

**APPENDIX G**  
**DATA VALIDATION REPORTS**

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**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: Columbia Analytical Services, Houston, Texas

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: June 27, 2012

Sample Delivery Group (SDG): E1200509

Sample Numbers: DPTS-8, DPTS-8-FD, DPTS-9, DPTS-27, 101-C1, 101-C2, 101-C2-FD, 101-CE, 104F-C1, 105E-C1, and 105E-C2

Matrix / Number of Samples: Nine Solid Samples and Two Field Duplicate Samples

The data were qualified according to the U.S. Environmental Protection Agency (EPA) documents entitled "Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review" (USEPA-540-R-05-001, September 2005). In addition, the Tetra Tech document "Tetra Tech EM Inc., Data Validation Guidelines" (2005) was used along with other criteria specified in the applicable method.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



27 June 2012

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Certified by Harry Ellis, Chemist

Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery group (SDG) E1200509 is composed of nine environmental solid samples (three soil and six concrete) and two quality control (QC) samples (field duplicates, one soil and one concrete). The samples were analyzed for polychlorinated biphenyl (PCB) congeners by EPA Method 1668A. The following summarizes the data validation that was performed.

### POLYCHLORINATED BIPHENYL CONGENERS BY CARB METHOD 428

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were extracted and analyzed within recommended holding times.

#### II. Blanks

The laboratory blank used in these analyses contained a number of congeners at concentrations less than their reporting limits. Therefore, a number of congener results in all field samples were flagged “B”, indicating that they were found in the laboratory blank. All congeners that are flagged “BJ”, indicating that they are also less than the sample reporting limits, should be qualified as nondetected and flagged “U”. Higher concentration results for those congeners (those flagged “B” alone) are sufficiently above the blank concentration that they are not qualified.

#### III. Laboratory Control Sample (LCS)

All results for the duplicate LCS were within acceptable limits.

#### IV. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

No MS/MSD analyses were performed. The duplicate LCS samples provide adequate information on precision and accuracy, so no qualifications were applied for this data gap.

#### V. Surrogates and Internal Standards

All internal standard and surrogate recoveries were within their established control limits.

#### VI. Comments

Many of the positive results for these samples (and most of them for the soil samples) were above the sample detection limit (“EDL”, for estimated detection limit on the analytical reports) but below the sample reporting limit (“MRL”, for method reporting limit), which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimates (flagged “J”).

The laboratory qualified a number of congener results with a “K” flag, often accompanied by other flags (such as “JK” and “BJK”). This “K” flag indicates irregularities with the ratios of the ions used for identifying the peaks as PCB congeners. This means that some, or even all, of the material contributing to the peak consists of non-PCB material. Therefore, all of these K-flagged results for PCB congeners should be qualified as non-detected and flagged “U”. For those results with just the “K” flags, the

associated reporting limit should be the number listed as “result” in sample summaries of the laboratory report. For those flagged with a “J”, too, the standard reporting limit (listed as “MRL”) should be used.

Note that the total homologue results from the laboratory (beginning on the fifth page of each analytical report) include the concentrations of the congeners flagged “K” and those flagged “B”, but not those that the laboratory flagged “U”. If total homologue results are desired, they should be re-calculated taking these data validation results into consideration.

Data users should note that the laboratory instrument cannot resolve all 209 PCB congeners. The laboratory indicated this by use of analyte names such as “PCBs 59+62+75” or “PCBs 135+151”. There is only a single line entry for each such group, so no precautions are needed to avoid double counting when adding up homologue results.

The field duplicate pairs contained similar mixtures of PCB congeners; they yielded different quantitative results. The pair from concrete sample 101-C2 yielded fairly similar numbers, but the primary sample concentrations were consistently about 1.3 times the field duplicate sample concentrations. The pair from soil sample DPTS-8 was more disparate, with field duplicate concentrations 2 to 3 times the primary sample concentrations. Both pairs indicate presence of significant heterogeneity in the distribution of the PCB mixture in the media. No qualifications were applied.

## VII. Overall Assessment of Data

Results are typical of those routinely seen in these extremely sensitive analyses. All data are usable for their intended purposes with the qualifications discussed above. However, decision makers should account for the heterogeneity of the PCB distributions within the sampled media that was observed in both sets of field duplicate samples.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: Columbia Analytical Services, Houston, Texas

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: July 30, 2012

Sample Delivery Group (SDG): E1200523

Sample Numbers: DPTS-30, DPTS-31, 105-C1, 105-C2, 105-C3, 105-C4, 105-C5, 105-C6, 105-C7, 110-C1, 110-C2, 103D-C1, 103D-C2, 103E-C1, 103E-C1-FD, 103E-C2, 103E-C3, 108B-C1, 108B-C2, and 108B-C3

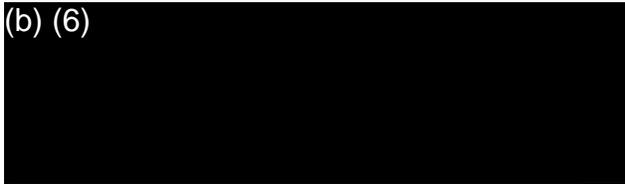
Matrix / Number of Samples: Nineteen Solid Samples and One Field Duplicate Sample

The data were qualified according to the U.S. Environmental Protection Agency (EPA) documents entitled "Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review" (USEPA-540-R-05-001, September 2005). In addition, the Tetra Tech document "Tetra Tech EM Inc., Data Validation Guidelines" (2005) was used along with other criteria specified in the applicable method.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



30 July 2012

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Certified by Harry Ellis, Chemist

Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery group (SDG) E1200523 is composed of 19 environmental solid samples (2 soil and 17 concrete) and 1 quality control (QC) sample (concrete field duplicate). The samples were analyzed for polychlorinated biphenyl (PCB) congeners by EPA Method 1668A. The following summarizes the data validation that was performed.

### POLYCHLORINATED BIPHENYL CONGENERS BY CARB METHOD 428

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were extracted and analyzed within recommended holding times.

#### II. Blanks

The laboratory blank used in these analyses contained a number of congeners at concentrations less than their reporting limits. Therefore, a number of congener results in all field samples were flagged "B", indicating that they were found in the laboratory blank. All congeners flagged "BJ", indicating that they are also less than the sample reporting limits, should be qualified as nondetected and flagged "U". Higher concentration results for those congeners (those flagged "B" alone) are sufficiently above the blank concentration that they are not qualified.

#### III. Laboratory Control Sample (LCS)

All results for the duplicate LCS were within acceptable limits.

#### IV. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

No MS/MSD analyses were performed. The duplicate LCS samples provide adequate information on precision and accuracy, so no qualifications were applied for this data gap.

#### V. Surrogates and Internal Standards

Almost all internal standard and surrogate recoveries were within their established control limits. One exception was PCB 167L in sample 105-C7, which yielded recoveries below the acceptance limit in both the original (undiluted) analysis and the diluted re-analysis. Therefore the result for PCB 167 in sample 105-C7 is qualified as estimated, possibly biased high.

In the diluted re-analysis of sample 110-C1, all of the hexachlorobiphenyl labeled congeners yielded recoveries below their acceptance limits. Most hexachlorobiphenyls (PCB 128 through 169) results were quantitated from the undiluted analysis (with fully satisfactory recoveries), so no qualifications are warranted for them. However, PCBs 153+168 and PCBs 129+138+163 were quantitated from the dilution, so the results for those congeners are qualified as estimated, possibly biased high.

#### VI. Comments

Many of the positive results for some samples (especially the soil samples) were above the sample detection limit ("EDL", for estimated detection limit on the analytical reports) but below the sample

reporting limit (“MRL”, for method reporting limit), which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimates (flagged “J”).

In addition, there are some congeners in some samples (such as PCBs 180+193 in sample 105-C5) with the opposite problem: a measured concentration above the calibration range. The laboratory flagged all of these results “E” to indicate the exceedance and then re-analyzed the extract at a suitable dilution (10-fold, in this case). In all cases where “E” flags are present, use the results from the diluted re-analysis for the congeners so flagged and the results from the original analysis for all other congeners.

The laboratory qualified a number of congener results with a “K” flag, often accompanied by other flags (such as “JK” and “BJK”). This “K” flag indicates irregularities with the ratios of the ions used for identifying the peaks as PCB congeners. This means that some, or even all, of the material contributing to the peak consists of non-PCB material. Therefore, all of these K-flagged results for PCB congeners should be qualified as non-detected and flagged “U”. For those results with just the “K” flags, the associated reporting limit should be the number listed as “result” in sample summaries of the laboratory report. For those flagged with a “J”, too, the standard reporting limit (listed as “MRL”) should be used.

Note that the total homologue results from the laboratory (beginning on the fifth page of each analytical report) include the concentrations of the congeners flagged “K” and those flagged “B”, but not those that the laboratory flagged “U”. If total homologue results are desired, they should be re-calculated taking these data validation results into consideration. Note especially the complications in the re-calculations of samples with diluted re-analyses for some, but not all, congeners.

Data users should note that the laboratory instrument cannot resolve all 209 PCB congeners. The laboratory indicated this by use of analyte names such as “PCBs 153+168”. There is only a single line entry for each such group, so no precautions are needed to avoid double counting when adding up homologue results.

The field duplicate pair contains what appears to be the same mixture of PCB congeners, although the primary sample yielded concentrations about 10 percent higher than the field duplicate sample. For measurements such as these, those small differences are irrelevant, and the pair can be considered identical.

## VII. Overall Assessment of Data

Results are typical of those routinely seen in these extremely sensitive analyses. All data are usable for their intended purposes with the qualifications discussed above. Data users should note that some concrete samples exceed one or more of EPA’s risk-based regional screening levels (RSL) for soil, especially the RSL for protection of groundwater.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

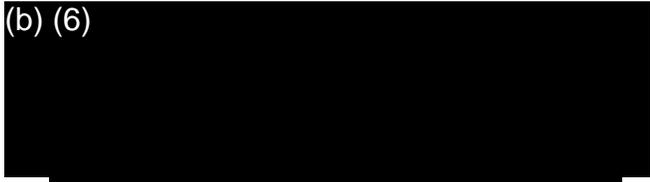
Site: Goodfellow Federal Center, Saint Louis, Missouri  
Laboratory: Columbia Analytical Services, Houston, Texas  
Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)  
Review Date: August 7, 2012  
Sample Delivery Group (SDG): E1200524  
Sample Numbers: 110-C3 and 110-C4  
Matrix / Number of Samples: Two Solid Samples

The data were qualified according to the U.S. Environmental Protection Agency (EPA) documents entitled "Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review" (USEPA-540-R-05-001, September 2005). In addition, the Tetra Tech document "Tetra Tech EM Inc., Data Validation Guidelines" (2005) was used along with other criteria specified in the applicable method.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



7 August 2012

Certified by Harry Ellis, Chemist

Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery group (SDG) E1200524 is composed of two environmental solid samples (concrete). The samples were analyzed for polychlorinated biphenyl (PCB) congeners by EPA Method 1668A. The following summarizes the data validation that was performed.

### POLYCHLORINATED BIPHENYL CONGENERS BY EPA METHOD 1668A

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were extracted and analyzed within recommended holding times.

#### II. Blanks

The laboratory blank used in these analyses contained a number of congeners at concentrations less than their reporting limits. Therefore, a number of congener results in both field samples were flagged “B”, indicating that they were found in the laboratory blank. All congeners flagged “BJ”, indicating that they are also less than the sample reporting limits, should be qualified as nondetected and flagged “U”. Higher concentration results for those congeners (those flagged “B” alone) are sufficiently above the blank concentration that they are not qualified.

#### III. Laboratory Control Sample (LCS)

All results for the duplicate LCS were within acceptable limits.

#### IV. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

No MS/MSD analyses were performed. The duplicate LCS samples provide adequate information on precision and accuracy, so no qualifications were applied for this data gap.

#### V. Surrogates and Internal Standards

All internal standard and surrogate recoveries were within their established control limits. No qualifications were applied.

#### VI. Comments

Some of the positive results were above the sample detection limit (“EDL”, for estimated detection limit on the analytical reports) but below the sample reporting limit (“MRL”, for method reporting limit), which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimates (flagged “J”).

In addition, there are some congeners in sample 110-C3 (such as PCBs 135+151) with the opposite problem: a measured concentration above the calibration range. The laboratory flagged all of these results “E” to indicate the exceedance and then re-analyzed the extract at a dilution (500-fold). In most cases where “E” flags are present in the report on the undiluted analysis, use the results from the diluted re-analysis for the congeners so flagged and the results from the original analysis for all other congeners.

However, when the diluted result is flagged “BJ” (as for PCBs 90+101+113), use the undiluted result but qualify it as estimated (flagged “J”), possibly biased low.

The laboratory qualified a number of congener results with a “K” flag, often accompanied by other flags (such as “JK” and “BJK”). This “K” flag indicates irregularities with the ratios of the ions used for identifying the peaks as PCB congeners. This means that some, or even all, of the material contributing to the peak consists of non-PCB material. Therefore, all of these K-flagged results for PCB congeners should be qualified as non-detected and flagged “U”. For those results with just the “K” flags, the associated reporting limit should be the number listed as “result” in sample summaries of the laboratory report. For those flagged with a “J”, too, the standard reporting limit (listed as “MRL”) should be used.

Note that the total homologue results from the laboratory (beginning on the fifth page of each analytical report) include the concentrations of the congeners flagged “K” and those flagged “B”, but not those that the laboratory flagged “U”. If total homologue results are desired, they should be re-calculated taking these data validation results into consideration. Note especially the complications in the re-calculations of samples with diluted re-analyses for some, but not all, congeners.

Data users should note that the laboratory instrument cannot resolve all 209 PCB congeners. The laboratory indicated this by the use of analyte names such as “PCBs 135+151”. There is only a single line entry for each such group, so no precautions are needed to avoid double counting when adding up homologue results.

## VII. Overall Assessment of Data

Results are typical of those routinely seen in these extremely sensitive analyses. All data are usable for their intended purposes with the qualifications discussed above.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: Columbia Analytical Services, Houston, Texas

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date August 6, 2012

Sample Delivery Group (SDG): E1200537 and E1200538

Sample Numbers: 103-C1, 103-C2, 103-C3, 103-C4, 103-C5, 103-C6, 103-C7, 103-C8, 103F-C1, 104-C1, 104-C2, 104-C3, 104-C4, 104-C5, 104-C6, 104E-C1, 105F-C1, 105L-C1, 105L-C2, 107-C1, 107-C2, 108A-C1, 108A-C2, 108A-C3, 108A-C4, 115-C1, 122B-C1, 208B-C1, 208B-C2, 208B-C3, DPTS-45, DPTS-47, and Rinsate Blank

Matrix / Number of Samples: Thirty-two Solid Samples and One Aqueous Blank

The data were qualified according to the U.S. Environmental Protection Agency (EPA) documents entitled "Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review" (USEPA-540-R-05-001, September 2005). In addition, the Tetra Tech document "Tetra Tech EM Inc., Data Validation Guidelines" (2005) was used along with other criteria specified in the applicable method.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



6 August 2012

Certified by Harry Ellis, Chemist

Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery groups (SDG) E1200537 and E1200538 are composed of 32 environmental solid samples (2 soil and 30 concrete) and 1 quality control (QC) sample (aqueous rinsate blank). The samples were analyzed for polychlorinated biphenyl (PCB) congeners by EPA Method 1668A. The following summarizes the data validation that was performed.

### POLYCHLORINATED BIPHENYL CONGENERS BY EPA METHOD 1668A

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were extracted and analyzed within recommended holding times. Note that the laboratory misread the chain-of-custody form and entered soil sample "DPTS-47" as sample "D9TS-47".

#### II. Blanks

The laboratory blanks used in these analyses contained a number of congeners at concentrations less than their reporting limits. Therefore, a number of congener results in all field samples were flagged "B", indicating that they were found in the laboratory blank. All congeners flagged "BJ", indicating that they are also less than the sample reporting limits, should be qualified as nondetected and flagged "U". Higher concentration results for those congeners (those flagged "B" alone) are sufficiently above the blank concentration that they are not qualified.

The rinsate blank included a number of congeners at concentrations less than their reporting limits. These low concentrations are irrelevant to the very high concentrations of total PCB (in the percent range) found in some samples (104-C3, 104-C6, and 107-C1). No qualifications were made for the rinsate blank contamination.

#### III. Laboratory Control Sample (LCS)

All results for the duplicate LCS were within acceptable limits.

#### IV. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD analyses were performed on samples 122B-C1 and 103F-C1. All recoveries and relative percent difference (RPD) results from the analyses of sample 122B-C1 were well within the laboratory's acceptance limits. However, in the MS/MSD analyses of sample 103F-C1, recoveries of 10 of the 26 spiked analytes could not be determined because the unspiked sample contained considerably more of the analyte than the spiked sample; the ratios varied from 5.5-fold for PCB 209 to 121-fold for PCB-206. All RPDs, as well as the duplicate LCS results, were acceptable for these analytes so no qualifications were made for this data gap. (The summary form for the MS/MSD analyses miscalculated RPD results, since it used fraction recovered rather than total analyte concentrations.) Fifteen of the remaining spiked analytes yielded fully acceptable results. However, PCB 169 yielded recoveries of 386 and 379 percent, well above the limits of 50 to 150 percent. PCB 169 was not detected in the unspiked sample, and its RPD was well within the 50 percent limit, so no qualifications were applied.

## V. Surrogates and Internal Standards

Almost all internal standard and surrogate recoveries were within their established control limits. One exception was PCB 54L in sample 103-C2, which yielded a recovery below the acceptance limit in the diluted re-analysis, but an acceptable recovery in the original, undiluted analysis. That labeled compound was used for quantitation only in the original analysis, so no qualifications were applied in this case. Similarly, in the less diluted analysis of sample 104-C3, the recovery of PCB 169L was 153 percent, just above the limits of 25 to 150 percent. PCB 169 was not detected in that sample, so no qualifications were applied. The more diluted analysis of sample 104-C3 yielded an even higher recovery (188 percent, versus the same limits) for PCB 54L. Since PCB 54 was quantitated from the less diluted analysis, no qualifications were applied.

However, in the analysis of sample 103-C3, PCB 1L yielded a recovery of only 9 percent, well below the limits. Therefore, the reporting limits for the nondetected results for PCB 1 and PCB 2, which are quantitated against PCB 1L, in sample 103-C3 are considered estimated and flagged “UJ” to indicate that.

## VI. Comments

Many of the positive results for some samples (especially the soil samples) were above the sample detection limit (“EDL”, for estimated detection limit on the analytical reports) but below the sample reporting limit (“MRL”, for method reporting limit), which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimates (flagged “J”).

In addition, there are some congeners in some samples (such as PCBs 180+193 in sample 103-C2) with the opposite problem: a measured concentration above the calibration range. The laboratory flagged all of these results “E” to indicate the exceedance and then re-analyzed the extract at a suitable dilution (10-fold, in this case). In all cases where “E” flags are present in an undiluted (or less diluted) analytical run, use the results from the diluted (or more diluted) re-analysis for the congeners so flagged and the results from the original analysis for all other congeners.

The laboratory qualified a number of congener results with a “K” flag, often accompanied by other flags (such as “JK” and “BJK”). This “K” flag indicates irregularities with the ratios of the ions used for identifying the peaks as PCB congeners. This means that some, or even all, of the material contributing to the peak consists of non-PCB material. Therefore, all of these K-flagged results for PCB congeners should be qualified as non-detected and flagged “U”. For those results with just the “K” flags, the associated reporting limit should be the number listed as “result” in sample summaries of the laboratory report. For those flagged with a “J”, too, the standard reporting limit (listed as “MRL”) should be used.

Due to matrix interference, a number of congeners in some samples did not elute fully during the expected time over which the associated ions were monitored. Therefore, these results are considered estimated and probably biased low. Affected results are:

<b>Sample</b>	<b>Estimated Congener Results</b>
103-C1	PCB 144, PCB 187
103-C7	PCBs 147+149
103F-C1	PCB 56, PCBs 147+149, PCB 183
104-C1	PCBs 147+149, PCB 183
104-C2	PCB 56

<b>Sample</b>	<b>Estimated Congener Results</b>
104-C6	PCBs 147+149, PCB 183
105F-C1	PCB 56, PCBs 147+149
105L-C2	PCB 56, PCBs 147+149
107-C1	PCB 183
107-C2	PCB 56, PCBs 147+149
108A-C1	PCBs 147+149
108A-C2	PCBs 147+149
108A-C4	PCB 56
115-C1	PCB 144
208B-C2	PCB 56, PCBs 147+149
208B-C3	PCB 56, PCBs 147+149

Note that the total homologue results from the laboratory (beginning on the fifth page of each analytical report) include the concentrations of the congeners flagged “K” and those flagged “B”, but not those that the laboratory flagged “U”. If total homologue results are desired, they should be re-calculated taking these data validation results into consideration. Note especially the complications in the re-calculations of samples with diluted re-analyses for some, but not all, congeners.

Data users should note that the laboratory instrument cannot resolve all 209 PCB congeners. The laboratory indicated this by use of analyte names such as “PCBs 153+168”. There is only a single line entry for each such group, so no precautions are needed to avoid double counting when adding up homologue results.

## VII. Overall Assessment of Data

Results are typical of those routinely seen in these extremely sensitive analyses. All data are usable for their intended purposes with the qualifications discussed above. Data users should note that some concrete samples exceed one or more of EPA’s risk-based regional screening levels (RSL) for soil, especially the RSL for protection of groundwater.

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**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri  
Laboratory: Columbia Analytical Services, Houston, Texas  
Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)  
Review Date: July 30, 2012  
Sample Delivery Group (SDG): E1200546 and E1200547  
Sample Numbers: DPTGW-9 and DPTGW-27  
Matrix / Number of Samples: Two Water Samples

The data were qualified according to the U.S. Environmental Protection Agency (EPA) documents entitled "Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins and Chlorinated Dibenzofurans Data Review" (USEPA-540-R-05-001, September 2005). In addition, the Tetra Tech document "Tetra Tech EM Inc., Data Validation Guidelines" (2005) was used along with other criteria specified in the applicable method.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



30 July 2012

Certified by Harry Ellis, Chemist

Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery groups (SDG) E1200546 and E1200547 are composed of two groundwater environmental samples. The samples were analyzed for polychlorinated biphenyl (PCB) congeners by EPA Method 1668A. The following summarizes the data validation that was performed.

### POLYCHLORINATED BIPHENYL CONGENERS BY CARB METHOD 428

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were extracted and analyzed within recommended holding times.

#### II. Blanks

The laboratory blank used in these analyses contained a number of congeners at concentrations less than their reporting limits. Therefore, a number of congener results in both field samples were flagged “B”, indicating that they were found in the laboratory blank. All congeners flagged “BJ”, indicating that they are also less than the sample reporting limits, should be qualified as nondetected and flagged “U”. Higher concentration results for those congeners (those flagged “B” alone) are sufficiently above the blank concentration that they are not qualified.

#### III. Laboratory Control Sample (LCS)

All results for the duplicate LCS were within acceptable limits.

#### IV. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

No MS/MSD analyses were performed. The duplicate LCS samples provide adequate information on precision and accuracy, so no qualifications were applied for this data gap.

#### V. Surrogates and Internal Standards

All internal standard and surrogate recoveries were within their established control limits. No qualifications were required.

#### VI. Comments

Many of the positive results were above the sample detection limit (“EDL”, for estimated detection limit on the analytical reports) but below the sample reporting limit (“MRL”, for method reporting limit), which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimates (flagged “J”).

The laboratory qualified a number of congener results with a “K” flag, often accompanied by other flags (such as “JK” and “BJK”). This “K” flag indicates irregularities with the ratios of the ions used for identifying the peaks as PCB congeners. This means that some, or even all, of the material contributing to the peak consists of non-PCB material. Therefore, all of these K-flagged results for PCB congeners should be qualified as non-detected and flagged “U”. For those results with just the “K” flags, the

associated reporting limit should be the number listed as “result” in sample summaries of the laboratory report. For those flagged with a “J”, too, the standard reporting limit (listed as “MRL”) should be used.

Note that the total homologue results from the laboratory (beginning on the fifth page of each analytical report) include the concentrations of the congeners flagged “K” and those flagged “B”, but not those that the laboratory flagged “U”. If total homologue results are desired, they should be re-calculated taking these data validation results into consideration.

Data users should note that the laboratory instrument cannot resolve all 209 PCB congeners. The laboratory indicated this by use of analyte names such as “PCBs 156+157”. There is only a single line entry for each such group, so no precautions are needed to avoid double counting when adding up homologue results.

## VII. Overall Assessment of Data

Results are typical of those routinely seen in these extremely sensitive analyses. All data are usable for their intended purposes with the qualifications discussed above. Data users should note that sample DPTGW-9 exceeds EPA’s risk-based regional screening levels (RSL) for drinking water for some individual congeners, as well as for PCB as Aroclors.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: ALS Environmental (Cincinnati, Ohio)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: May 31, 2012

Sample Delivery Group (SDG): 1205173

Sample Numbers: 102E-ID1, 102E-ID2, 102E-ID3, 102E-ID4, 102E-ID5, 103D-ID1, 103D-ID2, 104F-ID1, 104F-ID2, 104F-ID3, 104F-ID4, 105E-ID1, 105E-ID2, 105E-ID3, 105E-ID4, and Media Blank

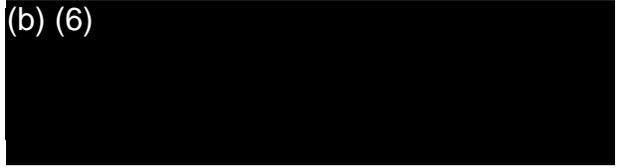
Matrix / Number of Samples: 15 Bulk Samples and 1 Media Blank

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 document entitled "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" (9240.1-51, January 2010). In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



31 May 2012

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Certified by Harry Ellis, Chemist

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Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## **DATA ASSESSMENT**

Sample delivery group (SDG) 1205173 included 15 environmental bulk (dust) samples and one quality control (QC) sample (a media blank). Samples were collected as particulate material by National Institute for Occupational Safety and Health (NIOSH) Method 0500 and analyzed for lead by EPA Method 6010B. The following summarizes the data validation that was performed.

### **METALS ANALYSIS**

#### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the established holding time of 6 months from sample collection to analysis. No data were qualified.

#### **II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD analyses are not practical for air analyses. No data were qualified for this data gap.

#### **III. Blanks**

The laboratory (method) and field (media) blanks contained no detectable lead. No qualifications were applied.

#### **IV. Laboratory Control Sample (LCS)**

The duplicate LCS yielded recoveries of 190 and 200 percent, well above the established control limits of 80 to 120 percent. It is possible that this reflects a laboratory error in the amount spiked, but that is not certain. Therefore all results are qualified as estimated and flagged "J" to indicate that.

#### **V. Comments**

No further comments.

#### **VII. Overall Assessment of Data**

Overall data quality is acceptable, with all results qualified due a problem with laboratory procedure or instrument sensitivity. All data are usable as qualified for their intended purposes.

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**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: ALS Environmental (Cincinnati, Ohio)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: May 31, 2012

Sample Delivery Group (SDG): 1205174

Sample Numbers: DPTS-1, DPTS-2, DPTS-3, DPTS-12, DPTS-12-FD, DPTS-13, DPTS-19, DPTS-20, DPTS-21, DPTS-24, DPTS-26, 102E-IS1, 102E-IS2, 104F-IS1, 104F-IS2, 105E-IS1, and 105E-IS2

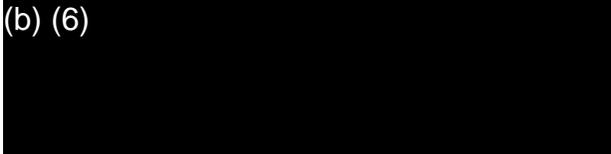
Matrix / Number of Samples: 16 Soil Samples and 1 Field Duplicate Sample

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" (9240.1-51, January 2010) and Response Engineering and Analytical Contract (REAC) SOP 1025 "Data Verification/Validation Procedures for Asbestos in Air by TEM." In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



31 May 2012

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Certified by Harry Ellis, Chemist

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Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## **DATA ASSESSMENT**

Sample delivery group (SDG) 1205174 included 16 environmental soil samples and 1 quality control (QC) samples (a field duplicate). Samples were analyzed for asbestos by phase-contrast light microscopy (PLM) using the laboratory's SOP ENV-004. The following summarizes the data validation that was performed.

### **ASBESTOS ANALYSIS**

#### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the accepted holding time of 6 months from sample collection to analysis. No data were qualified.

#### **II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD analyses are not practical for asbestos analyses. No data were qualified for this data gap.

#### **III. Blanks**

No blank data were included. No qualifications were applied.

#### **IV. Laboratory Control Sample (LCS)**

No LCS analyses were included. No data were qualified.

#### **V. Comments**

Results labeled "Trace" are present but below the reporting limit of 1 percent.

#### **VII. Overall Assessment of Data**

Overall data quality is acceptable, with no qualifications. All data are usable as reported for their intended purposes.

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**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: ALS Environmental (Cincinnati, Ohio)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: May 31, 2012

Sample Delivery Group (SDG): 1205218

Sample Numbers: 103D-ID3, 103D-ID4, 103E-ID1, 103E-ID2, 103E-ID3, 103E-ID4, 103E-ID5, 105-ID1, 105-ID2, 105-ID3, 105-ID4, 105-ID5, 105-ID6, 105-ID7, 105-ID8, 105-ID9, 105-ID10, 105-ID11, 110-ID1, 110-ID2, 110-ID3, 110-ID4, 110-ID5, 110-ID6, 110-ID7, 110-ID8, 103-ID1, 103-ID2, 103-ID3, 103-ID4, 103-ID5, 103-ID6, 103-ID7, 103-ID8, Media Blank 2, 103D-IS1, 103D-IS1-FD, 103D-IS2, 103E-IS1, 103E-IS2, DPTS-32, DPTS-33, DPTS-34, DPTS-35, DPTS-36, DPTS-36-FD, DPTS-37, DPTS-38, DPTS-39, DPTS-40, DPTS-40-FD, DPTS-41, DPTS-42, DPTS-43, 105-IS1, 105-IS2, 105-IS3, and 105-IS4

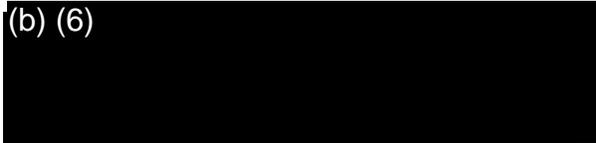
Matrix / Number of Samples: 34 Air Samples, 19 Soil Samples, 1 Media Blank, and 3 Soil Field Duplicate Samples

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled “Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review” (9240.1-51, January 2010) and Response Engineering and Analytical Contract (REAC) SOP 1025 “Data Verification/Validation Procedures for Asbestos in Air by TEM.” In addition, the Tetra Tech document “Review of Data Packages from Subcontracted Laboratories” (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



31 May 2012

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Certified by Harry Ellis, Chemist

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Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## **DATA ASSESSMENT**

Sample delivery group (SDG) 1205218 included 34 environmental air samples, 19 environmental soil samples, and 4 quality control (QC) samples (1 air media blank and 3 soil field duplicates). Air samples were collected as particulate material by National Institute for Occupational Safety and Health (NIOSH) Method 0500 and analyzed for lead by EPA Method 6010B. Soil samples were analyzed for asbestos by phase-contrast light microscopy (PLM) using the laboratory's SOP ENV-004. Some air samples were also analyzed for mercury in a different laboratory as SDG No. T1200731, and are discussed in a separate report. The following summarizes the data validation that was performed on this SDG.

### **METALS ANALYSIS**

#### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the established holding time of 6 months from sample collection to analysis. No data were qualified.

#### **II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD analyses are not practical for air analyses. No data were qualified for this data gap.

#### **III. Blanks**

The laboratory (method) and field (media) blanks contained no detectable lead. No qualifications were applied.

#### **IV. Laboratory Control Sample (LCS)**

The two pairs of duplicate LCS yielded recoveries well within the established control limits of 80 to 120 percent. No qualifications were applied.

#### **V. Comments**

No further comments.

#### **VII. Overall Assessment of Data**

Overall data quality is acceptable, with no qualifications added. All data are usable as reported for their intended purposes.

### **ASBESTOS ANALYSIS**

#### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the accepted holding time of 6 months from sample collection to analysis. No data were qualified.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD analyses are not practical for asbestos analyses. No data were qualified for this data gap.

III. Blanks

No blank data were included. No qualifications were applied.

IV. Laboratory Control Sample (LCS)

No LCS analyses were included. No data were qualified.

V. Comments

Results labeled "Trace" are present but below the reporting limit of 1 percent.

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications. All data are usable as reported for their intended purposes.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: ASL Environmental (Cincinnati, Ohio)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: June 4, 2012

Sample Delivery Group (SDG): 1205224

Sample Numbers: DPTS-1, DPTS-2, DPTS-3, DPTS-4, DPTS-5, DPTS-6, DPTS-7, DPTS-8, DPTS-8-D, DPTS-9, DPTS-10, DPTS-14, DPTS-15, DPTS-16, DPTS-17, DPTS-18, DPTS-20, DPTS-20-DUP, DPTS-21, DPTS-22, DPTS-23, DPTS-24, DPTS-25, DPTS-27, DPTS-28, DPTS-29, 102E-IS1, 102E-IS2, 104F-IS1, 104F-IS2, 105E-IS1, 105E-IS2, Trip Blank 042412-88, Trip Blank 042412-84, and Trip Blank 042412-85

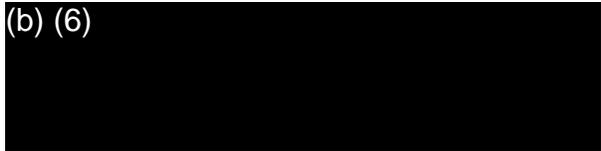
Matrix / Number of Samples: 30 Soil Samples, 2 Field Duplicate Soil Samples, and 3 Aqueous Trip Blanks

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled "Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review" (9240.1-48, June 2008) and "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" (9240.1-51, January 2010). In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



4 June 2012

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Certified by Harry Ellis, Chemist

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Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery group (SDG) 1205224 included 30 environmental soil samples and 5 quality control (QC) samples (2 soil field duplicate samples and 3 aqueous trip blanks). Samples were analyzed for volatile organic compounds (VOC), including total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) by EPA Method 8260B; semivolatile organic compounds (SVOC), including TPH as diesel range organics (DRO) and lubricating oil range organics (ORO) by EPA Method 8270C; organochlorine pesticides (OCP) by EPA Method 8081B; organophosphorus pesticides (OPP) by EPA Method 8141A; organochlorine herbicides (OCH) by EPA Method 8151A; and metals by EPA Methods 6010B and 7471A. No samples underwent all analyses. The following summarizes the data validation that was performed.

### VOLATILE ORGANIC COMPOUND ANALYSIS

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Most results from the multiple MS/MSD analyses were within acceptance criteria. In the MS/MSD analyses for GRO performed on sample DPTS-9, recoveries were 67 and 73 percent, and in those performed on sample GPTS-15, 62 and 83 percent, versus arbitrary limits of 70 to 130 percent. The average recoveries are acceptable, so no qualifications were applied. In the MS/MSD analyses performed on sample DPTS-25, recoveries for 1,1-dichloroethene were 125 and 120 percent versus limits of 80 to 112 percent; those for carbon disulfide were 125 and 126 percent versus 80 to 124 percent; and those for *trans*-1,2-dichloroethene were 123 and 119 percent, versus 79 to 120 percent. These minor exceedances may be due to inappropriate limits determined from past performance, and no qualifications were applied. However, in the same MS/MSD analyses, recoveries of trichloroethene were 73 and 71 percent versus limits of 80 to 121 percent. This may be due to either matrix interference or to an irregular distribution of the trichloroethene within the sample. The result for trichloroethene in sample DPTS-25 is flagged "J" to indicate that it is qualified as estimated.

#### III. Blanks

No analytes were found in the laboratory (method) and trip blanks. No data were qualified.

#### IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were within acceptance limits. No qualifications were applied.

## V. Surrogates

All recoveries for three of the four surrogates from field samples were within established control limits. However, the fourth surrogate (dibromofluoromethane) yielded recoveries from 4 to 10 percent, versus QC limits of 71 to 128 percent, from all soil samples. Recoveries from the aqueous trip blanks were fully acceptable at 99 to 105 percent. The consistency of these results implies that they are the result of a defective spiking solution, rather than some sort of matrix interference in the soils. Inspection of the raw data for the analyses may modify this conclusion. No data were qualified.

## VI. Comments

Few analytes were detected in these samples. Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them "J".

## VII. Overall Assessment of Data

Overall data quality is acceptable, with only one qualification applied. All data are usable as qualified for their intended purposes.

# SEMIVOLATILE ORGANIC COMPOUND ANALYSIS

## I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days to analysis. No data were qualified.

## II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Almost all results from MS/MSD analyses of sample DPTS-25 were within limits. However, recoveries for 4-nitroaniline were 167 and 43 percent, versus limits of 50 to 127 percent. 4-Nitroaniline is well known as a poor responder to the detector used in the analytical instrument. The nondetected result for 4-nitroaniline in sample DPTS-25 is flagged "UJ" to indicate that the detection and reporting limit are estimated. The same problem may apply to other soil samples. No other qualifications were applied.

## III. Blanks

No data analytes were detected in the laboratory blank. No qualifications were applied.

## IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were acceptable. No qualifications were applied.

## V. Surrogates

All surrogate recoveries from field and laboratory samples were within established control limits. No data were qualified.

## VI. Comments

Few analytes were detected in these samples. Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them "J". In addition, a few analytes in a few samples were found at concentrations above the calibration range. The laboratory re-analyzed those sample extracts at a dilution that brought the results within calibration range. Therefore, no further qualifications were applied.

In the field duplicate pair from location DPTS-8, a large number of polynuclear aromatic hydrocarbon (PAH) analytes were detected. PAHs are characteristic products of incomplete combustion, found in soot, coal tar, some crude oils, and other mixtures. The concentrations of the PAH in the field duplicate sample were generally much greater than in the primary sample. This implies that the PAHs represent environmental contamination with a heterogeneous distribution within the soil. Data users should note this when interpreting the results.

## VII. Overall Assessment of Data

Overall data quality is acceptable, with only one qualification applied. All data are usable as qualified for their intended purposes.

## **ORGANOCHLORINE PESTICIDE ANALYSIS**

### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days to analysis. No data were qualified.

### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All results from the MS/MSD analyses of sample DPTS-6 were acceptable. No qualifications were applied.

### III. Blanks

The laboratory blanks contained no detectable analytes. No qualifications were applied.

### IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were acceptable. No qualifications were applied.

### V. Surrogates

All surrogate recoveries from field and laboratory samples were within established control limits. No data were qualified.

## VI. Comments

No further comments.

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications applied. All data are usable as reported for their intended purposes.

**ORGANOPHOSPHORUS PESTICIDE ANALYSIS**

I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days to analysis. No data were qualified.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

All results from the MS/MSD analyses of sample DPTS-6 were acceptable. No qualifications were applied.

III. Blanks

No analytes were detected in the laboratory blank analyses. No qualifications were applied.

IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were acceptable. No qualifications were applied.

V. Surrogates

All surrogate recoveries from field and laboratory samples were within established control limits. No data were qualified.

VI. Comments

No analytes were detected in these samples.

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications applied. All data are usable as reported for their intended purposes.

## **ORGANOCHLORINE HERBICIDE ANALYSIS**

### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days from extraction to analysis. No data were qualified.

### **II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

All results from the MS/MSD analyses of sample DPTS-8-FD were acceptable. No qualifications were applied.

### **III. Blanks**

No analytes were reported in the laboratory blank analyses. No qualifications were applied.

### **IV. Laboratory Control Sample (LCS)**

All results from the LCS analyses were acceptable. No qualifications were applied.

### **V. Surrogates**

All surrogate recoveries were within established control limits. No samples were qualified.

### **VI. Comments**

No herbicides were detected in these samples. There are no additional comments on this SDG.

### **VII. Overall Assessment of Data**

Overall data quality is acceptable, with no qualification. All data are usable as reported for their intended purposes.

## **METALS ANALYSIS**

### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the established holding time of 6 months (28 days for mercury) from sample collection to analysis. No data were qualified.

## II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Some results from the MS/MSD analyses of sample DPTS-20 were acceptable. Recoveries of barium were negative and negative (the spiked sample contained less barium than the unspiked sample), those of chromium were 90 and 130 percent, and those of lead were 164 and 97 percent, all versus acceptance limits of 75 to 125 percent. In addition, lead had a relative percent difference (RPD) of 31 percent, versus a limit of 25 percent. In the laboratory duplicate analysis also performed on sample DPTS-20, arsenic yielded an RPD of 26 percent and barium one of 31 percent, versus a limit of 25 percent. These irregularities probably reflect heterogeneity in the distribution of the metals within the soil. As required by the data validation guidelines, all results for arsenic, barium, chromium, and lead in all of these soil samples are flagged “J” to indicate that they are estimated. No further qualifications were applied.

## III. Blanks

No metals were detected in the laboratory blank analyses. No qualifications were applied.

## IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were within acceptable limits. No qualifications were applied.

## V. Comments

Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them “J”. In addition, a few analytes in a few samples were found at concentrations above the calibration range. The laboratory re-analyzed those sample extracts at a dilution that brought the results within calibration range. Therefore no further qualifications were applied.

Results for the field duplicate pair collected from location DPTS-20 were similar.

## VII. Overall Assessment of Data

Overall data quality is acceptable, with qualifications of several metals due to heterogeneity in the distributions of the metals within the soils. This is a common phenomenon when the metals include contamination that was distributed in particulate form. Decision making on the basis of average concentrations from multiple samples rather than one result from a single sample would minimize the uncertainty. All data are usable as qualified for their intended purposes.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: ALS Environmental (Cincinnati, Ohio)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: June 4, 2012

Sample Delivery Group (SDG): 12051376

Sample Numbers: 115-ID1, 115-ID2, 115-ID3, 104E-ID1, 104E-ID2, 104E-ID3, 104E-ID4, 105F-ID1, 105F-ID2, 105F-ID3, 105F-ID4, 105F-ID5, 104-ID1, 104-ID2, 104-ID3, 104-ID4, 104-ID5, 104-ID6, 104-ID7, 104-ID8, 104-ID9, 104-ID10, 104-ID11, 104-ID12, 103-ID9, 103-ID10, 103F-ID1, 103F-ID2, 104-IS1, 104-IS2, 104-IS3, 104-IS5, 104-IS6, 104E-IS1, 104E-IS2, 103-IS1, 103-IS2, 103-IS5, 103F-IS1, 103F-IS2, 105-IS5, 105-IS6, 105F-IS1, 105F-IS2, Media Blank No. 5, and Media Blank No. 6

Matrix / Number of Samples: 28 Dust (Air) Samples, 17 Soil Samples, and 2 Media Blanks

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" (9240.1-51, January 2010) and Response Engineering and Analytical Contract (REAC) SOP 1025 "Data Verification/Validation Procedures for Asbestos in Air by TEM." In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)

4 June 2012

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Certified by Harry Ellis, Chemist

\_\_\_\_\_  
Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery group (SDG) 1205376 included 28 environmental dust (air) samples, 17 environmental soil samples, and two quality control (QC) samples (media blanks). Samples were collected as particulate material by National Institute for Occupational Safety and Health (NIOSH) Method 0500 and analyzed for asbestos by phase-contrast light microscopy (PLM) using the laboratory's SOP ENV-004. Some were also analyzed for lead by EPA Method 6010B. The following summarizes the data validation that was performed.

### METALS ANALYSIS

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 6 months from sample collection to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

MS/MSD analyses are not practical for air analyses. No data were qualified for this data gap.

#### III. Blanks

The laboratory (method) blanks contained no detectable lead. In contrast, the media blank contained a very high concentration of lead (that is, mass of lead per mass of dust). The actual amount of lead in the sample extract was very small (so small that it was below the lowest calibration standard and therefore qualified "J" as estimated), but the quantity of dust on the sample media was extremely small, so the calculated concentration is quite high. All field samples contain at least 200 times the mass of dust as the media blank, and their extracts contain lead concentrations well above the lowest calibration standard. That is, the total quantities of lead in the field samples are much higher than those in the media blank. No qualifications were applied.

#### IV. Laboratory Control Sample (LCS)

The duplicate LCS yielded fully acceptable results. No qualifications were applied.

#### V. Comments

No further comments.

#### VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications added. All data are usable as reported for their intended purposes.

## **ASBESTOS ANALYSIS**

### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the accepted holding time of 6 months from sample collection to analysis. No data were qualified.

### **II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD analyses are not practical for asbestos analyses. No data were qualified for this data gap.

### **III. Blanks**

No blank data were included. No qualifications were applied.

### **IV. Laboratory Control Sample (LCS)**

No LCS analyses were included. No data were qualified.

### **V. Comments**

Results labeled "Trace" are present but below the reporting limit of 1 percent.

### **VII. Overall Assessment of Data**

Overall data quality is acceptable, with no qualifications. All data are usable as reported for their intended purposes.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: ASL Environmental (Cincinnati, Ohio)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: June 4, 2012

Sample Delivery Group (SDG): 1205405

Sample Numbers: DPTS-30, DPTS-31, DPTS-32, DPTS-33, DPTS-34, DPTS-35, DPTS-37, DPTS-38, DPTS-39, DPTS-40, DPTS-41, DPTS-42, DPTS-42-DUP, DPTS-43, 103D-IS1, 103D-IS1-FD, 103D-IS2, 103E-IS1, 103E-IS2, Trip Blank 042412-49, and Trip Blank 042412-13

Matrix / Number of Samples: 17 Soil Samples, 2 Field Duplicate Soil Samples, and 2 Aqueous Trip Blanks

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled "Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review" (9240.1-48, June 2008) and "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" (9240.1-51, January 2010). In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



4 June 2012

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Certified by Harry Ellis, Chemist

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Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery group (SDG) 1205405 included 17 environmental soil samples and 4 quality control (QC) samples (2 soil field duplicate samples and 2 aqueous trip blanks). Samples were analyzed for volatile organic compounds (VOC), including total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) by EPA Method 8260B; semivolatile organic compounds (SVOC), including TPH as diesel range organics (DRO) and lubricating oil range organics (ORO) by EPA Method 8270C; and metals by EPA Methods 6010B and 7471A. No samples underwent all analyses. The following summarizes the data validation that was performed.

### VOLATILE ORGANIC COMPOUND ANALYSIS

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Most results from the MS/MSD analyses were within acceptance criteria. In the MS/MSD analyses of sample DPTS-35, there were a number of irregularities. 1,1-Dichloroethene yielded recoveries of 126 and 105 percent, versus limits of 80 to 122 percent. The average recovery is acceptable, so no qualifications were applied. 2-Hexanone yielded recoveries of 127 and 149 percent, versus limits of 65 to 133 percent; 4-methyl-2-pentanone 127 and 134 percent, versus 69 to 130 percent; and trichloroethene 206 and 175 percent, versus 80 to 121 percent. None of these analytes was reported in sample DPTS-35, so no qualifications were applied. However, 1,1,2,2-tetrachloroethane yielded recoveries of only 2 and 3 percent, versus limits of 75 to 123 percent, so the nondetected result for it in sample DPTS-35 is flagged "UJ" as estimated. The same problem may apply to other samples, but no further qualifications were applied.

#### III. Blanks

No analytes were found in the laboratory (method) and trip blanks. No data were qualified.

#### IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were within acceptance limits. No qualifications were applied.

#### V. Surrogates

All recoveries for three of the four surrogates from field samples were within established control limits. However, the fourth surrogate (dibromofluoromethane) yielded recoveries from 41 to 53 percent, versus QC limits of 71 to 128 percent, from all soil samples. Recoveries from the aqueous trip blanks were fully acceptable at 102 and 103 percent. The consistency of these results implies that they are the result of a defective spiking solution, rather than some sort of matrix interference in the soils. Inspection of the raw data for the analyses may modify this conclusion. No data were qualified.

## VI. Comments

Few analytes were detected in these samples. Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them "J".

## VII. Overall Assessment of Data

Overall data quality is acceptable, with only one qualification applied. All data are usable as qualified for their intended purposes.

### **SEMIVOLATILE ORGANIC COMPOUND ANALYSIS**

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Almost all results from MS/MSD analyses of sample DPTS-35 were within limits. However, recoveries for 4-nitroaniline were 47 and 45 percent, versus limits of 50 to 127 percent. 4-Nitroaniline is well known as a poor responder to the detector used in the analytical instrument. The nondetected result for 4-nitroaniline in sample DPTS-25 is flagged "UJ" to indicate that the detection and reporting limit are estimated. The same problem may apply to other soil samples. No other qualifications were applied.

#### III. Blanks

No data analytes were detected in the laboratory blank. No qualifications were applied.

#### IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were acceptable. No qualifications were applied.

#### V. Surrogates

Almost all surrogate recoveries from field and laboratory samples were within established control limits. The exceptions were low recoveries of the acidic surrogates from sample DPTS-30. This effect is likely related to the sample matrix, which included relatively high concentrations of polynuclear aromatic hydrocarbons and TPH-ORO plus mineral matter. The nondetected results for acidic compounds in sample DPTS-30 were flagged "UJ" to indicate that their reporting limits are estimated.

## VI. Comments

Few analytes were detected in these samples. Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged

them “J”. In addition, a few analytes in a few samples (such as TPH-ORO in sample DPTS-39) were found at concentrations above the calibration range. The laboratory re-analyzed those sample extracts at a dilution that brought the results within calibration range. Therefore no further qualifications were applied.

## VII. Overall Assessment of Data

Overall data quality is acceptable, with few qualifications applied. All data are usable as qualified for their intended purposes.

### **METALS ANALYSIS**

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 6 months (28 days for mercury) from sample collection to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Some results from the MS/MSD analyses of sample 103E-IS2 were acceptable. Recoveries of barium and lead could not be determined, because the unspiked sample contained much more of those metals than the spikes. No qualifications were made for these data gaps. Recoveries of arsenic were 91 and 61 percent, and those of cadmium were 109 and 135 percent, versus limits of 75 to 125 percent. The average recoveries were acceptable so no qualifications were made. The relative percent differences (RPD) were 38 percent for barium and 86 percent for lead, both above the limit of 25 percent. In addition, chromium had recoveries of 129 and 292 percent and an RPD of 29 percent. These irregularities probably reflect heterogeneity in the distribution of the metals within the soil. As required by the data validation guidelines, all results for barium, chromium, and lead in these soil samples are flagged “J” to indicate that they are estimated. No further qualifications were applied.

#### III. Blanks

Very low concentrations of barium and lead were detected in the laboratory blank analyses. The samples contained much higher concentrations so no qualifications were applied.

#### IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were within acceptable limits. No qualifications were applied.

#### V. Comments

Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them “J”. In addition, a few analytes in a few samples were found at concentrations above the calibration range. The laboratory re-analyzed those sample extracts at a dilution that brought the results within calibration range. Therefore no further qualifications were applied.

## VII. Overall Assessment of Data

Overall data quality is acceptable, with qualifications of several metals due to heterogeneity in the distributions of the metals within the soils. This is a common phenomenon when the metals include contamination that was distributed in particulate form. Decision making on the basis of average concentrations from multiple samples rather than one result from a single sample would minimize the uncertainty. All data are usable as qualified for their intended purposes.

**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

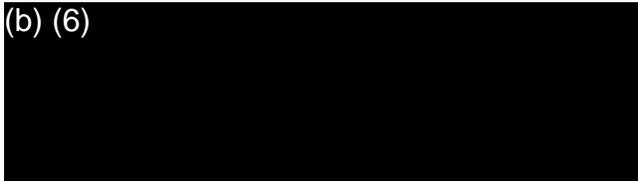
Site: Goodfellow Federal Center, Saint Louis, Missouri  
Laboratory: ALS Environmental (Cincinnati, Ohio)  
Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)  
Review Date: June 5, 2012  
Sample Delivery Group (SDG): 1205416  
Sample Numbers: 103-IS3 and 103-IS4  
Matrix / Number of Samples: Two Soil Samples

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" (9240.1-51, January 2010) and Response Engineering and Analytical Contract (REAC) SOP 1025 "Data Verification/Validation Procedures for Asbestos in Air by TEM." In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



5 June 2012

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Certified by Harry Ellis, Chemist

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Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## **DATA ASSESSMENT**

Sample delivery group (SDG) 1205416 included two environmental soil samples and no QC samples. Samples were analyzed for asbestos by phase-contrast light microscopy (PLM) using the laboratory's SOP ENV-004. The following summarizes the data validation that was performed.

### **ASBESTOS ANALYSIS**

#### **I. Holding Time and Chain of Custody (COC) Requirements**

All samples were received by the laboratory and analyzed within the accepted holding time of 6 months from sample collection to analysis. No data were qualified.

#### **II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)**

MS/MSD analyses are not practical for asbestos analyses. No data were qualified for this data gap.

#### **III. Blanks**

No blank data were included. No qualifications were applied.

#### **IV. Laboratory Control Sample (LCS)**

No LCS analyses were included. No data were qualified.

#### **V. Comments**

Results labeled "Trace" are present but below the reporting limit of 1 percent.

#### **VII. Overall Assessment of Data**

Overall data quality is acceptable, with no qualifications. All data are usable as reported for their intended purposes.

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**Tetra Tech, Inc.**  
**DATA VALIDATION REPORT**  
**LEVEL II**

Site: Goodfellow Federal Center, Saint Louis, Missouri

Laboratory: ASL Environmental (Cincinnati, Ohio)

Data Reviewer: Harry Ellis, Tetra Tech, Inc. (Tetra Tech)

Review Date: June 5, 2012

Sample Delivery Group (SDG): 1205487 and 1205674

Sample Numbers: DPTGW-1, DPTGW-1-DUP, DPTGW-6, DPTGW-10, DPTGW-37, DPTGW-27, DPTGW-25, DPTGW-16, DPTGW-24, DPTGW-9, DPTS-44, DPTS-45, DPTS-47, 104-IS1, 104-IS2, 104-IS3, 104-IS4, 104-IS5, 104-IS6, 107-IS1, 105F-IS1, 105F-IS2, 104E-IS1, 103-IS1, 103-IS2, 103-IS3, 103-IS4, 103-IS5, 105-IS1, 105-IS2, 105-IS3, 105-IS4, 105-IS5, 105-IS6, Rinsate Blank, Trip Blank 042412-72, Trip Blank 042412-47, and Trip Blank 042412-36

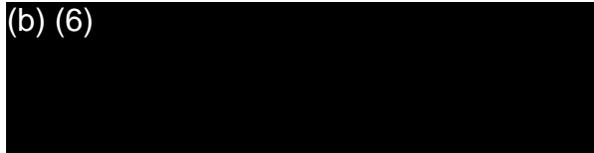
Matrix / Number of Samples: 27 Soil Samples, 9 Water Samples, 1 Field Duplicate Water Sample, 1 Aqueous Rinsate Blank, and 3 Aqueous Trip Blanks

The data were qualified according to the U.S. Environmental Protection Agency (EPA) Region 7 documents entitled "Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review" (9240.1-48, June 2008) and "Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review" (9240.1-51, January 2010). In addition, the Tetra Tech document "Review of Data Packages from Subcontracted Laboratories" (February 2002) was used along with other criteria specified in the applicable methods.

The review was intended to identify problems and quality control (QC) deficiencies that were readily apparent from the summary data package. The following sections discuss any problems or deficiencies that were found, and data qualifications applied because of non-compliant QC. The data review was limited to the available field and laboratory QC information submitted with the project-specific data package.

I, Harry Ellis, certify that all data validation criteria outlined in the above referenced documents were assessed, and any qualifications made to the data were in accordance with those documents.

(b) (6)



5 June 2012

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Certified by Harry Ellis, Chemist

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Date

## DATA VALIDATION QUALIFIERS

- U** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- J** — The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ** — The analyte was analyzed for, but was not detected above the reported sample quantitation limit, which is estimated.
- R** — The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

## DATA ASSESSMENT

Sample delivery groups (SDG) 1205487 and 1205674 included 27 environmental soil samples, 9 environmental water samples, and 5 quality control (QC) samples (1 water field duplicate sample, 1 aqueous rinsate blank, and 3 aqueous trip blanks). Samples were analyzed for volatile organic compounds (VOC), including total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) by EPA Method 8260B; semivolatile organic compounds (SVOC), including TPH as diesel range organics (DRO) and lubricating oil range organics (ORO) by EPA Method 8270C; organochlorine pesticides (OCP) by EPA Method 8081B; organochlorine herbicides (OCH) by EPA Method 8151A; and metals by EPA Methods 6010B and 7471A. No samples underwent all analyses. The following summarizes the data validation that was performed.

### VOLATILE ORGANIC COMPOUND ANALYSIS

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Most results from the multiple MS/MSD analyses were within acceptance criteria. Minor irregularities in analyses of samples from other sites are irrelevant. However, the aqueous MS/MSD analyses of sample DPTGW-1 yielded recoveries for methyl tert-butyl ether of 0 and 92 percent, versus limits of 73 to 121 percent, and for methylcyclohexane of 0 and 97 percent, versus limits of 75 to 122 percent. The reporting limits for the nondetected results for methyl tert-butyl ether and methylcyclohexane in sample DPTGW-1 were flagged "UJ" to indicate that they are estimated. No other qualifications were applied.

#### III. Blanks

No analytes were found in the laboratory (method) and trip blanks. No data were qualified.

#### IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were within acceptance limits. No qualifications were applied.

#### V. Surrogates

All recoveries for three of the four surrogates from field samples were within established control limits. However, the fourth surrogate (dibromofluoromethane) yielded recoveries from 41 to 53 percent, versus QC limits of 71 to 128 percent, from all soil samples. Recoveries from the aqueous trip blanks were fully acceptable at 102 to 103 percent. The consistency of these results implies that they are the result of a defective spiking solution, rather than some sort of matrix interference in the soils. Inspection of the raw data for the analyses may modify this conclusion. No data were qualified.

## VI. Comments

Few analytes were detected in these samples. Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them “J”.

## VII. Overall Assessment of Data

Overall data quality is acceptable, with few qualifications applied. All data are usable as qualified for their intended purposes.

### **SEMIVOLATILE ORGANIC COMPOUND ANALYSIS**

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

One batch of soil MS/MSD analyses were performed on sample DPTS-25, discussed in the report on SDG No. 1205224. Aqueous MS/MSD analyses were performed on sample DPTGW-1, and most results were within limits. However, recoveries for 2,4-dinitrophenol were 0 and 0 percent, versus limits of 15 to 120 percent, and those of 4,6-dinitro-2-methylphenol were 20 and 26 percent, versus limits of 25 to 121 percent. Both analytes are well known as poor responders to the detector used in the analytical instrument. The nondetected result for 4,6-dinitro-2-methylphenol in sample DPTGW-1 is flagged “UJ” to indicate that the detection and reporting limit are estimated. The nondetected result for 2,4-dinitrophenol is flagged “R” to indicate that it is rejected and that the analyte may or may not be present. (2,4-Dinitrophenol and 4,6-dinitro-2-methylphenol will react with a number of organic compounds and may have been consumed by such reactions, resulting in the low recoveries.) The same problem may apply to other aqueous samples. No other qualifications were applied.

#### III. Blanks

No data analytes were detected in the laboratory blank. No qualifications were applied.

#### IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were acceptable. No qualifications were applied.

#### V. Surrogates

Most surrogate recoveries from field and laboratory samples were within established control limits. However, in sample DPTS-30, all three acidic surrogates had recoveries below their acceptance limits, indicating matrix interference. Therefore, all the nondetected results for acidic analytes in sample DPTS-30 are considered estimated and were flagged “UJ”. No other data were qualified.

## VI. Comments

Few analytes were detected in these samples. Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them "J". In addition, a few analytes in a few samples were found at concentrations above the calibration range. The laboratory re-analyzed those sample extracts at a dilution that brought the results within calibration range. Therefore no further qualifications were applied.

## VII. Overall Assessment of Data

Overall data quality is acceptable, with only one qualification applied. All data are usable as qualified for their intended purposes.

### **ORGANOCHLORINE PESTICIDE ANALYSIS**

#### I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days to analysis. No data were qualified.

#### II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

No MS/MSD analyses were included. The duplicate LCS provided adequate information on accuracy and precision, so no qualifications were applied.

#### III. Blanks

The laboratory blanks contained no detectable analytes. The rinsate blank contained a low concentration of heptachlor epoxide, but no analytes were detected in the field samples. No qualifications were applied.

#### IV. Laboratory Control Sample (LCS)

All results from the duplicate LCS analyses were acceptable. No qualifications were applied.

#### V. Surrogates

All surrogate recoveries from field and laboratory samples were within established control limits. No data were qualified.

#### VI. Comments

No further comments.

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualifications applied. All data are usable as reported for their intended purposes.

**ORGANOCHLORINE HERBICIDE ANALYSIS**

I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 14 days from sample collection to extraction and 40 days from extraction to analysis. No data were qualified.

II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

No MS/MSD analyses were included. The duplicate LCS provided adequate information on accuracy and precision, so no qualifications were applied.

III. Blanks

No analytes were reported in the laboratory blank analyses. The rinsate blank contained a low concentration of dichloropropane, but no analytes were detected in the field samples. No qualifications were applied.

IV. Laboratory Control Sample (LCS)

All results from the duplicate LCS analyses were acceptable. No qualifications were applied.

V. Surrogates

All surrogate recoveries were within established control limits. No samples were qualified

VI. Comments

No herbicides were detected in the field samples. There are no additional comments on this SDG.

VII. Overall Assessment of Data

Overall data quality is acceptable, with no qualification. All data are usable as reported for their intended purposes.

**METALS ANALYSIS**

I. Holding Time and Chain of Custody (COC) Requirements

All samples were received by the laboratory and analyzed within the established holding time of 6 months (28 days for mercury) from sample collection to analysis. No data were qualified.

## II. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Some samples were analyzed with SDG No. 1205405, so the results of the MS/MSD analyses of sample 103E-IS2 apply to them. Specifically, the results for lead in samples 105-IS1, 105-IS2, 105-IS3, 105-IS4, 105-IS5, and 105-IS6 are considered estimated due to heterogeneity of the distribution of the metal within the soil; these results were flagged “J”. The mercury MS/MSD analyses of sample 103-IS4 yielded recoveries of 89 and 82 percent, versus limits of 85 to 115 percent. The average recovery was within limits, as was the relative percent difference (RPD) between the results, so no qualifications were applied for this minor irregularity. In the metals MS/MSD analyses of sample 103-IS4, recoveries of barium and lead could not be determined because the unspiked concentrations were much higher than the added spike. The RPD were acceptable so no qualifications were applied for this data gap. In the same analyses, recoveries of chromium were 133 and 37 percent (versus limits of 75 to 125 percent), and the RPD was 29 percent (versus the limit of 25 percent). These results indicate heterogeneity of the distribution of chromium within the soil. Therefore, all soil chromium concentrations in soil samples analyzed with sample 103-IS4 are flagged “J” to indicate that they are considered estimated. No further qualifications were applied.

## III. Blanks

The only metal detected in the laboratory blank analyses was a low concentration of lead in one soil method blank. The accompanying samples contained much higher concentrations of lead so no qualifications were applied.

## IV. Laboratory Control Sample (LCS)

All results from the LCS analyses were within acceptable limits. No qualifications were applied.

## V. Comments

Some of detected analytes were found at concentrations greater than the sample detection limit but below the reporting limit, which corresponds to the lowest calibration standard. The laboratory correctly qualified these extrapolations as estimated and flagged them “J”. In addition, a few analytes in a few samples were found at concentrations above the calibration range. The laboratory re-analyzed those sample extracts at a dilution that brought the results within calibration range. Therefore no further qualifications were applied.

## VII. Overall Assessment of Data

Overall data quality is acceptable, with qualifications of soil chromium due to heterogeneity in the distributions of the metals within the soils. This is a common phenomenon when the metals include contamination that was distributed in particulate form. Decision making on the basis of average concentrations from multiple samples rather than one result from a single sample would minimize the uncertainty. All data are usable as qualified for their intended purposes.

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**ATTACHMENT 1**

**WASTE TRANSFER AND DISPOSAL DOCUMENTATION**

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

Form Approved. OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone 888-741-6425	4. Manifest Tracking Number 005607313 FLE			
5. Generator's Name and Mailing Address <b>Goodfellow Federal Center 4300 Goodfellow St. Louis, MO 63120</b>				Generator's Site Address (if different than mailing address)				
Generator's Phone: 314 412-9119				U.S. EPA ID Number MO064660194				
6. Transporter 1 Company Name <b>Environmental Management Alt., Inc.</b>				U.S. EPA ID Number				
7. Transporter 2 Company Name				U.S. EPA ID Number				
8. Designated Facility Name and Site Address <b>Illini Environmental Inc. 8895 California Dr. Caseyville, IL 62203</b>				U.S. EPA ID Number				
Facility's Phone: (618) 397-1234								
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		No.	Type					
1.	<b>Non-DOT/ Non-RCRA Regulated-Soil Cuttings</b>	1	IM	500 lbs	P			
2.								
3.								
4.								
14. Special Handling Instructions and Additional Information <b>A: Profile/Approval #-106801</b>  B: C: D: 12-17-01								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.								
Generator's/Offeror's Printed/Typed Name <b>MICHAEL GARDNER</b>				Signature (b) (6)		Month	Day	Year
						8	17	12
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Date leaving U.S.: _____								
17. Transporter Acknowledgment of Receipt of Materials								
Transporter 1 Printed/Typed Name <b>Chris Hoppe</b>				Signature (b) (6)		Month	Day	Year
						8	17	12
Transporter 2 Printed/Typed Name						Month	Day	Year
18. Discrepancy								
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection								
Manifest Reference Number: _____								
18b. Alternate Facility (or Generator)				U.S. EPA ID Number				
Facility's Phone: _____								
18c. Signature of Alternate Facility (or Generator)				Signature		Month	Day	Year
						8	17	12
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)								
1.		2.		3.		4.		
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a								
Printed/Typed Name <b>Brian Grimmer</b>				Signature (b) (6)		Month	Day	Year
						8	17	12

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**ATTACHMENT 2**  
**LABORATORY ANALYTICAL RESULTS**

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