



**MEMORANDUM**

**Date:** 23 May 02

**To:** Dave Sawicki, Project Manager, Tetra Tech EM Inc. (Tetra Tech)  
Superfund Technical Assessment and Response Team (START) for Region 5

**From:** Nancy McDonald, Chemist, Tetra Tech START for Region 5

**Subject:** Data Validation for  
St. Clair Shores Site  
St. Clair Shores, Michigan  
Analytical Technical Direction Document (TDD) No. S05-0203-003  
Project TDD No. S05-0203-002

Laboratory: AAC Trinity (AACT), Farmington Hills, Michigan  
Work Order No. 02-0794  
Polychlorinated Biphenyl (PCB) and Resource Conservation and Recovery Act (RCRA)  
Metals Analysis of One Equipment Rinsate Sample

**1.0 INTRODUCTION**

The Tetra Tech START for Region 5 validated PCB and RCRA metals analytical data for one equipment rinsate sample collected on 21 Mar 02 during a site assessment of the St. Clair Shores site in St. Clair Shores, Michigan. The equipment rinsate sample was analyzed under the above-referenced work order by AACT using U.S. Environmental Protection Agency (U.S. EPA) SW-846 Method 8082 for PCB analysis. The equipment rinsate sample was analyzed for RCRA metals using SW-846 Methods 6020 (arsenic, cadmium, selenium, and silver) 7421 (lead), 6010B (barium and chromium), and 7470A (mercury). START identified several inconsistencies between the metals analytical method numbers listed in the AACT sample result summary sheet and those listed in the analytical data package. For this reason, START contacted AACT and verified which methods were actually used to analyze the samples

discussed herein. All methods listed in the case narrative are correct except for the methods for chromium and mercury analysis.

The organic and inorganic data were evaluated in general accordance with U.S. EPA's "Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated Oct 99 and "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" dated Feb 94, respectively. Organic data validation consisted of a review of the following quality control (QC) parameters: holding times, initial and continuing calibrations, blank results, matrix spike and matrix spike duplicate (MS/MSD) results, surrogate recovery results, laboratory control sample (LCS) results, and sample quantitation. Inorganic data validation consisted of a review of the following QC parameters: holding times, initial and continuing calibrations, blank results, MS/MSD and method duplicate results, LCS results, interference check sample (ICS) results, and sample quantitation.

Section 2.0 discusses the results of the organic data validation, Section 3.0 discusses the results of the inorganic data validation, and Section 4.0 presents an overall assessment of the data. The attachment contains AACT's summary of sample analytical results as well as START's handwritten data qualifications where warranted.

## **2.0 ORGANIC DATA VALIDATION RESULTS**

The results of START's data validation for the organic analyses are summarized below in terms of the QC parameters reviewed. The data qualifier below was applied to the sample analytical results where warranted (see the attachment).

- U - The analyte was not detected. The reported numerical value is the sample detection limit.

## **2.1 HOLDING TIMES**

The water sample was analyzed within the holding time limits of 7 days to extraction and 40 days from extraction to analysis.

## **2.2 INITIAL AND CONTINUING CALIBRATIONS**

All correlation coefficients for the initial calibration results met the QC limit of greater than 0.99. All continuing calibration results for the quantitation and confirmation columns were within the QC limit of 15 percent difference.

## **2.3 BLANK RESULTS**

A method blank was run with each analytical batch in the proper sequence. A low-level concentration of Aroclor 1248 (0.1029 microgram per liter) was detected in the water method blank used in the analysis. The laboratory attributes this detection to carryover from highly contaminated samples. The Aroclor 1248 result for sample EQPRINSE was qualified "U" as not detected because it was detected at less than five times the associated blank result.

## **2.4 MS/MSD RESULTS**

A water MS and MSD were analyzed. All percent recoveries and relative percent differences (RPD) between the MS and MSD recoveries were within laboratory-established QC limits.

## **2.5 SURROGATE RECOVERY RESULTS**

All surrogate recovery results were within laboratory-established QC limits.

## **2.6 LCS RESULTS**

An LCS was analyzed on the day of sample analysis, and the LCS result was within the laboratory-established QC limits.

## **2.7 SAMPLE QUANTITATION**

Sample quantitation was manually verified for equipment rinsate sample EQPRINSE. Sample quantitation was performed correctly.

## **3.0 INORGANIC DATA VALIDATION RESULTS**

The results of START's data validation for the inorganic analyses are summarized below in terms of the QC parameters reviewed. The data qualifiers below were applied to the sample analytical results where warranted (see the attachment).

- U - The analyte was not detected. The reported numerical value is the sample detection limit.
- J - The analyte was detected. The reported numerical value is considered estimated for QC reasons.

## **3.1 HOLDING TIMES**

The samples were analyzed within the holding time limits of 28 days for mercury and 6 months for all other metals.

## **3.2 INITIAL AND CONTINUING CALIBRATIONS**

Initial and continuing calibrations were performed as required by the analytical methods. The percent

recoveries for initial and continuing calibrations were within the QC limit of 90 to 110 percent.

### 3.3 BLANK RESULTS

Blanks were analyzed with each analytical batch. Low-level concentrations of lead and mercury were detected in the water calibration and method blanks, respectively. The sample results below were qualified "U" as not detected because the analyte was detected at less than five times the highest associated blank result.

<u>Analyte</u>	<u>Blank Result (microgram/liter)</u>	<u>Matrix</u>	<u>Samples Qualified</u>
Lead	1.4	Water	EQPRINSE
Mercury	0.22	Water	EQPRINSE

### 3.4 MS/MSD AND METHOD DUPLICATE RESULTS

MS/MSD and method duplicate analyses were performed as required, and all results except the following were within the laboratory-established QC limits. AACT performed the MS/MSD analysis on equipment rinsate sample EQPRINSE from the St. Clair Shores site. The chromium result for sample EQPRINSE was qualified "J" because the RPD was outside the QC limit of 20.

Although the RPD of 25.6 for silver also exceeded the QC limit, no qualifications are warranted because silver was not detected in the parent sample. The MSD recovery for barium of 60 percent was biased low and outside the QC limit of 75 to 125 percent. The RPD of 34.5 also exceeded the QC limit. Barium was analyzed for using SW-846 Method 6010B; however, the MS and MSD were prepared by spiking at a level specified for SW-846 Method 6020 which is near the reporting limit for SW-846 Method 6010B. No qualifications are warranted for this irregularity.

Method duplicate analyses were performed on equipment rinsate sample EQPRINSE. The RPD for silver exceeded the laboratory-established QC limit of 20. However, based on a review of the raw data, the sample result was just below the reporting limit of 0.50 microgram per liter and was reported as not detected. The sample duplicate result was reported as slightly above the reporting limit. When the raw data were used to calculate the RPD, the result was well within the QC limit; therefore, no qualifications are warranted.

### **3.5 LCS RESULTS**

An LCS was analyzed with each analytical batch, and all LCS results were within the laboratory-established QC limits with the following exceptions. The LCS for barium was not reported; the raw data were reviewed and indicated a recovery of 50 percent, which is outside the QC limit of 80 to 120 percent. Barium was analyzed using SW-846 Method 6010B; however, the LCS was prepared by spiking at levels specified for SW-846 Method 6020, which is near the reporting limit for SW-846 Method 6010B. No qualifications are warranted for this irregularity.

### **3.6 ICS RESULTS**

ICS results were within the QC limit of 80 to 120 percent recovery.

### **3.7 SAMPLE QUANTITATION**

Sample quantitation was manually verified for equipment rinsate sample EQPRINSE. In all cases, the calculations were performed correctly. The positive sample result for chromium was below the sample reporting limit, which corresponds to the lowest calibration standard. This extrapolation was flagged "J" as an estimate by the laboratory and is accepted.

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St. Clair Shores Site  
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#### **4.0 OVERALL ASSESSMENT OF DATA**

All sample analytical data generated by AACT are acceptable for use as qualified.

**ATTACHMENT**

**AACT SUMMARY OF SAMPLE ANALYTICAL RESULTS**

(One Sheet)

**ATTACHMENT**

**AACT SUMMARY OF SAMPLE ANALYTICAL RESULTS**

(One Sheet)

# AAC Trinity

Date: 27-Mar-02

CLIENT: Tetra Tech EM, Inc.  
 Lab Order: 02-0794  
 Project: S05-0203-002/St. Clair Shores  
 Lab ID: 02-0794-01

Client Sample ID: EQPRINSE  
 Collection Date: 3/21/2002 12:00:00 PM  
 Matrix: AQUEOUS

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>METALS - EPA 6020 (TOTAL)</b>		<b>EPA6020</b>				Analyst: AV
Arsenic	ND	5.0		µg/L	1	3/25/2002
Barium	ND	100		µg/L	1	3/25/2002
Cadmium	ND	0.50		µg/L	1	3/25/2002
Chromium	2.0 J	5.0	J	µg/L	1	3/25/2002
Lead	2.0 U	3.0	J	µg/L	1	3/25/2002
Selenium	ND	5.0		µg/L	1	3/25/2002
Silver	ND	0.50		µg/L	1	3/25/2002
<b>MERCURY - EPA 7470 (TOTAL)</b>		<b>EPA7470</b>				Analyst: JMK
Mercury	0.28 U	0.20		µg/L	1	3/25/2002
<b>POLYCHLORINATED BIPHENYLS</b>		<b>EPA8082</b>				Analyst: MB
Aroclor 1016	ND	0.10		µg/L	1	3/22/2002 2:40:04 PM
Aroclor 1221	ND	0.10		µg/L	1	3/22/2002 2:40:04 PM
Aroclor 1232	ND	0.10		µg/L	1	3/22/2002 2:40:04 PM
Aroclor 1242	ND	0.10		µg/L	1	3/22/2002 2:40:04 PM
Aroclor 1248	0.30 U	0.10		µg/L	1	3/22/2002 2:40:04 PM
Aroclor 1254	ND	0.10		µg/L	1	3/22/2002 2:40:04 PM
Aroclor 1260	ND	0.10		µg/L	1	3/22/2002 2:40:04 PM
Surr: Decachlorobiphenyl	42.2	10-144		%REC	1	3/22/2002 2:40:04 PM
Surr: Tetrachloro-m-xylene	63.9	10-120		%REC	1	3/22/2002 2:40:04 PM

MB 5-13-08

Qualifiers: ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 B - Analyte detected in the associated Method Blank  
 \* - Value exceeds Maximum Contaminant Level  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 E - Value above quantitation range  
 RL - Reporting Limit if used

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