS lab not reporting results below the RLs.

- Semivolatiles: Bis(2-ethylhexyl)phthalate detected below the RL in the original sample, but not in the FD or FS. Differences attributed to lack of homogeneity in soil samples and/or FS lab not reporting results below the RLs.

Field split data for SDG PK612404

Note: Field Split Laboratory - Specialized Assays, Inc., Nashville, Tennessee.

Original Sample ID	Field Duplicate ID	Field Split ID
FU2001	FU2002	FU2003

Comments:

- Metals: Majority of the same metals were reported in all three samples. Calcium, the only metal detected above the RL in the original and FD, has its RPD value above the QC limit. Differences attributed to lack of homogeneity in soil samples and/or FS lab not reporting results below the RLs.

- Volatiles: No volatiles detected for the original, FD, or FS sample.

- Semivolatiles: No semivolatiles detected in the FS. Phthalates, common laboratory contaminants, were detected in the original and the FD samples below the RL.