

LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 12 of 16

2011

Bate Stamp Numbers

00109032 – 00110113

Prepared for

**Department of the Army
Longhorn Army Ammunition Plant**

1976 – 2011

***LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX***

VOLUME 12 of 16

2011

- A. Title: Report (continued)– Final Completion Report Non-Time-Critical Removal Action LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Shaw Environmental, Inc., Houston, Texas
Recipient: All Stakeholders
Date: August 16, 2011
Bate Stamp: 00109032 - 00110113



158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090170

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
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Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on September 10, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

The reported results are related only to the samples analyzed as received.

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

This report was certified on September 10, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 72 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box. A thin white horizontal line is positioned above the text.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

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Microbac REPORT L09090170
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090170

CHAIN OF CUSTODY: The chain of custody number was 090309-01.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 3 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 10-SEP-09
<i>Stephanie Mossburg</i>

Laboratory Data Package Cover Page

00109037

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

September 9, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090170
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG311728
Reviewer Name: DEANNA I. HESSON
LRC Date: September 09, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109039

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090170
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG311728
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 09, 2009

EXCEPTIONS REPORT

ER# - Description

The reference, MS and MSD bottles were of different moistures. The analysis was performed from the MSD container since it was the dryest, per client's request. Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 Semivolatiles Data

2.1.1 Semivolatiles GC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090170

Department: Semivolatiles - GC

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All analytes met the MS/MSD acceptance criteria for % recovery and relative percent difference, except those listed below. An astrisk (*) denotes that the value is relative percent difference.

Sample	Instrument	Date	Analyte	AType	CType	Rec/RPD	Lower	Upper
L09090170-02	LCMS1	09/09/2009	PERCHLORATE	REG		-353	80	120
L09090170-03	LCMS1	09/09/2009	PERCHLORATE	REG		3480	80	120
L09090170-03	LCMS1	09/09/2009	PERCHLORATE	REG		249	*	15

The matrix spike solution was diluted out of the MS/MSD.

SAMPLES

Samples: Samples 01, 02, 03, 04 and 06 were run at a dilution to be within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090170

00109047

09/10/09 13:29

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	QC Type	Lab ID	Method	Dilution	Date Received
04CSWHM		L09090170-01	6850	10	09-SEP-09
04CSWHM	MS	L09090170-02	6850	10	09-SEP-09
04CSWHM	MSD	L09090170-03	6850	10	09-SEP-09
04CSWHMQC		L09090170-04	6850	10	09-SEP-09
04VLVOF-W (100)		L09090170-05	6850	1	09-SEP-09
04VLVOF-W		L09090170-06	6850	1000	09-SEP-09
04VLVOF-S		L09090170-07	6850	1	09-SEP-09



Report Number: **L09090170**Report Date : **September 10, 2009**

00109048

Sample Number: **L09090170-01**
Client ID: **04CSWHM**
Matrix: **Soil**
Workgroup Number: **WG311714**
Collect Date: **09/08/2009 15:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/09/2009 13:39**
Cal Date: **08/26/2009 12:56**
Run Date: **09/09/2009 16:17**
File ID: **1LM.LM00627**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	684		19.6	9.79

Report Number: L09090170

Report Date : September 10, 2009

00109049

Sample Number: L09090170-02
Client ID: 04CSWHM
Matrix: Soil
Workgroup Number: WG311714
Collect Date: 09/08/2009 15:30
Sample Tag: DL01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 10
Units: ug/kg

Instrument: LCMS1
Prep Date: 09/09/2009 13:39
Cal Date: 08/26/2009 12:56
Run Date: 09/09/2009 17:29
File ID: 1LM.LM00632

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	677		19.8	9.91

Report Number: **L09090170**Report Date : **September 10, 2009****00109050**

Sample Number: **L09090170-03**
Client ID: **04CSWHM**
Matrix: **Soil**
Workgroup Number: **WG311714**
Collect Date: **09/08/2009 15:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/09/2009 13:39**
Cal Date: **08/26/2009 12:56**
Run Date: **09/09/2009 17:43**
File ID: **1LM.LM00633**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	748		18.4	9.22

Report Number: **L09090170**Report Date : **September 10, 2009****00109051**

Sample Number: **L09090170-04**
Client ID: **04CSWHMQC**
Matrix: **Soil**
Workgroup Number: **WG311714**
Collect Date: **09/08/2009 15:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/09/2009 13:39**
Cal Date: **08/26/2009 12:56**
Run Date: **09/09/2009 16:31**
File ID: **1LM.LM00628**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	502		19.4	9.71

Report Number: **L09090170**Report Date : **September 10, 2009**

00109052

Sample Number: **L09090170-05**
Client ID: **04VLVOF-W (100)**
Matrix: **Soil**
Workgroup Number: **WG311714**
Collect Date: **09/08/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/09/2009 13:39**
Cal Date: **08/26/2009 12:56**
Run Date: **09/09/2009 17:57**
File ID: **1LM.LM00634**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	1.24	J	2.03	1.01

J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09090170**Report Date : **September 10, 2009****00109053**

Sample Number: **L09090170-06**
Client ID: **04VLVOF-W**
Matrix: **Soil**
Workgroup Number: **WG311714**
Collect Date: **09/08/2009 15:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/09/2009 13:39**
Cal Date: **08/26/2009 12:56**
Run Date: **09/09/2009 15:48**
File ID: **1LM.LM00625**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	4810		1850	924

Report Number: L09090170

Report Date : September 10, 2009

00109054

Sample Number: L09090170-07
Client ID: 04VLVOF-S
Matrix: Soil
Workgroup Number: WG311714
Collect Date: 09/08/2009 15:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 1
Units: ug/kg

Instrument: LCMS1
Prep Date: 09/09/2009 13:39
Cal Date: 08/26/2009 12:56
Run Date: 09/09/2009 18:12
File ID: 1LM.LM00635

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	3.82		1.89	0.944

2.1.1.2 QC Summary Data

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

$$RF = [(Ax) (Cis)] / [(Ais) (Cx)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured:	1261197
Cis = Concentration of the specific internal standard (ug/mL)	40
Ais = Area of the characteristic ion of the specific internal standard	608044
Cx = Concentration of the compound in the standard being measured (ug/mL)	50
RF = Calculated Response Factor	1.65935

2.0 Calculating the concentration (C) of a compound in water using the data from the prep log and quantitation report: *

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Vi)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Vi = Initial volume of sample extracted from prep log (mL)	1021
Cx = Concentration of the compound in the sample being measured (ug/mL)	0.016947
Cx = Concentration of the compound in the sample being measured (ug/L)	16.947

3.0 Calculating the concentration (C) of a compound in soil using the data from the prep log and quantitation report: *

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Wi)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Wi = Initial weight of sample extracted (g) from prep log	30
Cx = Concentration of the compound in the sample being measured (ug/g)	0.576763
Cx = Concentration of the compound in the sample being measured (ug/kg)	576.7627

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	1153.525 ug/kg

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression**Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

$$x = (y - b)/m = [(0.02139 - (-0.0435))/0.0783] = 0.829$$

Step 4: Solve for analyte concentration Cx

$$Cx = Cis (x) = (25.0)(0.829) = 20.72 \text{ ug/L}$$

Example Spreadsheet Calculation:

Slope from curve, m:	0.0783
Intercept from curve, b:	-0.0435
Area of analyte, Ax:	16790
Area of Internal Standard, Ais:	784484
Concentration of IS, Cis	25.00 ug/L
Response Ratio (y) :	0.021403
Amount Ratio:	0.828897
Concentration (Cx):	20.72241 ug/L

5.0 Concentration from Quadratic Regression**Step 1 - Retrieve Curve Data from Plot, $y = Ax^2 + Bx + C$**

Where:

$$Ax^2 + Bx + (C - y) = 0$$

A, B, C = constants from the ICAL quadratic regression

y = Response ratio = Area of analyte/Area of internal standard (IS)

x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

$$y = Ax/Ais$$

Step 3: Solve for x using the quadratic formula

$$Ax^2 + Bx + C - y = 0$$

$$x = \frac{b \pm \sqrt{b^2 - 4a(c - y)}}{2a} \quad (\text{Two possible solutions})$$

Step 4: Solve for analyte concentration Cx

$$Cx = (Cis)(\text{Amount ratio})$$

Example Spreadsheet Calculation:

Value of A from plot:	0.0259
Value of B from plot:	0.0596
Value of C from plot:	-0.0165
Area of analyte from quantitation report:	203233
Area of IS from quantitation report:	1425653
Response ratio, y:	0.142554
C - y:	-0.15905
Root 1 - Computed amount ratio, X1:	-3.88278
Root 2 - Computed amount ratio, X2:	1.581623 use this solution
Concentration of IS, Cis:	40.00
Concentration of analyte, Cx:	63.26 ug/L

Microbac Laboratories Inc.
Instrument Run Log

00109058

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

Page: 1

Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109059

Instrument: LCMS1 Dataset: 090909_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30089

Workgroups: 311714 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00616	WG311716-01 CCB	1	1		09/09/09 13:39
2	1LM.LM00617	WG311716-02 CCV 1.0 ug/L	1	1	STD35152	09/09/09 13:53
3	1LM.LM00618	WG311714-07 QCMRL 0.2 ug/L	7	1	STD35152	09/09/09 14:07
4	1LM.LM00619	WG311714-01 MCT/ICS 2.0 ug/kg	7	1		09/09/09 14:22
5	1LM.LM00620	WG311714-02 MET BLK	7	1		09/09/09 14:36
6	1LM.LM00621	WG311714-03 LCS 2.0ug/kg	7	1	STD35153	09/09/09 14:50
7	1LM.LM00622	L09090170-01 A 1000X	7	1000		09/09/09 15:05
8	1LM.LM00623	L09090170-04 A 1000X	7	1000		09/09/09 15:19
9	1LM.LM00624	L09090170-05 A 1000X	7	1000		09/09/09 15:34
10	1LM.LM00625	L09090170-06 A 1000X	7	1000		09/09/09 15:48
11	1LM.LM00626	L09090170-07 A 1000X	7	1000		09/09/09 16:02
12	1LM.LM00627	L09090170-01 A 10X	7	10		09/09/09 16:17
13	1LM.LM00628	L09090170-04 A 10X	7	10		09/09/09 16:31
14	1LM.LM00629	WG311716-03 CCV 1.0ug/L	1	1	STD35152	09/09/09 16:46
15	1LM.LM00630	WG311714-08 QCMRL 0.2ug/L	7	1	STD35152	09/09/09 17:00
16	1LM.LM00631	WG311716-04 CCB	1	1		09/09/09 17:14
17	1LM.LM00632	L09090170-02 MS A 10X	7	10	STD35153	09/09/09 17:29
18	1LM.LM00633	L09090170-03 MSD A 10X	7	10	STD35153	09/09/09 17:43
19	1LM.LM00634	L09090170-05	7	1		09/09/09 17:57
20	1LM.LM00635	L09090170-07	7	1		09/09/09 18:12
21	1LM.LM00636	WG311716-05 CCV 1.0ug/L	1	1	STD35152	09/09/09 18:28
22	1LM.LM00637	WG311714-09 QCMRL 0.2ug/L	7	1	STD35152	09/09/09 18:42
23	1LM.LM00638	WG311716-06 CCB	1	1		09/09/09 18:57

Comments

Seq.	Rerun	Dil.	Reason	Analytes
7	X	10	Analyzed too dilute	
			Per client instructions fraction -03 A used for Reference and MS/MSD, due to visible moisture content variability.	
8	X	10	Analyzed too dilute	
9	X	1	Analyzed too dilute	
11	X	1	Analyzed too dilute	
17				

Page: 1

Approved: 10-SEP-09




Microbac Laboratories Inc.
Instrument Run Log

00109060

Instrument: LCMS1 Dataset: 090909_WTD.TXT
Analyst1: WTD Analyst2: NA
Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30089

Column 1 ID: KP-RPPX250 Column 2 ID: NA
Workgroups: 311714
Internal STD: COA14015 Surrogate STD: NA

Comments

Seq.	Rerun	Dil.	Reason	Analytes
Per client instructions fraction -03 A used for Reference and MS/MSD, due to visible moisture content variability.				
18				
Per client instructions fraction -03 A used for Reference and MS/MSD, due to visible moisture content variability.				



Microbac Laboratories Inc.

00109061

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1


Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009



CHECKLIST1 - Modified 03/05/2008

Generated: AUG-28-2009 08:33:35



Microbac Laboratories Inc.

00109062

Data Checklist

Date: 09-SEP-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 30056

Analytical Workgroups: 311714

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
Per client instruction sample L090900170-03 used for Reference and MS/MSD.	
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
10-SEP-2009

CHECKLIST1 - Modified 03/05/2008

Generated: SEP-10-2009 09:22:51



Analytical Method:6850

AAB#:WG311714

Login Number:L09090170

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSWHM	01	09/08/09					09/09/09	.9	28		09/09/09	.1	28	
04CSWHM	02	09/08/09					09/09/09	.9	28		09/09/09	.2	28	
04CSWHM	03	09/08/09					09/09/09	.9	28		09/09/09	.2	28	
04CSWHMQC	04	09/08/09					09/09/09	.9	28		09/09/09	.1	28	
04VLVOF-W (100)	05	09/08/09					09/09/09	.9	28		09/09/09	.2	28	
04VLVOF-W	06	09/08/09					09/09/09	.9	28		09/09/09	.1	28	
04VLVOF-S	07	09/08/09					09/09/09	.9	28		09/09/09	.2	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109064

Login Number: L09090170
 Blank File ID: 1LM.LM00620
 Prep Date: 09/09/09 13:39
 Analyzed Date: 09/09/09 14:36
 Analyst: WTD

Work Group: WG311714
 Blank Sample ID: WG311714-02
 Instrument ID: LCMS1
 Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG311714-07	1LM.LM00618	09/09/09 14:07	01
MCT	WG311714-01	1LM.LM00619	09/09/09 14:22	01
LCS	WG311714-03	1LM.LM00621	09/09/09 14:50	01
04VLVOF-W	L09090170-06	1LM.LM00625	09/09/09 15:48	DL01
04CSWHM	L09090170-01	1LM.LM00627	09/09/09 16:17	DL01
04CSWHMQC	L09090170-04	1LM.LM00628	09/09/09 16:31	DL01
QCMRL	WG311714-08	1LM.LM00630	09/09/09 17:00	01
04CSWHM	L09090170-02	1LM.LM00632	09/09/09 17:29	DL01
04CSWHM	L09090170-03	1LM.LM00633	09/09/09 17:43	DL01
04VLVOF-W (100)	L09090170-05	1LM.LM00634	09/09/09 17:57	01
04VLVOF-S	L09090170-07	1LM.LM00635	09/09/09 18:12	01
QCMRL	WG311714-09	1LM.LM00637	09/09/09 18:42	01



Login Number: L09090170 Prep Date: 09/09/09 13:39 Sample ID: WG311714-02
Instrument ID: LCMS1 Run Date: 09/09/09 14:36 Prep Method: 6850
File ID: 1LM.LM00620 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311714 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.985	1.97	0.985	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1485996

10-SEP-2009 09:43



00109066

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311714-03
Instrument ID: LCMS1 Run Time: 14:50 Prep Method: 6850
File ID: 1LM.LM00621 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311714 Matrix: Soil Units: ug/kg
QC Key: STD Lot#: STD35152 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Perchlorate	1.98	2.08	105	80 - 120	



MS/MSD REPORT

00109067

Loginnum: L09090170 Cal ID: LCMS1- 26-AUG-09
 Instrument ID: LCMS1 Contract #: DACA56-94-D-0020
 Parent ID: L09090170-01 File ID: 1LM.LM00627 Dil: 10
 Sample ID: L09090170-02 MS File ID: 1LM.LM00632 Dil: 10
 Sample ID: L09090170-03 MSD File ID: 1LM.LM00633 Dil: 10

Worknum: WG311714
 Prep Method: 6850
 Method: 6850
 Matrix: Soil
 Units: ug/kg

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Perchlorate	684	1.98	677	-353	1.84	748	3480	10.0	80 - 120	15	*

* FAILS %REC LIMIT

FAILS RPD LIMIT



Conductivity Probe
 Calibration Check:
1419 /1410 $\mu\text{S}/\text{cm}$

Perchlorate Conductivity Check

Working MCT Level:
10,000 $\mu\text{S}/\text{cm}$

Sample	Conductivity ($\mu\text{S}/\text{cm}$)	Pretreatment or Dilution Needed
ING-311714-01 ^{MCT} LCS	10,190	NA
-02 MB/A	7.4	↓
-03 LCS	7.3	
L09090170-01A	36.5	
-02A	37.8	
-03A	38.8	
-04A	36.9	
-05A	23.2	
-06A	81.0	
-07A	7.4	

Wade T. Dely
 Analyst

9-9-09 / 16:55
 Date/Time

DCN#80685



00109069

Login Number: L09090170
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109070

Login Number: L09090170
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366

INT_CAL - Modified 03/06/2008
PDF File ID: 1486248
Report generated 09/10/2009 09:44



00109071

Login Number: L09090170
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393



00109072

Login Number: L09090170
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

Login Number: L09090170 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

00109074

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311716-01
Instrument ID: LCMS1 Run Time: 13:39 Method: 6850
File ID: 1LM.LM00616 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311714 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109075

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311716-04
Instrument ID: LCMS1 Run Time: 17:14 Method: 6850
File ID: 1LM.LM00631 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311714 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109076

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311716-06
Instrument ID: LCMS1 Run Time: 18:57 Method: 6850
File ID: 1LM.LM00638 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311714 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109077

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311716-02
Instrument ID: LCMS1 Run Time: 13:53 Method: 6850
File ID: 1LM.LM00617 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311714 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.01	ug/L	1.46	1.00	10	

* Exceeds %D Criteria



00109078

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311716-03
Instrument ID: LCMS1 Run Time: 16:46 Method: 6850
File ID: 1LM.LM00629 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311714 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.994	ug/L	1.43	0.600	10	

* Exceeds %D Criteria



00109079

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311716-05
Instrument ID: LCMS1 Run Time: 18:28 Method: 6850
File ID: 1LM.LM00636 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311714 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.00	ug/L	1.44	0	10	

* Exceeds %D Criteria



Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311714-07
Instrument ID: LCMS1 Run Time: 14:07 Prep Method: 6850
File ID: 1LM.LM00618 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311714 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.05	103	70 - 130	

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311714-08
Instrument ID: LCMS1 Run Time: 17:00 Prep Method: 6850
File ID: 1LM.LM00630 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311714 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.19	110	70 - 130	

Login Number: L09090170 Run Date: 09/09/2009 Sample ID: WG311714-09
Instrument ID: LCMS1 Run Time: 18:42 Prep Method: 6850
File ID: 1LM.LM00637 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311714 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.09	105	70 - 130	

Login Number: L09090170
Instrument ID: LCMS1
Workgroup (AAB#): WG311714

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090170-01	10.0	DL01	251000
L09090170-02	10.0	DL01	258000
L09090170-03	10.0	DL01	251000
L09090170-04	10.0	DL01	208000
L09090170-05	1.00	01	285000
L09090170-06	1000	DL01	267000
L09090170-07	1.00	01	277000
WG311714-02	1.00	01	271000
WG311714-03	1.00	01	271000

IS-1 - O18LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090170

00109087

09/10/09 13:29

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	QC Type	Lab ID	Method	Dilution	Date Received
04CSWHM		L09090170-01	D2216-90	1	09-SEP-09
04CSWHM	MS	L09090170-02	D2216-90	1	09-SEP-09
04CSWHM	MSD	L09090170-03	D2216-90	1	09-SEP-09
04CSWHMQC		L09090170-04	D2216-90	1	09-SEP-09
04VLVOF-W (100)		L09090170-05	D2216-90	1	09-SEP-09
04VLVOF-W		L09090170-06	D2216-90	1	09-SEP-09
04VLVOF-S		L09090170-07	D2216-90	1	09-SEP-09



Report Number: L09090170

Report Date : September 10, 2009

00109088

Sample Number: L09090170-01
Client ID: 04CSWHM
Matrix: Soil
Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/10/2009 08:33
Cal Date:
Run Date: 09/10/2009 08:33
File ID: B1.311728-0103

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	84.0		1.00	1.00

Report Number: L09090170

Report Date : September 10, 2009

00109089

Sample Number: L09090170-02
Client ID: 04CSWHM
Matrix: Soil
Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/10/2009 08:33
Cal Date:
Run Date: 09/10/2009 08:33
File ID: B1.311728-0104

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	84.0		1.00	1.00

Report Number: L09090170

Report Date : September 10, 2009

00109090

Sample Number: L09090170-03
Client ID: 04CSWHM
Matrix: Soil
Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/10/2009 08:33
Cal Date:
Run Date: 09/10/2009 08:33
File ID: B1.311728-0105

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	84.0		1.00	1.00

Report Number: L09090170

Report Date : September 10, 2009

00109091

Sample Number: L09090170-04
Client ID: 04CSWHMQC
Matrix: Soil
Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/10/2009 08:33
Cal Date:
Run Date: 09/10/2009 08:33
File ID: B1.311728-0106

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	76.3		1.00	1.00

Report Number: L09090170

Report Date : September 10, 2009

00109092

Sample Number: L09090170-05
Client ID: 04VLVOF-W (100)
Matrix: Soil
Workgroup Number: WG311728
Collect Date: 09/08/2009 15:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/10/2009 08:33
Cal Date:
Run Date: 09/10/2009 08:33
File ID: B1.311728-0107

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	81.0		1.00	1.00

5 of 7



Report Number: L09090170

Report Date : September 10, 2009

00109093

Sample Number: L09090170-06
Client ID: 04VLVOF-W
Matrix: Soil
Workgroup Number: WG311728
Collect Date: 09/08/2009 15:10
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/10/2009 08:33
Cal Date:
Run Date: 09/10/2009 08:33
File ID: B1.311728-0108

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	75.8		1.00	1.00

Report Number: L09090170

Report Date : September 10, 2009

00109094

Sample Number: L09090170-07
Client ID: 04VLVOF-S
Matrix: Soil
Workgroup Number: WG311728
Collect Date: 09/08/2009 15:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/10/2009 08:33
Cal Date:
Run Date: 09/10/2009 08:33
File ID: B1.311728-0109

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	76.1		1.00	1.00

7 of 7



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#):WG311728

Analyst:CPD

ADT(on):09/09/2009 13:15

Method:D2216-90

Instrument:BAL001

ADT(off):09/10/2009 08:33

SOP:K0003 Rev:9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090168-01	1.26	33.54	31.9			94.92	
L09090168-02	1.27	30.97	28.67			92.26	
L09090170-01	1.27	22.69	19.27			84.03	
L09090170-02	1.27	22.69	19.27			84.03	
L09090170-03	1.27	22.69	19.27			84.03	
L09090170-04	1.27	36.73	28.31			76.25	
L09090170-05	1.27	28.33	23.18			80.97	
L09090170-06	1.26	24.54	18.91			75.82	
L09090170-07	1.26	22.95	17.77			76.12	
L09090176-01	1.27	35.46	32.73			92.02	
L09090176-02	1.27	33.02	30.61			92.41	
L09090176-03	1.27	28.96	27.19			93.61	
L09090176-04	1.29	30.4	27.97			91.65	
L09090176-05	1.26	31.94	29.37			91.62	
WG311728-01	1.27	35.46	32.73			92.02	7.985
WG311728-02	1.27	27.05	25.07			92.32	7.680

Analyst:

Leanne Davis

3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

September 10, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



Shaw Environmental & Infrastructure, Inc.

3010 Briarpark Drive, Suite 400

Houston, TX 77042

(713) 996-4400

Laboratory Name: Microbac

Address : 158 Starlife Drive, Marietta OH 45750

Contact : Stephanie Mossburg

Phone: 1-800-373-4071

[illegible]

COOLER INSPECTION



Received: 09/09/2009 09:26
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L09090170

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014026	H	3.0	1Z66V7250190816702	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090170

Account: 2773

Project: 2773.025

Samples: 7

Due Date: 10-SEP-2009

Samplenum **Container ID** **Products**
L09090170-01 613635 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	09-SEP-2009 11:07	ERE	
2	ANALYZ	W1	SEM	09-SEP-2009 11:14	WTD	RLK
3	ANALYZ	SEM	W1	09-SEP-2009 12:22	RLK	WTD
4	ANALYZ	W1	WET	09-SEP-2009 13:09	CPD	RLK
5	STORE	WET	A1	10-SEP-2009 08:25	RLK	CPD

Samplenum **Container ID** **Products**
L09090170-02 613636 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	09-SEP-2009 11:07	ERE	
2	ANALYZ	W1	SEM	09-SEP-2009 11:14	WTD	RLK
3	ANALYZ	SEM	W1	09-SEP-2009 12:22	RLK	WTD
4	ANALYZ	W1	WET	09-SEP-2009 13:09	CPD	RLK
5	STORE	WET	A1	10-SEP-2009 08:25	RLK	CPD

Samplenum **Container ID** **Products**
L09090170-03 613637 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	09-SEP-2009 11:07	ERE	
2	ANALYZ	W1	SEM	09-SEP-2009 11:14	WTD	RLK
3	ANALYZ	SEM	W1	09-SEP-2009 12:22	RLK	WTD
4	ANALYZ	W1	WET	09-SEP-2009 13:08	CPD	RLK
5	STORE	WET	A1	10-SEP-2009 08:25	RLK	CPD

Samplenum **Container ID** **Products**
L09090170-04 613638 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	09-SEP-2009 11:07	ERE	
2	ANALYZ	W1	SEM	09-SEP-2009 11:14	WTD	RLK
3	ANALYZ	SEM	W1	09-SEP-2009 12:22	RLK	WTD
4	ANALYZ	W1	WET	09-SEP-2009 13:09	CPD	RLK
5	STORE	WET	A1	10-SEP-2009 08:25	RLK	CPD

A1 - Sample Archive (COLD)

A2 - Sample Archive (AMBIENT)

F1 - Volatiles Freezer in Login

V1 - Volatiles Refrigerator in Login

W1 - Walkin Cooler in Login



Login: L09090170
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 10-SEP-2009

Samplenum **Container ID** **Products**
L09090170-05 613639 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	09-SEP-2009 11:07	ERE	
2	ANALYZ	W1	SEM	09-SEP-2009 11:14	WTD	RLK
3	ANALYZ	SEM	W1	09-SEP-2009 12:22	RLK	WTD
4	ANALYZ	W1	WET	09-SEP-2009 13:09	CPD	RLK
5	STORE	WET	A1	10-SEP-2009 08:25	RLK	CPD

Samplenum **Container ID** **Products**
L09090170-06 613640 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	09-SEP-2009 11:07	ERE	
2	ANALYZ	W1	SEM	09-SEP-2009 11:14	WTD	RLK
3	ANALYZ	SEM	W1	09-SEP-2009 12:22	RLK	WTD
4	ANALYZ	W1	WET	09-SEP-2009 13:09	CPD	RLK
5	STORE	WET	A1	10-SEP-2009 08:25	RLK	CPD

Samplenum **Container ID** **Products**
L09090170-07 613641 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	09-SEP-2009 11:07	ERE	
2	ANALYZ	W1	SEM	09-SEP-2009 11:14	WTD	RLK
3	ANALYZ	SEM	W1	09-SEP-2009 12:22	RLK	WTD
4	ANALYZ	W1	WET	09-SEP-2009 13:09	CPD	RLK
5	STORE	WET	A1	10-SEP-2009 08:25	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090223

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on September 16, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

The reported results are related only to the samples analyzed as received.

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

This report was certified on September 16, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 63 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090223
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090223

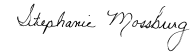
CHAIN OF CUSTODY: The chain of custody number was 082409-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 15-SEP-09



Laboratory Data Package Cover Page

00109109

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

September 14, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090223
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG311963
Reviewer Name: DEANNA I. HESSON
LRC Date: September 14, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109111

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090223
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG311963
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 14, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 Semivolatiles Data

2.1.1 Semivolatiles LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090223

Department: Semivolatiles - GC

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: There were no MS/MSD results associated with this sample delivery group, due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac recommends site specific MS/MSD samples to avoid possible data qualification.

SAMPLES

Samples: Samples 01, 02, 03 and 04 were run at a dilution to be within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090223

00109119

09/16/09 09:24

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWC1C	L09090223-01	6850	10000	11-SEP-09
04CSFL14(8)	L09090223-02	6850	10000	11-SEP-09
04CSFL11RE(13)	L09090223-03	6850	1000	11-SEP-09
04CSFL10(13)	L09090223-04	6850	1000	11-SEP-09



Report Number: **L09090223**Report Date : **September 16, 2009**

00109120

Sample Number: **L09090223-01**
Client ID: **04CSWC1C**
Matrix: **Soil**
Workgroup Number: **WG311953**
Collect Date: **09/10/2009 14:45**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/11/2009 14:31**
Cal Date: **08/26/2009 12:56**
Run Date: **09/11/2009 17:52**
File ID: **1LM.LM00727**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	262000		19600	9810

Report Number: **L09090223**Report Date : **September 16, 2009**

00109121

Sample Number: **L09090223-02**
Client ID: **04CSFL14(8)**
Matrix: **Soil**
Workgroup Number: **WG311953**
Collect Date: **09/10/2009 14:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/11/2009 14:31**
Cal Date: **08/26/2009 12:56**
Run Date: **09/11/2009 18:07**
File ID: **1LM.LM00728**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	218000		20200	10100

Report Number: **L09090223**Report Date : **September 16, 2009**

00109122

Sample Number: **L09090223-03**
Client ID: **04CSFL11RE(13)**
Matrix: **Soil**
Workgroup Number: **WG311953**
Collect Date: **09/10/2009 14:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/11/2009 14:31**
Cal Date: **08/26/2009 12:56**
Run Date: **09/11/2009 16:41**
File ID: **1LM.LM00722**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	11900		1820	909

Report Number: **L09090223**Report Date : **September 16, 2009****00109123**

Sample Number: **L09090223-04**
Client ID: **04CSFL10(13)**
Matrix: **Soil**
Workgroup Number: **WG311953**
Collect Date: **09/10/2009 14:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/11/2009 14:31**
Cal Date: **08/26/2009 12:56**
Run Date: **09/11/2009 16:55**
File ID: **1LM.LM00723**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	4890		1990	996

2.1.1.2 QC Summary Data

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

$$RF = [(Ax) (Cis)] / [(Ais) (Cx)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured:	1261197
Cis = Concentration of the specific internal standard (ug/mL)	40
Ais = Area of the characteristic ion of the specific internal standard	608044
Cx = Concentration of the compound in the standard being measured (ug/mL)	50
RF = Calculated Response Factor	1.65935

2.0 Calculating the concentration (C) of a compound in water using the data from the prep log and quantitation report: *

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Vi)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Vi = Initial volume of sample extracted from prep log (mL)	1021
Cx = Concentration of the compound in the sample being measured (ug/mL)	0.016947
Cx = Concentration of the compound in the sample being measured (ug/L)	16.947

3.0 Calculating the concentration (C) of a compound in soil using the data from the prep log and quantitation report: *

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Wi)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Wi = Initial weight of sample extracted (g) from prep log	30
Cx = Concentration of the compound in the sample being measured (ug/g)	0.576763
Cx = Concentration of the compound in the sample being measured (ug/kg)	576.7627

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	1153.525 ug/kg

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression**Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

$$x = (y - b)/m = [(0.02139 - (-0.0435))/0.0783] = 0.829$$

Step 4: Solve for analyte concentration Cx

$$Cx = Cis (x) = (25.0)(0.829) = 20.72 \text{ ug/L}$$

Example Spreadsheet Calculation:

Slope from curve, m:	0.0783
Intercept from curve, b:	-0.0435
Area of analyte, Ax:	16790
Area of Internal Standard, Ais:	784484
Concentration of IS, Cis	25.00 ug/L
Response Ratio (y) :	0.021403
Amount Ratio:	0.828897
Concentration (Cx):	20.72241 ug/L

5.0 Concentration from Quadratic Regression**Step 1 - Retrieve Curve Data from Plot, $y = Ax^2 + Bx + C$**

Where:

$$Ax^2 + Bx + (C - y) = 0$$

A, B, C = constants from the ICAL quadratic regression

y = Response ratio = Area of analyte/Area of internal standard (IS)

x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

$$y = Ax/Ais$$

Step 3: Solve for x using the quadratic formula

$$Ax^2 + Bx + C - y = 0$$

$$x = \frac{b \pm \sqrt{b^2 - 4a(c - y)}}{2a} \quad (\text{Two possible solutions})$$

Step 4: Solve for analyte concentration Cx

$$Cx = (Cis)(\text{Amount ratio})$$

Example Spreadsheet Calculation:

Value of A from plot:	0.0259
Value of B from plot:	0.0596
Value of C from plot:	-0.0165
Area of analyte from quantitation report:	203233
Area of IS from quantitation report:	1425653
Response ratio, y:	0.142554
C - y:	-0.15905
Root 1 - Computed amount ratio, X1:	-3.88278
Root 2 - Computed amount ratio, X2:	1.581623 use this solution
Concentration of IS, Cis:	40.00
Concentration of analyte, Cx:	63.26 ug/L

Microbac Laboratories Inc.
Instrument Run Log

00109127

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

Page: 1

Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109128

Instrument: LCMS1 Dataset: 091109_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30125

Workgroups: 311953 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00713	WG311949-01 CCB	1	1		09/11/09 14:31
2	1LM.LM00714	WG311949-02 CCV 1.0ug/L	1	1	STD35234	09/11/09 14:45
3	1LM.LM00715	WG311953-05 QCMRL 0.2ug/L	7	1	STD35234	09/11/09 15:00
4	1LM.LM00716	WG311953-01 MCT ICS 2.0ug/kg	7	1	STD35235	09/11/09 15:14
5	1LM.LM00717	WG311953-02 MET BLK	7	1		09/11/09 15:29
6	1LM.LM00718	WG311953-03 LCS 2.0ug/kg	7	1	STD35235	09/11/09 15:43
7	1LM.LM00719	WG311953-04 LCSD 2.0ug/kg	7	1	STD35235	09/11/09 15:57
8	1LM.LM00720	L09090223-01 A 1000X	7	1000		09/11/09 16:12
9	1LM.LM00721	L09090223-02 A 1000X	7	1000		09/11/09 16:26
10	1LM.LM00722	L09090223-03 A 1000X	7	1000		09/11/09 16:41
11	1LM.LM00723	L09090223-04 A 1000X	7	1000		09/11/09 16:55
12	1LM.LM00724	WG311949-03 CCV 1.0ug/L	1	1	STD35234	09/11/09 17:09
13	1LM.LM00725	WG311953-06 QCMRL 0.2ug/L	7	1	STD35234	09/11/09 17:24
14	1LM.LM00726	WG311949-04 CCB	1	1		09/11/09 17:38
15	1LM.LM00727	L09090223-01 A 10000X	7	10000		09/11/09 17:52
16	1LM.LM00728	L09090223-02 A 10000X	7	10000		09/11/09 18:07
17	1LM.LM00729	WG311949-05 CCV 1.0ug/L	1	1	STD35234	09/11/09 18:21
18	1LM.LM00730	WG311953-07 QCMRL 0.2ug/L	7	1	STD35234	09/11/09 18:36
19	1LM.LM00731	WG311949-06 CCB	1	1		09/11/09 18:50

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X	10000	Over Calibration Range	Perchlorate
9	X	10000	Over Calibration Range	Perchlorate




Microbac Laboratories Inc.

00109129

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1


Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009



CHECKLIST1 - Modified 03/05/2008

Generated: AUG-28-2009 08:33:35



Microbac Laboratories Inc.

00109130

Data Checklist

Date: 11-SEP-2009
 Analyst: WTD
 Analyst: NA
 Method: 6850
 Instrument: LCMS1
 Curve Workgroup: NA
 Runlog ID: 30095
 Analytical Workgroups: 311953

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
14-SEP-2009

CHECKLIST1 - Modified 03/05/2008

Generated: SEP-14-2009 07:52:19



Analytical Method:6850
Login Number:L09090223

AAB#:WG311953

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSWC1C	01	09/10/09					09/11/09	1	28		09/11/09	.1	28	
04CSFL14(8)	02	09/10/09					09/11/09	1	28		09/11/09	.2	28	
04CSFL11RE(13)	03	09/10/09					09/11/09	1	28		09/11/09	.1	28	
04CSFL10(13)	04	09/10/09					09/11/09	1	28		09/11/09	.1	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

Login Number: L09090223
Blank File ID: 1LM.LM00717
Prep Date: 09/11/09 14:31
Analyzed Date: 09/11/09 15:29
Analyst: WTD

Work Group: WG311953
Blank Sample ID: WG311953-02
Instrument ID: LCMS1
Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG311953-05	1LM.LM00715	09/11/09 15:00	01
MCT	WG311953-01	1LM.LM00716	09/11/09 15:14	01
LCS	WG311953-03	1LM.LM00718	09/11/09 15:43	01
LCS2	WG311953-04	1LM.LM00719	09/11/09 15:57	01
04CSFL11RE(13)	L09090223-03	1LM.LM00722	09/11/09 16:41	DL01
04CSFL10(13)	L09090223-04	1LM.LM00723	09/11/09 16:55	DL01
QCMRL	WG311953-06	1LM.LM00725	09/11/09 17:24	01
04CSWC1C	L09090223-01	1LM.LM00727	09/11/09 17:52	DL01
04CSFL14(8)	L09090223-02	1LM.LM00728	09/11/09 18:07	DL01
QCMRL	WG311953-07	1LM.LM00730	09/11/09 18:36	01

Login Number: L09090223 Prep Date: 09/11/09 14:31 Sample ID: WG311953-02
Instrument ID: LCMS1 Run Date: 09/11/09 15:29 Prep Method: 6850
File ID: 1LM.LM00717 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311953 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.994	1.99	0.994	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1488688

14-SEP-2009 08:12



00109134

Login Number: L09090223 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG311953 Units: ug/kg
QC Key: STD Lot #: STD35234
Sample ID: WG311953-03 LCS File ID: 1LM.LM00718 Run Date: 09/11/2009 15:43
Sample ID: WG311953-04 LCS2 File ID: 1LM.LM00719 Run Date: 09/11/2009 15:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.96	2.10	107	1.94	1.92	99.0	8.89	80 - 120	15	



Conductivity Probe
Calibration Check:
1412 /1410 $\mu\text{S}/\text{cm}$

Perchlorate Conductivity Check

Working MCT Level:
10,000 $\mu\text{s/cm}$

[illegible]

Wade E. Kelly
Analyst

9-11-09 / 17:10
Date/Time

DCN#80717



00109136

Login Number: L09090223
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109137

Login Number: L09090223
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366

INT_CAL - Modified 03/06/2008
PDF File ID: 1488694
Report generated 09/14/2009 08:12



00109138

Login Number: L09090223
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393

INT_CAL - Modified 03/06/2008
PDF File ID: 1488694
Report generated 09/14/2009 08:12



00109139

Login Number: L09090223
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484



Login Number: L09090223 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

00109141

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311949-01
Instrument ID: LCMS1 Run Time: 14:31 Method: 6850
File ID: 1LM.LM00713 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311953 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109142

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311949-04
Instrument ID: LCMS1 Run Time: 17:38 Method: 6850
File ID: 1LM.LM00726 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311953 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109143

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311949-06
Instrument ID: LCMS1 Run Time: 18:50 Method: 6850
File ID: 1LM.LM00731 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311953 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109144

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311949-02
Instrument ID: LCMS1 Run Time: 14:45 Method: 6850
File ID: 1LM.LM00714 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311953 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.993	ug/L	1.43	0.700	10	

* Exceeds %D Criteria



00109145

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311949-03
Instrument ID: LCMS1 Run Time: 17:09 Method: 6850
File ID: 1LM.LM00724 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311953 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.973	ug/L	1.40	2.70	10	

* Exceeds %D Criteria



00109146

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311949-05
Instrument ID: LCMS1 Run Time: 18:21 Method: 6850
File ID: 1LM.LM00729 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311953 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.985	ug/L	1.42	1.50	10	

* Exceeds %D Criteria



Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311953-05
Instrument ID: LCMS1 Run Time: 15:00 Prep Method: 6850
File ID: 1LM.LM00715 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311953 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.05	103	70 - 130	

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311953-06
Instrument ID: LCMS1 Run Time: 17:24 Prep Method: 6850
File ID: 1LM.LM00725 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311953 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.10	105	70 - 130	

Login Number: L09090223 Run Date: 09/11/2009 Sample ID: WG311953-07
Instrument ID: LCMS1 Run Time: 18:36 Prep Method: 6850
File ID: 1LM.LM00730 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311953 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.00	100	70 - 130	

Login Number: L09090223
Instrument ID: LCMS1
Workgroup (AAB#): WG311953

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090223-01	10000	DL01	243000
L09090223-02	10000	DL01	243000
L09090223-03	1000	DL01	222000
L09090223-04	1000	DL01	245000
WG311953-02	1.00	01	228000
WG311953-03	1.00	01	237000
WG311953-04	1.00	01	258000

IS-1 - 018LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090223

00109154

09/16/09 09:24

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWC1C	L09090223-01	D2216-90	1	11-SEP-09
04CSFL14(8)	L09090223-02	D2216-90	1	11-SEP-09
04CSFL11RE(13)	L09090223-03	D2216-90	1	11-SEP-09
04CSFL10(13)	L09090223-04	D2216-90	1	11-SEP-09



Report Number: L09090223

Report Date : September 16, 2009

00109155

Sample Number: L09090223-01
Client ID: 04CSWC1C
Matrix: Soil
Workgroup Number: WG311963
Collect Date: 09/10/2009 14:45
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/14/2009 08:43
Cal Date:
Run Date: 09/14/2009 08:43
File ID: B1.311963-0101

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	85.7		1.00	1.00

1 of 4



Report Number: L09090223

Report Date : September 16, 2009

00109156

Sample Number: L09090223-02
Client ID: 04CSFL14(8)
Matrix: Soil
Workgroup Number: WG311963
Collect Date: 09/10/2009 14:40
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/14/2009 08:43
Cal Date:
Run Date: 09/14/2009 08:43
File ID: B1.311963-0102

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	79.2		1.00	1.00

Report Number: L09090223

Report Date : September 16, 2009

00109157

Sample Number: L09090223-03
Client ID: 04CSFL11RE(13)
Matrix: Soil
Workgroup Number: WG311963
Collect Date: 09/10/2009 14:35
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/14/2009 08:43
Cal Date:
Run Date: 09/14/2009 08:43
File ID: B1.311963-0103

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	75.5		1.00	1.00

Report Number: L09090223

Report Date : September 16, 2009

00109158

Sample Number: L09090223-04
Client ID: 04CSFL10(13)
Matrix: Soil
Workgroup Number: WG311963
Collect Date: 09/10/2009 14:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/14/2009 08:43
Cal Date:
Run Date: 09/14/2009 08:43
File ID: B1.311963-0104

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	69.3		1.00	1.00

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#): WG311963Analyst: CPDADT(on): 09/11/2009 13:04Method: D2216-90Instrument: BAL001ADT(off): 09/14/2009 08:43SOP: K0003 Rev: 9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090223-01	1.27	18.57	16.1			85.72	
L09090223-02	1.28	15.65	12.66			79.19	
L09090223-03	1.31	31.35	24			75.53	
L09090223-04	1.3	17.37	12.43			69.26	
WG311963-01	1.27	18.57	16.1			85.72	14.28
WG311963-02	1.28	17.66	15.47			86.63	13.37

Analyst: *Leanne Davis*

3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

September 16, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

[illegible]

COOLER INSPECTION



Received: 09/11/2009 09:30
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L09090223

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014032	H	2.0	A5606683328	082409-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090223
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 14-SEP-2009

Samplenum **Container ID** **Products**
L09090223-01 614012 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-SEP-2009 10:56	RLK	
2	ANALYZ	W1	SEM	11-SEP-2009 11:01	WTD	RLK
3	ANALYZ	SEM	W1	11-SEP-2009 12:02	RLK	WTD
4	ANALYZ	W1	WET	11-SEP-2009 13:34	CPD	RLK
5	STORE	WET	A1	15-SEP-2009 08:59	RLK	CPD

Samplenum **Container ID** **Products**
L09090223-02 614013 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-SEP-2009 10:56	RLK	
2	ANALYZ	W1	SEM	11-SEP-2009 11:01	WTD	RLK
3	ANALYZ	SEM	W1	11-SEP-2009 12:02	RLK	WTD
4	ANALYZ	W1	WET	11-SEP-2009 13:34	CPD	RLK
5	STORE	WET	A1	15-SEP-2009 08:59	RLK	CPD

Samplenum **Container ID** **Products**
L09090223-03 614014 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-SEP-2009 10:56	RLK	
2	ANALYZ	W1	SEM	11-SEP-2009 11:01	WTD	RLK
3	ANALYZ	SEM	W1	11-SEP-2009 12:02	RLK	WTD
4	ANALYZ	W1	WET	11-SEP-2009 13:34	CPD	RLK
5	STORE	WET	A1	15-SEP-2009 08:59	RLK	CPD

Samplenum **Container ID** **Products**
L09090223-04 614015 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-SEP-2009 10:56	RLK	
2	ANALYZ	W1	SEM	11-SEP-2009 11:01	WTD	RLK
3	ANALYZ	SEM	W1	11-SEP-2009 12:02	RLK	WTD
4	ANALYZ	W1	WET	11-SEP-2009 13:34	CPD	RLK
5	STORE	WET	A1	15-SEP-2009 08:59	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090257

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on September 16, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

The reported results are related only to the samples analyzed as received.

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

This report was certified on September 16, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 85 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

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Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

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LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090257
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090257

CHAIN OF CUSTODY: The chain of custody number was 090309-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 0 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 15-SEP-09



Laboratory Data Package Cover Page

00109172

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

September 14, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090257
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG311984
Reviewer Name: DEANNA I. HESSON
LRC Date: September 14, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109174

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090257
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG311984
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 14, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 Semivolatiles Data

2.1.1 Semivolatiles LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090257

Department: Semivolatiles - GC

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: There were no MS/MSD results associated with this sample delivery group, due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac recommends site specific MS/MSD samples to avoid possible data qualification.

SAMPLES

Samples: Samples 01-13 were run at a dilution to be within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090257

00109182

09/16/09 09:24

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL05RE (13)	L09090257-01	6850	1000	12-SEP-09
04CSFL02RE (7)	L09090257-02	6850	1000	12-SEP-09
04CSFL09RE (13)	L09090257-03	6850	1000	12-SEP-09
04CSWCDRE (4)L	L09090257-04	6850	1000	12-SEP-09
04CSFL13 (8)	L09090257-05	6850	1000	12-SEP-09
04CSWCDRE (19)U	L09090257-06	6850	10	12-SEP-09
04CSFL07RE (11)	L09090257-07	6850	1000	12-SEP-09
04CSWD1E	L09090257-08	6850	1000	12-SEP-09
04CSWD1EQC	L09090257-09	6850	1000	12-SEP-09
04CSWEF3	L09090257-10	6850	100	12-SEP-09
04CSFL12RE (13)	L09090257-11	6850	1000	12-SEP-09
04CSWR1H	L09090257-12	6850	1000	12-SEP-09
04CSWFR1	L09090257-13	6850	1000	12-SEP-09



Report Number: **L09090257**Report Date : **September 16, 2009**

00109183

Sample Number: **L09090257-01**
Client ID: **04CSFL05RE (13)**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 13:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 15:41**
File ID: **1LM.LM00739**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	7990		1850	926

Report Number: **L09090257**Report Date : **September 16, 2009**

00109184

Sample Number: **L09090257-02**
Client ID: **04CSFL02RE (7)**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 13:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 15:55**
File ID: **1LM.LM00740**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	2210		1970	985

Report Number: L09090257

Report Date : September 16, 2009

00109185

Sample Number: L09090257-03
Client ID: 04CSFL09RE (13)
Matrix: Soil
Workgroup Number: WG311982
Collect Date: 09/11/2009 13:25
Sample Tag: DL01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 1000
Units: ug/kg

Instrument: LCMS1
Prep Date: 09/12/2009 14:00
Cal Date: 08/26/2009 11:59
Run Date: 09/12/2009 16:09
File ID: 1LM.LM00741

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	17400		1930	963

Report Number: L09090257

Report Date : September 16, 2009

00109186

Sample Number: L09090257-04
Client ID: 04CSWCDRE (4)L
Matrix: Soil
Workgroup Number: WG311982
Collect Date: 09/11/2009 13:10
Sample Tag: DL01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 1000
Units: ug/kg

Instrument: LCMS1
Prep Date: 09/12/2009 14:00
Cal Date: 08/26/2009 11:59
Run Date: 09/12/2009 16:24
File ID: 1LM.LM00742

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	52700		1760	881

Report Number: **L09090257**Report Date : **September 16, 2009****00109187**

Sample Number: **L09090257-05**
Client ID: **04CSFL13 (8)**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 13:15**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/12/2009 16:38**
File ID: **1LM.LM00743**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	24900		1990	997

Report Number: **L09090257**Report Date : **September 16, 2009**

00109188

Sample Number: **L09090257-06**
Client ID: **04CSWCDRE (19)U**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 13:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 19:31**
File ID: **1LM.LM00755**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	87.0		19.4	9.71

Report Number: **L09090257**Report Date : **September 16, 2009**

00109189

Sample Number: **L09090257-07**
Client ID: **04CSFL07RE (11)**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 12:25**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/12/2009 17:50**
File ID: **1LM.LM00748**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	8700		1920	962

Report Number: **L09090257**Report Date : **September 16, 2009**

00109190

Sample Number: **L09090257-08**
Client ID: **04CSWD1E**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 12:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 18:04**
File ID: **1LM.LM00749**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	30300		1890	943

Report Number: **L09090257**Report Date : **September 16, 2009**

00109191

Sample Number: **L09090257-09**
Client ID: **04CSWD1EQC**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 12:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 18:19**
File ID: **1LM.LM00750**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	29100		1830	913

Report Number: **L09090257**Report Date : **September 16, 2009**

00109192

Sample Number: **L09090257-10**
Client ID: **04CSWEF3**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 12:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **100**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/12/2009 19:45**
File ID: **1LM.LM00756**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	1300		184	92.1

Report Number: **L09090257**Report Date : **September 16, 2009**

00109193

Sample Number: **L09090257-11**
Client ID: **04CSFL12RE (13)**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 12:50**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 18:47**
File ID: **1LM.LM00752**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	3030		1910	955

Report Number: **L09090257**Report Date : **September 16, 2009**

00109194

Sample Number: **L09090257-12**
Client ID: **04CSWR1H**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 12:55**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 19:02**
File ID: **1LM.LM00753**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	15400		2020	1010

12 of 13



Report Number: **L09090257**Report Date : **September 16, 2009**

00109195

Sample Number: **L09090257-13**
Client ID: **04CSWFR1**
Matrix: **Soil**
Workgroup Number: **WG311982**
Collect Date: **09/11/2009 12:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/12/2009 14:00**
Cal Date: **08/26/2009 11:59**
Run Date: **09/12/2009 19:16**
File ID: **1LM.LM00754**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	2660		1970	983

13 of 13



2.1.1.2 QC Summary Data

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

$$RF = [(Ax) (Cis)] / [(Ais) (Cx)]$$

where:

Ax = Area of the characteristic ion for the compound being measured:	1261197
Cis = Concentration of the specific internal standard (ug/mL)	40
Ais = Area of the characteristic ion of the specific internal standard	608044
Cx = Concentration of the compound in the standard being measured (ug/mL)	50
RF = Calculated Response Factor	1.65935

Example**2.0 Calculating the concentration (C) of a compound in water using the data from the prep log and quantitation report: ***

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Vi)]$$

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Vi = Initial volume of sample extracted from prep log (mL)	1021
Cx = Concentration of the compound in the sample being measured (ug/mL)	0.016947
Cx = Concentration of the compound in the sample being measured (ug/L)	16.947

Example**3.0 Calculating the concentration (C) of a compound in soil using the data from the prep log and quantitation report: ***

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Wi)]$$

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Wi = Initial weight of sample extracted (g) from prep log	30
Cx = Concentration of the compound in the sample being measured (ug/g)	0.576763
Cx = Concentration of the compound in the sample being measured (ug/kg)	576.7627

Example

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	1153.525 ug/kg

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression**Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

$$x = (y - b)/m = [(0.02139 - (-0.0435))/0.0783] = 0.829$$

Step 4: Solve for analyte concentration Cx

$$Cx = Cis (x) = (25.0)(0.829) = 20.72 \text{ ug/L}$$

Example Spreadsheet Calculation:

Slope from curve, m:	0.0783
Intercept from curve, b:	-0.0435
Area of analyte, Ax:	16790
Area of Internal Standard, Ais:	784484
Concentration of IS, Cis	25.00 ug/L
Response Ratio (y) :	0.021403
Amount Ratio:	0.828897
Concentration (Cx):	20.72241 ug/L

5.0 Concentration from Quadratic Regression**Step 1 - Retrieve Curve Data from Plot, $y = Ax^2 + Bx + C$**

Where:

$$Ax^2 + Bx + (C - y) = 0$$

A, B, C = constants from the ICAL quadratic regression

y = Response ratio = Area of analyte/Area of internal standard (IS)

x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

$$y = Ax/Ais$$

Step 3: Solve for x using the quadratic formula

$$Ax^2 + Bx + C - y = 0$$

$$x = \frac{b \pm \sqrt{b^2 - 4a(c - y)}}{2a} \quad (\text{Two possible solutions})$$

Step 4: Solve for analyte concentration Cx

$$Cx = (Cis)(\text{Amount ratio})$$

Example Spreadsheet Calculation:

Value of A from plot:	0.0259
Value of B from plot:	0.0596
Value of C from plot:	-0.0165
Area of analyte from quantitation report:	203233
Area of IS from quantitation report:	1425653
Response ratio, y:	0.142554
C - y:	-0.15905
Root 1 - Computed amount ratio, X1:	-3.88278
Root 2 - Computed amount ratio, X2:	1.581623 use this solution
Concentration of IS, Cis:	40.00
Concentration of analyte, Cx:	63.26 ug/L

Microbac Laboratories Inc.
Instrument Run Log

00109199

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

Page: 1

Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109200

Instrument: LCMS1 Dataset: 091209_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30126

Workgroups: 311982 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00732	WG311983-01 CCB	1	1		09/12/09 14:00
2	1LM.LM00733	WG311983-02 CCV 1.0ug/L	1	1	STD35234	09/12/09 14:15
3	1LM.LM00734	WG311982-05 QCMRL 0.2ug/L	7	1	STD35234	09/12/09 14:29
4	1LM.LM00735	WG311982-01 MCT/ICS 2.0ug/kg	7	1	STD35235	09/12/09 14:43
5	1LM.LM00736	WG311982-02 MET BLK	7	1		09/12/09 14:58
6	1LM.LM00737	WG311982-03 LCS 2.0ug/kg	7	1	STD35235	09/12/09 15:12
7	1LM.LM00738	WG311982-04 LCSD 2.0ug/kg	7	1	STD35235	09/12/09 15:26
8	1LM.LM00739	L09090257-01 A 1000X	7	1000		09/12/09 15:41
9	1LM.LM00740	L09090257-02 A 1000X	7	1000		09/12/09 15:55
10	1LM.LM00741	L09090257-03 A 1000X	7	1000		09/12/09 16:09
11	1LM.LM00742	L09090257-04 A 1000X	7	1000		09/12/09 16:24
12	1LM.LM00743	L09090257-05 A 1000X	7	1000		09/12/09 16:38
13	1LM.LM00744	L09090257-06 A 1000X	7	1000		09/12/09 16:53
14	1LM.LM00745	WG311983-03 CCV 1.0 ug/L	1	1	STD35234	09/12/09 17:07
15	1LM.LM00746	WG311982-06 QCMRL 0.2ug/L	7	1	STD35234	09/12/09 17:21
16	1LM.LM00747	WG311983-04 CCB	1	1		09/12/09 17:36
17	1LM.LM00748	L09090257-07 A 1000X	7	1000		09/12/09 17:50
18	1LM.LM00749	L09090257-08 A 1000X	7	1000		09/12/09 18:04
19	1LM.LM00750	L09090257-09 A 1000X	7	1000		09/12/09 18:19
20	1LM.LM00751	L09090257-10 A 1000X	7	1000		09/12/09 18:33
21	1LM.LM00752	L09090257-11 A 1000X	7	1000		09/12/09 18:47
22	1LM.LM00753	L09090257-12 A 1000X	7	1000		09/12/09 19:02
23	1LM.LM00754	L09090257-13 A 1000X	7	1000		09/12/09 19:16
24	1LM.LM00755	L09090257-06 A 10X	7	10		09/12/09 19:31
25	1LM.LM00756	L09090257-10 A 100X	7	100		09/12/09 19:45
26	1LM.LM00757	WG311983-05 CCV 1.0ug/L	1	1	STD35234	09/12/09 19:59
27	1LM.LM00758	WG311982-07 QCMRL 0.2ug/L	7	1	STD35234	09/12/09 20:14
28	1LM.LM00759	WG311983-06 CCB	1	1		09/12/09 20:28

Comments

Seq.	Rerun	Dil.	Reason	Analytes
13	X	10	Analyzed too dilute	
20	X	100	Analyzed too dilute	

Page: 1

Approved: 14-SEP-09




Microbac Laboratories Inc.

00109201

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009

CHECKLIST1 - Modified 03/05/2008

Generated: AUG-28-2009 08:33:35



Microbac Laboratories Inc.

00109202

Data Checklist

Date: 12-SEP-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 30096

Analytical Workgroups: 311982

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
14-SEP-2009

CHECKLIST1 - Modified 03/05/2008

Generated: SEP-14-2009 08:40:12



Analytical Method:6850

AAB#:WG311982

Login Number:L09090257

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSFL05RE (13)	01	09/11/09					09/12/09	1	28		09/12/09	.1	28	
04CSFL02RE (7)	02	09/11/09					09/12/09	1	28		09/12/09	.1	28	
04CSFL09RE (13)	03	09/11/09					09/12/09	1	28		09/12/09	.1	28	
04CSWCDRE (4)L	04	09/11/09					09/12/09	1	28		09/12/09	.1	28	
04CSFL13 (8)	05	09/11/09					09/12/09	1	28		09/12/09	.1	28	
04CSWCDRE (19)U	06	09/11/09					09/12/09	1	28		09/12/09	.2	28	
04CSFL07RE (11)	07	09/11/09					09/12/09	1.1	28		09/12/09	.2	28	
04CSWD1E	08	09/11/09					09/12/09	1.1	28		09/12/09	.2	28	
04CSWD1EQC	09	09/11/09					09/12/09	1.1	28		09/12/09	.2	28	
04CSWEF3	10	09/11/09					09/12/09	1.1	28		09/12/09	.2	28	
04CSFL12RE (13)	11	09/11/09					09/12/09	1	28		09/12/09	.2	28	
04CSWR1H	12	09/11/09					09/12/09	1	28		09/12/09	.2	28	
04CSWFR1	13	09/11/09					09/12/09	1.1	28		09/12/09	.2	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109204

Login Number: L09090257
 Blank File ID: 1LM.LM00736
 Prep Date: 09/12/09 14:00
 Analyzed Date: 09/12/09 14:58
 Analyst: WTD

Work Group: WG311982
 Blank Sample ID: WG311982-02
 Instrument ID: LCMS1
 Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG311982-05	1LM.LM00734	09/12/09 14:29	01
MCT	WG311982-01	1LM.LM00735	09/12/09 14:43	01
LCS	WG311982-03	1LM.LM00737	09/12/09 15:12	01
LCS2	WG311982-04	1LM.LM00738	09/12/09 15:26	01
04CSFL05RE (13)	L09090257-01	1LM.LM00739	09/12/09 15:41	DL01
04CSFL02RE (7)	L09090257-02	1LM.LM00740	09/12/09 15:55	DL01
04CSFL09RE (13)	L09090257-03	1LM.LM00741	09/12/09 16:09	DL01
04CSWCDRE (4)L	L09090257-04	1LM.LM00742	09/12/09 16:24	DL01
04CSFL13 (8)	L09090257-05	1LM.LM00743	09/12/09 16:38	DL01
QCMRL	WG311982-06	1LM.LM00746	09/12/09 17:21	01
04CSFL07RE (11)	L09090257-07	1LM.LM00748	09/12/09 17:50	DL01
04CSWD1E	L09090257-08	1LM.LM00749	09/12/09 18:04	DL01
04CSWD1EQC	L09090257-09	1LM.LM00750	09/12/09 18:19	DL01
04CSFL12RE (13)	L09090257-11	1LM.LM00752	09/12/09 18:47	DL01
04CSWR1H	L09090257-12	1LM.LM00753	09/12/09 19:02	DL01
04CSWFR1	L09090257-13	1LM.LM00754	09/12/09 19:16	DL01
04CSWCDRE (19)U	L09090257-06	1LM.LM00755	09/12/09 19:31	DL01
04CSWEF3	L09090257-10	1LM.LM00756	09/12/09 19:45	DL01
QCMRL	WG311982-07	1LM.LM00758	09/12/09 20:14	01

Report Name: BLANK_SUMMARY
 PDF File ID: 1488697
 Report generated 09/14/2009 09:35



Login Number: L09090257 Prep Date: 09/12/09 14:00 Sample ID: WG311982-02
Instrument ID: LCMS1 Run Date: 09/12/09 14:58 Prep Method: 6850
File ID: 1LM.LM00736 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311982 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.969	1.94	0.969	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1488698

14-SEP-2009 09:36



Login Number: L09090257 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG311982 Units: ug/kg
QC Key: STD Lot #: STD35234
Sample ID: WG311982-03 LCS File ID: 1LM.LM00737 Run Date: 09/12/2009 15:12
Sample ID: WG311982-04 LCS2 File ID: 1LM.LM00738 Run Date: 09/12/2009 15:26

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.93	1.96	102	1.96	1.94	99.0	0.997	80 - 120	15	

Conductivity Probe
Calibration Check:
14/05 /1410 $\mu\text{S}/\text{cm}$

Perchlorate Conductivity Check

Working MCT Level:
10,000 $\mu\text{S}/\text{cm}$

Sample	Conductivity ($\mu\text{S}/\text{cm}$)	Pretreatment or Dilution Needed
mct/Ics	10,120	
Blk	6.3	
LCS	6.7	
LESA	11.1	
L09090257-01	47.1	
-02	33.6	
-03	59.9	
-04	58.3	
-05	36.8	
-06	32.2	
-07	18.7	
-08	22.7	
-09	26.3	
-10	16.4	
-11	131.8	
-12	52.2	
-13	26.9	

Wadei. Doly
Analyst

9-12-09 / 17:35
Date/Time

DCN#80718



00109208

Login Number: L09090257
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109209

Login Number: L09090257
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366

INT_CAL - Modified 03/06/2008
PDF File ID: 1488775
Report generated 09/14/2009 09:37



00109210

Login Number: L09090257
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393

INT_CAL - Modified 03/06/2008
PDF File ID: 1488775
Report generated 09/14/2009 09:37



00109211

Login Number: L09090257
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00109212

Login Number: L09090257 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1488776
Report generated 09/14/2009 09:37



00109213

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311983-01
Instrument ID: LCMS1 Run Time: 14:00 Method: 6850
File ID: 1LM.LM00732 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311982 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109214

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311983-04
Instrument ID: LCMS1 Run Time: 17:36 Method: 6850
File ID: 1LM.LM00747 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311982 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109215

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311983-06
Instrument ID: LCMS1 Run Time: 20:28 Method: 6850
File ID: 1LM.LM00759 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311982 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109216

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311983-02
Instrument ID: LCMS1 Run Time: 14:15 Method: 6850
File ID: 1LM.LM00733 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311982 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.01	ug/L	1.46	1.00	10	

* Exceeds %D Criteria



00109217

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311983-03
Instrument ID: LCMS1 Run Time: 17:07 Method: 6850
File ID: 1LM.LM00745 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311982 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.984	ug/L	1.42	1.60	10	

* Exceeds %D Criteria



00109218

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311983-05
Instrument ID: LCMS1 Run Time: 19:59 Method: 6850
File ID: 1LM.LM00757 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311982 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.928	ug/L	1.34	7.20	10	

* Exceeds %D Criteria



Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311982-05
Instrument ID: LCMS1 Run Time: 14:29 Prep Method: 6850
File ID: 1LM.LM00734 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311982 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.21	111	70 - 130	

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311982-06
Instrument ID: LCMS1 Run Time: 17:21 Prep Method: 6850
File ID: 1LM.LM00746 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311982 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.10	105	70 - 130	

Login Number: L09090257 Run Date: 09/12/2009 Sample ID: WG311982-07
Instrument ID: LCMS1 Run Time: 20:14 Prep Method: 6850
File ID: 1LM.LM00758 Analyst: WTD Method: 6850
Workgroup (AAB#): WG311982 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.10	105	70 - 130	

Login Number: L09090257
Instrument ID: LCMS1
Workgroup (AAB#): WG311982

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090257-01	1000	DL01	230000
L09090257-02	1000	DL01	222000
L09090257-03	1000	DL01	208000
L09090257-04	1000	DL01	215000
L09090257-06	10.0	DL01	211000
L09090257-08	1000	DL01	209000
L09090257-09	1000	DL01	213000
L09090257-11	1000	DL01	218000
L09090257-12	1000	DL01	215000
L09090257-13	1000	DL01	211000
WG311982-02	1.00	01	229000
WG311982-03	1.00	01	234000
WG311982-04	1.00	01	229000

IS-1 - O18LP

Underline = Response outside limits

Login Number: L09090257
Instrument ID: LCMS1
Workgroup (AAB#): WG311982

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090257-05	1000	DL01	208000
L09090257-07	1000	DL01	218000
L09090257-10	100	DL01	216000

IS-1 - 018LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090257

00109227

09/16/09 09:24

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373-4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL05RE (13)	L09090257-01	D2216-90	1	12-SEP-09
04CSFL02RE (7)	L09090257-02	D2216-90	1	12-SEP-09
04CSFL09RE (13)	L09090257-03	D2216-90	1	12-SEP-09
04CSWCDRE (4)L	L09090257-04	D2216-90	1	12-SEP-09
04CSFL13 (8)	L09090257-05	D2216-90	1	12-SEP-09
04CSWCDRE (19)U	L09090257-06	D2216-90	1	12-SEP-09
04CSFL07RE (11)	L09090257-07	D2216-90	1	12-SEP-09
04CSWD1E	L09090257-08	D2216-90	1	12-SEP-09
04CSWD1EQC	L09090257-09	D2216-90	1	12-SEP-09
04CSWEF3	L09090257-10	D2216-90	1	12-SEP-09
04CSFL12RE (13)	L09090257-11	D2216-90	1	12-SEP-09
04CSWR1H	L09090257-12	D2216-90	1	12-SEP-09
04CSWFR1	L09090257-13	D2216-90	1	12-SEP-09



Report Number: L09090257

Report Date : September 16, 2009

00109228

Sample Number: L09090257-01
Client ID: 04CSFL05RE (13)
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 13:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0101

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	71.5		1.00	1.00

1 of 13



Report Number: L09090257

Report Date : September 16, 2009

00109229

Sample Number: L09090257-02
Client ID: 04CSFL02RE (7)
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 13:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0102

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.0		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109230

Sample Number: L09090257-03
Client ID: 04CSFL09RE (13)
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 13:25
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0103

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	70.2		1.00	1.00

3 of 13



Report Number: L09090257

Report Date : September 16, 2009

00109231

Sample Number: L09090257-04
Client ID: 04CSWCDRE (4)L
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 13:10
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0104

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	70.7		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109232

Sample Number: L09090257-05
Client ID: 04CSFL13 (8)
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 13:15
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0105

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	85.7		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109233

Sample Number: L09090257-06
Client ID: 04CSWCDRE (19)U
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 13:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0106

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	93.0		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109234

Sample Number: L09090257-07
Client ID: 04CSFL07RE (11)
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 12:25
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0107

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	73.7		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109235

Sample Number: L09090257-08
Client ID: 04CSWD1E
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 12:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0108

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.0		1.00	1.00

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Report Number: L09090257

Report Date : September 16, 2009

00109236

Sample Number: L09090257-09
Client ID: 04CSWD1EQC
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 12:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0109

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	70.1		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109237

Sample Number: L09090257-10
Client ID: 04CSWEF3
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 12:35
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0110

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	79.2		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109238

Sample Number: L09090257-11
Client ID: 04CSFL12RE (13)
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 12:50
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0111

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	76.0		1.00	1.00

Report Number: L09090257

Report Date : September 16, 2009

00109239

Sample Number: L09090257-12
Client ID: 04CSWR1H
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 12:55
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0112

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.3		1.00	1.00

12 of 13



Report Number: L09090257

Report Date : September 16, 2009

00109240

Sample Number: L09090257-13
Client ID: 04CSWFR1
Matrix: Soil
Workgroup Number: WG311984
Collect Date: 09/11/2009 12:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL014
Prep Date: 09/14/2009 08:36
Cal Date:
Run Date: 09/14/2009 08:36
File ID: B14.311984-0113

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.3		1.00	1.00

13 of 13



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

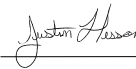
Workgroup (AAB#): WG311984
Method: D2216-90
SOP: K0003 Rev: 9

Analyst: JDH
Instrument: BAL014

ADT(on): 09/13/2009 12:41
ADT(off): 09/14/2009 08:36

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090257-01	1.29	34.86	25.29			71.49	
L09090257-02	1.29	19.85	16.51			82.00	
L09090257-03	1.3	26.89	19.26			70.18	
L09090257-04	1.29	41.57	29.75			70.66	
L09090257-05	1.28	20.64	17.88			85.74	
L09090257-06	1.29	18.11	16.93			92.98	
L09090257-07	1.29	19.71	14.86			73.67	
L09090257-08	1.29	20.56	17.09			81.99	
L09090257-09	1.28	42.75	30.34			70.07	
L09090257-10	1.29	24.18	19.42			79.20	
L09090257-11	1.3	30.98	23.87			76.04	
L09090257-12	1.3	35.01	29.03			82.26	
L09090257-13	1.3	23.83	20.07			83.31	
WG311984-01	1.3	23.83	20.07			83.31	16.69
WG311984-02	1.29	19.72	16.66			83.40	16.60

Analyst: _____



3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

September 16, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.





1000001674

COOLER INSPECTION



00109247

Received: 09/12/2009 10:00
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L09090257

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014041	H	0.0	A5606683471	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090257
Account: 2773
Project: 2773.025
Samples: 13
Due Date: 14-SEP-2009

Samplenum **Container ID** **Products**
L09090257-01 614171 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:59	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-02 614172 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-03 614173 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-04 614174 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



Login: L09090257

Account: 2773

Project: 2773.025

Samples: 13

Due Date: 14-SEP-2009

Samplenum **Container ID** **Products**
L09090257-05 614175 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-06 614176 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-07 614177 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-08 614178 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

A1 - Sample Archive (COLD)

A2 - Sample Archive (AMBIENT)

F1 - Volatiles Freezer in Login

V1 - Volatiles Refrigerator in Login

W1 - Walkin Cooler in Login



Login: L09090257

Account: 2773

Project: 2773.025

Samples: 13

Due Date: 14-SEP-2009

Samplenum **Container ID** **Products**
L09090257-09 614179 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:19	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:19	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:32	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-10 614180 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:18	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:20	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-11 614181 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:18	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:20	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

Samplenum **Container ID** **Products**
L09090257-12 614182 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:18	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:20	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

A1 - Sample Archive (COLD)

A2 - Sample Archive (AMBIENT)

F1 - Volatiles Freezer in Login

V1 - Volatiles Refrigerator in Login

W1 - Walkin Cooler in Login



Login: L09090257
Account: 2773
Project: 2773.025
Samples: 13
Due Date: 14-SEP-2009

Samplenum **Container ID** **Products**
L09090257-13 614183 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	12-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	12-SEP-2009 11:18	WTD	RLK
3	ANALYZ	SEM	W1	12-SEP-2009 12:20	RLK	WTD
4	ANALYZ	W1	WET	12-SEP-2009 12:31	JBK	RLK
5	STORE	WET	A1	15-SEP-2009 08:58	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090276

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on September 16, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

The reported results are related only to the samples analyzed as received.

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

This report was certified on September 16, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 63 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

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Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090276
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Laboratory Data Package Cover Page

00109256

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

September 16, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090276
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG312185
Reviewer Name: DEANNA I. HESSON
LRC Date: September 16, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090276
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG312185
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 16, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 Semivolatiles Data

2.1.1 Semivolatiles LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090276

Department: Semivolatiles - GC

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: There were no MS/MSD results associated with this sample delivery group, due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac recommends site specific MS/MSD samples to avoid possible data qualification.

SAMPLES

Samples: Samples 01, 02, 03, 04, 05 and 06 were run at a dilution to be within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090276

00109266

09/16/09 11:27

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04VLV0FFL(8)	L09090276-01	6850	1000	15-SEP-09
04VLV0FW-W	L09090276-02	6850	1000	15-SEP-09
04VLV0FW-E	L09090276-03	6850	1000	15-SEP-09
04VLV0FW-E-QC	L09090276-04	6850	1000	15-SEP-09
04VLV0FW-S	L09090276-05	6850	1000	15-SEP-09
04VLV0FW-N	L09090276-06	6850	1000	15-SEP-09



Report Number: **L09090276**Report Date : **September 16, 2009**

00109267

Sample Number: **L09090276-01**
Client ID: **04VLV0FFL(8)**
Matrix: **Soil**
Workgroup Number: **WG312153**
Collect Date: **09/12/2009 13:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/15/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/15/2009 14:59**
File ID: **1LM.LM00780**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	35100		1970	984

Report Number: **L09090276**Report Date : **September 16, 2009**

00109268

Sample Number: **L09090276-02**
Client ID: **04VLV0FW-W**
Matrix: **Soil**
Workgroup Number: **WG312153**
Collect Date: **09/12/2009 13:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/15/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/15/2009 15:13**
File ID: **1LM.LM00781**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	15400		1900	951

Report Number: **L09090276**Report Date : **September 16, 2009**

00109269

Sample Number: **L09090276-03**
Client ID: **04VLV0FW-E**
Matrix: **Soil**
Workgroup Number: **WG312153**
Collect Date: **09/12/2009 13:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/15/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/15/2009 15:28**
File ID: **1LM.LM00782**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	5430		1900	950

Report Number: **L09090276**Report Date : **September 16, 2009****00109270**

Sample Number: **L09090276-04**
Client ID: **04VLV0FW-E-QC**
Matrix: **Soil**
Workgroup Number: **WG312153**
Collect Date: **09/12/2009 13:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/15/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/15/2009 15:42**
File ID: **1LM.LM00783**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	5070		2030	1010

Report Number: **L09090276**Report Date : **September 16, 2009**

00109271

Sample Number: **L09090276-05**
Client ID: **04VLV0FW-S**
Matrix: **Soil**
Workgroup Number: **WG312153**
Collect Date: **09/12/2009 13:15**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/15/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/15/2009 15:56**
File ID: **1LM.LM00784**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	9250		1940	970

Report Number: **L09090276**Report Date : **September 16, 2009**

00109272

Sample Number: **L09090276-06**
Client ID: **04VLV0FW-N**
Matrix: **Soil**
Workgroup Number: **WG312153**
Collect Date: **09/12/2009 13:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/15/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/15/2009 16:11**
File ID: **1LM.LM00785**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	37600		1930	964

6 of 6



2.1.1.2 QC Summary Data

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

$$RF = [(Ax) (Cis)] / [(Ais) (Cx)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured:	1261197
Cis = Concentration of the specific internal standard (ug/mL)	40
Ais = Area of the characteristic ion of the specific internal standard	608044
Cx = Concentration of the compound in the standard being measured (ug/mL)	50
RF = Calculated Response Factor	1.65935

2.0 Calculating the concentration (C) of a compound in water using the data from the prep log and quantitation report: *

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Vi)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Vi = Initial volume of sample extracted from prep log (mL)	1021
Cx = Concentration of the compound in the sample being measured (ug/mL)	0.016947
Cx = Concentration of the compound in the sample being measured (ug/L)	16.947

3.0 Calculating the concentration (C) of a compound in soil using the data from the prep log and quantitation report: *

$$Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Wi)]$$

Example

where:

Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Wi = Initial weight of sample extracted (g) from prep log	30
Cx = Concentration of the compound in the sample being measured (ug/g)	0.576763
Cx = Concentration of the compound in the sample being measured (ug/kg)	576.7627

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	1153.525 ug/kg

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression**Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

$$x = (y - b)/m = [(0.02139 - (-0.0435))/0.0783] = 0.829$$

Step 4: Solve for analyte concentration Cx

$$Cx = Cis (x) = (25.0)(0.829) = 20.72 \text{ ug/L}$$

Example Spreadsheet Calculation:

Slope from curve, m:	0.0783
Intercept from curve, b:	-0.0435
Area of analyte, Ax:	16790
Area of Internal Standard, Ais:	784484
Concentration of IS, Cis	25.00 ug/L
Response Ratio (y) :	0.021403
Amount Ratio:	0.828897
Concentration (Cx):	20.72241 ug/L

5.0 Concentration from Quadratic Regression**Step 1 - Retrieve Curve Data from Plot, $y = Ax^2 + Bx + C$**

Where:

$$Ax^2 + Bx + (C - y) = 0$$

A, B, C = constants from the ICAL quadratic regression

y = Response ratio = Area of analyte/Area of internal standard (IS)

x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

$$y = Ax/Ais$$

Step 3: Solve for x using the quadratic formula

$$Ax^2 + Bx + C - y = 0$$

$$x = \frac{b \pm \sqrt{b^2 - 4a(c - y)}}{2a} \quad (\text{Two possible solutions})$$

Step 4: Solve for analyte concentration Cx

$$Cx = (Cis)(\text{Amount ratio})$$

Example Spreadsheet Calculation:

Value of A from plot:	0.0259
Value of B from plot:	0.0596
Value of C from plot:	-0.0165
Area of analyte from quantitation report:	203233
Area of IS from quantitation report:	1425653
Response ratio, y:	0.142554
C - y:	-0.15905
Root 1 - Computed amount ratio, X1:	-3.88278
Root 2 - Computed amount ratio, X2:	1.581623 use this solution
Concentration of IS, Cis:	40.00
Concentration of analyte, Cx:	63.26 ug/L

Microbac Laboratories Inc.
Instrument Run Log

00109276

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

Page: 1

Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109277

Instrument: LCMS1 Dataset: 091509_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30163

Workgroups: 312153 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00773	WG312154-01 CCB	1	1		09/15/09 13:18
2	1LM.LM00774	WG312154-02 CCV 1.0ug/L	1	1	STD35286	09/15/09 13:33
3	1LM.LM00775	WG312153-05 QCMRL 0.2ug/L	7	1	STD35286	09/15/09 13:47
4	1LM.LM00776	WG312153-01 MCT/ICS 2.0ug/kg	7	1	STD35287	09/15/09 14:01
5	1LM.LM00777	WG312153-02 MET BLK	7	1		09/15/09 14:16
6	1LM.LM00778	WG312153-03 LCS 2.0ug/kg	7	1	STD35285	09/15/09 14:30
7	1LM.LM00779	WG312153-04 LCSD 2.0ug/kg	7	1	STD35285	09/15/09 14:44
8	1LM.LM00780	L09090276-01 A 1000X	7	1000		09/15/09 14:59
9	1LM.LM00781	L09090276-02 A 1000X	7	1000		09/15/09 15:13
10	1LM.LM00782	L09090276-03 A 1000X	7	1000		09/15/09 15:28
11	1LM.LM00783	L09090276-04 A 1000X	7	1000		09/15/09 15:42
12	1LM.LM00784	L09090276-05 A 1000X	7	1000		09/15/09 15:56
13	1LM.LM00785	L09090276-06 A 1000X	7	1000		09/15/09 16:11
14	1LM.LM00786	WG312154-03 CCV 1.0ug/L	1	1	STD35286	09/15/09 16:25
15	1LM.LM00787	WG312153-06 QCMRL 0.2ug/L	7	1	STD35286	09/15/09 16:39
16	1LM.LM00788	WG312154-04 CCB	1	1		09/15/09 16:54

Comments

Seq.	Rerun	Dil.	Reason	Analytes
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Microbac Laboratories Inc.

00109278

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1



Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009



CHECKLIST1 - Modified 03/05/2008

Generated: AUG-28-2009 08:33:35



Microbac Laboratories Inc.

00109279

Data Checklist

Date: 15-SEP-2009
Analyst: WTD
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 30153
Analytical Workgroups: 312153

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
16-SEP-2009

CHECKLIST1 - Modified 03/05/2008

Generated: SEP-16-2009 08:36:53



Analytical Method:6850

AAB#:WG312153

Login Number:L09090276

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04VLV0FFL(8)	01	09/12/09					09/15/09	3	28		09/15/09	.1	28	
04VLV0FW-W	02	09/12/09					09/15/09	3	28		09/15/09	.1	28	
04VLV0FW-E	03	09/12/09					09/15/09	3	28		09/15/09	.1	28	
04VLV0FW-E-QC	04	09/12/09					09/15/09	3	28		09/15/09	.1	28	
04VLV0FW-S	05	09/12/09					09/15/09	3	28		09/15/09	.1	28	
04VLV0FW-N	06	09/12/09					09/15/09	3	28		09/15/09	.1	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109281

Login Number: <u>L09090276</u>	Work Group: <u>WG312153</u>
Blank File ID: <u>1LM.LM00777</u>	Blank Sample ID: <u>WG312153-02</u>
Prep Date: <u>09/15/09 13:18</u>	Instrument ID: <u>LCMS1</u>
Analyzed Date: <u>09/15/09 14:16</u>	Method: <u>6850</u>
Analyst: <u>WTD</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG312153-05	1LM.LM00775	09/15/09 13:47	01
MCT	WG312153-01	1LM.LM00776	09/15/09 14:01	01
LCS	WG312153-03	1LM.LM00778	09/15/09 14:30	01
LCS2	WG312153-04	1LM.LM00779	09/15/09 14:44	01
04VLV0FFL(8)	L09090276-01	1LM.LM00780	09/15/09 14:59	DL01
04VLV0FW-W	L09090276-02	1LM.LM00781	09/15/09 15:13	DL01
04VLV0FW-E	L09090276-03	1LM.LM00782	09/15/09 15:28	DL01
04VLV0FW-E-QC	L09090276-04	1LM.LM00783	09/15/09 15:42	DL01
04VLV0FW-S	L09090276-05	1LM.LM00784	09/15/09 15:56	DL01
04VLV0FW-N	L09090276-06	1LM.LM00785	09/15/09 16:11	DL01
QCMRL	WG312153-06	1LM.LM00787	09/15/09 16:39	01

Report Name: BLANK_SUMMARY
 PDF File ID: 1490487
 Report generated 09/16/2009 09:07



Login Number: L09090276 Prep Date: 09/15/09 13:18 Sample ID: WG312153-02
Instrument ID: LCMS1 Run Date: 09/15/09 14:16 Prep Method: 6850
File ID: 1LM.LM00777 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312153 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.974	1.95	0.974	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1490488

16-SEP-2009 09:07



00109283

Login Number: L09090276 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG312153 Units: ug/kg
QC Key: STD Lot #: STD35286
Sample ID: WG312153-03 LCS File ID: 1LM.LM00778 Run Date: 09/15/2009 14:30
Sample ID: WG312153-04 LCS2 File ID: 1LM.LM00779 Run Date: 09/15/2009 14:44

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.98	2.12	107	1.96	2.06	105	3.13	80 - 120	15	



00109284

Login Number: L09090276
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109285

Login Number: L09090276
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366

INT_CAL - Modified 03/06/2008
PDF File ID: 1490593
Report generated 09/16/2009 09:08



00109286

Login Number: L09090276
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393

INT_CAL - Modified 03/06/2008
PDF File ID: 1490593
Report generated 09/16/2009 09:08



00109287

Login Number: L09090276
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484



Login Number: L09090276 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

00109289

Login Number: L09090276 Run Date: 09/15/2009 Sample ID: WG312154-01
Instrument ID: LCMS1 Run Time: 13:18 Method: 6850
File ID: 1LM.LM00773 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312153 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109290

Login Number: L09090276 Run Date: 09/15/2009 Sample ID: WG312154-04
Instrument ID: LCMS1 Run Time: 16:54 Method: 6850
File ID: 1LM.LM00788 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312153 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109291

Login Number: L09090276 Run Date: 09/15/2009 Sample ID: WG312154-02
Instrument ID: LCMS1 Run Time: 13:33 Method: 6850
File ID: 1LM.LM00774 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312153 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.03	ug/L	1.49	3.00	10	

* Exceeds %D Criteria



00109292

Login Number: L09090276 Run Date: 09/15/2009 Sample ID: WG312154-03
Instrument ID: LCMS1 Run Time: 16:25 Method: 6850
File ID: 1LM.LM00786 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312153 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.01	ug/L	1.46	1.00	10	

* Exceeds %D Criteria



Login Number: L09090276 Run Date: 09/15/2009 Sample ID: WG312153-05
Instrument ID: LCMS1 Run Time: 13:47 Prep Method: 6850
File ID: 1LM.LM00775 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312153 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.27	114	70 - 130	

Login Number: L09090276 Run Date: 09/15/2009 Sample ID: WG312153-06
Instrument ID: LCMS1 Run Time: 16:39 Prep Method: 6850
File ID: 1LM.LM00787 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312153 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.08	104	70 - 130	

Login Number: L09090276
Instrument ID: LCMS1
Workgroup (AAB#): WG312153

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090276-01	1000	DL01	231000
L09090276-02	1000	DL01	231000
L09090276-03	1000	DL01	228000
L09090276-04	1000	DL01	205000
L09090276-05	1000	DL01	223000
L09090276-06	1000	DL01	227000
WG312153-02	1.00	01	233000
WG312153-03	1.00	01	241000
WG312153-04	1.00	01	243000

IS-1 - O18LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090276

00109299

09/16/09 11:27

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04VLV0FFL(8)	L09090276-01	D2216-90	1	15-SEP-09
04VLV0FW-W	L09090276-02	D2216-90	1	15-SEP-09
04VLV0FW-E	L09090276-03	D2216-90	1	15-SEP-09
04VLV0FW-E-QC	L09090276-04	D2216-90	1	15-SEP-09
04VLV0FW-S	L09090276-05	D2216-90	1	15-SEP-09
04VLV0FW-N	L09090276-06	D2216-90	1	15-SEP-09



Report Number: L09090276

Report Date : September 16, 2009

00109300

Sample Number: L09090276-01
Client ID: 04VLV0FFL(8)
Matrix: Soil
Workgroup Number: WG312185
Collect Date: 09/12/2009 13:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/16/2009 08:32
Cal Date:
Run Date: 09/16/2009 08:32
File ID: B1.312185-0101

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	78.7		1.00	1.00

Report Number: L09090276

Report Date : September 16, 2009

00109301

Sample Number: L09090276-02
Client ID: 04VLV0FW-W
Matrix: Soil
Workgroup Number: WG312185
Collect Date: 09/12/2009 13:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/16/2009 08:32
Cal Date:
Run Date: 09/16/2009 08:32
File ID: B1.312185-0102

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	79.8		1.00	1.00

Report Number: L09090276

Report Date : September 16, 2009

00109302

Sample Number: L09090276-03
Client ID: 04VLV0FW-E
Matrix: Soil
Workgroup Number: WG312185
Collect Date: 09/12/2009 13:10
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/16/2009 08:32
Cal Date:
Run Date: 09/16/2009 08:32
File ID: B1.312185-0103

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	73.8		1.00	1.00

Report Number: L09090276

Report Date : September 16, 2009

00109303

Sample Number: L09090276-04
Client ID: 04VLV0FW-E-QC
Matrix: Soil
Workgroup Number: WG312185
Collect Date: 09/12/2009 13:10
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/16/2009 08:32
Cal Date:
Run Date: 09/16/2009 08:32
File ID: B1.312185-0104

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	77.5		1.00	1.00

Report Number: L09090276

Report Date : September 16, 2009

00109304

Sample Number: L09090276-05	PrePrep Method: NONE	Instrument: BAL001
Client ID: 04VLV0FW-S	Prep Method: D2216-90	Prep Date: 09/16/2009 08:32
Matrix: Soil	Analytical Method: D2216-90	Cal Date:
Workgroup Number: WG312185	Analyst: CPD	Run Date: 09/16/2009 08:32
Collect Date: 09/12/2009 13:15	Dilution: 1	File ID: B1.312185-0105
Sample Tag: 01	Units: weight %	

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	80.0		1.00	1.00

Report Number: L09090276

Report Date : September 16, 2009

00109305

Sample Number: L09090276-06
Client ID: 04VLV0FW-N
Matrix: Soil
Workgroup Number: WG312185
Collect Date: 09/12/2009 13:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/16/2009 08:32
Cal Date:
Run Date: 09/16/2009 08:32
File ID: B1.312185-0106

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	77.7		1.00	1.00

6 of 6



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#): WG312185
 Method: D2216-90
 SOP: K0003 Rev: 9

Analyst: CPD
 Instrument: BAL001

ADT(on): 09/15/2009 13:00
 ADT(off): 09/16/2009 08:32

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090275-01	1.26	19.59	14.75			73.60	
L09090275-02	1.27	17.99	13.73			74.52	
L09090275-03	1.28	18.02	14.04			76.22	
L09090276-01	1.28	30.12	23.97			78.68	
L09090276-02	1.29	24.44	19.77			79.83	
L09090276-03	1.3	26.65	20.02			73.85	
L09090276-04	1.28	31.81	24.95			77.53	
L09090276-05	1.26	21.6	17.53			79.99	
L09090276-06	1.3	28.45	22.4			77.72	
L09090278-01	1.28	24.63	19.84			79.49	
L09090278-02	1.26	25.7	21.2			81.59	
L09090278-03	1.28	31.48	25.77			81.09	
L09090278-04	1.26	29.56	24.57			82.37	
L09090278-05	1.27	20.44	16.02			76.94	
L09090278-06	1.3	22.96	19.36			83.38	
L09090278-07	1.3	21.01	17.39			81.63	
L09090278-08	1.29	21.51	18.09			83.09	
L09090278-09	1.28	18.3	14.36			76.85	
L09090278-10	1.28	24.94	19.29			76.12	
L09090278-11	1.27	20.43	16.93			81.73	
L09090278-12	1.27	21.68	18.09			82.41	
WG312185-01	1.28	24.63	19.84			79.49	20.51
WG312185-02	1.27	21.68	18.09			82.41	17.59
WG312185-03	1.28	22.73	18.35			79.58	20.42
WG312185-04	1.27	23.26	19.63			83.49	16.51

Analyst: Leanne Davis

3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

September 16, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

00109311

[illegible]



1000001683

COOLER INSPECTION



00109312

Received: 09/15/2009 09:23
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L09090276

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014044	H	2.0	1Z66V7250195226706	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090276
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 16-SEP-2009

Samplenum **Container ID** **Products**
L09090276-01 614677 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	15-SEP-2009 11:00	RLK	
2	ANALYZ	W1	SEM	15-SEP-2009 11:04	WTD	RLK
3	ANALYZ	SEM	W1	15-SEP-2009 11:30	RLK	WTD
4	ANALYZ	W1	WET	15-SEP-2009 12:54	CPD	RLK
5	STORE	WET	A1	16-SEP-2009 08:12	RLK	CPD

Samplenum **Container ID** **Products**
L09090276-02 614678 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	15-SEP-2009 11:00	RLK	
2	ANALYZ	W1	SEM	15-SEP-2009 11:04	WTD	RLK
3	ANALYZ	SEM	W1	15-SEP-2009 11:30	RLK	WTD
4	ANALYZ	W1	WET	15-SEP-2009 12:54	CPD	RLK
5	STORE	WET	A1	16-SEP-2009 08:12	RLK	CPD

Samplenum **Container ID** **Products**
L09090276-03 614679 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	15-SEP-2009 11:00	RLK	
2	ANALYZ	W1	SEM	15-SEP-2009 11:04	WTD	RLK
3	ANALYZ	SEM	W1	15-SEP-2009 11:30	RLK	WTD
4	ANALYZ	W1	WET	15-SEP-2009 12:54	CPD	RLK
5	STORE	WET	A1	16-SEP-2009 08:12	RLK	CPD

Samplenum **Container ID** **Products**
L09090276-04 614680 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	15-SEP-2009 11:00	RLK	
2	ANALYZ	W1	SEM	15-SEP-2009 11:03	WTD	RLK
3	ANALYZ	SEM	W1	15-SEP-2009 11:30	RLK	WTD
4	ANALYZ	W1	WET	15-SEP-2009 12:54	CPD	RLK
5	STORE	WET	A1	16-SEP-2009 08:12	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



Login: L09090276
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 16-SEP-2009

Samplenum **Container ID** **Products**
L09090276-05 614681 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	15-SEP-2009 11:00	RLK	
2	ANALYZ	W1	SEM	15-SEP-2009 11:03	WTD	RLK
3	ANALYZ	SEM	W1	15-SEP-2009 11:30	RLK	WTD
4	ANALYZ	W1	WET	15-SEP-2009 12:54	CPD	RLK
5	STORE	WET	A1	16-SEP-2009 08:12	RLK	CPD

Samplenum **Container ID** **Products**
L09090276-06 614682 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	15-SEP-2009 11:00	RLK	
2	ANALYZ	W1	SEM	15-SEP-2009 11:03	WTD	RLK
3	ANALYZ	SEM	W1	15-SEP-2009 11:30	RLK	WTD
4	ANALYZ	W1	WET	15-SEP-2009 12:54	CPD	RLK
5	STORE	WET	A1	16-SEP-2009 08:12	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090427

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on September 23, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

The reported results are related only to the samples analyzed as received.

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

This report was certified on September 23, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 69 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
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User ID: jdoe@abc.com

Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090427
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090427

CHAIN OF CUSTODY: The chain of custody number was 090309-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 5 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 23-SEP-09



Laboratory Data Package Cover Page

00109320

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

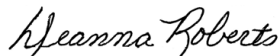
R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA . ROBERTS



Analyst III

September 23, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090427
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG312680
Reviewer Name: DEANNA . ROBERTS
LRC Date: September 23, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109323

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090427
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG312680
Reviewer Name:	DEANNA . ROBERTS
LRC Date:	September 23, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 General Chromatography Data

2.1.1 LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090427

Department: General Chromatography

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: There were no MS/MSD results associated with this sample delivery group, due to insufficient volume of sample. The laboratory included an LCS and LCS duplicate in the preparation batch in lieu of the NELAC prescribed MS/MSD. Microbac recommends site specific MS/MSD samples to avoid possible data qualification.

SAMPLES

Samples: Samples 02, 04, 05, 06 and 07 were run at a dilution to be within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090427

00109330

09/23/09 12:36

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWC2C	L09090427-01	6850	1	22-SEP-09
04CSFL05RE(14)	L09090427-02	6850	10	22-SEP-09
04CSWD2E1	L09090427-03	6850	1	22-SEP-09
04VLVOFFL(6)	L09090427-04	6850	100	22-SEP-09
04VLVOFW-W(1)	L09090427-05	6850	1000	22-SEP-09
04VLVOFW-N(1)	L09090427-06	6850	1000	22-SEP-09
04VLVOFW-S(1)	L09090427-07	6850	10	22-SEP-09

Report Number: **L09090427**Report Date : **September 23, 2009**

00109331

Sample Number: **L09090427-01**
Client ID: **04CSWC2C**
Matrix: **Soil**
Workgroup Number: **WG312679**
Collect Date: **09/21/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/22/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/22/2009 18:34**
File ID: **1LM.LM00903**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	14.7		2.10	1.05

Report Number: **L09090427**Report Date : **September 23, 2009**

00109332

Sample Number: **L09090427-02**
Client ID: **04CSFL05RE(14)**
Matrix: **Soil**
Workgroup Number: **WG312679**
Collect Date: **09/21/2009 14:35**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/22/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/22/2009 17:36**
File ID: **1LM.LM00899**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	44.1		18.7	9.35

Report Number: **L09090427**Report Date : **September 23, 2009****00109333**

Sample Number: **L09090427-03**
Client ID: **04CSWD2E1**
Matrix: **Soil**
Workgroup Number: **WG312679**
Collect Date: **09/21/2009 14:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/22/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/22/2009 18:48**
File ID: **1LM.LM00904**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	17.1		1.97	0.983

Report Number: **L09090427**Report Date : **September 23, 2009**

00109334

Sample Number: **L09090427-04**
Client ID: **04VLVOFFL(6)**
Matrix: **Soil**
Workgroup Number: **WG312679**
Collect Date: **09/21/2009 15:20**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **100**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/22/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/22/2009 18:05**
File ID: **1LM.LM00901**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	1770		190	95.2

Report Number: **L09090427**Report Date : **September 23, 2009****00109335**

Sample Number: **L09090427-05**
Client ID: **04VLVOFW-W(1)**
Matrix: **Soil**
Workgroup Number: **WG312679**
Collect Date: **09/21/2009 15:25**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/22/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/22/2009 15:56**
File ID: **1LM.LM00892**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	25800		2010	1000

Report Number: **L09090427**Report Date : **September 23, 2009****00109336**

Sample Number: **L09090427-06**
Client ID: **04VLVOFW-N(1)**
Matrix: **Soil**
Workgroup Number: **WG312679**
Collect Date: **09/21/2009 15:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/22/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/22/2009 16:10**
File ID: **1LM.LM00893**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	22800		1990	997

Report Number: **L09090427**Report Date : **September 23, 2009**

00109337

Sample Number: **L09090427-07**
Client ID: **04VLVOFW-S(1)**
Matrix: **Soil**
Workgroup Number: **WG312679**
Collect Date: **09/21/2009 15:35**
Sample Tag: **DL02**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/22/2009 13:18**
Cal Date: **08/26/2009 12:56**
Run Date: **09/22/2009 18:20**
File ID: **1LM.LM00902**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	30.5		19.4	9.70

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate**Concentration from Linear Regression****Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of internal standard (IS) = R_x/R_{istd}

x = amount ratio = concentration analyte/concentration internal standard (IS) = C_x / C_{istd}

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

$y = 1.45x + -0.00242$

Step 2: Substitute the value for y

where $y = 12600/226000 = 0.055752$

Step 3: Solve for x

$x = (y - b)/m = 0.0040119$

Step 4: Solve for analyte concentration C_x

$C_x = (C_{is})(x) = (5 \text{ ug/L})(0.0040119) = 0.0200594 \text{ ug/L}$

Example Calculation - Water:

Slope from curve, m :	1.45
Intercept from curve, b :	0
Response of analyte, R_x :	12600
Response of Internal Standard, R_{istd} :	226000
Concentration of IS, C_{istd} (ug/L):	5.00
Response Ratio:	0.06
Amount Ratio:	0.04
Analyte Concentration, C_x (ug/L) :	0.2

Example Calculation - Soil:

Analyte Concentration, C_x (ug/L):	0.2
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.0
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.01

Microbac Laboratories Inc.
Instrument Run Log

00109340

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments



Microbac Laboratories Inc.
Instrument Run Log

00109341

Instrument: LCMS1 Dataset: 092209_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30240

Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Workgroups: 312679, 312708
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00881	WG312681-01 CCB	1	1		09/22/09 13:18
2	1LM.LM00882	WG312681-02 1.0ug/L CCV	1	1	STD35408	09/22/09 13:32
3	1LM.LM00883	WG312679-05 0.2ug/L QCMRL	7	1	STD35408	09/22/09 13:46
4	1LM.LM00884	WG312679-01 2.0ug/kg MCT/ICS	7	1	STD35408	09/22/09 14:01
5	1LM.LM00885	WG312679-02 MET BLANK	7	1		09/22/09 14:15
6	1LM.LM00886	WG312679-03 2.0ug/kg LCS	7	1	STD35408	09/22/09 14:29
7	1LM.LM00887	WG312679-04 2.0ug/kg LCSD	7	1	STD35408	09/22/09 14:44
8	1LM.LM00888	L09090427-01 A 1000X	7	1000		09/22/09 14:58
9	1LM.LM00889	L09090427-02 A 1000X	7	1000		09/22/09 15:12
10	1LM.LM00890	L09090427-03 A 1000X	7	1000		09/22/09 15:27
11	1LM.LM00891	L09090427-04 A 1000X	7	1000		09/22/09 15:41
12	1LM.LM00892	L09090427-05 A 1000X	7	1000		09/22/09 15:56
13	1LM.LM00893	L09090427-06 A 1000X	7	1000		09/22/09 16:10
14	1LM.LM00894	WG312681-03 1.0ug/L CCV	1	1	STD35408	09/22/09 16:24
15	1LM.LM00895	WG312679-06 0.2ug/L QCMRL	7	1	STD35408	09/22/09 16:39
16	1LM.LM00896	WG312681-04 CCB	1	1		09/22/09 16:53
17	1LM.LM00897	L09090427-07 A 1000X	7	1000		09/22/09 17:08
18	1LM.LM00898	L09090427-01 A 10X	7	10		09/22/09 17:22
19	1LM.LM00899	L09090427-02 A 10X	7	10		09/22/09 17:36
20	1LM.LM00900	L09090427-03 A 10X	7	10		09/22/09 17:51
21	1LM.LM00901	L09090427-04 A 100X	7	100		09/22/09 18:05
22	1LM.LM00902	L09090427-07 A 10X	7	10		09/22/09 18:20
23	1LM.LM00903	L09090427-01 A	7	1		09/22/09 18:34
24	1LM.LM00904	L09090427-03 A	7	1		09/22/09 18:48
25	1LM.LM00905	WG312681-05 1.0ug/L CCV	1	1	STD35408	09/22/09 19:03
26	1LM.LM00906	WG312679-07 0.2 ug/L QCMRL	7	1	STD35408	09/22/09 19:17
27	1LM.LM00907	WG312681-06 CCB	1	1		09/22/09 19:31
28	1LM.LM00908	WG312708-01 2.0ug/kg MCT/ICS	7	1	STD35408	09/22/09 19:46
29	1LM.LM00909	WG312708-02 MET BLANK	7	1		09/22/09 20:00
30	1LM.LM00910	L09080563-08 2.0ug/kg DOC1	7	1	STD35408	09/22/09 20:14
31	1LM.LM00911	L09080563-09 2.0ug/kg DOC1	7	1	STD35408	09/22/09 20:29
32	1LM.LM00912	L09080563-10 2.0ug/kg DOC1	7	1	STD35408	09/22/09 20:43
33	1LM.LM00913	L09080563-11 2.0ug/kg DOC1	7	1	STD35408	09/22/09 20:58
34	1LM.LM00914	WG312681-07 1.0ug/L CCV	1	1	STD35408	09/22/09 21:12
35	1LM.LM00915	WG312708-04 0.2ug/L QCMRL	7	1	STD35408	09/22/09 21:26




Microbac Laboratories Inc.
Instrument Run Log

00109342

Instrument: LCMS1 Dataset: 092209_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30240

Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Workgroups: 312679, 312708
 Internal STD: COA14015 Surrogate STD: NA

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
36	1LM.LM00916	WG312681-08 CCB	1	1		09/22/09 21:41

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X	10	Analyzed too dilute	
9	X	10	Analyzed too dilute	
10	X	10	Analyzed too dilute	
11	X	100	Analyzed too dilute	
17	X	10	Analyzed too dilute	
18	X	1	Analyzed too dilute	
20	X	1	Analyzed too dilute	
28				
			Chad Davis Sample Prep DOC.	
29				
			Chad Davis Sample Prep DOC.	
30				
			Chad Davis Sample Prep DOC.	
31				
			Chad Davis Sample Prep DOC.	
32				
			Chad Davis Sample Prep DOC.	
33				
			Chad Davis Sample Prep DOC.	




Microbac Laboratories Inc.

00109343

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1


Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009



Microbac Laboratories Inc.

00109344

Data Checklist

Date: 22-SEP-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1


Curve Workgroup: NA

Runlog ID: 30258

Analytical Workgroups: 312679, 312708

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:

Secondary Reviewer:
23-SEP-2009



Analytical Method:6850

AAB#:WG312679

Login Number:L09090427

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSWC2C	01	09/21/09					09/22/09	1	28		09/22/09	.2	28	
04CSFL05RE(14)	02	09/21/09					09/22/09	.9	28		09/22/09	.2	28	
04CSWD2E1	03	09/21/09					09/22/09	.9	28		09/22/09	.2	28	
04VLVOFFL(6)	04	09/21/09					09/22/09	.9	28		09/22/09	.2	28	
04VLVOFW-W(1)	05	09/21/09					09/22/09	.9	28		09/22/09	.1	28	
04VLVOFW-N(1)	06	09/21/09					09/22/09	.9	28		09/22/09	.1	28	
04VLVOFW-S(1)	07	09/21/09					09/22/09	.9	28		09/22/09	.2	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109346

Login Number: L09090427
Blank File ID: 1LM.LM00885
Prep Date: 09/22/09 13:18
Analyzed Date: 09/22/09 14:15
Analyst: WTD

Work Group: WG312679
Blank Sample ID: WG312679-02
Instrument ID: LCMS1
Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG312679-05	1LM.LM00883	09/22/09 13:46	01
MCT	WG312679-01	1LM.LM00884	09/22/09 14:01	01
LCS	WG312679-03	1LM.LM00886	09/22/09 14:29	01
LCS2	WG312679-04	1LM.LM00887	09/22/09 14:44	01
04VLVOFW-W(1)	L09090427-05	1LM.LM00892	09/22/09 15:56	DL01
04VLVOFW-N(1)	L09090427-06	1LM.LM00893	09/22/09 16:10	DL01
QCMRL	WG312679-06	1LM.LM00895	09/22/09 16:39	01
04CSFL05RE(14)	L09090427-02	1LM.LM00899	09/22/09 17:36	DL02
04VLVOFFL(6)	L09090427-04	1LM.LM00901	09/22/09 18:05	DL02
04VLVOFW-S(1)	L09090427-07	1LM.LM00902	09/22/09 18:20	DL02
04CSWC2C	L09090427-01	1LM.LM00903	09/22/09 18:34	01
04CSWD2E1	L09090427-03	1LM.LM00904	09/22/09 18:48	01
QCMRL	WG312679-07	1LM.LM00906	09/22/09 19:17	01



Login Number: L09090427 Prep Date: 09/22/09 13:18 Sample ID: WG312679-02
Instrument ID: LCMS1 Run Date: 09/22/09 14:15 Prep Method: 6850
File ID: 1LM.LM00885 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312679 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.944	1.89	0.944	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1494615

23-SEP-2009 09:32



00109348

Login Number: L09090427 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG312679 Units: ug/kg
QC Key: STD Lot #: STD35408
Sample ID: WG312679-03 LCS File ID: 1LM.LM00886 Run Date: 09/22/2009 14:29
Sample ID: WG312679-04 LCS2 File ID: 1LM.LM00887 Run Date: 09/22/2009 14:44

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	2.00	2.01	101	1.82	1.76	96.5	13.5	80 - 120	15	

Conductivity Probe
 Calibration Check:
1402 /1410 $\mu\text{s}/\text{cm}$

Perchlorate Conductivity Check

Working MCT Level:
10,000 $\mu\text{s}/\text{cm}$

Sample	Conductivity ($\mu\text{s}/\text{cm}$)	Pretreatment or Dilution Needed
WG-312679-01 ^{MCT} LCS	10,190	N/A
-02 Blk	7.8	↓
-03 LCS	6.9	
-04 LCSB	15.2	
L09090427-01A	6.9	
-02	15.5	
-03	11.5	
-04	28.3	
-05	28.8	
-06	20.7	
-07	25.5	
WG-312708-01 ^{MCT} LCS	10,230	↓
WG-312708-02 Blk	8.3	
L09080563-08	9.8	
-09	10.4	
-10	10.9	
-11	12.8	↓

Wade T. Dwyer
 Analyst

9-22-09 / 17:50
 Date/Time

DCN#80821



00109350

Login Number: L09090427
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum

00109351

Login Number: L09090427
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366

00109352

Login Number: L09090427
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393

00109353

Login Number: L09090427
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00109354

Login Number: L09090427 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

00109355

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312681-01
Instrument ID: LCMS1 Run Time: 13:18 Method: 6850
File ID: 1LM.LM00881 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312679 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

00109356

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312681-04
Instrument ID: LCMS1 Run Time: 16:53 Method: 6850
File ID: 1LM.LM00896 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312679 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

00109357

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312681-06
Instrument ID: LCMS1 Run Time: 19:31 Method: 6850
File ID: 1LM.LM00907 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312679 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

00109358

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312681-02
Instrument ID: LCMS1 Run Time: 13:32 Method: 6850
File ID: 1LM.LM00882 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312679 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.967	ug/L	1.39	3.30	10	

* Exceeds %D Criteria



00109359

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312681-03
Instrument ID: LCMS1 Run Time: 16:24 Method: 6850
File ID: 1LM.LM00894 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312679 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	10	

* Exceeds %D Criteria



00109360

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312681-05
Instrument ID: LCMS1 Run Time: 19:03 Method: 6850
File ID: 1LM.LM00905 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312679 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.909	ug/L	1.31	9.10	10	

* Exceeds %D Criteria



Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312679-05
Instrument ID: LCMS1 Run Time: 13:46 Prep Method: 6850
File ID: 1LM.LM00883 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312679 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.09	105	70 - 130	

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312679-06
Instrument ID: LCMS1 Run Time: 16:39 Prep Method: 6850
File ID: 1LM.LM00895 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312679 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	1.98	99.0	70 - 130	

Login Number: L09090427 Run Date: 09/22/2009 Sample ID: WG312679-07
Instrument ID: LCMS1 Run Time: 19:17 Prep Method: 6850
File ID: 1LM.LM00906 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312679 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	1.96	98.0	70 - 130	

Login Number: L09090427
Instrument ID: LCMS1
Workgroup (AAB#): WG312679

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090427-01	1.00	01	218000
L09090427-02	10.0	DL02	207000
L09090427-03	1.00	01	195000
L09090427-04	100	DL02	209000
L09090427-05	1000	DL01	209000
L09090427-06	1000	DL01	196000
L09090427-07	10.0	DL02	211000
WG312679-02	1.00	01	228000
WG312679-03	1.00	01	226000
WG312679-04	1.00	01	227000

IS-1 - O18LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090427

00109368

09/23/09 12:36

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWC2C	L09090427-01	D2216-90	1	22-SEP-09
04CSFL05RE(14)	L09090427-02	D2216-90	1	22-SEP-09
04CSWD2E1	L09090427-03	D2216-90	1	22-SEP-09
04VLVOFFL(6)	L09090427-04	D2216-90	1	22-SEP-09
04VLVOFW-W(1)	L09090427-05	D2216-90	1	22-SEP-09
04VLVOFW-N(1)	L09090427-06	D2216-90	1	22-SEP-09
04VLVOFW-S(1)	L09090427-07	D2216-90	1	22-SEP-09



Report Number: **L09090427**Report Date : **September 23, 2009****00109369**

Sample Number: **L09090427-01**
Client ID: **04CSWC2C**
Matrix: **Soil**
Workgroup Number: **WG312680**
Collect Date: **09/21/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/23/2009 08:34**
Cal Date:
Run Date: **09/23/2009 08:34**
File ID: **B1.312680-0101**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	74.3		1.00	1.00

Report Number: **L09090427**Report Date : **September 23, 2009****00109370**

Sample Number: **L09090427-02**
Client ID: **04CSFL05RE(14)**
Matrix: **Soil**
Workgroup Number: **WG312680**
Collect Date: **09/21/2009 14:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/23/2009 08:34**
Cal Date:
Run Date: **09/23/2009 08:34**
File ID: **B1.312680-0102**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	75.1		1.00	1.00

Report Number: **L09090427**Report Date : **September 23, 2009**

00109371

Sample Number: L09090427-03	PrePrep Method: NONE	Instrument: BAL001
Client ID: 04CSWD2E1	Prep Method: D2216-90	Prep Date: 09/23/2009 08:34
Matrix: Soil	Analytical Method: D2216-90	Cal Date:
Workgroup Number: WG312680	Analyst: CPD	Run Date: 09/23/2009 08:34
Collect Date: 09/21/2009 14:45	Dilution: 1	File ID: B1.312680-0103
Sample Tag: 01	Units: weight %	

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	74.4		1.00	1.00

Report Number: **L09090427**Report Date : **September 23, 2009****00109372**

Sample Number: **L09090427-04**
Client ID: **04VLVOFFL(6)**
Matrix: **Soil**
Workgroup Number: **WG312680**
Collect Date: **09/21/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/23/2009 08:34**
Cal Date:
Run Date: **09/23/2009 08:34**
File ID: **B1.312680-0104**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	70.7		1.00	1.00

Report Number: **L09090427**Report Date : **September 23, 2009****00109373**

Sample Number: **L09090427-05**
Client ID: **04VLVOFW-W(1)**
Matrix: **Soil**
Workgroup Number: **WG312680**
Collect Date: **09/21/2009 15:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/23/2009 08:34**
Cal Date:
Run Date: **09/23/2009 08:34**
File ID: **B1.312680-0105**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	79.0		1.00	1.00

Report Number: **L09090427**Report Date : **September 23, 2009**

00109374

Sample Number: **L09090427-06**
Client ID: **04VLVOFW-N(1)**
Matrix: **Soil**
Workgroup Number: **WG312680**
Collect Date: **09/21/2009 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/23/2009 08:34**
Cal Date:
Run Date: **09/23/2009 08:34**
File ID: **B1.312680-0106**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	77.5		1.00	1.00

Report Number: **L09090427**Report Date : **September 23, 2009**

00109375

Sample Number: **L09090427-07**
Client ID: **04VLVOFW-S(1)**
Matrix: **Soil**
Workgroup Number: **WG312680**
Collect Date: **09/21/2009 15:35**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/23/2009 08:34**
Cal Date:
Run Date: **09/23/2009 08:34**
File ID: **B1.312680-0107**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	76.9		1.00	1.00

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#):WG312680

Analyst:CPD

ADT(on):09/22/2009 12:44

Method:D2216-90

Instrument:BAL001

ADT(off):09/23/2009 08:34

SOP:K0003 Rev:9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090427-01	1.28	36.43	27.38			74.25	
L09090427-02	1.27	22.02	16.85			75.08	
L09090427-03	1.27	18.62	14.17			74.35	
L09090427-04	1.29	17.04	12.43			70.73	
L09090427-05	1.28	31.11	24.86			79.05	
L09090427-06	1.3	27.91	21.93			77.53	
L09090427-07	1.29	20.8	16.29			76.88	
WG312680-01	1.28	36.43	27.38			74.25	25.75
WG312680-02	1.28	19.25	14.76			75.01	24.99

Analyst: Richard Davis

3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

September 23, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.

COC NO. 090309-01

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

[illegible]

Login: L09090427
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 23-SEP-2009

Samplenum **Container ID** **Products**
L09090427-01 616331 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	22-SEP-2009 10:10	RLK	
2	ANALYZ	W1	SEM	22-SEP-2009 10:38	WTD	RLK
3	ANALYZ	SEM	WET	22-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	23-SEP-2009 08:19	JKT	CPD

Samplenum **Container ID** **Products**
L09090427-02 616332 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	22-SEP-2009 10:10	RLK	
2	ANALYZ	W1	SEM	22-SEP-2009 10:38	WTD	RLK
3	ANALYZ	SEM	WET	22-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	23-SEP-2009 08:19	JKT	CPD

Samplenum **Container ID** **Products**
L09090427-03 616333 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	22-SEP-2009 10:10	RLK	
2	ANALYZ	W1	SEM	22-SEP-2009 10:38	WTD	RLK
3	ANALYZ	SEM	WET	22-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	23-SEP-2009 08:19	JKT	CPD

Samplenum **Container ID** **Products**
L09090427-04 616334 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	22-SEP-2009 10:10	RLK	
2	ANALYZ	W1	SEM	22-SEP-2009 10:38	WTD	RLK
3	ANALYZ	SEM	WET	22-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	23-SEP-2009 08:19	JKT	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Login: L09090427
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 23-SEP-2009

Samplenum **Container ID** **Products**
L09090427-05 616335 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	22-SEP-2009 10:10	RLK	
2	ANALYZ	W1	SEM	22-SEP-2009 10:38	WTD	RLK
3	ANALYZ	SEM	WET	22-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	23-SEP-2009 08:19	JKT	CPD

Samplenum **Container ID** **Products**
L09090427-06 616336 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	22-SEP-2009 10:10	RLK	
2	ANALYZ	W1	SEM	22-SEP-2009 10:39	WTD	RLK
3	ANALYZ	SEM	WET	22-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	23-SEP-2009 08:19	JKT	CPD

Samplenum **Container ID** **Products**
L09090427-07 616337 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	22-SEP-2009 10:10	RLK	
2	ANALYZ	W1	SEM	22-SEP-2009 10:38	WTD	RLK
3	ANALYZ	SEM	WET	22-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	23-SEP-2009 08:20	JKT	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090494

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

Contract #: DACA56-94-D-0020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on September 25, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on September 25, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 62 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

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User ID: jdoe@abc.com

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Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090494
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090494

CHAIN OF CUSTODY: The chain of custody number was

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 1 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 25-SEP-09



This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

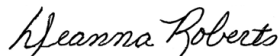
R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA . ROBERTS



Analyst III

September 25, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090494
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG312870
Reviewer Name: DEANNA . ROBERTS
LRC Date: September 25, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109391

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090494
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG312870
Reviewer Name:	DEANNA . ROBERTS
LRC Date:	September 25, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 General Chromatography Data

2.1.1 LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090494

Department: General Chromatography

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: Samples 01 and 04 were run at a dilution to be within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090494

00109399

09/25/09 12:26

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04VLVOFW-W(2)-COMP	L09090494-01	6850	10	24-SEP-09
04VLVOFW-W(2)N	L09090494-02	6850	1	24-SEP-09
04VLVOFW-W(2)S	L09090494-03	6850	1	24-SEP-09
04VLVOFW-3(2)	L09090494-04	6850	100	24-SEP-09



Report Number: **L09090494**Report Date : **September 25, 2009****00109400**

Sample Number: **L09090494-01**
Client ID: **04VLVOFW-W(2)-COMP**
Matrix: **Soil**
Workgroup Number: **WG312867**
Collect Date: **09/23/2009 14:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **10**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/24/2009 13:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/24/2009 15:39**
File ID: **1LM.LM00946**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	23.5		19.4	9.72

Report Number: **L09090494**Report Date : **September 25, 2009****00109401**

Sample Number: **L09090494-02**
Client ID: **04VLVOFW-W(2)N**
Matrix: **Soil**
Workgroup Number: **WG312867**
Collect Date: **09/23/2009 14:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/24/2009 13:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/24/2009 15:53**
File ID: **1LM.LM00947**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	8.61		1.92	0.960

Report Number: **L09090494**Report Date : **September 25, 2009**

00109402

Sample Number: **L09090494-03**
Client ID: **04VLVOFW-W(2)S**
Matrix: **Soil**
Workgroup Number: **WG312867**
Collect Date: **09/23/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/24/2009 13:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/24/2009 16:50**
File ID: **1LM.LM00951**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	29.8		1.82	0.911

Report Number: **L09090494**Report Date : **September 25, 2009****00109403**

Sample Number: **L09090494-04**
Client ID: **04VLVOFW-3(2)**
Matrix: **Soil**
Workgroup Number: **WG312867**
Collect Date: **09/23/2009 14:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **100**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/24/2009 13:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/24/2009 17:19**
File ID: **1LM.LM00953**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	847		191	95.4

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate**Concentration from Linear Regression****Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of internal standard (IS) = R_x/R_{istd}

x = amount ratio = concentration analyte/concentration internal standard (IS) = C_x / C_{istd}

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

$y = 1.45x + -0.00242$

Step 2: Substitute the value for y

where $y = 12600/226000 = 0.055752$

Step 3: Solve for x

$x = (y - b)/m = 0.0040119$

Step 4: Solve for analyte concentration C_x

$C_x = (C_{is})(x) = (5 \text{ ug/L})(0.0040119) = 0.0200594 \text{ ug/L}$

Example Calculation - Water:

Slope from curve, m :	1.45
Intercept from curve, b :	0
Response of analyte, R_x :	12600
Response of Internal Standard, R_{istd} :	226000
Concentration of IS, C_{istd} (ug/L):	5.00
Response Ratio:	0.06
Amount Ratio:	0.04
Analyte Concentration, C_x (ug/L) :	0.2

Example Calculation - Soil:

Analyte Concentration, C_x (ug/L):	0.2
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.0
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.01

Microbac Laboratories Inc.
Instrument Run Log

00109406

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

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Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109407

Instrument: LCMS1 Dataset: 092409_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30272

Workgroups: 312867 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00935	WG312868-01 CCB	1	1		09/24/09 13:00
2	1LM.LM00936	WG312868-02 1.0ug/L CCV	1	1	STD35441	09/24/09 13:15
3	1LM.LM00937	WG312867-05 0.2ug/L QCMRL	7	1	STD35441	09/24/09 13:29
4	1LM.LM00938	WG312867-01 2.0ug/kg MCT/ICS	7	1	STD35443	09/24/09 13:43
5	1LM.LM00939	WG312867-02 MET BLANK	7	1		09/24/09 13:58
6	1LM.LM00940	WG312867-03 2.0ug/kg LCS	7	1	STD35442	09/24/09 14:12
7	1LM.LM00941	WG312867-04 2.0ug/kg LCSD	7	1	STD35442	09/24/09 14:27
8	1LM.LM00942	L09090494-01 A 1000X	7	1000		09/24/09 14:41
9	1LM.LM00943	L09090494-02 A 1000X	7	1000		09/24/09 14:55
10	1LM.LM00944	L09090494-03 A 1000X	7	1000		09/24/09 15:10
11	1LM.LM00945	L09090494-04 A 1000X	7	1000		09/24/09 15:24
12	1LM.LM00946	L09090494-01 A 10X	7	10		09/24/09 15:39
13	1LM.LM00947	L09090494-02 A	7	1		09/24/09 15:53
14	1LM.LM00948	WG312868-03 1.0ug/L CCV	1	1	STD35441	09/24/09 16:07
15	1LM.LM00949	WG312867-06 0.2ug/L QCMRL	7	1	STD35441	09/24/09 16:22
16	1LM.LM00950	WG312868-04 CCB	1	1		09/24/09 16:36
17	1LM.LM00951	L09090494-03 A	7	1		09/24/09 16:50
18	1LM.LM00952	L09090494-03 A 10X	7	10		09/24/09 17:05
19	1LM.LM00953	L09090494-04 A 100X	7	100		09/24/09 17:19
20	1LM.LM00954	WG312868-05 1.0ug/L CCV	1	1	STD35441	09/24/09 17:34
21	1LM.LM00955	WG312867-07 0.2ug/L QCMRL	7	1	STD35441	09/24/09 17:48
22	1LM.LM00956	WG312868-06 CCB	1	1		09/24/09 18:02

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X	10	Analyzed too dilute	
9	X	1		
10	X	1	Analyzed too dilute	
11	X	100	Analyzed too dilute	
18				
Data not needed.				

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Approved: 25-SEP-09




Microbac Laboratories Inc.

00109408

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009

CHECKLIST1 - Modified 03/05/2008

Generated: AUG-28-2009 08:33:35



Microbac Laboratories Inc.

00109409

Data Checklist

Date: 24-SEP-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1


Curve Workgroup: NA

Runlog ID: 30294

Analytical Workgroups: L09090494

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:

Secondary Reviewer:
25-SEP-2009




Analytical Method:6850

AAB#:WG312867

Login Number:L09090494

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04VLVOFW-W(2)-COMP	01	09/23/09					09/24/09	1	28		09/24/09	.1	28	
04VLVOFW-W(2)N	02	09/23/09					09/24/09	1	28		09/24/09	.1	28	
04VLVOFW-W(2)S	03	09/23/09					09/24/09	.9	28		09/24/09	.2	28	
04VLVOFW-3(2)	04	09/23/09					09/24/09	.9	28		09/24/09	.2	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109411

Login Number: L09090494
 Blank File ID: 1LM.LM00939
 Prep Date: 09/24/09 13:00
 Analyzed Date: 09/24/09 13:58
 Analyst: WTD

Work Group: WG312867
 Blank Sample ID: WG312867-02
 Instrument ID: LCMS1
 Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG312867-05	1LM.LM00937	09/24/09 13:29	01
MCT	WG312867-01	1LM.LM00938	09/24/09 13:43	01
LCS	WG312867-03	1LM.LM00940	09/24/09 14:12	01
LCS2	WG312867-04	1LM.LM00941	09/24/09 14:27	01
04VLVOFW-W(2)-COMP	L09090494-01	1LM.LM00946	09/24/09 15:39	DL01
04VLVOFW-W(2)N	L09090494-02	1LM.LM00947	09/24/09 15:53	01
QCMRL	WG312867-06	1LM.LM00949	09/24/09 16:22	01
04VLVOFW-W(2)S	L09090494-03	1LM.LM00951	09/24/09 16:50	01
04VLVOFW-3(2)	L09090494-04	1LM.LM00953	09/24/09 17:19	DL01
QCMRL	WG312867-07	1LM.LM00955	09/24/09 17:48	01

Report Name: BLANK_SUMMARY
 PDF File ID: 1496174
 Report generated 09/25/2009 08:57



Login Number: L09090494 Prep Date: 09/24/09 13:00 Sample ID: WG312867-02
Instrument ID: LCMS1 Run Date: 09/24/09 13:58 Prep Method: 6850
File ID: 1LM.LM00939 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312867 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.992	1.98	0.992	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1496175

25-SEP-2009 08:57



00109413

Login Number: L09090494 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG312867 Units: ug/kg
QC Key: STD Lot #: STD35441
Sample ID: WG312867-03 LCS File ID: 1LM.LM00940 Run Date: 09/24/2009 14:12
Sample ID: WG312867-04 LCS2 File ID: 1LM.LM00941 Run Date: 09/24/2009 14:27

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.94	2.00	103	2.00	2.04	102	2.04	80 - 120	15	



00109415

Login Number: L09090494
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109416

Login Number: L09090494
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366

INT_CAL - Modified 03/06/2008
PDF File ID: 1496280
Report generated 09/25/2009 08:58



00109417

Login Number: L09090494
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393



00109418

Login Number: L09090494
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

INT_CAL - Modified 03/06/2008
PDF File ID: 1496280
Report generated 09/25/2009 08:58



Login Number: L09090494 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

00109420

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-01
Instrument ID: LCMS1 Run Time: 13:00 Method: 6850
File ID: 1LM.LM00935 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312867 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109421

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-04
Instrument ID: LCMS1 Run Time: 16:36 Method: 6850
File ID: 1LM.LM00950 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312867 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109422

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-06
Instrument ID: LCMS1 Run Time: 18:02 Method: 6850
File ID: 1LM.LM00956 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG312867 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109423

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-02
Instrument ID: LCMS1 Run Time: 13:15 Method: 6850
File ID: 1LM.LM00936 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312867 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.941	ug/L	1.36	5.90	10	

* Exceeds %D Criteria



00109424

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-03
Instrument ID: LCMS1 Run Time: 16:07 Method: 6850
File ID: 1LM.LM00948 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312867 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.02	ug/L	1.47	2.00	10	

* Exceeds %D Criteria



00109425

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-05
Instrument ID: LCMS1 Run Time: 17:34 Method: 6850
File ID: 1LM.LM00954 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG312867 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.984	ug/L	1.42	1.60	10	

* Exceeds %D Criteria



Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312867-05
Instrument ID: LCMS1 Run Time: 13:29 Prep Method: 6850
File ID: 1LM.LM00937 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312867 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.18	109	70 - 130	

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312867-06
Instrument ID: LCMS1 Run Time: 16:22 Prep Method: 6850
File ID: 1LM.LM00949 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312867 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.16	108	70 - 130	

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312867-07
Instrument ID: LCMS1 Run Time: 17:48 Prep Method: 6850
File ID: 1LM.LM00955 Analyst: WTD Method: 6850
Workgroup (AAB#): WG312867 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	1.97	98.5	70 - 130	

Login Number: L09090494
Instrument ID: LCMS1
Workgroup (AAB#): WG312867

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090494-01	10.0	DL01	191000
L09090494-02	1.00	01	191000
L09090494-03	1.00	01	195000
L09090494-04	100	DL01	175000
WG312867-02	1.00	01	190000
WG312867-03	1.00	01	197000
WG312867-04	1.00	01	180000

IS-1 - 018LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090494

00109433

09/25/09 12:26

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04VLVOFW-W(2)-COMP	L09090494-01	D2216-90	1	24-SEP-09
04VLVOFW-W(2)N	L09090494-02	D2216-90	1	24-SEP-09
04VLVOFW-W(2)S	L09090494-03	D2216-90	1	24-SEP-09
04VLVOFW-3(2)	L09090494-04	D2216-90	1	24-SEP-09



Report Number: **L09090494**Report Date : **September 25, 2009****00109434**

Sample Number: **L09090494-01**
Client ID: **04VLVOFW-W(2)-COMP**
Matrix: **Soil**
Workgroup Number: **WG312870**
Collect Date: **09/23/2009 14:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/25/2009 08:41**
Cal Date:
Run Date: **09/25/2009 08:41**
File ID: **B1.312870-0101**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	67.6		1.00	1.00

1 of 4



Report Number: **L09090494**Report Date : **September 25, 2009****00109435**

Sample Number: **L09090494-02**
Client ID: **04VLVOFW-W(2)N**
Matrix: **Soil**
Workgroup Number: **WG312870**
Collect Date: **09/23/2009 14:10**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/25/2009 08:41**
Cal Date:
Run Date: **09/25/2009 08:41**
File ID: **B1.312870-0102**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	71.2		1.00	1.00

2 of 4



Report Number: **L09090494**Report Date : **September 25, 2009****00109436**

Sample Number: **L09090494-03**
Client ID: **04VLVOFW-W(2)S**
Matrix: **Soil**
Workgroup Number: **WG312870**
Collect Date: **09/23/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/25/2009 08:41**
Cal Date:
Run Date: **09/25/2009 08:41**
File ID: **B1.312870-0103**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	74.3		1.00	1.00

Report Number: **L09090494**Report Date : **September 25, 2009****00109437**

Sample Number: **L09090494-04**
Client ID: **04VLVOFW-3(2)**
Matrix: **Soil**
Workgroup Number: **WG312870**
Collect Date: **09/23/2009 14:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **09/25/2009 08:41**
Cal Date:
Run Date: **09/25/2009 08:41**
File ID: **B1.312870-0104**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	74.2		1.00	1.00

4 of 4



Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#):WG312870

Analyst:CPD

ADT(on):09/24/2009 12:55

Method:D2216-90

Instrument:BAL001

ADT(off):09/25/2009 08:41

SOP:K0003 Rev:9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090494-01	1.25	13.63	9.62			67.61	
L09090494-02	1.25	19.29	14.1			71.23	
L09090494-03	1.25	19.29	14.66			74.33	
L09090494-04	1.25	18.81	14.28			74.20	
WG312870-01	1.25	13.63	9.62			67.61	32.39
WG312870-02	1.25	15.2	10.89			69.10	30.90

Analyst: Richard Davis

3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

September 25, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.





1000001879

COOLER INSPECTION

00109444



Received: 09/24/2009 09:35
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09090494

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0010476	G	1.0	1Z4016632210105044	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090494
Account: 2773
Project: 2773.025
Samples: 4
Due Date: 25-SEP-2009

Samplenum **Container ID** **Products**
L09090494-01 617161 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	24-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	24-SEP-2009 10:56	WTD	RLK
3	STORE	SEM	W1	24-SEP-2009 11:15	RLK	WTD
4	ANALYZ	W1	WET	24-SEP-2009 11:56	CPD	RLK
5	STORE	WET	A1	25-SEP-2009 09:38	RLK	CPD

Samplenum **Container ID** **Products**
L09090494-02 617162 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	24-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	24-SEP-2009 10:56	WTD	RLK
3	STORE	SEM	W1	24-SEP-2009 11:14	RLK	WTD
4	ANALYZ	W1	WET	24-SEP-2009 11:56	CPD	RLK
5	STORE	WET	A1	25-SEP-2009 09:38	RLK	CPD

Samplenum **Container ID** **Products**
L09090494-03 617163 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	24-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	24-SEP-2009 10:56	WTD	RLK
3	STORE	SEM	W1	24-SEP-2009 11:14	RLK	WTD
4	ANALYZ	W1	WET	24-SEP-2009 11:56	CPD	RLK
5	STORE	WET	A1	25-SEP-2009 09:38	RLK	CPD

Samplenum **Container ID** **Products**
L09090494-04 617164 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	24-SEP-2009 10:19	RLK	
2	ANALYZ	W1	SEM	24-SEP-2009 10:56	WTD	RLK
3	STORE	SEM	W1	24-SEP-2009 11:14	RLK	WTD
4	ANALYZ	W1	WET	24-SEP-2009 11:56	CPD	RLK
5	STORE	WET	A1	25-SEP-2009 09:38	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090567

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

Contract #: DACA56-94-D-0020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on September 29, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on September 29, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 72 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090567
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090567

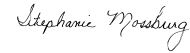
CHAIN OF CUSTODY: The chain of custody number was 090309-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 4 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 29-SEP-09



Laboratory Data Package Cover Page

00109451

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

September 29, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090567
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG313078
Reviewer Name: DEANNA I. HESSON
LRC Date: September 29, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090567
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG313078
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 29, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 General Chromatography Data

2.1.1 LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090567

Department: General Chromatography

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All analytes met the MS/MSD acceptance criteria for % recovery and relative percent difference, except those listed below. An astrisk (*) denotes that the value is relative percent difference.

Sample	Instrument	Date	Analyte	AType	CType	Rec/RPD	Lower	Upper
L09090567-05	LCMS1	09/28/2009	PERCHLORATE	REG		-32500	80	120
L09090567-06	LCMS1	09/28/2009	PERCHLORATE	REG		139000	80	120
L09090567-06	LCMS1	09/28/2009	PERCHLORATE	REG		318	*	15

The spiking solution was diluted out of the MS/MSD.

SAMPLES

Samples: Samples 01-08 were run at a dilution in order to obtain results within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090567

00109461

09/29/09 14:32

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL07RE(12)	L09090567-01	6850	1000	28-SEP-09
04CSWR2H	L09090567-02	6850	1000	28-SEP-09
04WCDRE(19)L	L09090567-03	6850	1000	28-SEP-09
04CSFL13RE(13)	L09090567-04	6850	100	28-SEP-09
04CSFL13RE(13)-MS	L09090567-05	6850	100	28-SEP-09
04CSFL13RE(13)-MSD	L09090567-06	6850	100	28-SEP-09
04CSFL14RE(13)	L09090567-07	6850	1000	28-SEP-09
04CSFL14RE(13)QC	L09090567-08	6850	1000	28-SEP-09



Report Number: **L09090567**Report Date : **September 29, 2009**

00109462

Sample Number: **L09090567-01**
Client ID: **04CSFL07RE(12)**
Matrix: **Soil**
Workgroup Number: **WG313072**
Collect Date: **09/25/2009 14:05**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/28/2009 13:10**
Cal Date: **08/26/2009 12:56**
Run Date: **09/28/2009 14:36**
File ID: **1LM.LM00963**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	4200		1830	913

Report Number: **L09090567**Report Date : **September 29, 2009****00109463**

Sample Number: **L09090567-02**
Client ID: **04CSWR2H**
Matrix: **Soil**
Workgroup Number: **WG313072**
Collect Date: **09/25/2009 14:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/28/2009 13:10**
Cal Date: **08/26/2009 12:56**
Run Date: **09/28/2009 14:50**
File ID: **1LM.LM00964**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	9600		1900	950

Report Number: **L09090567**Report Date : **September 29, 2009**

00109464

Sample Number: **L09090567-03**
Client ID: **04WCDRE(19)L**
Matrix: **Soil**
Workgroup Number: **WG313072**
Collect Date: **09/25/2009 14:15**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/28/2009 13:10**
Cal Date: **08/26/2009 12:56**
Run Date: **09/28/2009 15:05**
File ID: **1LM.LM00965**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	6650		1980	990

Report Number: **L09090567**Report Date : **September 29, 2009****00109465**

Sample Number: **L09090567-04**
Client ID: **04CSFL13RE(13)**
Matrix: **Soil**
Workgroup Number: **WG313072**
Collect Date: **09/25/2009 14:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **100**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/28/2009 13:10**
Cal Date: **08/26/2009 12:56**
Run Date: **09/28/2009 17:14**
File ID: **1LM.LM00974**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	2400		190	94.9

Report Number: **L09090567**Report Date : **September 29, 2009**

00109466

Sample Number: **L09090567-05**
Client ID: **04CSFL13RE(13)-MS**
Matrix: **Soil**
Workgroup Number: **WG313072**
Collect Date: **09/25/2009 14:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **100**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/28/2009 13:10**
Cal Date: **08/26/2009 12:56**
Run Date: **09/28/2009 17:29**
File ID: **1LM.LM00975**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	1770		193	96.5

Report Number: L09090567

Report Date : September 29, 2009

00109467

Sample Number: L09090567-06
Client ID: 04CSFL13RE(13)-MSD
Matrix: Soil
Workgroup Number: WG313072
Collect Date: 09/25/2009 14:20
Sample Tag: DL01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 100
Units: ug/kg

Instrument: LCMS1
Prep Date: 09/28/2009 13:10
Cal Date: 08/26/2009 12:56
Run Date: 09/28/2009 17:43
File ID: 1LM.LM00976

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	5160		198	99.0

Report Number: **L09090567**Report Date : **September 29, 2009**

00109468

Sample Number: **L09090567-07**
Client ID: **04CSFL14RE(13)**
Matrix: **Soil**
Workgroup Number: **WG313072**
Collect Date: **09/25/2009 14:25**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/28/2009 13:10**
Cal Date: **08/26/2009 12:56**
Run Date: **09/28/2009 15:34**
File ID: **1LM.LM00967**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	2590		1960	980

Report Number: **L09090567**Report Date : **September 29, 2009**

00109469

Sample Number: **L09090567-08**
Client ID: **04CSFL14RE(13)QC**
Matrix: **Soil**
Workgroup Number: **WG313072**
Collect Date: **09/25/2009 14:25**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/28/2009 13:10**
Cal Date: **08/26/2009 12:56**
Run Date: **09/28/2009 15:48**
File ID: **1LM.LM00968**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	3020		1860	932

8 of 8



2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate**Concentration from Linear Regression****Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of internal standard (IS) = R_x/R_{istd}

x = amount ratio = concentration analyte/concentration internal standard (IS) = C_x / C_{istd}

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

$y = 1.45x + -0.00242$

Step 2: Substitute the value for y

where $y = 12600/226000 = 0.055752$

Step 3: Solve for x

$x = (y - b)/m = 0.0040119$

Step 4: Solve for analyte concentration C_x

$C_x = (C_{is})(x) = (5 \text{ ug/L})(0.0040119) = 0.0200594 \text{ ug/L}$

Example Calculation - Water:

Slope from curve, m :	1.45
Intercept from curve, b :	0
Response of analyte, R_x :	12600
Response of Internal Standard, R_{istd} :	226000
Concentration of IS, C_{istd} (ug/L):	5.00
Response Ratio:	0.06
Amount Ratio:	0.04
Analyte Concentration, C_x (ug/L) :	0.2

Example Calculation - Soil:

Analyte Concentration, C_x (ug/L):	0.2
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.0
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.01

Microbac Laboratories Inc.
Instrument Run Log

00109472

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

Page: 1

Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109473

Instrument: LCMS1 Dataset: 092809_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30303

Workgroups: 313072 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00957	WG313058-01 CCB	1	1		09/28/09 13:10
2	1LM.LM00958	WG313058-02 1.0ug/L CCV	1	1	STD35486	09/28/09 13:24
3	1LM.LM00959	WG313072-07 0.2ug/L QCMRL	7	1	STD35486	09/28/09 13:39
4	1LM.LM00960	WG313072-01 2.0ug/kg MCT/ICS	7	1	STD35485	09/28/09 13:53
5	1LM.LM00961	WG313072-02 MET BLANK	7	1		09/28/09 14:07
6	1LM.LM00962	WG313072-03 2.0ug/kg LCS	7	1	STD35485	09/28/09 14:22
7	1LM.LM00963	L09090567-01 A 1000X	7	1000		09/28/09 14:36
8	1LM.LM00964	L09090567-02 A 1000X	7	1000		09/28/09 14:50
9	1LM.LM00965	L09090567-03 A 1000X	7	1000		09/28/09 15:05
10	1LM.LM00966	L09090567-04 A 1000X	7	1000		09/28/09 15:19
11	1LM.LM00967	L09090567-07 A 1000X	7	1000		09/28/09 15:34
12	1LM.LM00968	L09090567-08 A 1000X	7	1000		09/28/09 15:48
13	1LM.LM00969	WG313058-04 CCB	1	1		09/28/09 16:02
14	1LM.LM00970	WG313058-03 1.0ug/L CCV	1	1	STD35486	09/28/09 16:17
15	1LM.LM00971	WG313072-08 0.2ug/L QCMRL	7	1		09/28/09 16:31
16	1LM.LM00972	L09090567-05 A MS 1000X	7	1000		09/28/09 16:45
17	1LM.LM00973	L09090567-06 A MSD 1000X	7	1000		09/28/09 17:00
18	1LM.LM00974	L09090567-04 A 100X	7	100		09/28/09 17:14
19	1LM.LM00975	L09090567-05 A MS 100X	7	100		09/28/09 17:29
20	1LM.LM00976	L09090567-06 A MSD 100X	7	100		09/28/09 17:43
21	1LM.LM00977	WG3131058-05 1.0ug/L CCV	1	1	STD35486	09/28/09 17:58
22	1LM.LM00978	WG313058-06 CCB	1	1		09/28/09 18:12
23	1LM.LM00979	WG313072-09 0.2ug/L QCMRL	7	1	STD35486	09/28/09 18:26

Comments

Seq.	Rerun	Dil.	Reason	Analytes
10	X	100	Analyzed too dilute	
16	X	100	Analyzed too dilute	
17	X	100	Analyzed too dilute	




Microbac Laboratories Inc.

00109474

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009

CHECKLIST1 - Modified 03/05/2008

Generated: AUG-28-2009 08:33:35



Microbac Laboratories Inc.

00109475

Data Checklist

Date: 28-SEP-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 30335

Analytical Workgroups: 313072

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	X
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:

Secondary Reviewer:
29-SEP-2009



CHECKLIST1 - Modified 03/05/2008

Generated: SEP-29-2009 09:23:03



Analytical Method:6850

AAB#:WG313072

Login Number:L09090567

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSFL07RE(12)	01	09/25/09					09/28/09	3	28		09/28/09	.1	28	
04CSWR2H	02	09/25/09					09/28/09	3	28		09/28/09	.1	28	
04WCDRE(19)L	03	09/25/09					09/28/09	3	28		09/28/09	.1	28	
04CSFL13RE(13)	04	09/25/09					09/28/09	3	28		09/28/09	.2	28	
04CSFL13RE(13)-MS	05	09/25/09					09/28/09	3	28		09/28/09	.2	28	
04CSFL13RE(13)-MSD	06	09/25/09					09/28/09	3	28		09/28/09	.2	28	
04CSFL14RE(13)	07	09/25/09					09/28/09	2.9	28		09/28/09	.1	28	
04CSFL14RE(13)QC	08	09/25/09					09/28/09	2.9	28		09/28/09	.1	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109477

Login Number: L09090567
 Blank File ID: 1LM.LM00961
 Prep Date: 09/28/09 13:10
 Analyzed Date: 09/28/09 14:07
 Analyst: WTD

Work Group: WG313072
 Blank Sample ID: WG313072-02
 Instrument ID: LCMS1
 Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG313072-07	1LM.LM00959	09/28/09 13:39	01
MCT	WG313072-01	1LM.LM00960	09/28/09 13:53	01
LCS	WG313072-03	1LM.LM00962	09/28/09 14:22	01
04CSFL07RE(12)	L09090567-01	1LM.LM00963	09/28/09 14:36	DL01
04CSWR2H	L09090567-02	1LM.LM00964	09/28/09 14:50	DL01
04WCDRE(19)L	L09090567-03	1LM.LM00965	09/28/09 15:05	DL01
04CSFL14RE(13)	L09090567-07	1LM.LM00967	09/28/09 15:34	DL01
04CSFL14RE(13)QC	L09090567-08	1LM.LM00968	09/28/09 15:48	DL01
QCMRL	WG313072-08	1LM.LM00971	09/28/09 16:31	01
04CSFL13RE(13)	L09090567-04	1LM.LM00974	09/28/09 17:14	DL01
04CSFL13RE(13)-MS	L09090567-05	1LM.LM00975	09/28/09 17:29	DL01
04CSFL13RE(13)-MSD	L09090567-06	1LM.LM00976	09/28/09 17:43	DL01
QCMRL	WG313072-09	1LM.LM00979	09/28/09 18:26	01



Login Number: L09090567 Prep Date: 09/28/09 13:10 Sample ID: WG313072-02
Instrument ID: LCMS1 Run Date: 09/28/09 14:07 Prep Method: 6850
File ID: 1LM.LM00961 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313072 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.988	1.98	0.988	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1498039

29-SEP-2009 12:42



00109479

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313072-03
Instrument ID: LCMS1 Run Time: 14:22 Prep Method: 6850
File ID: 1LM.LM00962 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313072 Matrix: Soil Units: ug/kg
QC Key: STD Lot#: STD35486 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Perchlorate	1.98	2.08	106	80 - 120	



MS/MSD REPORT

Loginnum: L09090567 Cal ID: LCMS1- 26-AUG-09
Instrument ID: LCMS1 Contract #: DACA56-94-D-0020
Parent ID: L09090567-04 File ID: 1LM.LM00974 Dil: 100
Sample ID: L09090567-05 MS File ID: 1LM.LM00975 Dil: 100
Sample ID: L09090567-06 MSD File ID: 1LM.LM00976 Dil: 100

00109481
Worknum: WG313072

Prep Method: 6850
Method: 6850
Matrix: Soil
Units: ug/kg

Analyte	Parent	MS	MS	MS	MSD	MSD	MSD	%RPD	%Rec Limits	RPD Limit	Q
		Spiked	Found	%Rec	Spiked	Found	%Rec				
Perchlorate	2400	1.93	1770	-32500	1.98	5160	139000	97.6	80 - 120	15	*#

* FAILS %REC LIMIT

FAILS RPD LIMIT

00109482

Login Number: L09090567
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109483

Login Number: L09090567
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366



00109484

Login Number: L09090567
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393

INT_CAL - Modified 03/06/2008
PDF File ID: 1498932
Report generated 09/29/2009 12:43



00109485

Login Number: L09090567
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

Login Number: L09090567 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

00109487

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313058-01
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00957 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313072 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109488

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313058-04
Instrument ID: LCMS1 Run Time: 16:02 Method: 6850
File ID: 1LM.LM00969 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313072 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109489

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313058-06
Instrument ID: LCMS1 Run Time: 18:12 Method: 6850
File ID: 1LM.LM00978 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313072 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109490

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313058-02
Instrument ID: LCMS1 Run Time: 13:24 Method: 6850
File ID: 1LM.LM00958 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313072 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.02	ug/L	1.48	2.00	10	

* Exceeds %D Criteria



00109491

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313058-03
Instrument ID: LCMS1 Run Time: 16:17 Method: 6850
File ID: 1LM.LM00970 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313072 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.00	ug/L	1.44	0	10	

* Exceeds %D Criteria



00109492

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313058-05
Instrument ID: LCMS1 Run Time: 17:58 Method: 6850
File ID: 1LM.LM00977 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313072 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.01	ug/L	1.46	1.00	10	

* Exceeds %D Criteria



Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313072-07
Instrument ID: LCMS1 Run Time: 13:39 Prep Method: 6850
File ID: 1LM.LM00959 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313072 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.10	105	70 - 130	

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313072-08
Instrument ID: LCMS1 Run Time: 16:31 Prep Method: 6850
File ID: 1LM.LM00971 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313072 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	1.99	99.5	70 - 130	

Login Number: L09090567 Run Date: 09/28/2009 Sample ID: WG313072-09
Instrument ID: LCMS1 Run Time: 18:26 Prep Method: 6850
File ID: 1LM.LM00979 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313072 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.31	116	70 - 130	

Login Number: L09090567
Instrument ID: LCMS1
Workgroup (AAB#): WG313072

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090567-01	1000	DL01	181000
L09090567-02	1000	DL01	178000
L09090567-03	1000	DL01	186000
L09090567-04	100	DL01	173000
L09090567-05	100	DL01	188000
L09090567-06	100	DL01	187000
L09090567-07	1000	DL01	179000
L09090567-08	1000	DL01	178000
WG313072-02	1.00	01	160000
WG313072-03	1.00	01	163000

IS-1 - O18LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090567

00109500

09/29/09 14:32

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL07RE(12)	L09090567-01	D2216-90	1	28-SEP-09
04CSWR2H	L09090567-02	D2216-90	1	28-SEP-09
04WCDRE(19)L	L09090567-03	D2216-90	1	28-SEP-09
04CSFL13RE(13)	L09090567-04	D2216-90	1	28-SEP-09
04CSFL13RE(13)-MS	L09090567-05	D2216-90	1	28-SEP-09
04CSFL13RE(13)-MSD	L09090567-06	D2216-90	1	28-SEP-09
04CSFL14RE(13)	L09090567-07	D2216-90	1	28-SEP-09
04CSFL14RE(13)QC	L09090567-08	D2216-90	1	28-SEP-09



Report Number: L09090567

Report Date : September 29, 2009

00109501

Sample Number: L09090567-01
Client ID: 04CSFL07RE(12)
Matrix: Soil
Workgroup Number: WG313078
Collect Date: 09/25/2009 14:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/29/2009 08:42
Cal Date:
Run Date: 09/29/2009 08:42
File ID: B1.313078-0101

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	80.7		1.00	1.00

Report Number: L09090567

Report Date : September 29, 2009

00109502

Sample Number: L09090567-02
Client ID: 04CSWR2H
Matrix: Soil
Workgroup Number: WG313078
Collect Date: 09/25/2009 14:10
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/29/2009 08:42
Cal Date:
Run Date: 09/29/2009 08:42
File ID: B1.313078-0102

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	81.2		1.00	1.00

Report Number: L09090567

Report Date : September 29, 2009

00109503

Sample Number: L09090567-03
Client ID: 04WCDRE(19)L
Matrix: Soil
Workgroup Number: WG313078
Collect Date: 09/25/2009 14:15
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/29/2009 08:42
Cal Date:
Run Date: 09/29/2009 08:42
File ID: B1.313078-0103

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.2		1.00	1.00

Report Number: L09090567

Report Date : September 29, 2009

00109504

Sample Number: L09090567-04	PrePrep Method: NONE	Instrument: BAL001
Client ID: 04CSFL13RE(13)	Prep Method: D2216-90	Prep Date: 09/29/2009 08:42
Matrix: Soil	Analytical Method: D2216-90	Cal Date:
Workgroup Number: WG313078	Analyst: CPD	Run Date: 09/29/2009 08:42
Collect Date: 09/25/2009 14:20	Dilution: 1	File ID: B1.313078-0104
Sample Tag: 01	Units: weight %	

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.1		1.00	1.00

Report Number: L09090567

Report Date : September 29, 2009

00109505

Sample Number: L09090567-05	PrePrep Method: NONE	Instrument: BAL001
Client ID: 04CSFL13RE(13)-MS	Prep Method: D2216-90	Prep Date: 09/29/2009 08:42
Matrix: Soil	Analytical Method: D2216-90	Cal Date:
Workgroup Number: WG313078	Analyst: CPD	Run Date: 09/29/2009 08:42
Collect Date: 09/25/2009 14:20	Dilution: 1	File ID: B1.313078-0105
Sample Tag: 01	Units: weight %	

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.1		1.00	1.00

5 of 8



Report Number: L09090567

Report Date : September 29, 2009

00109506

Sample Number: L09090567-06
Client ID: 04CSFL13RE(13)-MSD
Matrix: Soil
Workgroup Number: WG313078
Collect Date: 09/25/2009 14:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/29/2009 08:42
Cal Date:
Run Date: 09/29/2009 08:42
File ID: B1.313078-0106

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.1		1.00	1.00

6 of 8



Report Number: L09090567

Report Date : September 29, 2009

00109507

Sample Number: L09090567-07
Client ID: 04CSFL14RE(13)
Matrix: Soil
Workgroup Number: WG313078
Collect Date: 09/25/2009 14:25
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/29/2009 08:42
Cal Date:
Run Date: 09/29/2009 08:42
File ID: B1.313078-0107

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	79.6		1.00	1.00

Report Number: L09090567

Report Date : September 29, 2009

00109508

Sample Number: L09090567-08
Client ID: 04CSFL14RE(13)QC
Matrix: Soil
Workgroup Number: WG313078
Collect Date: 09/25/2009 14:25
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 09/29/2009 08:42
Cal Date:
Run Date: 09/29/2009 08:42
File ID: B1.313078-0108

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	80.5		1.00	1.00

8 of 8



Example Percent Solids Calculations**1.0 Calculating the percent solids of a sample.**

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#):WG313078

Analyst:CPD

ADT(on):09/28/2009 12:26

Method:D2216-90

Instrument:BAL001

ADT(off):09/29/2009 08:42

SOP:K0003 Rev:9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090567-01	1.28	29.78	24.28			80.70	
L09090567-02	1.27	35.44	29.01			81.18	
L09090567-03	1.27	24.71	20.53			82.17	
L09090567-04	1.28	26.86	22.28			82.10	
L09090567-05	1.28	26.86	22.28			82.10	
L09090567-06	1.28	26.86	22.28			82.10	
L09090567-07	1.29	37.45	30.09			79.65	
L09090567-08	1.28	31.11	25.28			80.46	
WG313078-01	1.28	29.78	24.28			80.70	19.30
WG313078-02	1.28	25.39	20.56			79.97	20.03

Analyst: Leanne Davis

3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

September 29, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

00109514

[illegible]

COOLER INSPECTION



Received: 09/28/2009 09:45
Delivery Method: UPS
Opened By: Jane Thompson
Comments:

Login(s): L09090567

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0012238	G	4.0	1Z4016632210105053	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	No	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Discrepancies:

6	RS, MS, SD is marked on the COC for sample 04CSFL14RE(13)rec'd 1 jar, actual RS, MS, SD sample received is 04CSFL13RE(13)rec'd 3 jars.	COC was incorrectly marked. MS/MSD should be done on ID 04CSFL13RE(13) per the client
---	--	---

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090567
Account: 2773
Project: 2773.025
Samples: 8
Due Date: 29-SEP-2009

Samplenum **Container ID** **Products**
L09090567-01 618106 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

Samplenum **Container ID** **Products**
L09090567-02 618107 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

Samplenum **Container ID** **Products**
L09090567-03 618108 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

Samplenum **Container ID** **Products**
L09090567-04 618109 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



Login: L09090567
Account: 2773
Project: 2773.025
Samples: 8
Due Date: 29-SEP-2009

Samplenum **Container ID** **Products**
L09090567-05 618110 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

Samplenum **Container ID** **Products**
L09090567-06 618111 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:31	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

Samplenum **Container ID** **Products**
L09090567-07 618112 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:30	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

Samplenum **Container ID** **Products**
L09090567-08 618113 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-SEP-2009 10:39	RLK	
2	ANALYZ	W1	SEM	28-SEP-2009 10:44	WTD	RLK
3	ANALYZ	SEM	WET	28-SEP-2009 11:30	CPD	WTD
4	STORE	WET	A1	29-SEP-2009 08:27	JKT	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090606

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

Contract #: DACA56-94-D-0020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on October 01, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on October 01, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 60 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090606
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090606

CHAIN OF CUSTODY: The chain of custody number was 090309-01.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 0 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 01-OCT-09

<i>Stephanie Mossburg</i>

Laboratory Data Package Cover Page

00109523

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

October 1, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090606
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG313288
Reviewer Name: DEANNA I. HESSON
LRC Date: October 01, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090606
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG313288
Reviewer Name:	DEANNA I. HESSON
LRC Date:	October 01, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 General Chromatography Data

2.1.1 LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090606

Department: General Chromatography

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: Samples 01-03 were run at a dilution in order to obtain results within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090606

00109533

10/01/09 10:11

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL09RE(14)	L09090606-01	6850	1000	30-SEP-09
04CSFL11RE(14)	L09090606-02	6850	1000	30-SEP-09
04CSWCM	L09090606-03	6850	1000	30-SEP-09



Report Number: **L09090606**Report Date : **October 1, 2009**

00109534

Sample Number: **L09090606-01**
Client ID: **04CSFL09RE(14)**
Matrix: **Soil**
Workgroup Number: **WG313268**
Collect Date: **09/29/2009 16:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/30/2009 12:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/30/2009 13:42**
File ID: **1LM.LM01014**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	44300		1960	979

Report Number: **L09090606**Report Date : **October 1, 2009****00109535**

Sample Number: **L09090606-02**
Client ID: **04CSFL11RE(14)**
Matrix: **Soil**
Workgroup Number: **WG313268**
Collect Date: **09/29/2009 16:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/30/2009 12:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/30/2009 13:56**
File ID: **1LM.LM01015**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	68100		1930	964

Report Number: **L09090606**Report Date : **October 1, 2009**

00109536

Sample Number: **L09090606-03**
Client ID: **04CSWCM**
Matrix: **Soil**
Workgroup Number: **WG313268**
Collect Date: **09/29/2009 17:00**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **1000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/30/2009 12:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/30/2009 14:11**
File ID: **1LM.LM01016**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	2280		1820	912

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate**Concentration from Linear Regression****Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of internal standard (IS) = R_x/R_{istd}

x = amount ratio = concentration analyte/concentration internal standard (IS) = C_x / C_{istd}

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

$y = 1.45x + -0.00242$

Step 2: Substitute the value for y

where $y = 12600/226000 = 0.055752$

Step 3: Solve for x

$x = (y - b)/m = 0.0040119$

Step 4: Solve for analyte concentration C_x

$C_x = (C_{is})(x) = (5 \text{ ug/L})(0.0040119) = 0.0200594 \text{ ug/L}$

Example Calculation - Water:

Slope from curve, m :	1.45
Intercept from curve, b :	0
Response of analyte, R_x :	12600
Response of Internal Standard, R_{istd} :	226000
Concentration of IS, C_{istd} (ug/L):	5.00
Response Ratio:	0.06
Amount Ratio:	0.04
Analyte Concentration, C_x (ug/L) :	0.2

Example Calculation - Soil:

Analyte Concentration, C_x (ug/L):	0.2
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.0
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.01

Microbac Laboratories Inc.
Instrument Run Log

00109539

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

Page: 1

Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109540

Instrument: LCMS1 Dataset: 093009_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30336

Workgroups: 313268 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM01007	WG313269-01 CCB	1	1		09/30/09 12:00
2	1LM.LM01008	WG313269-02 1.0ug/L CCV	1	1	STD35536	09/30/09 12:14
3	1LM.LM01009	WG313268-05 0.2ug/L QCMRL	7	1	STD35536	09/30/09 12:28
4	1LM.LM01010	WG313268-01 2.0ug/kg MCT/ICS	7	1	STD35537	09/30/09 12:43
5	1LM.LM01011	WG313268-02 MET BLANK	7	1		09/30/09 12:57
6	1LM.LM01012	WG313268-03 2.0ug/kg LCS	7	1	STD35537	09/30/09 13:13
7	1LM.LM01013	WG313268-04 2.0ug/kg LCSD	7	1	STD35537	09/30/09 13:28
8	1LM.LM01014	L09090606-01 A 1000X	7	1000		09/30/09 13:42
9	1LM.LM01015	L09090606-02 A 1000X	7	1000		09/30/09 13:56
10	1LM.LM01016	L09090606-03 A 1000X	7	1000		09/30/09 14:11
11	1LM.LM01017	L09090607-01 A 1000X	7	1000		09/30/09 14:25
12	1LM.LM01018	L09090607-02 A 1000X	7	1000		09/30/09 14:40
13	1LM.LM01019	WG313269-03 1.0ug/L CCV	1	1	STD35536	09/30/09 14:54
14	1LM.LM01020	WG313268-06 0.2ug/L QCMRL	7	1	STD35536	09/30/09 15:09
15	1LM.LM01021	WG313269-04 CCB	1	1		09/30/09 15:23
16	1LM.LM01022	L09090607-01 A 10X	7	10		09/30/09 15:37
17	1LM.LM01023	WG313269-05 1.0ug/L CCV	1	1	STD35536	09/30/09 15:52
18	1LM.LM01024	L09090607-02 A 100X	7	100		09/30/09 16:06
19	1LM.LM01025	WG313269-06 1.0ug/L CCV	1	1	STD35536	09/30/09 16:21
20	1LM.LM01026	WG313268-07 0.2ug/L QCMRL	7	1	STD35536	09/30/09 16:35
21	1LM.LM01027	WG313269-07 CCB	1	1		09/30/09 16:49

Comments

Seq.	Rerun	Dil.	Reason	Analytes
11	X	10	Analyzed too dilute	
12	X	100	Analyzed too dilute	




Microbac Laboratories Inc.

00109541

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1



Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009



CHECKLIST1 - Modified 03/05/2008

Generated: AUG-28-2009 08:33:35



Microbac Laboratories Inc.

00109542

Data Checklist

Date: 30-SEP-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 30381

Analytical Workgroups: 313268

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
01-OCT-2009




Analytical Method:6850
Login Number:L09090606

AAB#:WG313268

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSFL09RE(14)	01	09/29/09					09/30/09	.8	28		09/30/09	.1	28	
04CSFL11RE(14)	02	09/29/09					09/30/09	.8	28		09/30/09	.1	28	
04CSWCM	03	09/29/09					09/30/09	.8	28		09/30/09	.1	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109544

Login Number: L09090606
Blank File ID: 1LM.LM01011
Prep Date: 09/30/09 12:00
Analyzed Date: 09/30/09 12:57
Analyst: WTD

Work Group: WG313268
Blank Sample ID: WG313268-02
Instrument ID: LCMS1
Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG313268-05	1LM.LM01009	09/30/09 12:28	01
MCT	WG313268-01	1LM.LM01010	09/30/09 12:43	01
LCS	WG313268-03	1LM.LM01012	09/30/09 13:13	01
LCS2	WG313268-04	1LM.LM01013	09/30/09 13:28	01
04CSFL09RE(14)	L09090606-01	1LM.LM01014	09/30/09 13:42	DL01
04CSFL11RE(14)	L09090606-02	1LM.LM01015	09/30/09 13:56	DL01
04CSWCM	L09090606-03	1LM.LM01016	09/30/09 14:11	DL01
QCMRL	WG313268-06	1LM.LM01020	09/30/09 15:09	01
QCMRL	WG313268-07	1LM.LM01026	09/30/09 16:35	01



Login Number: L09090606 Prep Date: 09/30/09 12:00 Sample ID: WG313268-02
Instrument ID: LCMS1 Run Date: 09/30/09 12:57 Prep Method: 6850
File ID: 1LM.LM01011 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.987	1.97	0.987	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1500697

01-OCT-2009 09:32



00109546

Login Number: L09090606 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG313268 Units: ug/kg
QC Key: STD Lot #: STD35536
Sample ID: WG313268-03 LCS File ID: 1LM.LM01012 Run Date: 09/30/2009 13:13
Sample ID: WG313268-04 LCS2 File ID: 1LM.LM01013 Run Date: 09/30/2009 13:28

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.96	2.20	113	1.96	2.22	114	0.905	80 - 120	15	



00109547

Login Number: L09090606
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109548

Login Number: L09090606
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-02			WG310580-03			WG310580-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	7760.00000	1.486	0.200	13900.0000	1.334	0.500	35100.0000	1.366

INT_CAL - Modified 03/06/2008
PDF File ID: 1500855
Report generated 10/01/2009 09:33



00109549

Login Number: L09090606
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-05			WG310580-06			WG310580-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	72400.0000	1.431	2.00	144000.000	1.457	5.00	347000.000	1.393

INT_CAL - Modified 03/06/2008
PDF File ID: 1500855
Report generated 10/01/2009 09:33



00109550

Login Number: L09090606
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

Login Number: L09090606 Run Date: 08/26/2009 Sample ID: WG310580-09
Instrument ID: LCMS1 Run Time: 13:10 Method: 6850
File ID: 1LM.LM00467 Analyst: WTD QC Key: STD
ICal Workgroup: WG310580 Cal ID: LCMS1 - 26-AUG-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	1.02	ug/L	1.47	2.00	15	

* Exceeds %D Limit

00109552

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313269-01
Instrument ID: LCMS1 Run Time: 12:00 Method: 6850
File ID: 1LM.LM01007 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313268 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109553

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313269-04
Instrument ID: LCMS1 Run Time: 15:23 Method: 6850
File ID: 1LM.LM01021 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313268 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109554

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313269-07
Instrument ID: LCMS1 Run Time: 16:49 Method: 6850
File ID: 1LM.LM01027 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313268 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109555

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313269-02
Instrument ID: LCMS1 Run Time: 12:14 Method: 6850
File ID: 1LM.LM01008 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.973	ug/L	1.40	2.70	10	

* Exceeds %D Criteria



00109556

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313269-03
Instrument ID: LCMS1 Run Time: 14:54 Method: 6850
File ID: 1LM.LM01019 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.03	ug/L	1.48	3.00	10	

* Exceeds %D Criteria



00109557

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313269-05
Instrument ID: LCMS1 Run Time: 15:52 Method: 6850
File ID: 1LM.LM01023 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.09	ug/L	1.58	9.00	10	

* Exceeds %D Criteria



00109558

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313269-06
Instrument ID: LCMS1 Run Time: 16:21 Method: 6850
File ID: 1LM.LM01025 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.08	ug/L	1.56	8.00	10	

* Exceeds %D Criteria



Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313268-05
Instrument ID: LCMS1 Run Time: 12:28 Prep Method: 6850
File ID: 1LM.LM01009 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.17	109	70 - 130	

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313268-06
Instrument ID: LCMS1 Run Time: 15:09 Prep Method: 6850
File ID: 1LM.LM01020 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.13	107	70 - 130	

Login Number: L09090606 Run Date: 09/30/2009 Sample ID: WG313268-07
Instrument ID: LCMS1 Run Time: 16:35 Prep Method: 6850
File ID: 1LM.LM01026 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.16	108	70 - 130	

Login Number: L09090606
Instrument ID: LCMS1
Workgroup (AAB#): WG313268

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090606-01	1000	DL01	162000
L09090606-02	1000	DL01	166000
L09090606-03	1000	DL01	168000
WG313268-02	1.00	01	175000
WG313268-03	1.00	01	169000
WG313268-04	1.00	01	172000

IS-1 - 018LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090606

00109566

10/01/09 10:11

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Buiilding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL09RE(14)	L09090606-01	D2216-90	1	30-SEP-09
04CSFL11RE(14)	L09090606-02	D2216-90	1	30-SEP-09
04CSWCM	L09090606-03	D2216-90	1	30-SEP-09



Report Number: L09090606

Report Date : October 1, 2009

00109567

Sample Number: L09090606-01
Client ID: 04CSFL09RE(14)
Matrix: Soil
Workgroup Number: WG313288
Collect Date: 09/29/2009 16:40
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 10/01/2009 08:28
Cal Date:
Run Date: 10/01/2009 08:28
File ID: B1.313288-0101

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.0		1.00	1.00

Report Number: L09090606

Report Date : October 1, 2009

00109568

Sample Number: L09090606-02
Client ID: 04CSFL11RE(14)
Matrix: Soil
Workgroup Number: WG313288
Collect Date: 09/29/2009 16:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 10/01/2009 08:28
Cal Date:
Run Date: 10/01/2009 08:28
File ID: B1.313288-0102

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.6		1.00	1.00

Report Number: L09090606

Report Date : October 1, 2009

00109569

Sample Number: L09090606-03
Client ID: 04CSWCM
Matrix: Soil
Workgroup Number: WG313288
Collect Date: 09/29/2009 17:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 10/01/2009 08:28
Cal Date:
Run Date: 10/01/2009 08:28
File ID: B1.313288-0103

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	85.0		1.00	1.00

3 of 3



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#): WG313288
Method: D2216-90
SOP: K0003 Rev: 9

Analyst: CPD
Instrument: BAL001

ADT(on): 09/30/2009 13:16
ADT(off): 10/01/2009 08:28

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090606-01	1.29	21.46	18.03			82.99	
L09090606-02	1.29	26.75	22.58			83.62	
L09090606-03	1.31	22.22	19.09			85.03	
L09090607-01	1.31	19.34	16.97			86.86	
L09090607-02	1.3	31.54	25.31			79.40	
WG313288-01	1.29	21.46	18.03			82.99	17.01
WG313288-02	1.31	24.5	20.73			83.74	16.26

Analyst: *Leanne Davis*

3.0 Attachments

Microbac Laboratories Inc.

Analyst Listing

October 1, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

Page 58



1000001974

COOLER INSPECTION



00109576

Received: 09/30/2009 09:30
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09090606

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014013	G	0.0	1Z4016632210105071	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090606
Account: 2773
Project: 2773.025
Samples: 3
Due Date: 01-OCT-2009

Samplenum **Container ID** **Products**
L09090606-01 618419 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	30-SEP-2009 10:22	RLK	
2	ANALYZ	W1	SEM	30-SEP-2009 10:31	WTD	RLK
3	STORE	SEM	W1	30-SEP-2009 10:59	RLK	WTD
4	ANALYZ	W1	WET	30-SEP-2009 13:12	CPD	RLK
5	ANALYZ	WET	A1	01-OCT-2009 08:23	JKT	CPD

Samplenum **Container ID** **Products**
L09090606-02 618420 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	30-SEP-2009 10:22	RLK	
2	ANALYZ	W1	SEM	30-SEP-2009 10:31	WTD	RLK
3	STORE	SEM	W1	30-SEP-2009 10:59	RLK	WTD
4	ANALYZ	W1	WET	30-SEP-2009 13:12	CPD	RLK
5	ANALYZ	WET	A1	01-OCT-2009 08:23	JKT	CPD

Samplenum **Container ID** **Products**
L09090606-03 618421 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	30-SEP-2009 10:22	RLK	
2	ANALYZ	W1	SEM	30-SEP-2009 10:31	WTD	RLK
3	STORE	SEM	W1	30-SEP-2009 10:58	RLK	WTD
4	ANALYZ	W1	WET	30-SEP-2009 13:12	CPD	RLK
5	ANALYZ	WET	A1	01-OCT-2009 08:23	JKT	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09090607

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

Contract #: DACA56-94-D-0020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on October 01, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on October 01, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 52 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

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Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

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LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090607
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090607

CHAIN OF CUSTODY: The chain of custody number was 090309-01.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 1 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 01-OCT-09
<i>Stephanie Mossburg</i>

Laboratory Data Package Cover Page

00109583

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

October 1, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09090607
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG313288
Reviewer Name: DEANNA I. HESSON
LRC Date: October 01, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090607
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG313288
Reviewer Name:	DEANNA I. HESSON
LRC Date:	October 01, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 General Chromatography Data

2.1.1 LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09090607

Department: General Chromatography

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: Samples 01, 02 were run at a dilution in order to obtain results within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09090607

00109593

10/01/09 10:11

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWR2H(1)	L09090607-01	6850	10	30-SEP-09
04CSWR2H(1)QC	L09090607-02	6850	100	30-SEP-09



Report Number: L09090607

Report Date : October 1, 2009

00109594

Sample Number: L09090607-01
Client ID: 04CSWR2H(1)
Matrix: Soil
Workgroup Number: WG313268
Collect Date: 09/29/2009 12:10
Sample Tag: DL01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 10
Units: ug/kg

Instrument: LCMS1
Prep Date: 09/30/2009 12:00
Cal Date: 08/26/2009 12:56
Run Date: 09/30/2009 15:37
File ID: 1LM.LM01022

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	294		18.6	9.29

Report Number: **L09090607**Report Date : **October 1, 2009****00109595**

Sample Number: **L09090607-02**
Client ID: **04CSWR2H(1)QC**
Matrix: **Soil**
Workgroup Number: **WG313268**
Collect Date: **09/29/2009 12:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **100**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/30/2009 12:00**
Cal Date: **08/26/2009 12:56**
Run Date: **09/30/2009 16:06**
File ID: **1LM.LM01024**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	1080		195	97.5

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate**Concentration from Linear Regression****Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of internal standard (IS) = R_x/R_{istd}

x = amount ratio = concentration analyte/concentration internal standard (IS) = C_x / C_{istd}

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

$y = 1.45x + -0.00242$

Step 2: Substitute the value for y

where $y = 12600/226000 = 0.055752$

Step 3: Solve for x

$x = (y - b)/m = 0.0040119$

Step 4: Solve for analyte concentration C_x

$C_x = (C_{is})(x) = (5 \text{ ug/L})(0.0040119) = 0.0200594 \text{ ug/L}$

Example Calculation - Water:

Slope from curve, m :	1.45
Intercept from curve, b :	0
Response of analyte, R_x :	12600
Response of Internal Standard, R_{istd} :	226000
Concentration of IS, C_{istd} (ug/L):	5.00
Response Ratio:	0.06
Amount Ratio:	0.04
Analyte Concentration, C_x (ug/L) :	0.2

Example Calculation - Soil:

Analyte Concentration, C_x (ug/L):	0.2
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.0
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.01

Microbac Laboratories Inc.
Instrument Run Log

00109598

Instrument: LCMS1 Dataset: 082609_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Workgroups: 310493 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: WG310580

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
30	1LM.LM00488	L09080500-01 A 2X	7	2		08/26/09 18:12
31	1LM.LM00489	WG310581-05 CCV 1.0	1	1	STD34872	08/26/09 18:27
32	1LM.LM00490	WG310493-04 QCMRL 0.2	7	1	STD34872	08/26/09 18:41
33	1LM.LM00491	WG310581-06 CCB	1	1		08/26/09 18:56

Comments

Page: 1

Approved: 28-AUG-09




Microbac Laboratories Inc.
Instrument Run Log

00109599

Instrument: LCMS1 Dataset: 093009_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30336

Workgroups: 313268 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM01007	WG313269-01 CCB	1	1		09/30/09 12:00
2	1LM.LM01008	WG313269-02 1.0ug/L CCV	1	1	STD35536	09/30/09 12:14
3	1LM.LM01009	WG313268-05 0.2ug/L QCMRL	7	1	STD35536	09/30/09 12:28
4	1LM.LM01010	WG313268-01 2.0ug/kg MCT/ICS	7	1	STD35537	09/30/09 12:43
5	1LM.LM01011	WG313268-02 MET BLANK	7	1		09/30/09 12:57
6	1LM.LM01012	WG313268-03 2.0ug/kg LCS	7	1	STD35537	09/30/09 13:13
7	1LM.LM01013	WG313268-04 2.0ug/kg LCSD	7	1	STD35537	09/30/09 13:28
8	1LM.LM01014	L09090606-01 A 1000X	7	1000		09/30/09 13:42
9	1LM.LM01015	L09090606-02 A 1000X	7	1000		09/30/09 13:56
10	1LM.LM01016	L09090606-03 A 1000X	7	1000		09/30/09 14:11
11	1LM.LM01017	L09090607-01 A 1000X	7	1000		09/30/09 14:25
12	1LM.LM01018	L09090607-02 A 1000X	7	1000		09/30/09 14:40
13	1LM.LM01019	WG313269-03 1.0ug/L CCV	1	1	STD35536	09/30/09 14:54
14	1LM.LM01020	WG313268-06 0.2ug/L QCMRL	7	1	STD35536	09/30/09 15:09
15	1LM.LM01021	WG313269-04 CCB	1	1		09/30/09 15:23
16	1LM.LM01022	L09090607-01 A 10X	7	10		09/30/09 15:37
17	1LM.LM01023	WG313269-05 1.0ug/L CCV	1	1	STD35536	09/30/09 15:52
18	1LM.LM01024	L09090607-02 A 100X	7	100		09/30/09 16:06
19	1LM.LM01025	WG313269-06 1.0ug/L CCV	1	1	STD35536	09/30/09 16:21
20	1LM.LM01026	WG313268-07 0.2ug/L QCMRL	7	1	STD35536	09/30/09 16:35
21	1LM.LM01027	WG313269-07 CCB	1	1		09/30/09 16:49

Comments

Seq.	Rerun	Dil.	Reason	Analytes
11	X	10	Analyzed too dilute	
12	X	100	Analyzed too dilute	




Microbac Laboratories Inc.

00109600

Data Checklist

Date: 26-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1


Curve Workgroup: NA

Runlog ID: 29811

Analytical Workgroups: 310493

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009




Data Checklist

Date: 30-SEP-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 30381

Analytical Workgroups: 313268

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
01-OCT-2009

METHOD BLANK SUMMARY

Login Number: <u>L09090607</u>	Work Group: <u>WG313268</u>
Blank File ID: <u>1LM.LM01011</u>	Blank Sample ID: <u>WG313268-02</u>
Prep Date: <u>09/30/09 12:00</u>	Instrument ID: <u>LCMS1</u>
Analyzed Date: <u>09/30/09 12:57</u>	Method: <u>6850</u>
Analyst: <u>WTD</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG313268-05	1LM.LM01009	09/30/09 12:28	01
MCT	WG313268-01	1LM.LM01010	09/30/09 12:43	01
LCS	WG313268-03	1LM.LM01012	09/30/09 13:13	01
LCS2	WG313268-04	1LM.LM01013	09/30/09 13:28	01
QCMRL	WG313268-06	1LM.LM01020	09/30/09 15:09	01
04CSWR2H(1)	L09090607-01	1LM.LM01022	09/30/09 15:37	DL01
04CSWR2H(1)QC	L09090607-02	1LM.LM01024	09/30/09 16:06	DL01
QCMRL	WG313268-07	1LM.LM01026	09/30/09 16:35	01

Report Name: BLANK_SUMMARY
PDF File ID: 1500703
Report generated 10/01/2009 08:07



Login Number: L09090607 Prep Date: 09/30/09 12:00 Sample ID: WG313268-02
Instrument ID: LCMS1 Run Date: 09/30/09 12:57 Prep Method: 6850
File ID: 1LM.LM01011 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.987	1.97	0.987	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1500704

01-OCT-2009 08:07



00109604

Login Number: L09090607 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG313268 Units: ug/kg
QC Key: STD Lot #: STD35536
Sample ID: WG313268-03 LCS File ID: 1LM.LM01012 Run Date: 09/30/2009 13:13
Sample ID: WG313268-04 LCS2 File ID: 1LM.LM01013 Run Date: 09/30/2009 13:28

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.96	2.20	113	1.96	2.22	114	0.905	80 - 120	15	



00109605

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313269-01
Instrument ID: LCMS1 Run Time: 12:00 Method: 6850
File ID: 1LM.LM01007 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313268 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1500708
Report generated 10/01/2009 08:07



00109606

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313269-04
Instrument ID: LCMS1 Run Time: 15:23 Method: 6850
File ID: 1LM.LM01021 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313268 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1500708
Report generated 10/01/2009 08:07



00109607

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313269-07
Instrument ID: LCMS1 Run Time: 16:49 Method: 6850
File ID: 1LM.LM01027 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313268 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109608

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313269-02
Instrument ID: LCMS1 Run Time: 12:14 Method: 6850
File ID: 1LM.LM01008 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.973	ug/L	1.40	2.70	10	

* Exceeds %D Criteria



00109609

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313269-03
Instrument ID: LCMS1 Run Time: 14:54 Method: 6850
File ID: 1LM.LM01019 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.03	ug/L	1.48	3.00	10	

* Exceeds %D Criteria



00109610

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313269-05
Instrument ID: LCMS1 Run Time: 15:52 Method: 6850
File ID: 1LM.LM01023 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.09	ug/L	1.58	9.00	10	

* Exceeds %D Criteria



00109611

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313269-06
Instrument ID: LCMS1 Run Time: 16:21 Method: 6850
File ID: 1LM.LM01025 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313268 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.08	ug/L	1.56	8.00	10	

* Exceeds %D Criteria



Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313268-05
Instrument ID: LCMS1 Run Time: 12:28 Prep Method: 6850
File ID: 1LM.LM01009 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.17	109	70 - 130	

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313268-06
Instrument ID: LCMS1 Run Time: 15:09 Prep Method: 6850
File ID: 1LM.LM01020 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.13	107	70 - 130	

Login Number: L09090607 Run Date: 09/30/2009 Sample ID: WG313268-07
Instrument ID: LCMS1 Run Time: 16:35 Prep Method: 6850
File ID: 1LM.LM01026 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313268 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.16	108	70 - 130	

Login Number: L09090607
Instrument ID: LCMS1
Workgroup (AAB#): WG313268

ICAL CCV Number: WG310580-05
CAL ID: LCMS1-26-AUG-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09090607-01	10.0	DL01	163000
L09090607-02	100	DL01	166000
WG313268-02	1.00	01	175000
WG313268-03	1.00	01	169000
WG313268-04	1.00	01	172000

IS-1 - 018LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090607

00109619

10/01/09 10:11

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWR2H(1)	L09090607-01	D2216-90	1	30-SEP-09
04CSWR2H(1)QC	L09090607-02	D2216-90	1	30-SEP-09



Report Number: L09090607

Report Date : October 1, 2009

00109620

Sample Number: L09090607-01
Client ID: 04CSWR2H(1)
Matrix: Soil
Workgroup Number: WG313288
Collect Date: 09/29/2009 12:10
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 10/01/2009 08:28
Cal Date:
Run Date: 10/01/2009 08:28
File ID: B1.313288-0104

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	86.9		1.00	1.00

1 of 2



Report Number: L09090607

Report Date : October 1, 2009

00109621

Sample Number: L09090607-02
Client ID: 04CSWR2H(1)QC
Matrix: Soil
Workgroup Number: WG313288
Collect Date: 09/29/2009 12:10
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 10/01/2009 08:28
Cal Date:
Run Date: 10/01/2009 08:28
File ID: B1.313288-0105

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	79.4		1.00	1.00

2 of 2



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#):WG313288

Analyst:CPD

ADT(on):09/30/2009 13:16

Method:D2216-90

Instrument:BAL001

ADT(off):10/01/2009 08:28

SOP:K0003 Rev:9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09090606-01	1.29	21.46	18.03			82.99	
L09090606-02	1.29	26.75	22.58			83.62	
L09090606-03	1.31	22.22	19.09			85.03	
L09090607-01	1.31	19.34	16.97			86.86	
L09090607-02	1.3	31.54	25.31			79.40	
WG313288-01	1.29	21.46	18.03			82.99	17.01
WG313288-02	1.31	24.5	20.73			83.74	16.26

Analyst: Leanne Davis

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
October 1, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



COC NO. 090309-01

00109627



1000001975

COOLER INSPECTION



00109628

Received: 09/30/2009 09:32
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09090607

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0013545	G	1.0	1Z4016632210105062	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09090607
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 01-OCT-2009

Samplenum **Container ID** **Products**
L09090607-01 618422 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	30-SEP-2009 10:22	RLK	
2	ANALYZ	W1	SEM	30-SEP-2009 10:31	WTD	RLK
3	STORE	SEM	W1	30-SEP-2009 10:58	RLK	WTD
4	ANALYZ	W1	WET	30-SEP-2009 13:12	CPD	RLK
5	ANALYZ	WET	A1	01-OCT-2009 08:23	JKT	CPD

Samplenum **Container ID** **Products**
L09090607-02 618423 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	30-SEP-2009 10:22	RLK	
2	ANALYZ	W1	SEM	30-SEP-2009 10:31	WTD	RLK
3	STORE	SEM	W1	30-SEP-2009 10:58	RLK	WTD
4	ANALYZ	W1	WET	30-SEP-2009 13:12	CPD	RLK
5	ANALYZ	WET	A1	01-OCT-2009 08:23	JKT	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09100059

Client: Jennifer Hoang, ABB Lummus Building, Houston, TX, 77042

Contract #: DACA56-94-D-0020

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on October 05, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

This report was certified on October 05, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 55 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

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Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

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LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09100059
PREPARED FOR Shaw E I, Inc.
WORK ID:

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2.1.1.1 Summary Data	13
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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09100059

CHAIN OF CUSTODY: The chain of custody number was 090309-01.

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 0 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 05-OCT-09
<i>Stephanie Mossburg</i>

Laboratory Data Package Cover Page

00109635

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

October 5, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09100059
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG313499
Reviewer Name: DEANNA I. HESSON
LRC Date: October 05, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109637

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09100059
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG313499
Reviewer Name:	DEANNA I. HESSON
LRC Date:	October 05, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 General Chromatography Data

2.1.1 LC/MS Data (6850)

2.1.1.1 Summary Data



Loginnum: L09100059

Department: General Chromatography

Analyst: Wade DeLong

METHOD

Analysis SW-846 6850

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration and Tune: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

Reason #1: Data System Fails to Select Correct Peak In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

Reason #4: System Establishes Incorrect Baseline There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

Reason #5: Miscellaneous Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

LABORATORY REPORT

L09100059

00109645

10/05/09 09:48

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Buiilding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL09RE(14)-NORTH WALL	L09100059-01	6850	1	02-OCT-09
04CSFL11RE(14)-NORTH WALL	L09100059-02	6850	1	02-OCT-09



Report Number: L09100059

Report Date : October 5, 2009

00109646

Sample Number: L09100059-01
Client ID: 04CSFL09RE(14)-NORTH WALL
Matrix: Soil
Workgroup Number: WG313495
Collect Date: 10/01/2009 16:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 1
Units: ug/kg

Instrument: LCMS1
Prep Date: 10/02/2009 12:01
Cal Date: 10/02/2009 13:42
Run Date: 10/02/2009 16:20
File ID: 1LM.LM01049

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0		U	1.98	0.992

U Not detected at or above adjusted sample detection limit

Report Number: L09100059

Report Date : October 5, 2009

00109647

Sample Number: L09100059-02
Client ID: 04CSFL11RE(14)-NORTH WALL
Matrix: Soil
Workgroup Number: WG313495
Collect Date: 10/01/2009 16:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 6850
Analytical Method: 6850
Analyst: WTD
Dilution: 1
Units: ug/kg

Instrument: LCMS1
Prep Date: 10/02/2009 12:01
Cal Date: 10/02/2009 13:42
Run Date: 10/02/2009 16:38
File ID: 1LM.LM01050

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0		U	1.96	0.981

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example Calculation 6850 - Perchlorate**Concentration from Linear Regression****Step 1: Retrieve Curve Data From Plot, $y = mx + b$**

y = response ratio = response of analyte / response of internal standard (IS) = R_x/R_{istd}

x = amount ratio = concentration analyte/concentration internal standard (IS) = C_x / C_{istd}

m = slope from curve (1.45)

b = intercept from curve (-0.00242)

$y = 1.45x + -0.00242$

Step 2: Substitute the value for y

where $y = 12600/226000 = 0.055752$

Step 3: Solve for x

$x = (y - b)/m = 0.0040119$

Step 4: Solve for analyte concentration C_x

$C_x = (C_{is})(x) = (5 \text{ ug/L})(0.0040119) = 0.0200594 \text{ ug/L}$

Example Calculation - Water:

Slope from curve, m :	1.45
Intercept from curve, b :	-0.00242
Response of analyte, R_x :	12600
Response of Internal Standard, R_{istd} :	226000
Concentration of IS, C_{istd} (ug/L):	5.00
Response Ratio:	0.05575
Amount Ratio:	0.04012
Analyte Concentration, C_x (ug/L) :	0.200594

Example Calculation - Soil:

Analyte Concentration, C_x (ug/L):	0.20059
Amount of soil extracted (g):	5.00
Final volume of extract (mL):	50.00
Percent solids (Pct wt.)	100
Concentration in soil (ug/kg):	2.005938

Microbac Laboratories Inc.
Instrument Run Log

00109650

Instrument: LCMS1 Dataset: 100209_WTD.TXT
 Analyst1: WTD Analyst2: NA
 Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30365

Workgroups: 313495 Column 1 ID: KP-RPPX250 Column 2 ID: NA
 Internal STD: COA14015 Surrogate STD: NA Calibration STD: _____

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM01031	WG313487-01 CCB	1	1		10/02/09 12:01
2	1LM.LM01032	WG313487-02 0.1ug/L STD	1	1	STD35590	10/02/09 12:15
3	1LM.LM01033	WG313487-03 0.2ug/L STD	1	1	STD35590	10/02/09 12:30
4	1LM.LM01034	WG313487-04 0.5ug/L STD	1	1	STD35590	10/02/09 12:44
5	1LM.LM01035	WG313487-05 1.0ug/L STD	1	1	STD35590	10/02/09 12:58
6	1LM.LM01036	WG313487-06 2.0ug/L STD	1	1	STD35590	10/02/09 13:13
7	1LM.LM01037	WG313487-07 5.0ug/L STD	1	1	STD35590	10/02/09 13:27
8	1LM.LM01038	WG313487-08 10ug/L STD	1	1	STD35590	10/02/09 13:42
9	1LM.LM01039	WG313487-09 1.0ug/L ICV	1	1	STD35594	10/02/09 13:56
10	1LM.LM01040	WG313489-01 1.0ug/L CCV	1	1	STD35590	10/02/09 14:10
11	1LM.LM01041	WG313485-05 0.2ug/L QCMRL	7	1	STD35590	10/02/09 14:25
12	1LM.LM01042	WG313489-02 CCB	1	1		10/02/09 14:39
13	1LM.LM01043	WG313491-01 2.0ug/kg MCT/ICS	7	1	STD35591	10/02/09 14:54
14	1LM.LM01044	WG313491-02 MET BLANK	7	1		10/02/09 15:08
15	1LM.LM01045	WG313491-03 2.0ug/kg LCS	7	1	STD35591	10/02/09 15:22
16	1LM.LM01046	WG313491-04 2.0ug/kg LCSD	7	1	STD35591	10/02/09 15:37
17	1LM.LM01047	L09100059-01 A 1000X	7	1000		10/02/09 15:51
18	1LM.LM01048	L09100059-02 A 1000X	7	1000		10/02/09 16:06
19	1LM.LM01049	L09100059-01 A	7	1		10/02/09 16:20
20	1LM.LM01050	L09100059-02 A	7	1		10/02/09 16:38
21	1LM.LM01051	WG313489-03 1.0ug/L CCV	1	1	STD35590	10/02/09 17:01
22	1LM.LM01052	WG313495-06 0.2ug/L QCMRL	7	1	STD35590	10/02/09 17:15
23	1LM.LM01053	WG313489-04 CCB	1	1		10/02/09 17:30

Comments

Seq.	Rerun	Dil.	Reason	Analytes
17	X	1	Analyzed too dilute	
18	X	1	Analyzed too dilute	

Page: 1

Approved: 05-OCT-09




Microbac Laboratories Inc.

00109651

Data Checklist

Date: 02-OCT-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 30423

Analytical Workgroups: 313495

ANALYTICAL	
System Performance Check	NA
DFTPP (GCMS)	NA
Endrin/DDT breakdown (8081/GCMS)	NA
Pentachlorophenol/benzidine tailing (GCMS)	NA
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (GCMS)	X
Continuing calibration blank (CCB) (IC/LCMS)	X
Limit of quantitation verification (LOQV) (LCMS)	X
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:

Secondary Reviewer:
05-OCT-2009



Analytical Method:6850
Login Number:L09100059

AAB#:WG313495

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSFL09RE(14)-NORTH WAI	01	10/01/09					10/02/09	.8	28		10/02/09	.2	28	
04CSFL11RE(14)-NORTH WAI	02	10/01/09					10/02/09	.8	28		10/02/09	.2	28	

* = SEE PROJECT QAPP REQUIREMENTS

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

METHOD BLANK SUMMARY

00109654

Login Number: L09100059
Blank File ID: 1LM.LM01044
Prep Date: 10/02/09 12:01
Analyzed Date: 10/02/09 15:08
Analyst: WTD

Work Group: WG313495
Blank Sample ID: WG313495-02
Instrument ID: LCMS1
Method: 6850

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG313495-05	1LM.LM01041	10/02/09 14:25	01
MCT	WG313495-01	1LM.LM01043	10/02/09 14:54	01
LCS	WG313495-03	1LM.LM01045	10/02/09 15:22	01
LCS2	WG313495-04	1LM.LM01046	10/02/09 15:37	01
04CSFL09RE(14)-NORTH WALL	L09100059-01	1LM.LM01049	10/02/09 16:20	01
04CSFL11RE(14)-NORTH WALL	L09100059-02	1LM.LM01050	10/02/09 16:38	01
QCMRL	WG313495-06	1LM.LM01052	10/02/09 17:15	01

Report Name: BLANK_SUMMARY
PDF File ID: 1502514
Report generated 10/05/2009 08:52



Login Number: L09100059 Prep Date: 10/02/09 12:01 Sample ID: WG313495-02
Instrument ID: LCMS1 Run Date: 10/02/09 15:08 Prep Method: 6850
File ID: 1LM.LM01044 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313495 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-02-OCT-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.979	1.96	0.979	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1502515

05-OCT-2009 08:52



00109656

Login Number: L09100059 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG313495 Units: ug/kg
QC Key: STD Lot #: STD35590
Sample ID: WG313495-03 LCS File ID: 1LM.LM01045 Run Date: 10/02/2009 15:22
Sample ID: WG313495-04 LCS2 File ID: 1LM.LM01046 Run Date: 10/02/2009 15:37

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.96	1.85	94.0	1.98	1.94	98.0	5.15	80 - 120	15	



00109657

Login Number: L09100059
Analytical Method: 6850
ICAL Workgroup: WG313487

Instrument ID: LCMS1
Initial Calibration Date: 02-OCT-09 13:42
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R ²)	QUAD(R ²)
Perchlorate		1.682	3.87	1.00000	

R = Correlation coefficient; 0.995 minimum
R² = Coefficient of determination; 0.99 minimum



00109658

Login Number: L09100059
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 02-OCT-09 13:42
Column ID: F

Analyte	WG313487-02			WG313487-03			WG313487-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	0.100	3710.00000	1.825	0.200	7520.00000	1.593	0.500	18500.0000	1.664



00109659

Login Number: L09100059
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 02-OCT-09 13:42
Column ID: F

Analyte	WG313487-05			WG313487-06			WG313487-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Perchlorate	1.00	35500.0000	1.698	2.00	69600.0000	1.680	5.00	188000.000	1.666

INT_CAL - Modified 03/06/2008
PDF File ID: 1502518
Report generated 10/05/2009 08:52



00109660

Login Number: L09100059
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 02-OCT-09 13:42
Column ID: F

Analyte	WG313487-08		
	CONC	RESP	RF
Perchlorate	10.0	342000.000	1.651

INT_CAL - Modified 03/06/2008
PDF File ID: 1502518
Report generated 10/05/2009 08:52



00109661

Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313487-09
Instrument ID: LCMS1 Run Time: 13:56 Method: 6850
File ID: 1LM.LM01039 Analyst: WTD QC Key: STD
ICal Workgroup: WG313487 Cal ID: LCMS1 - 02-OCT-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Perchlorate		1.00	0.990	ug/L	1.65	1.00	15	

* Exceeds %D Limit

00109662

Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313487-01
Instrument ID: LCMS1 Run Time: 12:01 Method: 6850
File ID: 1LM.LM01031 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313495 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109663

Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313489-02
Instrument ID: LCMS1 Run Time: 14:39 Method: 6850
File ID: 1LM.LM01042 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313495 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109664

Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313489-04
Instrument ID: LCMS1 Run Time: 17:30 Method: 6850
File ID: 1LM.LM01053 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG313495 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109665

Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313489-01
Instrument ID: LCMS1 Run Time: 14:10 Method: 6850
File ID: 1LM.LM01040 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313495 Cal ID: LCMS1 - 02-OCT-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.03	ug/L	1.72	3.00	10	

* Exceeds %D Criteria



00109666

Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313489-03
Instrument ID: LCMS1 Run Time: 17:01 Method: 6850
File ID: 1LM.LM01051 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG313495 Cal ID: LCMS1 - 02-OCT-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.07	ug/L	1.78	7.00	10	

* Exceeds %D Criteria



Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313495-05
Instrument ID: LCMS1 Run Time: 14:25 Prep Method: 6850
File ID: 1LM.LM01041 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313495 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-02-OCT-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	1.90	95.0	70 - 130	

Login Number: L09100059 Run Date: 10/02/2009 Sample ID: WG313495-06
Instrument ID: LCMS1 Run Time: 17:15 Prep Method: 6850
File ID: 1LM.LM01052 Analyst: WTD Method: 6850
Workgroup (AAB#): WG313495 Matrix: Soil Units: ug/kg
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-02-OCT-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	2.05	103	70 - 130	

Login Number: L09100059
Instrument ID: LCMS1
Workgroup (AAB#): WG313495

ICAL CCV Number: WG313487-05
CAL ID: LCMS1-02-OCT-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG313487-05	NA	NA	105000
Upper Limit	NA	NA	210000
Lower Limit	NA	NA	52500
L09100059-01	1.00	01	110000
L09100059-02	1.00	01	107000
WG313495-02	1.00	01	116000
WG313495-03	1.00	01	113000
WG313495-04	1.00	01	111000

IS-1 - 018LP

Underline = Response outside limits

Login Number: L09100059
Instrument ID: LCMS1
Workgroup (AAB#): WG313495

ICAL CCV Number: WG313487-05
CAL ID: LCMS1-02-OCT-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1
WG313487-05	NA	NA	105000
Upper Limit	NA	NA	210000
Lower Limit	NA	NA	52500
L09100059-01	1.00	01	110000
L09100059-02	1.00	01	107000
WG313495-02	1.00	01	116000
WG313495-03	1.00	01	113000
WG313495-04	1.00	01	111000

IS-1 - 018LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09100059

00109674

10/05/09 09:48

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Buiilding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL09RE(14)-NORTH WALL	L09100059-01	D2216-90	1	02-OCT-09
04CSFL11RE(14)-NORTH WALL	L09100059-02	D2216-90	1	02-OCT-09



Report Number: L09100059

Report Date : October 5, 2009

00109675

Sample Number: L09100059-01
Client ID: 04CSFL09RE(14)-NORTH WALL
Matrix: Soil
Workgroup Number: WG313499
Collect Date: 10/01/2009 16:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 10/03/2009 08:22
Cal Date:
Run Date: 10/03/2009 08:22
File ID: B1.313499-0101

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	90.1		1.00	1.00

Report Number: L09100059

Report Date : October 5, 2009

00109676

Sample Number: L09100059-02
Client ID: 04CSFL11RE(14)-NORTH WALL
Matrix: Soil
Workgroup Number: WG313499
Collect Date: 10/01/2009 16:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: CPD
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 10/03/2009 08:22
Cal Date:
Run Date: 10/03/2009 08:22
File ID: B1.313499-0102

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	90.0		1.00	1.00

2 of 2



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

Workgroup (AAB#): WG313499Analyst: CPDADT(on): 10/02/2009 12:27Method: D2216-90Instrument: BAL001ADT(off): 10/03/2009 08:22SOP: K0003 Rev: 9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09100059-01	1.3	15.46	14.06			90.11	
L09100059-02	1.29	19.16	17.38			90.04	
WG313499-01	1.3	15.46	14.06			90.11	9.887
WG313499-02	1.28	19.78	17.97			90.22	9.784

Analyst: *Robert Davis*

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
October 5, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



00109682

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

[illegible]



1000002045

COOLER INSPECTION

00109683



Received: 10/02/2009 09:43
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09100059

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
001-000171	G	0.0	1Z4016632210105080	090309-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09100059**Account:** 2773**Project:** 2773.025**Samples:** 2**Due Date:** 05-OCT-2009

Samplenum **Container ID** **Products**
L09100059-01 620128 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	02-OCT-2009 10:03	RLK	
2	ANALYZ	W1	SEM	02-OCT-2009 10:10	WTD	RLK
3	ANALYZ	SEM	WET	02-OCT-2009 12:12	CPD	WTD

Samplenum **Container ID** **Products**
L09100059-02 620129 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	02-OCT-2009 10:03	RLK	
2	ANALYZ	W1	SEM	02-OCT-2009 10:10	WTD	RLK
3	ANALYZ	SEM	WET	02-OCT-2009 12:12	CPD	WTD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09080361

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on August 20, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 20, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 60 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

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Password: demo

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LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09080361
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080361

CHAIN OF CUSTODY: The chain of custody number was 081709-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 18-AUG-09
<i>Stephanie Mossburg</i>

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

SHERI L. PFALZGRAF



Chemist II

August 19, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080361
Project Name: 798-LONGHORN
Method: 7471
Prep Batch Number(s): WG309946
Reviewer Name: SHERI L. PFALZGRAF
LRC Date: August 19, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

00109692

00109693

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080361
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309946
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 19, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

Laboratory Data Package Cover Page

00109695

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
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- d) Cleanup methods, and
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- b) The laboratory's surrogate QC limits.

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R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

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DEANNA I. HESSON



Conventional Lab Supervisor

August 19, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080361
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG309940
Reviewer Name: DEANNA I. HESSON
LRC Date: August 19, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109697

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080361
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309940
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 19, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 Metals Data

2.1.1 Metals CVAA Data (Mercury)

2.1.1.1 Summary Data

LABORATORY REPORT

L09080361

00109703

08/20/09 09:32

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSEF1	L09080361-01	7471A	1	18-AUG-09
04CSEF2	L09080361-02	7471A	1	18-AUG-09



Report Number: **L09080361**Report Date : **August 20, 2009**

00109704

Sample Number: **L09080361-01**
Client ID: **04CSEF1**
Matrix: **Soil**
Workgroup Number: **WG309978**
Collect Date: **08/17/2009 13:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **7471A**
Analytical Method: **7471A**
Analyst: **SLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **HYDRA**
Prep Date: **08/18/2009 11:47**
Cal Date:
Run Date: **08/19/2009 11:34**
File ID: **HY.081909.113425**
Percent Solid: **79.8**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0204	J	0.119	0.0119

J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080361**Report Date : **August 20, 2009**

00109705

Sample Number: **L09080361-02**
Client ID: **04CSEF2**
Matrix: **Soil**
Workgroup Number: **WG309978**
Collect Date: **08/17/2009 13:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **7471A**
Analytical Method: **7471A**
Analyst: **SLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **HYDRA**
Prep Date: **08/18/2009 11:47**
Cal Date: **08/19/2009 11:10**
Run Date: **08/19/2009 11:38**
File ID: **HY.081909.113833**
Percent Solid: **85.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.128		0.109	0.0109

2 of 2



2.1.1.2 QC Summary Data

Example Cold Vapor Mercury Calculations

Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Diluted to Volume (mL)

Vi = Aliquot Volume (mL)

D = Manual dilution factor, if required (10X = 10)

Example:

0.1

40

40

1

Cx = Concentration of element in ppb (ug/L)

0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Diluted to volume (mL)

Ws = Aliquot weight (g)

D = Manual dilution factor

Example:

0.1

40

0.6

1

Cx = Concentration of element in ug/kg

6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

6.67

80

$Cdry$ = Concentration calculated as dry weight (ug/kg)

8.33

8.33 ug/kg = 0.00833 mg/kg

Workgroup: WG309946
Analyst: REK
Spike Analyst: REK
Method: 7471A
Run Date: 08/18/2009 11:46
Hotblock Start Temp: 94.6 @ 13:00
Hotblock End Temp: 96.6 @ 13:30

SOP: ME405 Revision 9
Spike Solution: STD34729
Spike Witness: VC
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
HCL Lot #: COA14111
KMnO4 1:1 Lot #: RGT13913
HG SOIL STD 10PPM Lot #: STD34736
HG SOILS ICV Lot #: STD34737

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG309946-03	BLANK	7	.6 g	40 mL		
2	WG309946-04	LCS	7	.604 g	40 mL	4 mL	
3	L09080340-01	SAMP	7	.602 g	40 mL		08/21/09
4	L09080340-02	SAMP	7	.604 g	40 mL		08/21/09
5	L09080340-03	SAMP	7	.618 g	40 mL		08/21/09
6	L09080340-04	SAMP	7	.614 g	40 mL		08/21/09
7	L09080340-05	SAMP	7	.6 g	40 mL		08/21/09
8	L09080340-06	SAMP	7	.617 g	40 mL		08/21/09
9	L09080340-07	SAMP	7	.611 g	40 mL		08/21/09
10	L09080340-08	SAMP	7	.612 g	40 mL		08/21/09
11	L09080340-09	SAMP	7	.617 g	40 mL		08/21/09
12	L09080340-10	SAMP	7	.622 g	40 mL		08/21/09
13	L09080340-11	SAMP	7	.643 g	40 mL		08/21/09
14	WG309946-01	REF	7	.62 g	40 mL		
15	L09080340-12	RS01	7	.62 g	40 mL		08/21/09
16	WG309946-05	MS	7	.62 g	40 mL	4 mL	
17	L09080340-13	MS01	7	.62 g	40 mL	4 mL	08/21/09
18	WG309946-06	MSD	7	.62 g	40 mL	4 mL	
19	L09080340-14	SD01	7	.62 g	40 mL	4 mL	08/21/09
20	WG309946-02	REF	7	.622 g	40 mL		
21	L09080340-15	RS02	7	.622 g	40 mL		08/21/09
22	WG309946-07	MS	7	.622 g	40 mL	4 mL	
23	L09080340-16	MS02	7	.622 g	40 mL	4 mL	08/21/09
24	WG309946-08	MSD	7	.622 g	40 mL	4 mL	
25	L09080340-17	SD02	7	.622 g	40 mL	4 mL	08/21/09
26	L09080340-18	SAMP	7	.605 g	40 mL		08/21/09
27	L09080340-19	SAMP	7	.61 g	40 mL		08/21/09
28	L09080340-20	SAMP	7	.627 g	40 mL		08/21/09
29	L09080361-01	SAMP	7	.63 g	40 mL		08/19/09
30	L09080361-02	SAMP	7	.644 g	40 mL		08/19/09

Analyst: REK

Reviewer: Eric Pottin

Microbac Laboratories Inc.

Instrument Run Log

00109709

Instrument: HYDRA Dataset: 081909B.PRN
 Analyst1: SLP Analyst2: N/A
 Method: 7471A SOP: ME405 Rev: 9
 Maintenance Log ID: 29839

Calibration Std: STD34736 ICV/CCV Std: STD34737 Post Spike: STD34736
 ICSA: N/A ICSAB: N/A Int. Std: _____

Workgroups: 309978

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.081909.110418	WG310119-01	Calibration Point		1		08/19/09 11:04
2	HY.081909.110622	WG310119-02	Calibration Point		1		08/19/09 11:06
3	HY.081909.110825	WG310119-03	Calibration Point		1		08/19/09 11:08
4	HY.081909.111032	WG310119-04	Calibration Point		1		08/19/09 11:10
5	HY.081909.111230	WG310119-05	Calibration Point		1		08/19/09 11:12
6	HY.081909.111415	WG310119-06	Calibration Point		1		08/19/09 11:14
7	HY.081909.112149	WG310119-07	Initial Calibration Verification		1		08/19/09 11:21
8	HY.081909.112331	WG310119-08	Initial Calib Blank		1		08/19/09 11:23
9	HY.081909.112617	WG310119-09	CCV		1		08/19/09 11:26
10	HY.081909.112823	WG310119-10	CCB		1		08/19/09 11:28
11	HY.081909.113036	WG309946-03	Method/Prep Blank	.6/40	1		08/19/09 11:30
12	HY.081909.113231	WG309946-04	Laboratory Control S	.604/40	1		08/19/09 11:32
13	HY.081909.113425	L09080361-01	04CSEF1	.63/40	1		08/19/09 11:34
14	HY.081909.113609	WG309978-02	Post Digestion Spike		1	L09080361-01	08/19/09 11:36
15	HY.081909.113833	L09080361-02	04CSEF2	.644/40	1		08/19/09 11:38
16	HY.081909.114038	L09080340-01	SO-00	.602/40	1		08/19/09 11:40
17	HY.081909.114253	WG309978-01	Post Digestion Spike		1	L09080340-01	08/19/09 11:42
18	HY.081909.114500	L09080340-02	SO-01	.604/40	1		08/19/09 11:45
19	HY.081909.114714	L09080340-03	SO-02	.618/40	1		08/19/09 11:47
20	HY.081909.114907	L09080340-04	SO-10	.614/40	1		08/19/09 11:49
21	HY.081909.115121	WG310119-11	CCV		1		08/19/09 11:51
22	HY.081909.115459	WG310119-12	CCB		1		08/19/09 11:54
23	HY.081909.120255	WG309978-01	Post Digestion Spike		1	L09080340-01	08/19/09 12:02
24	HY.081909.120443	L09080340-05	SO-11	.6/40	1		08/19/09 12:04
25	HY.081909.120637	L09080340-06	SO-12	.617/40	1		08/19/09 12:06
26	HY.081909.120834	L09080340-07	SO-110	.611/40	1		08/19/09 12:08
27	HY.081909.121049	L09080340-08	SO-20	.612/40	1		08/19/09 12:10
28	HY.081909.121232	L09080340-09	SO-21	.617/40	1		08/19/09 12:12
29	HY.081909.121509	L09080340-10	SO-22	.622/40	1		08/19/09 12:15
30	HY.081909.121752	L09080340-11	SO-210	.643/40	1		08/19/09 12:17
31	HY.081909.122131	L09080340-12	SO-30	.62/40	1	WG309946-01	08/19/09 12:21
32	HY.081909.122407	L09080340-13	SO-30-MS	.62/40	1	WG309946-05	08/19/09 12:24
33	HY.081909.122555	WG310119-13	CCV		1		08/19/09 12:25
34	HY.081909.122752	WG310119-14	CCB		1		08/19/09 12:27
35	HY.081909.122936	L09080340-14	SO-30-MSD	.62/40	1	WG309946-06	08/19/09 12:29
36	HY.081909.123239	L09080340-15	SO-31	.622/40	1	WG309946-02	08/19/09 12:32
37	HY.081909.123434	L09080340-16	SO-31-MS	.622/40	1	WG309946-07	08/19/09 12:34

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Maren Beery



Microbac Laboratories Inc.

Instrument Run Log

00109710

Instrument: HYDRA Dataset: 081909B.PRN
 Analyst1: SLP Analyst2: N/A
 Method: 7471A SOP: ME405 Rev: 9
 Maintenance Log ID: 29839

Calibration Std: STD34736 ICV/CCV Std: STD34737 Post Spike: STD34736
 ICSA: N/A ICSAB: N/A Int. Std: _____

Workgroups: 309978

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.081909.123717	L09080340-17	SO-31-MSD	.622/40	1	WG309946-08	08/19/09 12:37
39	HY.081909.123910	L09080340-18	SO-310	.605/40	1		08/19/09 12:39
40	HY.081909.124127	L09080340-19	SO-40	.61/40	1		08/19/09 12:41
41	HY.081909.124406	L09080340-20	SO-41	.627/40	1		08/19/09 12:44
42	HY.081909.124551	WG310119-15	CCV		1		08/19/09 12:45
43	HY.081909.124814	WG310119-16	CCB		1		08/19/09 12:48

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Maren Beery



Microbac Laboratories Inc.

00109711

Data Checklist

Date: 19-AUG-2009

Analyst: SLP

Analyst: NA

Method: 7471A

Instrument: HYDRA

Curve Workgroup: 310119

Runlog ID: 29698

Analytical Workgroups: 309978

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0340, 0361
Client Forms	X
Level X	
Level 3	
Level 4	0340, 0361
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	SLP
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
19-AUG-2009

Secondary Reviewer:
20-AUG-2009

Shen L. Pabon

Maren Berry



Analytical Method:7471A
Login Number:L09080361

AAB#:WG309978

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSEF1	01	08/17/09					08/18/09	.9	28		08/19/09	1.9	28	
04CSEF2	02	08/17/09					08/18/09	.9	28		08/19/09	1.9	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

Login Number: L09080361 Work Group: WG309978
Blank File ID: HY.081909.113036 Blank Sample ID: WG309946-03
Prep Date: 08/18/09 11:46 Instrument ID: HYDRA
Analyzed Date: 08/19/09 11:30 Method: 7471A
Analyst: SLP

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309946-04	HY.081909.113231	08/19/09 11:32	01
04CSEF1	L09080361-01	HY.081909.113425	08/19/09 11:34	01
04CSEF2	L09080361-02	HY.081909.113833	08/19/09 11:38	01

Report Name: BLANK_SUMMARY
PDF File ID: 1469495
Report generated 08/19/2009 15:47



Login Number: L09080361 Prep Date: 08/18/09 11:46 Sample ID: WG309946-03
Instrument ID: HYDRA Run Date: 08/19/09 11:30 Prep Method: 7471A
File ID: HY.081909.113036 Analyst: SLP Method: 7471A
Workgroup (AAB#): WG309978 Matrix: Soil Units: mg/kg
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-19-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury, Total	0.0100	0.100	0.0100	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1469496

19-AUG-2009 15:47



00109715

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG309946-04
Instrument ID: HYDRA Run Time: 11:32 Prep Method: 7471A
File ID: HY.081909.113231 Analyst: SLP Method: 7471A
Workgroup (AAB#): WG309978 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD34729 Cal ID: HYDRA-19-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury, Total	0.265	0.278	105	80 - 120	



00109716

Loginnum: L09080361 Cal ID: HYDRA- Worknum: WG309978
Instrument ID: HYDRA Contract #: DACA56-94-D-0020 Method: 7471A
Parent ID: WG309946-01 File ID: HY.081909.122131 Dil: 1 Matrix: SOLID
Sample ID: WG309946-05 MS File ID: HY.081909.122407 Dil: 1 Units: mg/kg
Sample ID: WG309946-06 MSD File ID: HY.081909.122936 Dil: 1 Percent Solid: 91.4

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury, Total	0.0125	0.282	0.283	95.8	0.282	0.289	97.8	1.98	75 - 125	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

00109717

Loginnum: L09080361 Cal ID: HYDRA- Worknum: WG309978
Instrument ID: HYDRA Contract #: DACA56-94-D-0020 Method: 7471A
Parent ID: WG309946-02 File ID: HY.081909.123239 Dil: 1 Matrix: SOLID
Sample ID: WG309946-07 MS File ID: HY.081909.123434 Dil: 1 Units: mg/kg
Sample ID: WG309946-08 MSD File ID: HY.081909.123717 Dil: 1 Percent Solid: 89.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury, Total	0.0105	0.286	0.274	92.1	0.286	0.279	93.6	1.55	75 - 125	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Sample Login ID: L09080361

Worknum: WG309978

Instrument ID: HYDRA

Method: 7471A

Post Spike ID: WG309978-02

File ID: HY.081909.113609

Dil: 1

Units: ug/L

Sample ID: L09080361-01

File ID: HY.081909.113425

Dil: 1

Matrix: Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	1.25	F	0.256	F	1	102.0	85 - 115	

N = % Recovery exceeds control limits

F = Result is between MDL and RL

U = Sample result is below MDL. A value of zero is used in the calculation

00109719

Login Number: L09080361
Analytical Method: 7471A
ICAL Worknum: WG310119

Workgroup (AAB#): WG309978
Instrument ID: HYDRA
Initial Calibration Date: 08/19/2009 11:14

Analyte	WG310119-01		WG310119-02		WG310119-03		WG310119-04		WG310119-05		WG310119-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	-308	0.200	834	1.00	3713	2.00	9186	5.00	21597	10.0	41458

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



00109720

Login Number: L09080361
Analytical Method: 7471A
ICAL Worknum: WG310119

Workgroup (AAB#): WG309978
Instrument ID: HYDRA
Initial Calibration Date: 08/19/2009 11:14

Analyte	R	Q
Mercury	0.9995	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-08
Instrument ID: HYDRA Run Time: 11:23 Method: 7471A
File ID: HY.081909.112331 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.15	1.5	.15	U

00109722

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-10
Instrument ID: HYDRA Run Time: 11:28 Method: 7471A
File ID: HY.081909.112823 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109723

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-12
Instrument ID: HYDRA Run Time: 11:54 Method: 7471A
File ID: HY.081909.115459 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109724

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-14
Instrument ID: HYDRA Run Time: 12:27 Method: 7471A
File ID: HY.081909.122752 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109725

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-16
Instrument ID: HYDRA Run Time: 12:48 Method: 7471A
File ID: HY.081909.124814 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1469503
Report generated 08/19/2009 15:47



00109726

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-07
Instrument ID: HYDRA Run Time: 11:21 Method: 7471A
File ID: HY.081909.112149 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
QC Key: STD

Analyte	Expected	Found	%REC	LIMITS	Q
Mercury	2	1.92	96.0	90 - 110	

* Exceeds LIMITS Limit

00109727

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-09
Instrument ID: HYDRA Run Time: 11:26 Method: 7471A
File ID: HY.081909.112617 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00213	mg/L	107	80 - 120		

* Exceeds LIMITS Criteria



00109728

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-11
Instrument ID: HYDRA Run Time: 11:51 Method: 7471A
File ID: HY.081909.115121 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00213	mg/L	107	80 - 120		

* Exceeds LIMITS Criteria



00109729

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-13
Instrument ID: HYDRA Run Time: 12:25 Method: 7471A
File ID: HY.081909.122555 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00203	mg/L	102	80 - 120		

* Exceeds LIMITS Criteria



00109730

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-15
Instrument ID: HYDRA Run Time: 12:45 Method: 7471A
File ID: HY.081909.124551 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG309978 Cal ID: HYDRA - 19-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00209	mg/L	105	80 - 120		

* Exceeds LIMITS Criteria



2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09080361

00109734

08/20/09 09:32

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Buiilding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSEF1	L09080361-01	D2216-90	1	18-AUG-09
04CSEF2	L09080361-02	D2216-90	1	18-AUG-09



Report Number: **L09080361**Report Date : **August 20, 2009****00109735**

Sample Number: **L09080361-01**
Client ID: **04CSEF1**
Matrix: **Soil**
Workgroup Number: **WG309940**
Collect Date: **08/17/2009 13:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/19/2009 08:55**
Cal Date:
Run Date: **08/19/2009 08:55**
File ID: **B1.309940-0123**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	79.8		1.00	1.00

1 of 2



Report Number: **L09080361**Report Date : **August 20, 2009**

00109736

Sample Number: **L09080361-02**
Client ID: **04CSEF2**
Matrix: **Soil**
Workgroup Number: **WG309940**
Collect Date: **08/17/2009 13:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/19/2009 08:55**
Cal Date:
Run Date: **08/19/2009 08:55**
File ID: **B1.309940-0124**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	85.5		1.00	1.00

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

PERCENT SOLIDS

00109738

Workgroup (AAB#): WG309940
 Method: D2216-90
 SOP: K0003 Rev: 9

Analyst: CPD
 Instrument: BAL001

ADT(on): 08/18/2009 11:25
 ADT(off): 08/19/2009 08:55

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080308-01	1.29	18.27	18.27			100.0	
L09080308-02	1.29	17.71	17.71			100.0	
L09080308-03	1.29	15.2	15.19			99.93	
L09080308-04	1.29	18.61	18.6			99.94	
L09080308-05	1.29	21.49	21.48			99.95	
L09080308-06	1.29	22.74	22.64			99.53	
L09080308-07	1.29	4.37	4.37			100.0	
L09080308-08	1.29	12.35	12.29			99.46	
L09080308-09	1.29	12.04	12			99.63	
L09080308-10	1.29	12.57	12.52			99.56	
L09080308-11	1.29	12.05	12			99.54	
L09080308-12	1.29	20.32	20.25			99.63	
L09080308-13	1.29	22.48	22.46			99.91	
L09080308-14	1.29	15.95	15.95			100.0	
L09080308-15	1.29	21.4	21.15			98.76	
L09080308-16	1.29	14.7	14.63			99.48	
L09080308-17	1.29	16.81	16.78			99.81	
L09080308-18	1.29	19.48	19.48			100.0	
L09080308-19	1.29	27.21	27.17			99.85	
L09080308-20	1.29	23.65	23.63			99.91	
L09080308-21	1.29	18.05	18.05			100.0	
L09080360-01	1.28	32.98	28.5			85.87	
L09080361-01	1.29	22.79	18.44			79.77	
L09080361-02	1.28	23.77	20.51			85.50	
WG309940-01	1.28	32.98	28.5			85.87	14.13
WG309940-02	1.28	28.04	23.37			82.55	17.45

Analyst: Leanne Davis

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 20, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



Page 58

COC NO. (DATE-01)

00109742

[illegible]



1000001131

COOLER INSPECTION



00109743

Received: 08/18/2009 09:34
Delivery Method: UPS
Opened By: Jane Thompson
Comments:

Login(s): L09080361

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0012221	H	2.0	1Z66V7250193574101	DATE-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09080361**Account:** 2773**Project:** 2773.025**Samples:** 2**Due Date:** 19-AUG-2009

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L09080361-01	606733	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	18-AUG-2009 11:31	JKT	
2	PREP	W1	DIG	18-AUG-2009 11:33	REK	JKT
3	ANALYZ*	DIG	METALS	18-AUG-2009 14:15	PDM	REK
4	STORE	DIG	A1	18-AUG-2009 15:15	JKT	REK

**Sample extract/digestate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L09080361-02	606734	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	18-AUG-2009 11:31	JKT	
2	PREP	W1	DIG	18-AUG-2009 11:33	REK	JKT
3	ANALYZ*	DIG	METALS	18-AUG-2009 14:15	PDM	REK
4	STORE	DIG	A1	18-AUG-2009 15:15	JKT	REK

**Sample extract/digestate*

A1 - Sample Archive (COLD)
 A2 - Sample Archive (AMBIENT)
 F1 - Volatiles Freezer in Login
 V1 - Volatiles Refrigerator in Login
 W1 - Walkin Cooler in Login





158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • <http://www.microbac.com>

Laboratory Report Number: L09080399

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	<i>Team Chemist/Data Specialist</i>	kalbertson@microbac.com
Stephanie Mossburg	<i>Team Chemist/Data Specialist</i>	smossburg@microbac.com
Tony Long	<i>Team Chemist/Data Specialist</i>	tlong@microbac.com
Amanda Fickiesen	<i>Client Services Specialist</i>	afickiesen@microbac.com
Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on August 20, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 20, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 70 pages.

Look closer. Go further. Do more.



The Microbac logo consists of the word "Microbac" in a white serif font, centered within a dark teal rectangular box.

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"

User ID: jdoe@abc.com

Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09080399
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080399

CHAIN OF CUSTODY: The chain of custody number was 081809-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 1 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 20-AUG-09
<i>Stephanie Mossburg</i>

Laboratory Data Package Cover Page

00109750

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MAREN M. BEERY



Metals Supervisor

August 20, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080399
Project Name: 798-LONGHORN
Method: 7471
Prep Batch Number(s): WG310050
Reviewer Name: MAREN M. BEERY
LRC Date: August 20, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?	✓				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080399
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG310050
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 20, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

Laboratory Data Package Cover Page

00109755

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

August 20, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080399
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG310090
Reviewer Name: DEANNA I. HESSON
LRC Date: August 20, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109757

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080399
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG310090
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 20, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 Metals Data

2.1.1 Metals CVAA Data (Mercury)

2.1.1.1 Summary Data

LABORATORY REPORT

L09080399

00109763

08/20/09 13:37

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Building
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWRQ	L09080399-01	7471A	1	19-AUG-09
04CSWRQ-MS	L09080399-02	7471A	1	19-AUG-09
04CSWRQ-MSD	L09080399-03	7471A	1	19-AUG-09
04CSWOH	L09080399-04	7471A	1	19-AUG-09
04CSWOP	L09080399-05	7471A	1	19-AUG-09
04CSWOP-QC	L09080399-06	7471A	1	19-AUG-09
04CSWFR	L09080399-07	7471A	1	19-AUG-09



Report Number: L09080399

Report Date : August 20, 2009

00109764

Sample Number: L09080399-01
Client ID: 04CSWRQ
Matrix: Soil
Workgroup Number: WG310174
Collect Date: 08/18/2009 14:15
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 7471A
Analytical Method: 7471A
Analyst: SLP
Dilution: 1
Units: mg/kg

Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49
Run Date: 08/20/2009 10:42
File ID: HY.082009.104248
Percent Solid: 83.3

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0129	J	0.113	0.0113

J The analyte was positively identified, but the quantitation was below the RL

Report Number: L09080399

Report Date : August 20, 2009

00109765

Sample Number: L09080399-02
Client ID: 04CSWRQ-MS
Matrix: Soil
Workgroup Number: WG310174
Collect Date: 08/18/2009 14:15
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 7471A
Analytical Method: 7471A
Analyst: SLP
Dilution: 1
Units: mg/kg

Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49
Run Date: 08/20/2009 10:44
File ID: HY.082009.104434
Percent Solid: 83.3

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.335		0.113	0.0113

Report Number: L09080399

Report Date : August 20, 2009

00109766

Sample Number: L09080399-03
Client ID: 04CSWRQ-MSD
Matrix: Soil
Workgroup Number: WG310174
Collect Date: 08/18/2009 14:15
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 7471A
Analytical Method: 7471A
Analyst: SLP
Dilution: 1
Units: mg/kg

Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49
Run Date: 08/20/2009 10:50
File ID: HY.082009.105006
Percent Solid: 83.3

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.318		0.113	0.0113

Report Number: L09080399

Report Date : August 20, 2009

00109767

Sample Number: L09080399-04
Client ID: 04CSWOH
Matrix: Soil
Workgroup Number: WG310174
Collect Date: 08/18/2009 14:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 7471A
Analytical Method: 7471A
Analyst: SLP
Dilution: 1
Units: mg/kg

Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49
Run Date: 08/20/2009 10:52
File ID: HY.082009.105202
Percent Solid: 84.8

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0231	J	0.109	0.0109

J The analyte was positively identified, but the quantitation was below the RL

Report Number: L09080399

Report Date : August 20, 2009

00109768

Sample Number: L09080399-05
Client ID: 04CSWOP
Matrix: Soil
Workgroup Number: WG310174
Collect Date: 08/18/2009 08:15
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 7471A
Analytical Method: 7471A
Analyst: SLP
Dilution: 1
Units: mg/kg

Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49
Run Date: 08/20/2009 10:55
File ID: HY.082009.105551
Percent Solid: 83.6

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0526	J	0.119	0.0119

J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080399**Report Date : **August 20, 2009****00109769**

Sample Number: **L09080399-06**
Client ID: **04CSWOP-QC**
Matrix: **Soil**
Workgroup Number: **WG310174**
Collect Date: **08/18/2009 08:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **7471A**
Analytical Method: **7471A**
Analyst: **SLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **HYDRA**
Prep Date: **08/19/2009 11:39**
Cal Date: **08/20/2009 09:49**
Run Date: **08/20/2009 10:57**
File ID: **HY.082009.105733**
Percent Solid: **82.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.124		0.120	0.0120

Report Number: L09080399

Report Date : August 20, 2009

00109770

Sample Number: L09080399-07
Client ID: 04CSWFR
Matrix: Soil
Workgroup Number: WG310174
Collect Date: 08/18/2009 15:30
Sample Tag: 01

PrePrep Method: NONE
Prep Method: 7471A
Analytical Method: 7471A
Analyst: SLP
Dilution: 1
Units: mg/kg

Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49
Run Date: 08/20/2009 10:59
File ID: HY.082009.105925
Percent Solid: 82.3

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0120	J	0.114	0.0114

J The analyte was positively identified, but the quantitation was below the RL

7 of 7



2.1.1.2 QC Summary Data

Example Cold Vapor Mercury Calculations

Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Diluted to Volume (mL)

Vi = Aliquot Volume (mL)

D = Manual dilution factor, if required (10X = 10)

Example:

0.1

40

40

1

Cx = Concentration of element in ppb (ug/L)

0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Diluted to volume (mL)

Ws = Aliquot weight (g)

D = Manual dilution factor

Example:

0.1

40

0.6

1

Cx = Concentration of element in ug/kg

6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

6.67

80

$Cdry$ = Concentration calculated as dry weight (ug/kg)

8.33

8.33 ug/kg = 0.00833 mg/kg

Workgroup: WG310050
Analyst: REK
Spike Analyst: REK
Method: 7471A
Run Date: 08/19/2009 11:39
Hotblock Start Temp: 94.6 @ 12:05
Hotblock End Temp: 93.5 @ 12:35

SOP: ME405 Revision 9
Spike Solution: STD34760
Spike Witness: VC
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
HCL Lot #: COA14028
KMnO4 1:1 Lot #: RGT14157
HG SOIL STD 10PPM Lot #: STD34767
HG SOILS ICV Lot #: STD34768

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG310050-02	BLANK	7	.624 g	40 mL		
2	WG310050-03	LCS	7	.612 g	40 mL	4 mL	
3	L09080371-05	SAMP	7	.606 g	40 mL		09/01/09
4	L09080377-01	SAMP	7	.607 g	40 mL		08/28/09
5	L09080377-02	SAMP	7	.639 g	40 mL		08/28/09
6	L09080377-03	SAMP	7	.612 g	40 mL		08/28/09
7	L09080377-04	SAMP	7	.617 g	40 mL		08/28/09
8	L09080377-05	SAMP	7	.62 g	40 mL		08/28/09
9	L09080377-06	SAMP	7	.617 g	40 mL		08/28/09
10	L09080377-07	SAMP	7	.648 g	40 mL		08/28/09
11	L09080377-08	SAMP	7	.6 g	40 mL		08/28/09
12	L09080377-09	SAMP	7	.638 g	40 mL		08/28/09
13	L09080377-10	SAMP	7	.608 g	40 mL		08/28/09
14	L09080386-02	SAMP	7	.616 g	40 mL		08/28/09
15	L09080386-04	SAMP	7	.634 g	40 mL		08/28/09
16	WG310050-01	REF	7	.635 g	40 mL		
17	L09080399-01	RS01	7	.635 g	40 mL		08/20/09
18	WG310050-04	MS	7	.635 g	40 mL	4 mL	
19	L09080399-02	MS01	7	.635 g	40 mL	4 mL	08/20/09
20	WG310050-05	MSD	7	.635 g	40 mL	4 mL	
21	L09080399-03	SD01	7	.635 g	40 mL	4 mL	08/20/09
22	L09080399-04	SAMP	7	.646 g	40 mL		08/20/09
23	L09080399-05	SAMP	7	.603 g	40 mL		08/20/09
24	L09080399-06	SAMP	7	.606 g	40 mL		08/20/09
25	L09080399-07	SAMP	7	.641 g	40 mL		08/20/09

Analyst: 

Reviewer: Brenda Gregory

Microbac Laboratories Inc.

Instrument Run Log

00109774

Instrument: HYDRA Dataset: 082009A.PRN
 Analyst1: SLP Analyst2: N/A
 Method: 7471A SOP: ME405 Rev: 9
 Maintenance Log ID: 29855

Calibration Std: STD34767 ICV/CCV Std: STD34768 Post Spike: STD34767
 ICSA: N/A ICSAB: N/A Int. Std: _____

Workgroups: 310174, 310076

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.082009.094113	WG310194-01	Calibration Point		1		08/20/09 09:41
2	HY.082009.094255	WG310194-02	Calibration Point		1		08/20/09 09:42
3	HY.082009.094450	WG310194-03	Calibration Point		1		08/20/09 09:44
4	HY.082009.094634	WG310194-04	Calibration Point		1		08/20/09 09:46
5	HY.082009.094816	WG310194-05	Calibration Point		1		08/20/09 09:48
6	HY.082009.094959	WG310194-06	Calibration Point		1		08/20/09 09:49
7	HY.082009.095333	WG310194-07	Initial Calibration Verification		1		08/20/09 09:53
8	HY.082009.095519	WG310194-08	Initial Calib Blank		1		08/20/09 09:55
9	HY.082009.095706	WG310194-09	CCV		1		08/20/09 09:57
10	HY.082009.095847	WG310194-10	CCB		1		08/20/09 09:58
11	HY.082009.100341	WG310050-02	Method/Prep Blank	.624/40	1		08/20/09 10:03
12	HY.082009.100535	WG310050-03	Laboratory Control S	.612/40	1		08/20/09 10:05
13	HY.082009.100717	L09080371-05	G-31-GSS005E (0.5-1.0)	.606/40	1		08/20/09 10:07
14	HY.082009.100921	WG310174-01	Post Digestion Spike		1	L09080371-05	08/20/09 10:09
15	HY.082009.101143	L09080377-01	3401-SB01-26-28	.607/40	1		08/20/09 10:11
16	HY.082009.101327	WG310174-02	Post Digestion Spike		1	L09080377-01	08/20/09 10:13
17	HY.082009.101510	L09080377-02	3401-SB01-30-32	.639/40	1		08/20/09 10:15
18	HY.082009.101714	L09080377-03	3401-SB02-28-32	.612/40	1		08/20/09 10:17
19	HY.082009.101917	L09080377-04	3401-SB02-34-36	.617/40	1		08/20/09 10:19
20	HY.082009.102102	L09080377-05	3401-SB03-8-10	.62/40	1		08/20/09 10:21
21	HY.082009.102330	WG310194-11	CCV		1		08/20/09 10:23
22	HY.082009.102512	WG310194-12	CCB		1		08/20/09 10:25
23	HY.082009.102714	L09080377-06	3401-SB03-14-16	.617/40	1		08/20/09 10:27
24	HY.082009.102859	L09080377-07	3401-SB04-10-12	.648/40	1		08/20/09 10:28
25	HY.082009.103044	L09080377-08	3401-SB04-14-16	.6/40	1		08/20/09 10:30
26	HY.082009.103235	L09080377-09	3401-SB05-10-12	.638/40	1		08/20/09 10:32
27	HY.082009.103439	L09080377-10	3401-SB05-14-16	.608/40	1		08/20/09 10:34
28	HY.082009.103652	L09080386-02	AV-NCB-PE-VIS-38-C2-0817	.616/40	1		08/20/09 10:36
29	HY.082009.103837	WG310174-03	Post Digestion Spike		1	L09080386-02	08/20/09 10:38
30	HY.082009.104105	L09080386-04	AV-NCB-AS-VIS-8-081709	.634/40	1		08/20/09 10:41
31	HY.082009.104248	L09080399-01	04CSWRQ	.635/40	1	WG310050-01	08/20/09 10:42
32	HY.082009.104434	L09080399-02	04CSWRQ-MS	.635/40	1	WG310050-04	08/20/09 10:44
33	HY.082009.104617	WG310194-13	CCV		1		08/20/09 10:46
34	HY.082009.104804	WG310194-14	CCB		1		08/20/09 10:48
35	HY.082009.105006	L09080399-03	04CSWRQ-MSD	.635/40	1	WG310050-05	08/20/09 10:50
36	HY.082009.105202	L09080399-04	04CSWOH	.646/40	1		08/20/09 10:52
37	HY.082009.105345	WG310174-04	Post Digestion Spike		1	L09080399-04	08/20/09 10:53

Page: 1 Approved: August 20, 2009

Maren Beery



Microbac Laboratories Inc.

00109775

Instrument Run Log

Instrument: HYDRA Dataset: 082009A.PRN
 Analyst1: SLP Analyst2: N/A
 Method: 7471A SOP: ME405 Rev: 9
 Maintenance Log ID: 29855

Calibration Std: STD34767 ICV/CCV Std: STD34768 Post Spike: STD34767
 ICSA: N/A ICSAB: N/A Int. Std: _____

Workgroups: 310174, 310076

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.082009.105551	L09080399-05	04CSWOP	.603/40	1		08/20/09 10:55
39	HY.082009.105733	L09080399-06	04CSWOP-QC	.606/40	1		08/20/09 10:57
40	HY.082009.105925	L09080399-07	04CSWFR	.641/40	1		08/20/09 10:59
41	HY.082009.110109	WG310194-15	CCV		1		08/20/09 11:01
42	HY.082009.110253	WG310194-16	CCB		1		08/20/09 11:02
43	HY.082009.110444	WG310032-02	Method/Prep Blank	.63/40	1		08/20/09 11:04
44	HY.082009.110624	WG310032-03	Laboratory Control S	.613/40	1		08/20/09 11:06
45	HY.082009.110808	L09080340-21	SO-42	.602/40	1		08/20/09 11:08
46	HY.082009.111023	WG310076-01	Post Digestion Spike		1	L09080340-21	08/20/09 11:10
47	HY.082009.111206	L09080340-23	SO-50	.643/40	1		08/20/09 11:12
48	HY.082009.111359	L09080340-24	SO-51	.621/40	1		08/20/09 11:13
49	HY.082009.111623	L09080340-25	SO-52	.64/40	1		08/20/09 11:16
50	HY.082009.111818	L09080340-26	SO-53	.609/40	1		08/20/09 11:18
51	HY.082009.112020	L09080340-27	SO-60	.603/40	1		08/20/09 11:20
52	HY.082009.112207	L09080340-28	SO-61	.623/40	1		08/20/09 11:22
53	HY.082009.112354	WG310194-17	CCV		1		08/20/09 11:23
54	HY.082009.112551	WG310194-18	CCB		1		08/20/09 11:25
55	HY.082009.112734	L09080340-29	SO-62	.634/40	1		08/20/09 11:27
56	HY.082009.112937	L09080340-34	SO-70	.622/40	1		08/20/09 11:29
57	HY.082009.113121	L09080340-35	SO-71	.632/40	1		08/20/09 11:31
58	HY.082009.113306	L09080340-36	SO-72	.607/40	1		08/20/09 11:33
59	HY.082009.113507	L09080340-37	SO-80	.641/40	1		08/20/09 11:35
60	HY.082009.113653	L09080340-38	SO-81	.6/40	1		08/20/09 11:36
61	HY.082009.113847	L09080340-39	SO-82	.623/40	1		08/20/09 11:38
62	HY.082009.114050	L09080340-40	SO-90	.616/40	1		08/20/09 11:40
63	HY.082009.114307	L09080340-41	SO-91	.612/40	1		08/20/09 11:43
64	HY.082009.114513	L09080340-42	SO-92	.607/40	1		08/20/09 11:45
65	HY.082009.114658	WG310194-19	CCV		1		08/20/09 11:46
66	HY.082009.114852	WG310194-20	CCB		1		08/20/09 11:48
67	HY.082009.115033	L09080357-03	SO-901	.616/40	1		08/20/09 11:50
68	HY.082009.115217	WG310076-02	Post Digestion Spike		1	L09080357-03	08/20/09 11:52
69	HY.082009.115431	WG310032-04	Matrix Spike	.615/40	1	L09080357-03	08/20/09 11:54
70	HY.082009.115634	WG310032-05	Matrix Spike Duplica	.615/40	1	L09080357-03	08/20/09 11:56
71	HY.082009.115837	WG310194-21	CCV		1		08/20/09 11:58
72	HY.082009.120035	WG310194-22	CCB		1		08/20/09 12:00

Page: 2 Approved: August 20, 2009

Maren Beery



Data Checklist

Date: 20-AUG-2009

Analyst: SLP

Analyst: NA

Method: 7471A

Instrument: HYDRA

Curve Workgroup: 310194

Runlog ID: 29715

Analytical Workgroups: 310174, 310076

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0371, 0377, 0386, 0399, 0340, 0357
Client Forms	X
Level X	
Level 3	0377, 0399
Level 4	0371, 0386, 0340, 0357
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	SLP
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
20-AUG-2009

Shen L. Pabon

Secondary Reviewer:
20-AUG-2009

Maren Berry

Analytical Method:7471A

AAB#:WG310174

Login Number:L09080399

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04CSWRQ	01	08/18/09					08/19/09	.9	28		08/20/09	1.9	28	
04CSWRQ-MS	02	08/18/09					08/19/09	.9	28		08/20/09	1.9	28	
04CSWRQ-MSD	03	08/18/09					08/19/09	.9	28		08/20/09	1.9	28	
04CSWOH	04	08/18/09					08/19/09	.9	28		08/20/09	1.9	28	
04CSWOP	05	08/18/09					08/19/09	1.1	28		08/20/09	2.1	28	
04CSWOP-QC	06	08/18/09					08/19/09	1.1	28		08/20/09	2.1	28	
04CSWFR	07	08/18/09					08/19/09	.8	28		08/20/09	1.8	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

00109778

Login Number: <u>L09080399</u>	Work Group: <u>WG310174</u>
Blank File ID: <u>HY.082009.100341</u>	Blank Sample ID: <u>WG310050-02</u>
Prep Date: <u>08/19/09 11:39</u>	Instrument ID: <u>HYDRA</u>
Analyzed Date: <u>08/20/09 10:03</u>	Method: <u>7471A</u>
Analyst: <u>SLP</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG310050-03	HY.082009.100535	08/20/09 10:05	01
04CSWRQ	L09080399-01	HY.082009.104248	08/20/09 10:42	01
04CSWRQ-MS	L09080399-02	HY.082009.104434	08/20/09 10:44	01
04CSWRQ-MSD	L09080399-03	HY.082009.105006	08/20/09 10:50	01
04CSWOH	L09080399-04	HY.082009.105202	08/20/09 10:52	01
04CSWOP	L09080399-05	HY.082009.105551	08/20/09 10:55	01
04CSWOP-QC	L09080399-06	HY.082009.105733	08/20/09 10:57	01
04CSWFR	L09080399-07	HY.082009.105925	08/20/09 10:59	01

Report Name: BLANK_SUMMARY
PDF File ID: 1470122
Report generated 08/20/2009 12:25



Login Number: L09080399 Prep Date: 08/19/09 11:39 Sample ID: WG310050-02
Instrument ID: HYDRA Run Date: 08/20/09 10:03 Prep Method: 7471A
File ID: HY.082009.100341 Analyst: SLP Method: 7471A
Workgroup (AAB#): WG310174 Matrix: Soil Units: mg/kg
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-20-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury, Total	0.00962	0.0962	0.00962	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1470123

20-AUG-2009 12:25



00109780

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310050-03
Instrument ID: HYDRA Run Time: 10:05 Prep Method: 7471A
File ID: HY.082009.100535 Analyst: SLP Method: 7471A
Workgroup (AAB#): WG310174 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD34760 Cal ID: HYDRA - 20-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury, Total	0.261	0.263	101	80 - 120	



MS/MSD REPORT

Loginnum: L09080399 Cal ID: HYDRA- 20-AUG-09
Instrument ID: HYDRA Contract #: DACA56-94-D-0020
Parent ID: L09080399-01 File ID: HY.082009.104248 Dil: 1
Sample ID: L09080399-02 MS File ID: HY.082009.104434 Dil: 1
Sample ID: L09080399-03 MSD File ID: HY.082009.105006 Dil: 1

00109781
Worknum: WG310174

Prep Method: 7471A
Method: 7471A
Matrix: Soil
Units: mg/kg
Percent Solid: 83.3

Analyte	Parent	MS	MS	MS	MSD	MSD	MSD	%RPD	%Rec Limits	RPD Limit	Q
		Spiked	Found	%Rec	Spiked	Found	%Rec				
Mercury, Total	0.0129	0.302	0.335	107	0.302	0.318	101	5.09	75 - 125	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

Sample Login ID: L09080399

Worknum: WG310174

Instrument ID: HYDRA

Method: 7471A

Post Spike ID: WG310174-04

File ID: HY.082009.105345

Dil: 1

Units: ug/L

Sample ID: L09080399-04

File ID: HY.082009.105202

Dil: 1

Matrix: Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	1.39	F	0.317	F	1	110.5	85 - 115	

N = % Recovery exceeds control limits

F = Result is between MDL and RL

U = Sample result is below MDL. A value of zero is used in the calculation

00109783

Login Number: L09080399
Analytical Method: 7471A
ICAL Worknum: WG310194

Workgroup (AAB#): WG310174
Instrument ID: HYDRA
Initial Calibration Date: 08/20/2009 09:49

Analyte	WG310194-01		WG310194-02		WG310194-03		WG310194-04		WG310194-05		WG310194-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	65	0.200	744	1.00	3695	2.00	6895	5.00	17428	10.0	34668

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



00109784

Login Number: L09080399
Analytical Method: 7471A
ICAL Worknum: WG310194

Workgroup (AAB#): WG310174
Instrument ID: HYDRA
Initial Calibration Date: 08/20/2009 09:49

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-08
Instrument ID: HYDRA Run Time: 09:55 Method: 7471A
File ID: HY.082009.095519 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.15	1.5	.15	U

00109786

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-10
Instrument ID: HYDRA Run Time: 09:58 Method: 7471A
File ID: HY.082009.095847 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109787

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-12
Instrument ID: HYDRA Run Time: 10:25 Method: 7471A
File ID: HY.082009.102512 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109788

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-14
Instrument ID: HYDRA Run Time: 10:48 Method: 7471A
File ID: HY.082009.104804 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109789

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-16
Instrument ID: HYDRA Run Time: 11:02 Method: 7471A
File ID: HY.082009.110253 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109790

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-07
Instrument ID: HYDRA Run Time: 09:53 Method: 7471A
File ID: HY.082009.095333 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
QC Key: STD

Analyte	Expected	Found	%REC	LIMITS	Q
Mercury	2	2.00	100	90 - 110	

* Exceeds LIMITS Limit

00109791

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-09
Instrument ID: HYDRA Run Time: 09:57 Method: 7471A
File ID: HY.082009.095706 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Mercury, Total	0.00200	0.00191	mg/L	95.5	80 - 120	

* Exceeds LIMITS Criteria



00109792

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-11
Instrument ID: HYDRA Run Time: 10:23 Method: 7471A
File ID: HY.082009.102330 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00215	mg/L	108	80 - 120		

* Exceeds LIMITS Criteria



00109793

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-13
Instrument ID: HYDRA Run Time: 10:46 Method: 7471A
File ID: HY.082009.104617 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00202	mg/L	101	80 - 120		

* Exceeds LIMITS Criteria



00109794

Login Number: L09080399 Run Date: 08/20/2009 Sample ID: WG310194-15
Instrument ID: HYDRA Run Time: 11:01 Method: 7471A
File ID: HY.082009.110109 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310174 Cal ID: HYDRA - 20-AUG-09
Matrix: SOIL

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Mercury, Total	0.00200	0.00206	mg/L	103	80 - 120	

* Exceeds LIMITS Criteria



2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09080399

00109798

08/20/09 13:37

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSWRQ	L09080399-01	D2216-90	1	19-AUG-09
04CSWRQ-MS	L09080399-02	D2216-90	1	19-AUG-09
04CSWRQ-MSD	L09080399-03	D2216-90	1	19-AUG-09
04CSWOH	L09080399-04	D2216-90	1	19-AUG-09
04CSWOP	L09080399-05	D2216-90	1	19-AUG-09
04CSWOP-QC	L09080399-06	D2216-90	1	19-AUG-09
04CSWFR	L09080399-07	D2216-90	1	19-AUG-09



Report Number: **L09080399**Report Date : **August 20, 2009****00109799**

Sample Number: **L09080399-01**
Client ID: **04CSWRQ**
Matrix: **Soil**
Workgroup Number: **WG310090**
Collect Date: **08/18/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/20/2009 09:28**
Cal Date:
Run Date: **08/20/2009 09:28**
File ID: **B1.310090-0101**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.3		1.00	1.00

1 of 7



Report Number: **L09080399**Report Date : **August 20, 2009**

00109800

Sample Number: **L09080399-02**
Client ID: **04CSWRQ-MS**
Matrix: **Soil**
Workgroup Number: **WG310090**
Collect Date: **08/18/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/20/2009 09:28**
Cal Date:
Run Date: **08/20/2009 09:28**
File ID: **B1.310090-0102**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.3		1.00	1.00

2 of 7



Report Number: **L09080399**Report Date : **August 20, 2009**

00109801

Sample Number: **L09080399-03**
Client ID: **04CSWRQ-MSD**
Matrix: **Soil**
Workgroup Number: **WG310090**
Collect Date: **08/18/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/20/2009 09:28**
Cal Date:
Run Date: **08/20/2009 09:28**
File ID: **B1.310090-0103**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.3		1.00	1.00

3 of 7



Report Number: **L09080399**Report Date : **August 20, 2009****00109802**

Sample Number: **L09080399-04**
Client ID: **04CSWOH**
Matrix: **Soil**
Workgroup Number: **WG310090**
Collect Date: **08/18/2009 14:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/20/2009 09:28**
Cal Date:
Run Date: **08/20/2009 09:28**
File ID: **B1.310090-0104**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	84.8		1.00	1.00

Report Number: **L09080399**Report Date : **August 20, 2009****00109803**

Sample Number: **L09080399-05**
Client ID: **04CSWOP**
Matrix: **Soil**
Workgroup Number: **WG310090**
Collect Date: **08/18/2009 08:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/20/2009 09:28**
Cal Date:
Run Date: **08/20/2009 09:28**
File ID: **B1.310090-0105**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.6		1.00	1.00

5 of 7



Report Number: **L09080399**Report Date : **August 20, 2009****00109804**

Sample Number: **L09080399-06**
Client ID: **04CSWOP-QC**
Matrix: **Soil**
Workgroup Number: **WG310090**
Collect Date: **08/18/2009 08:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/20/2009 09:28**
Cal Date:
Run Date: **08/20/2009 09:28**
File ID: **B1.310090-0106**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.2		1.00	1.00

6 of 7



Report Number: **L09080399**Report Date : **August 20, 2009****00109805**

Sample Number: **L09080399-07**
Client ID: **04CSWFR**
Matrix: **Soil**
Workgroup Number: **WG310090**
Collect Date: **08/18/2009 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **CPD**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/20/2009 09:28**
Cal Date:
Run Date: **08/20/2009 09:28**
File ID: **B1.310090-0107**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.3		1.00	1.00

7 of 7



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

PERCENT SOLIDS

00109807

Workgroup (AAB#): WG310090
 Method: D2216-90
 SOP: K0003 Rev: 9

Analyst: CPD
 Instrument: BAL001

ADT(on): 08/19/2009 14:14
 ADT(off): 08/20/2009 09:28

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080399-01	1.28	27.41	23.05			83.31	
L09080399-02	1.28	27.41	23.05			83.31	
L09080399-03	1.28	27.41	23.05			83.31	
L09080399-04	1.28	24.69	21.14			84.84	
L09080399-05	1.27	26.79	22.6			83.58	
L09080399-06	1.28	28.91	23.99			82.19	
L09080399-07	1.3	28.84	23.97			82.32	
L09080412-02	1.28	34.02	33.25			97.65	
L09080412-03	1.27	35.73	34.34			95.97	
L09080412-04	1.29	35.66	34.14			95.58	
L09080412-05	1.28	36.07	32.89			90.86	
L09080412-06	1.27	33.64	30.72			90.98	
L09080412-07	1.28	17.04	16.06			93.78	
L09080412-08	1.29	26.54	24.3			91.13	
L09080412-09	1.28	24.24	22.79			93.68	
L09080412-10	1.28	23.18	21.39			91.83	
L09080412-11	1.28	32.3	30.6			94.52	
L09080412-12	1.29	23.51	22.02			93.29	
L09080412-13	1.28	30.9	28.03			90.31	
L09080412-14	1.28	31.11	29.15			93.43	
L09080412-15	1.28	26.77	24.77			92.15	
WG310090-01	1.28	34.02	33.25			97.65	2.352
WG310090-02	1.28	26.77	24.77			92.15	7.846
WG310090-03	1.3	24.07	23.51			97.54	2.459
WG310090-04	1.27	27.13	24.95			91.57	8.430

Analyst: Leanne Davis

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 20, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.


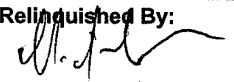



Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

COC NO. (DATE-01)

00109811

PM: Praveen Svrivastav (713.996.4588) TAT: 24 Hr Project Contact: Jennifer Hoang Phone No: 713-996-4408 Project Name: LHAAP-04 Site: Confirmation Sampling Project #: 117591-0009B300 Location: Karnack, TX																			
Sampler Print: ALLEN WILLMORE (713) 247-9292		Sampler Sign: 				# of Containers	Mercury-7471												
Sample Number	Grab	Date	Time	Matrix														Comments	
04CSWRQ	X	8/18/09	14:15	Soil	1	X													
04CSWRQ-MS	X	8/18/09	14:15	Soil	1	X													
04CSWRQ-MSD	X	8/18/09	14:15	Soil	1	X													
04CSWQH	X	8/18/09	14:20	Soil	1	X													
04CSWOP	X	8/18/09	8:15	Soil	1	X													
04CSWOP-AC	X	8/18/09	8:15	Soil	1	X													
04CSWFR	X	8/18/09	15:30	Soil															
	X			Soil															
	X			Soil															
	X			Soil															
	X			Soil															
	X			Soil															
	X			Soil															
	X			Soil															
	X			Soil															
	X			Soil															
Relinquished By:		Received By:		Special Instructions															
				Microbac OVD Received: 08/19/2009 10:03 By: ROBIN KLINGER 221000001167															
Date/Time 8/18/09 17:30		Date/Time																	
Relinquished By:		Receiver																	
Date/Time		Date/Time																	



1000001167

COOLER INSPECTION



00109812

Received: 08/19/2009 10:03
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L09080399

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0012224	H	1.0	1Z66V7250196737966	DATE-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09080399

Account: 2773

Project: 2773.025

Samples: 7

Due Date: 20-AUG-2009

Samplenum Container ID Products
L09080399-01 607188 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:13	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	STORE	WET	A1	20-AUG-2009 08:33	JKT	CPD
4	ANALYZ*	DIG	METALS	20-AUG-2009 09:36	SLP	REK

**Sample extract/digestate*

Samplenum Container ID Products
L09080399-02 607189 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:13	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	STORE	WET	A1	20-AUG-2009 08:34	JKT	CPD
4	ANALYZ*	DIG	METALS	20-AUG-2009 09:36	SLP	REK

**Sample extract/digestate*

Samplenum Container ID Products
L09080399-03 607190 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:13	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	STORE	WET	A1	20-AUG-2009 08:34	JKT	CPD
4	ANALYZ*	DIG	METALS	20-AUG-2009 09:36	SLP	REK

**Sample extract/digestate*

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



Login: L09080399
Account: 2773
Project: 2773.025
Samples: 7
Due Date: 20-AUG-2009

Samplenum **Container ID** **Products**
L09080399-04 607191 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:13	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	STORE	WET	A1	20-AUG-2009 08:33	JKT	CPD
4	ANALYZ*	DIG	METALS	20-AUG-2009 09:36	SLP	REK

****Sample extract/digestate***

Samplenum **Container ID** **Products**
L09080399-05 607192 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:13	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	STORE	WET	A1	20-AUG-2009 08:36	JKT	CPD
4	ANALYZ*	DIG	METALS	20-AUG-2009 09:36	SLP	REK

****Sample extract/digestate***

Samplenum **Container ID** **Products**
L09080399-06 607193 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:13	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	ANALYZ*	DIG	METALS	20-AUG-2009 09:36	SLP	REK

****Sample extract/digestate***

Samplenum **Container ID** **Products**
L09080399-07 607194 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:13	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	ANALYZ*	DIG	METALS	20-AUG-2009 09:36	SLP	REK

****Sample extract/digestate***

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login





08/17/09

Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67138R

Sampling Date: 08/05/09

Report to:

Shaw E & I, Inc
3010 Briarpark Dr Suite 400
Houston, TX 77042
jennifer.hoang@shawgrp.com

ATTN: Jennifer Hoang

Total number of pages in report: **113**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK
This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Harry Behzadi, Ph.D.
Laboratory Director

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Sample Summary

SHAW E & I

Job No: F67138R

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F67138-6R	08/05/09	12:45 AW	08/06/09	SO	Soil	04CONC01
F67138-6RA	08/05/09	12:45 AW	08/06/09	SO	Soil	04CONC01
F67138-7R	08/05/09	12:55 AW	08/06/09	SO	Soil	04CONC02
F67138-7RA	08/05/09	12:55 AW	08/06/09	SO	Soil	04CONC02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I

Job No: F67138R

Site: Longhorn Army Ammunitions Plant, Karnack, TX

Report Date: 8/17/2009 4:34:25 PM

2 Samples were collected on 08/05/2009 and were received at Accutest SE on 08/06/2009 properly preserved, at 3.4 Deg. C and intact. These Samples received an Accutest job number of F67138R. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals by Method SW846 6010B

Matrix: LEACHATE

Batch ID: MP16812

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F67176-2DUP, F67176-2MS, F67176-2MSD, F67176-2SDL were used as the QC samples for metals.

RPD for Duplicate for Selenium is outside control limits for sample MP16812-D1. RPD acceptable due to low duplicate and sample concentrations.

RPDs for Serial Dilution for Cadmium, Selenium are outside control limits for sample MP16812-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

F67138-6RA, F67138-7RA for Arsenic, Lead, Selenium: Elevated reporting limit(s) due to matrix interference.

Matrix: SO

Batch ID: MP16808

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F67214-3DUP, F67214-3MS, F67214-3MSD, F67214-3SDL were used as the QC samples for metals.

Matrix Spike Recoverys for Antimony, Arsenic, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Magnesium, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Matrix Spike Duplicate Recoverys for Antimony, Arsenic, Barium, Cadmium, Chromium, Cobalt, Copper, Lead, Magnesium, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc are outside control limits. Probable cause: due to matrix interference.

Matrix Spike Recoverys for Iron, Manganese are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

RPD for Duplicate for Selenium is outside control limits for sample MP16808-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD for MSD for Manganese is outside control limits for sample MP16808-S2. High RPD due to possible sample nonhomogeneity.

RPDs for Serial Dilution for Arsenic, Beryllium, Sodium, Aluminum, Barium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Nickel, Potassium, Vanadium, Zinc are outside control limits for sample MP16808-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

MP16808-SD1 for Aluminum, Barium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Nickel, Potassium, Vanadium, Zinc: Serial dilution indicates possible matrix interference.

F67138-7R for Antimony, Arsenic, Lead, Selenium, Thallium: Elevated reporting limits due to matrix interference.

F67138-6R for Thallium: Elevated reporting limits due to matrix interference.

Monday, August 17, 2009

Metals by Method SW846 7470A**Matrix:** LEACHATE**Batch ID:** MP16814

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F67176-2DUP, F67176-2MS, F67176-2SDL were used as the QC samples for metals.

Metals by Method SW846 7471A**Matrix:** SO**Batch ID:** MP16809

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Samples F67214-3DUP, F67214-3MS, F67214-3SDL were used as the QC samples for metals.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

Ellen Pampel, Inorganic QA (signature on file)

Date: August 17, 2009

Monday, August 17, 2009



Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: 04CONC01

Lab Sample ID: F67138-6R

Matrix: SO - Soil

Date Sampled: 08/05/09

Date Received: 08/06/09

Percent Solids: n/a ^a

Project: Longhorn Army Ammunitions Plant, Karnack, TX

Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	4240	9.7	0.97	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Antimony	0.23 B	2.9	0.23	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Arsenic	2.3	0.39	0.17	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Barium	270	39	1.9	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B ³	SW846 3050B ⁴
Beryllium	0.24	0.24	0.097	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Cadmium	0.54	0.19	0.049	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Calcium	23500	240	4.9	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Chromium	11.5	0.49	0.078	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Cobalt	2.0 B	2.4	0.040	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Copper	34.9	1.2	0.10	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Iron	7200	4.9	1.3	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Lead	9.3	4.9	0.22	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Magnesium	896	240	4.9	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Manganese	148	0.73	0.024	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Mercury	0.045 B	0.067	0.0096	mg/kg	1	08/12/09	08/12/09 DM	SW846 7471A ¹	SW846 7471A ⁵
Nickel	4.6	1.9	0.16	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Potassium	403 B	490	4.9	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Selenium	0.15 U	4.9	0.15	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Silver	0.21 B	0.49	0.058	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Sodium	81.4 B	490	40	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Thallium ^b	1.7 U	2.5	1.7	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Vanadium	13.5	2.4	0.032	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Zinc	44.1	0.97	0.18	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA7414

(2) Instrument QC Batch: MA7415

(3) Instrument QC Batch: MA7420

(4) Prep QC Batch: MP16808

(5) Prep QC Batch: MP16809

(a) Percent solids not analyzed due to sample matrix. Results reported on wet weight basis.

(b) Elevated reporting limit(s) due to matrix interference.

MQL = Method Quantitation Limit
 SDL = Sample Detection Limit

U = Indicates a result < SDL
 B = Indicates a result > = SDL but < MQL

Report of Analysis

Client Sample ID: 04CONC01

Lab Sample ID: F67138-6RA

Matrix: SO - Soil

Date Sampled: 08/05/09

Date Received: 08/06/09

Percent Solids: n/a ^a

Project: Longhorn Army Ammunitions Plant, Karnack, TX

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	QL	SDL	Units	DF	Prep	Analyzed By	Method
Arsenic ^b	0.011 U	D004	5.0	0.10	0.011	mg/l	2	08/12/09	08/13/09	RS SW846 6010B ³
Barium	2.1	D005	100	1.0	0.20	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹
Cadmium	0.0012 B	D006	1.0	0.0050	0.0010	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹
Chromium	0.019	D007	5.0	0.010	0.0020	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹
Lead ^b	0.0040 U	D008	5.0	0.10	0.0040	mg/l	2	08/12/09	08/13/09	RS SW846 6010B ³
Mercury	0.0015 U	D009	0.20	0.010	0.0015	mg/l	1	08/13/09	08/13/09	DM SW846 7470A ²
Selenium ^b	0.040 U	D010	1.0	0.10	0.040	mg/l	2	08/12/09	08/13/09	RS SW846 6010B ³
Silver	0.0014 U	D011	5.0	0.010	0.0014	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹

(1) Instrument QC Batch: MA7415

(2) Instrument QC Batch: MA7418

(3) Instrument QC Batch: MA7420

(4) Prep QC Batch: MP16812

(5) Prep QC Batch: MP16814

(a) Percent solids not analyzed due to sample matrix. Results reported on wet weight basis.

(b) Elevated reporting limit(s) due to matrix interference.

QL = Method Quantitation Limit
 MCL = Maximum Contamination Level (40 CFR 261.6/96)

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < QL

Report of Analysis

Client Sample ID: 04CONC02

Lab Sample ID: F67138-7R

Matrix: SO - Soil

Date Sampled: 08/05/09

Date Received: 08/06/09

Percent Solids: n/a ^a

Project: Longhorn Army Ammunitions Plant, Karnack, TX

Metals Analysis

Analyte	Result	MQL	SDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Aluminum	4330	10	1.0	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Antimony ^b	0.96 U	12	0.96	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B ³	SW846 3050B ⁴
Arsenic ^b	3.3	1.6	0.72	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B ³	SW846 3050B ⁴
Barium	58.8	10	0.50	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Beryllium	0.34	0.25	0.10	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Cadmium	0.14 B	0.20	0.050	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Calcium	68700	1000	20	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B ³	SW846 3050B ⁴
Chromium	20.4	0.50	0.080	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Cobalt	3.7	2.5	0.042	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Copper	7.4	1.3	0.11	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Iron	5650	5.0	1.3	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Lead ^b	4.3 B	20	0.90	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B ³	SW846 3050B ⁴
Magnesium	907	250	5.0	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Manganese	350	3.0	0.10	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B ³	SW846 3050B ⁴
Mercury	0.011 U	0.076	0.011	mg/kg	1	08/12/09	08/12/09 DM	SW846 7471A ¹	SW846 7471A ⁵
Nickel	9.1	2.0	0.16	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Potassium	390 B	500	5.0	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Selenium ^b	0.62 U	20	0.62	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B ³	SW846 3050B ⁴
Silver	0.13 B	0.50	0.060	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Sodium	202 B	500	42	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Thallium ^b	3.4 U	5.0	3.4	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Vanadium	19.4	2.5	0.033	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴
Zinc	19.3	1.0	0.19	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA7414

(2) Instrument QC Batch: MA7415

(3) Instrument QC Batch: MA7420

(4) Prep QC Batch: MP16808

(5) Prep QC Batch: MP16809

(a) Percent solids not analyzed due to sample matrix. Results reported on wet weight basis.

(b) Elevated reporting limit(s) due to matrix interference.

MQL = Method Quantitation Limit

SDL = Sample Detection Limit

U = Indicates a result < SDL

B = Indicates a result > = SDL but < MQL

Report of Analysis

Client Sample ID: 04CONC02

Lab Sample ID: F67138-7RA

Matrix: SO - Soil

Date Sampled: 08/05/09

Date Received: 08/06/09

Percent Solids: n/a ^a

Project: Longhorn Army Ammunitions Plant, Karnack, TX

Metals Analysis, TCLP Leachate SW846 1311

Analyte	Result	HW#	MCL	QL	SDL	Units	DF	Prep	Analyzed By	Method
Arsenic ^b	0.011 U	D004	5.0	0.10	0.011	mg/l	2	08/12/09	08/13/09	RS SW846 6010B ³
Barium	1.0	D005	100	1.0	0.20	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹
Cadmium	0.0010 U	D006	1.0	0.0050	0.0010	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹
Chromium	0.056	D007	5.0	0.010	0.0020	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹
Lead ^b	0.0040 U	D008	5.0	0.10	0.0040	mg/l	2	08/12/09	08/13/09	RS SW846 6010B ³
Mercury	0.0015 U	D009	0.20	0.010	0.0015	mg/l	1	08/13/09	08/13/09	DM SW846 7470A ²
Selenium ^b	0.040 U	D010	1.0	0.10	0.040	mg/l	2	08/12/09	08/13/09	RS SW846 6010B ³
Silver	0.0014 U	D011	5.0	0.010	0.0014	mg/l	1	08/12/09	08/12/09	RS SW846 6010B ¹

(1) Instrument QC Batch: MA7415

(2) Instrument QC Batch: MA7418

(3) Instrument QC Batch: MA7420

(4) Prep QC Batch: MP16812

(5) Prep QC Batch: MP16814

(a) Percent solids not analyzed due to sample matrix. Results reported on wet weight basis.

(b) Elevated reporting limit(s) due to matrix interference.

QL = Method Quantitation Limit
 MCL = Maximum Contamination Level (40 CFR 261.6/96)

U = Indicates a result < SDL
 B = Indicates a result > = SDL but < QL



IT'S ALL IN THE CHEMISTRY

Section 4

4

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

00109827

ACCUTEST'S JOB NUMBER: F67138 CLIENT: Shaw PROJECT: CHAAP-04
 DATE/TIME RECEIVED: 8-6-09 09:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 3.4
 METHOD OF DELIVERY: FEDEX ☒ UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER
 AIRBILL NUMBERS: 1Z 66V 725 01 9158 2490

COOLER INFORMATION

- ☐ CUSTODY SEAL NOT PRESENT OR NOT INTACT
- ☐ CHAIN OF CUSTODY NOT RECEIVED (COC)
- ☐ ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- ☐ SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- ☐ TEMPERATURE CRITERIA NOT MET
- ☐ WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- ☐ TRIP BLANK PROVIDED
- ☐ TRIP BLANK NOT PROVIDED
- ☐ TRIP BLANK NOT ON COC
- ☐ TRIP BLANK INTACT
- ☐ TRIP BLANK NOT INTACT
- ☐ RECEIVED WATER TRIP BLANK
- ☐ RECEIVED SOIL TRIP BLANK

MISC. INFORMATION

NUMBER OF ENCORES ? _____
 NUMBER OF 5035 FIELD KITS ? _____
 NUMBER OF LAB FILTERED METALS ? _____

SUMMARY OF COMMENTS: _____

TECHNICIAN SIGNATURE/DATE E.T. 8-6-09 TECHNICIAN SIGNATURE/DATE JS 8-6-09

ASBD 12/17/07

SAMPLE INFORMATION

- ☐ SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- ☐ CORRECT NUMBER OF CONTAINERS USED
- ☐ SAMPLE RECEIVED IMPROPERLY PRESERVED
- ☐ INSUFFICIENT VOLUME FOR ANALYSIS
- ☐ TIMES ON COC DOES NOT MATCH LABEL(S)
- ☐ ID'S ON COC DOES NOT MATCH LABEL(S)
- ☐ VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- ☐ BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- ☐ NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- ☐ UNCLEAR FILTERING INSTRUCTIONS
- ☐ UNCLEAR COMPOSITING INSTRUCTIONS
- ☐ SAMPLE CONTAINER(S) RECEIVED BROKEN
- ☐ % SOLIDS JAR NOT RECEIVED
- ☐ 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- ☐ RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

F67138R: Chain of Custody

Page 2 of 3

Job Change Order: F67138_8/11/2009

Requested Date:	8/11/2009	Received Date:	8/6/2009
Account Name:	SHAW E & I	Due Date:	8/10/2009
Project Description:	Longhorn Army Ammunitions Plant, Karnack, TX	Deliverable:	REDT1
CSR:	SB	TAT (Days):	3

Sample #: F67138-6 **Change:** Per Jen H @ Shaw via e-mail 08.11.09, run TCLP Metals and TAL Metals on this sample on a RUSH TAT.

04CONC01

Sample #: F67138-7 **Change:** Per Jen H @ Shaw via e-mail 08.11.09, run TCLP Metals and TAL Metals on this sample on a RUSH TAT.

04CONC02

Above Changes

Jen H @ Shaw

Date: 8/11/2009**F67138R: Chain of Custody****Page 3 of 3**

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service

Page 1 of 1

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA							
Laboratory Name: Accutest Southeast			Date: 08/17/2009				
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67138R				
Reviewer Name: Ellen Pampel			Batch Number(s): MA7414, MA7415, MA7418, MA7420, MP16808, MP16809, MP16812, MP16814				
# ¹	Analysis ²	Description	Yes	No	NA ³	NR ⁴	ER # ⁵
	OI	CHAIN-OF-CUSTODY (COC):					
		1) Were all samples included on a completed COC?	X				
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X				
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X				
		4) Were the samples in the appropriate containers?	X				
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
	OI	TEST REPORTS:					
		1) Were samples prepared and analyzed within holding times?	X				
		2) Were reported results within calibration range?	X				
		3) Were all calculations verified?	X				
		4) Were all analyte identifications verified?	X				
		5) Were sample quantitation limits reported for all analytes not detected?	X				
		6) If required for the project, were the tentatively identified compounds reported?			X		
		7) Were results reported on a dry weight basis?	X				
	O	SURROGATE RECOVERY DATA:					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X		
	OI	TEST REPORTS FOR BLANK SAMPLES:					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		3) Were blanks free of detected compounds?	X				
	OI	LABORATORY CONTROL SAMPLES (LCSs):					
		1) Was each LCS prepared from a source external to the calibration standards?	X				
		2) Were all project-required analytes included in the LCS?	X				
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X				
		4) Were LCSs analyzed at the required frequency?	X				
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X				
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:					
		1) Were all project-required analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?		X			2
	OI	ANALYTICAL DUPLICATE DATA:					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?		X			2
	OI	METHOD QUANTITATION LIMITS (MQLs):					
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X		
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS					
		Were all samples prepared and analyzed using a Reference Method?	X				
	OI	OTHER PROBLEMS/ANOMALIES:					
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X				

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA							
Laboratory Name: Accutest Southeast			Date: 08/17/2009				
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67138R				
Reviewer Name: Ellen Pampel			Batch Number(s): MA7414, MA7415, MA7418, MA7420, MP16808, MP16809, MP16812, MP16814				
# ¹	Analysis ²	Description	Yes	No	NA ³	NR ⁴	ER # ⁵
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):					
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Were the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICV data available for all instruments used?	X				
		6) Has the calibration curve been verified using a NIST-traceable second source?	X				
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences within the method-required QC acceptance criteria?	X				
		3) Was the ICAL curve verified for each analyte of interest?	X				
	O	MASS SPECTRAL TUNING:					
		1) Was the appropriate compound for the method used for tuning?			X		
		2) Were ion abundance data within the method-required QC acceptance criteria?			X		
	O	INTERNAL STANDARD (IS):					
		1) Were IS area counts within the method-required QC acceptance criteria?			X		
		2) Were IS retention times within the method-required QC acceptance criteria?			X		
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):					
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were all data associated with manual integrations flagged?	X				
	O	DUAL COLUMN CONFIRMATION:					
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X		
		2) Were all percent differences less than 25%?			X		
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):					
		If TICs were requested, were the mass spectra and TIC data reviewed?			X		
	I	ICS RESULTS:					
		1) Were percent recoveries within method acceptance criteria?	X				
		2) Were the absolute values for all analytes less than the IDL?	X				
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:					
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?		X			2
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:					
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X		
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:					
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X				
	OI	STANDARDS TRACEABILITY:					
		Are all standards used in the analyses NIST-traceable?	X				
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:					
		Is documentation of the quality of water and reagents used in the analyses on file?	X				
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:					
		Are the procedures for compound identification documented?	X				
	OI	DEMONSTRATION OF ANALYST CAPABILITY:					
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X				
		2) Is documentation of the analyst's demonstration of capability on file?	X				
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X				
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):					
		Are proficiency testing or interlaboratory comparison results on file?	X				
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):					
		Are laboratory SOPs current and on file for each method performed?	X				

¹ Items identified by the letter "R" should be submitted to TNRC in the Data Package. Items identified by the letter "S" should be retained and made available to the TNRC upon request for a period of three years after the data are submitted.

² O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

³ NA = Not applicable;

⁴ NR = Not Reviewed;

⁵ ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	
Date: 08/17/2009	
Project Name: SEITXH: Longhorn Army Ammunitions Plant	
Laboratory Job Number: F67138R	
Reviewer Name: Ellen Pampel	
Batch Number(s): MA7414, MA7415, MA7418, MA7420, MP16808, MP16809, MP16812, MP16814	
ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

- ☒ This signature page, the laboratory review checklist, and the following reportable data:
- ☒ R1 Field chain-of-custody documentation;
- ☒ R2 Sample identification cross-reference;
- ☒ R3 Test reports (analytical data sheets) for each environmental sample that includes:
 - a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
 - b) dilution factors,
 - c) preparation methods,
 - d) cleanup methods, and
 - e) if required for the project, tentatively identified compounds (TICs).
- R4 Surrogate recovery data including:
 - a) Calculated recovery (%R), and
 - b) The laboratory's surrogate QC limits.
- ☒ R5 Test reports/summary forms for blank samples;
- ☒ R6 Test reports/summary forms for laboratory control samples (LCSs) including:
 - a) LCS spiking amounts,
 - b) Calculated %R for each analyte, and
 - c) The laboratory's LCS QC limits.
- ☒ R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
 - a) Samples associated with the MS/MSD clearly identified,
 - b) MS/MSD spiking amounts,
 - c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
 - d) Calculated %Rs and relative percent differences (RPDs), and
 - e) The laboratory's MS/MSD QC limits
- ☒ R8 Laboratory analytical duplicate (if applicable) recovery and precision:
 - a) the amount of analyte measured in the duplicate,
 - b) the calculated RPD, and
 - c) the laboratory's QC limits for analytical duplicates.
- ☒ R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
- R10 Other problems or anomalies.
- ☒ The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release Statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By me signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Ellen Pampel
Name:

On file
Signature:

Inorganic QA
Title:

08/17/09
Date:



IT'S ALL IN THE CHEMISTRY

Section 5

Metals Analysis

5

QC Data Summaries

Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
Analyst: DM Run ID: MA7414
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:58	MA7414-STD1	1		STD01REP1
11:00	MA7414-STD2	1		STD02REP1
11:01	MA7414-STD3	1		STD03REP1
11:03	MA7414-STD4	1		STD04REP1
11:05	MA7414-STD5	1		STD05REP1
11:07	MA7414-STD6	1		STD06REP1
11:09	MA7414-HSTD1	1		
11:12	MA7414-ICV1	1		
11:15	MA7414-ICB1	1		
11:17	MA7414-CRI1	1		
11:18	MA7414-CCV1	1		
11:20	MA7414-CCB1	1		
11:22	MP16807-MB1	1		
11:24	MP16807-B1	1		
11:26	F67219-1	1		(sample used for QC only; not part of login F67138R)
11:28	MP16807-D1	1		
11:29	MP16807-SD1	1		
11:31	MP16807-S1	1		
11:33	MP16807-S2	1		
11:36	ZZZZZZ	1		
11:40	MA7414-CCV2	1		
11:42	MA7414-CCB2	1		
11:46	ZZZZZZ	1		
11:47	ZZZZZZ	1		
11:49	ZZZZZZ	1		
11:54	ZZZZZZ	1		
11:56	ZZZZZZ	1		
11:58	ZZZZZZ	1		
12:01	MA7414-CCV3	1		
12:03	MA7414-CCB3	1		
12:07	ZZZZZZ	1		
12:09	ZZZZZZ	1		
12:11	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
Analyst: DM Run ID: MA7414
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:12	ZZZZZZ	1		
12:15	MP16809-MB1	1		
12:17	MP16809-B1	1		
12:20	F67214-3	1		(sample used for QC only; not part of login F67138R)
12:22	MP16809-D1	1		
12:25	MP16809-SD1	1		
12:27	MA7414-CCV4	1		
12:29	MA7414-CCB4	1		
12:31	MP16809-S1	1		
12:33	ZZZZZZ	1		
12:35	ZZZZZZ	1		
12:37	ZZZZZZ	1		
12:39	ZZZZZZ	1		
12:40	F67138-6R	1		
12:42	F67138-7R	1		
----->	Last reportable sample/prep for job F67138R			
12:44	ZZZZZZ	1		
12:47	MA7414-CCV5	1		
12:49	MA7414-CCB5	1		
12:52	ZZZZZZ	5		
12:53	ZZZZZZ	10		
12:55	ZZZZZZ	10		
12:57	ZZZZZZ	2		
12:59	ZZZZZZ	5		
13:00	ZZZZZZ	2		
13:02	ZZZZZZ	10		
13:04	MA7414-CRI2	1		
13:06	MA7414-CCV6	1		
13:08	MA7414-CCB6	1		
----->	Last reportable CCB for job F67138R			
	Refer to raw data for calibration curve and standards.			

5.1
5

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
QC Limits: result < RL Run ID: MA7414 Units: ug/l

Time: Sample ID:			11:15 ICB1		11:20 CCB1		11:42 CCB2		12:03 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	1.0	.14	-0.038	<1.0	-0.054	<1.0	-0.025	<1.0	-0.0060	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

5.1.1
5

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
QC Limits: result < RL Run ID: MA7414 Units: ug/l

Time:			12:29		12:49		13:08	
Sample ID:			CCB4		CCB5		CCB6	
Metal	RL	IDL	raw	final	raw	final	raw	final
Mercury	1.0	.14	-0.010	<1.0	0.0	<1.0	0.0050	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

5.1.1
5

File ID: H20812S1.PRN	Date Analyzed: 08/12/09	Methods: SW846 7471A
QC Limits: 90 to 110 % Recovery	Run ID: MA7414	Units: ug/l

Time: Sample ID:		11:12 ICV1			11:18 CCV1			11:40 CCV2		
Metal	ICV	Results	% Rec	CCV	Results	% Rec	CCV	Results	% Rec	
Mercury	3	3.1	103.3	3	2.9	96.7	3	3.1	103.3	

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
QC Limits: 90 to 110 % Recovery Run ID: MA7414 Units: ug/l

Time:		12:01		12:27		12:47			
Sample ID:	CCV	CCV3		CCV	CCV4		CCV	CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	3.1	103.3	3	3.1	103.3	3.0	3.0	100.0

(*) Outside of QC limits
(anr) Analyte not requested

5.1.2
5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
QC Limits: 90 to 110 % Recovery Run ID: MA7414 Units: ug/l

Time:		13:06	
Sample ID:	CCV	CCV6	
Metal	True	Results	% Rec
Mercury	3.0	3.0	100.0

(*) Outside of QC limits
(anr) Analyte not requested

5.1.2
5

HIGH STANDARD CHECK SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
QC Limits: 95 to 105 % Recovery Run ID: MA7414 Units: ug/l

Time:		11:09	
Sample ID:		HSTD1	
Metal	True	Results	% Rec
Mercury	6	5.9	98.3

(*) Outside of QC limits
(anr) Analyte not requested

5.1.3
5

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Date Analyzed: 08/12/09 Methods: SW846 7471A
QC Limits: 80 to 120 % Recovery Run ID: MA7414 Units: ug/l

Time:			11:17		13:04	
Sample ID:	CRI	CRIA	CRI1		CRI2	
Metal	True	True	Results	% Rec	Results	% Rec
Mercury	0.20		0.18	90.0	0.23	115.0

(*) Outside of QC limits
(anr) Analyte not requested

5.1.4
5

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7415
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:05	MA7415-HSTD1	1		
09:08	MA7415-ICV1	1		
09:13	MA7415-ICB1	1		
09:16	MA7415-CRIA1	1		
09:22	MA7415-CRIA2	1		
09:24	MA7415-CRI1	1		
09:29	MA7415-ICSA1	1		
09:31	MA7415-ICSAB1	1		
09:35	MA7415-CCV1	1		
09:40	MA7415-CCB1	1		
09:53	ZZZZZZ	2		
09:57	MA7415-CCV2	1		
10:01	MA7415-CCB2	1		
10:08	MP16806-MB1	1		
10:11	MP16806-B1	1		
10:15	F67219-1	1		(sample used for QC only; not part of login F67138R)
10:18	MP16806-D1	1		
10:21	MP16806-SD1	5		
10:25	MP16806-PS1	1		
10:28	MP16806-S1	1		
10:32	MP16806-S2	1		
10:35	ZZZZZZ	1		
10:38	ZZZZZZ	1		
10:42	MA7415-CCV3	1		
10:46	MA7415-CCB3	1		
10:50	ZZZZZZ	1		
10:53	ZZZZZZ	1		
10:56	ZZZZZZ	1		
11:00	ZZZZZZ	1		
11:03	ZZZZZZ	1		
11:07	ZZZZZZ	1		
11:10	ZZZZZZ	1		
11:13	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7415
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:17	ZZZZZZ	1		
11:20	ZZZZZZ	1		
11:24	MA7415-CCV4	1		
11:28	MA7415-CCB4	1		
11:31	ZZZZZZ	1		
11:35	ZZZZZZ	1		
11:38	ZZZZZZ	1		
11:42	ZZZZZZ	1		
11:45	ZZZZZZ	1		
11:48	ZZZZZZ	1		
11:52	ZZZZZZ	1		
11:55	MA7415-CCV5	1		
12:00	MA7415-CCB5	1		
12:06	MP16808-MB1	1		
12:10	MP16808-B1	1		
12:13	F67214-3	1		(sample used for QC only; not part of login F67138R)
12:16	MP16808-D1	1		
12:20	MP16808-SD1	5		
12:23	MP16808-PS1	1		
12:27	MP16808-S1	1		
12:30	MP16808-S2	1		
12:33	ZZZZZZ	1		
12:37	ZZZZZZ	1		
12:40	MA7415-CCV6	1		
12:45	MA7415-CCB6	1		
12:48	ZZZZZZ	1		
12:51	ZZZZZZ	1		
12:55	ZZZZZZ	1		
12:58	ZZZZZZ	1		
13:02	ZZZZZZ	1		
13:05	ZZZZZZ	1		
13:15	ZZZZZZ	1		
13:19	F67138-6R	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7415
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:22	MA7415-CCV7	1		
13:27	MA7415-CCB7	1		
13:30	F67138-7R	1		
13:33	MA7415-CCV8	1		
13:38	MA7415-CCB8	1		
15:07	MA7415-CCV9	1		
15:12	MA7415-CCB9	1		
15:15	MP16811-MB1	1		
15:19	MP16811-B1	1		
15:22	F67181-2	1		(sample used for QC only; not part of login F67138R)
15:26	MP16811-D1	1		
15:29	MP16811-SD1	5		
15:32	MP16811-PS1	1		
15:36	MP16811-S1	1		
15:39	MP16811-S2	1		
15:44	ZZZZZZ	1		
15:47	ZZZZZZ	1		
15:50	MA7415-CCV10	1		
15:55	MA7415-CCB10	1		
15:58	ZZZZZZ	1		
16:02	ZZZZZZ	1		
16:05	ZZZZZZ	1		
16:09	ZZZZZZ	1		
16:12	ZZZZZZ	1		
16:15	ZZZZZZ	1		
16:19	ZZZZZZ	1		
16:22	ZZZZZZ	1		
16:26	ZZZZZZ	1		
16:29	ZZZZZZ	1		
16:32	MA7415-CCV11	1		
16:37	MA7415-CCB11	1		
16:40	ZZZZZZ	1		
16:44	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7415
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:47	ZZZZZZ	1		
16:50	ZZZZZZ	1		
16:54	ZZZZZZ	1		
16:57	ZZZZZZ	1		
17:01	ZZZZZZ	1		
17:05	MP16811-MB2A	1		
17:08	MP16812-MB1	1		
17:12	MP16812-B1	1		
17:15	MA7415-CCV12	1		
17:20	MA7415-CCB12	1		
17:23	F67176-2	1		(sample used for QC only; not part of login F67138R)
17:27	MP16812-D1	1		
17:30	MP16812-SD1	5		
17:33	MP16812-S1	1		
17:37	MP16812-S2	1		
17:40	F67177-2	1		(sample used for QC only; not part of login F67138R)
17:44	F67138-6RA	1		
17:47	F67138-7RA	1		
17:50	ZZZZZZ	1		
17:54	MP16812-D2	1		
17:57	MA7415-CCV13	1		
18:02	MA7415-CCB13	1		
18:05	MP16812-MB2	1		
18:08	MP16812-B2	1		
18:13	MP16812-MB3	1		
18:16	MP16812-B3	1		
----->	Last reportable sample/prep for job F67138R			
18:20	ZZZZZZ	2		
18:24	MA7415-CRIA3	1		
18:27	MA7415-CRI2	1		
18:31	MA7415-ICSA2	1		
18:34	MA7415-ICSAB2	1		
18:38	MA7415-CCV14	1		
18:42	MA7415-CCB14	1		
----->	Last reportable CCB for job F67138R			
	Refer to raw data for calibration curve and standards.			

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INTERNAL STANDARD SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
 Analyst: RS Run ID: MA7415
 Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Istd#1
09:05	MA7415-HSTD1	6351
09:08	MA7415-ICV1	6408
09:13	MA7415-ICB1	6610 R
09:16	MA7415-CRIA1	6638
09:22	MA7415-CRIA2	6596
09:24	MA7415-CRI1	6600
09:29	MA7415-ICSA1	5910
09:31	MA7415-ICSAB1	5915
09:35	MA7415-CCV1	6417
09:40	MA7415-CCB1	6619
09:53	ZZZZZZ	6278
09:57	MA7415-CCV2	6538
10:01	MA7415-CCB2	6592
10:08	MP16806-MB1	6483
10:11	MP16806-B1	6371
10:15	F67219-1	7137
10:18	MP16806-D1	7167
10:21	MP16806-SD1	6836
10:25	MP16806-PS1	7087
10:28	MP16806-S1	7038
10:32	MP16806-S2	7093
10:35	ZZZZZZ	7054
10:38	ZZZZZZ	6739
10:42	MA7415-CCV3	6526
10:46	MA7415-CCB3	6743
10:50	ZZZZZZ	6720
10:53	ZZZZZZ	7028
10:56	ZZZZZZ	7127
11:00	ZZZZZZ	7023
11:03	ZZZZZZ	7369
11:07	ZZZZZZ	6613
11:10	ZZZZZZ	6661
11:13	ZZZZZZ	6921

INTERNAL STANDARD SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
 Analyst: RS Run ID: MA7415
 Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Istd#1
11:17	ZZZZZZ	7007
11:20	ZZZZZZ	7170
11:24	MA7415-CCV4	6576
11:28	MA7415-CCB4	6666
11:31	ZZZZZZ	6736
11:35	ZZZZZZ	6554
11:38	ZZZZZZ	7192
11:42	ZZZZZZ	7287
11:45	ZZZZZZ	6602
11:48	ZZZZZZ	6952
11:52	ZZZZZZ	6509
11:55	MA7415-CCV5	6578
12:00	MA7415-CCB5	6629
12:06	MP16808-MB1	6611
12:10	MP16808-B1	6448
12:13	F67214-3	7703
12:16	MP16808-D1	7745
12:20	MP16808-SD1	6923
12:23	MP16808-PS1	7796
12:27	MP16808-S1	7651
12:30	MP16808-S2	7779
12:33	ZZZZZZ	6859
12:37	ZZZZZZ	7526
12:40	MA7415-CCV6	6530
12:45	MA7415-CCB6	6705
12:48	ZZZZZZ	7439
12:51	ZZZZZZ	7090
12:55	ZZZZZZ	7258
12:58	ZZZZZZ	7395
13:02	ZZZZZZ	6573
13:05	ZZZZZZ	6273
13:15	ZZZZZZ	6233
13:19	F67138-6R	6484

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7415
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Istd#1
13:22	MA7415-CCV7	6664
13:27	MA7415-CCB7	6771
13:30	F67138-7R	6274
13:33	MA7415-CCV8	6582
13:38	MA7415-CCB8	6717
15:07	MA7415-CCV9	6546
15:12	MA7415-CCB9	6690
15:15	MP16811-MB1	6754
15:19	MP16811-B1	6540
15:22	F67181-2	6272
15:26	MP16811-D1	6251
15:29	MP16811-SD1	6557
15:32	MP16811-PS1	6291
15:36	MP16811-S1	6216
15:39	MP16811-S2	6209
15:44	ZZZZZZ	5015
15:47	ZZZZZZ	6708
15:50	MA7415-CCV10	6500
15:55	MA7415-CCB10	6633
15:58	ZZZZZZ	6679
16:02	ZZZZZZ	6457
16:05	ZZZZZZ	6523
16:09	ZZZZZZ	6484
16:12	ZZZZZZ	6560
16:15	ZZZZZZ	6495
16:19	ZZZZZZ	6783
16:22	ZZZZZZ	6665
16:26	ZZZZZZ	6577
16:29	ZZZZZZ	6516
16:32	MA7415-CCV11	6564
16:37	MA7415-CCB11	6713
16:40	ZZZZZZ	6543
16:44	ZZZZZZ	6468

INTERNAL STANDARD SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
 Analyst: RS Run ID: MA7415
 Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Time	Sample Description	Istd#1
16:47	ZZZZZZ	6765
16:50	ZZZZZZ	6758
16:54	ZZZZZZ	6888
16:57	ZZZZZZ	6738
17:01	ZZZZZZ	6650
17:05	MP16811-MB2A	6703
17:08	MP16812-MB1	6621
17:12	MP16812-B1	6588
17:15	MA7415-CCV12	6440
17:20	MA7415-CCB12	6716
17:23	F67176-2	5744
17:27	MP16812-D1	5721
17:30	MP16812-SD1	6405
17:33	MP16812-S1	5658
17:37	MP16812-S2	5753
17:40	F67177-2	5736
17:44	F67138-6RA	5739
17:47	F67138-7RA	5678
17:50	ZZZZZZ	6027
17:54	MP16812-D2	5593
17:57	MA7415-CCV13	6466
18:02	MA7415-CCB13	6808
18:05	MP16812-MB2	5930
18:08	MP16812-B2	5973
18:13	MP16812-MB3	5972
18:16	MP16812-B3	5995
18:20	ZZZZZZ	6786
18:24	MA7415-CRIA3	6735
18:27	MA7415-CRI2	6798
18:31	MA7415-ICSA2	6121
18:34	MA7415-ICSAB2	6019
18:38	MA7415-CCV14	6536
18:42	MA7415-CCB14	6771

R = Reference for ISTD limits. ! = Outside limits.

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7415
Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn

Sample		
Time	Description	Istd#1

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium	60-125 %

5.2.1
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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7415 Units: ug/l

Time: Sample ID:		09:13 ICB1		09:40 CCB1		10:01 CCB2		10:46 CCB3			
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final	
Aluminum	200	11	0.41	<200	5.2	<200	4.4	<200	4.7	<200	
Antimony	6.0	4.5	-0.67	<6.0	0.60	<6.0	0.98	<6.0	0.34	<6.0	
Arsenic	10	3.6	2.9	<10	-0.47	<10	0.71	<10	1.3	<10	
Barium	200	5	0.020	<200	0.060	<200	0.10	<200	0.080	<200	
Beryllium	4.0	1	0.070	<4.0	0.11	<4.0	0.12	<4.0	0.17	<4.0	
Cadmium	5.0	1	0.22	<5.0	0.060	<5.0	0.13	<5.0	0.18	<5.0	
Calcium	1000	100	-0.74	<1000	3.0	<1000	3.6	<1000	5.0	<1000	
Chromium	10	1.6	-0.16	<10	-0.24	<10	-0.030	<10	-0.020	<10	
Cobalt	50	.83	0.16	<50	-0.010	<50	0.18	<50	0.10	<50	
Copper	25	2.1	-0.52	<25	-0.26	<25	0.20	<25	-0.060	<25	
Iron	300	23	-13	<300	-1.7	<300	-6.0	<300	-2.7	<300	
Lead	5.0	2	0.67	<10	2.3	<10	1.9	<10	2.4	<10	
Magnesium	5000	100	-0.59	<5000	1.7	<5000	2.2	<5000	2.2	<5000	
Manganese	15	.5	-0.040	<15	-0.060	<15	0.030	<15	0.0	<15	
Molybdenum	50	2.8									
Nickel	40	2.3	0.040	<40	0.020	<40	-0.55	<40	-0.20	<40	
Potassium	10000	100	228	<10000	222	<10000	229	<10000	237	<10000	
Selenium	10	3.1	-1.5	<10	2.7	<10	2.0	<10	1.0	<10	
Silver	10	1.2	-0.12	<10	0.0	<10	-0.22	<10	0.090	<10	
Sodium	10000	500	51.1	<10000	-42	<10000	-67	<10000	64.8	<10000	
Thallium	10	3.4	1.2	<10	2.2	<10	1.9	<10	0.27	<10	
Tin	50	2.8									
Vanadium	50	.66	-0.13	<50	-0.10	<50	-0.24	<50	-0.060	<50	
Zinc	20	3.8	-0.12	<20	-0.010	<20	0.010	<20	0.070	<20	

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7415 Units: ug/l

Time: Sample ID:			11:28 CCB4		12:00 CCB5		12:45 CCB6		13:27 CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	11	5.4	<200	6.2	<200	4.5	<200	4.2	<200
Antimony	6.0	4.5	1.9	<6.0	1.2	<6.0	3.3	<6.0	-0.86	<6.0
Arsenic	10	3.6	0.53	<10	1.5	<10	2.1	<10	-0.37	<10
Barium	200	5	0.16	<200	0.090	<200	0.18	<200	0.16	<200
Beryllium	4.0	1	0.15	<4.0	0.20	<4.0	0.24	<4.0	0.29	<4.0
Cadmium	5.0	1	0.12	<5.0	0.26	<5.0	0.11	<5.0	0.16	<5.0
Calcium	1000	100	5.2	<1000	3.6	<1000	4.1	<1000	5.6	<1000
Chromium	10	1.6	-0.18	<10	-0.050	<10	0.090	<10	-0.13	<10
Cobalt	50	.83	0.19	<50	-0.030	<50	0.090	<50	0.22	<50
Copper	25	2.1	-0.040	<25	-0.23	<25	-0.14	<25	-0.41	<25
Iron	300	23	0.43	<300	-1.1	<300	-1.9	<300	-1.6	<300
Lead	5.0	2	1.6	<10	2.1	<10	2.0	<10	1.7	<10
Magnesium	5000	100	2.6	<5000	0.80	<5000	4.2	<5000	2.4	<5000
Manganese	15	.5	0.13	<15	0.080	<15	0.11	<15	0.070	<15
Molybdenum	50	2.8								
Nickel	40	2.3	0.020	<40	0.50	<40	0.030	<40	-0.89	<40
Potassium	10000	100	233	<10000	231	<10000	244	<10000	235	<10000
Selenium	10	3.1	4.7	<10	-0.070	<10	1.3	<10	0.43	<10
Silver	10	1.2	0.28	<10	-0.69	<10	0.35	<10	0.040	<10
Sodium	10000	500	-52	<10000	42.8	<10000	27.6	<10000	100	<10000
Thallium	10	3.4	-0.020	<10	3.6	<10	1.5	<10	0.84	<10
Tin	50	2.8								
Vanadium	50	.66	-0.15	<50	-0.31	<50	0.0	<50	-0.11	<50
Zinc	20	3.8	0.25	<20	0.17	<20	0.30	<20	0.78	<20

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7415 Units: ug/l

Time: Sample ID:		13:38 CCB8		15:12 CCB9		15:55 CCB10		16:37 CCB11			
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final	
Aluminum	200	11	3.7	<200	1.5	<200	2.7	<200	1.3	<200	
Antimony	6.0	4.5	0.60	<6.0	0.77	<6.0	-0.63	<6.0	0.79	<6.0	
Arsenic	10	3.6	0.69	<10	1.6	<10	0.86	<10	4.6	<10	
Barium	200	5	0.080	<200	0.17	<200	0.17	<200	0.20	<200	
Beryllium	4.0	1	0.22	<4.0	0.19	<4.0	0.16	<4.0	0.20	<4.0	
Cadmium	5.0	1	0.22	<5.0	0.33	<5.0	0.23	<5.0	0.17	<5.0	
Calcium	1000	100	4.3	<1000	6.1	<1000	5.6	<1000	7.0	<1000	
Chromium	10	1.6	-0.13	<10	0.030	<10	-0.060	<10	0.17	<10	
Cobalt	50	.83	-0.17	<50	0.45	<50	0.28	<50	0.30	<50	
Copper	25	2.1	-0.29	<25	0.30	<25	0.42	<25	0.45	<25	
Iron	300	23	-2.7	<300	-3.1	<300	0.87	<300	2.5	<300	
Lead	5.0	2	1.0	<10	1.9	<10	2.0	<10	1.9	<10	
Magnesium	5000	100	0.59	<5000	2.2	<5000	4.4	<5000	4.0	<5000	
Manganese	15	.5	0.0	<15	0.11	<15	0.050	<15	0.13	<15	
Molybdenum	50	2.8									
Nickel	40	2.3	-0.23	<40	0.030	<40	0.90	<40	0.94	<40	
Potassium	10000	100	215	<10000	238	<10000	236	<10000	233	<10000	
Selenium	10	3.1	3.3	<10	3.5	<10	4.0	<10	1.2	<10	
Silver	10	1.2	-0.060	<10	-0.16	<10	0.080	<10	-0.92	<10	
Sodium	10000	500	-160	<10000	47.5	<10000	23.3	<10000	-11	<10000	
Thallium	10	3.4	0.95	<10	1.8	<10	2.5	<10	1.3	<10	
Tin	50	2.8									
Vanadium	50	.66	-0.22	<50	-0.010	<50	0.020	<50	0.090	<50	
Zinc	20	3.8	0.60	<20	0.14	<20	0.030	<20	0.24	<20	

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7415 Units: ug/l

Time: Sample ID:		17:20 CCB12		18:02 CCB13		18:42 CCB14			
Metal	RL	IDL	raw	final	raw	final	raw	final	
Aluminum	200	11	1.9	<200	-1.0	<200	6.2	<200	
Antimony	6.0	4.5	0.89	<6.0	0.21	<6.0	1.2	<6.0	
Arsenic	10	3.6	0.41	<10	2.7	<10	1.1	<10	
Barium	200	5	0.12	<200	0.15	<200	0.17	<200	
Beryllium	4.0	1	0.28	<4.0	0.27	<4.0	0.27	<4.0	
Cadmium	5.0	1	0.10	<5.0	0.23	<5.0	0.040	<5.0	
Calcium	1000	100	5.6	<1000	9.2	<1000	10.7	<1000	
Chromium	10	1.6	-0.020	<10	0.0	<10	-0.16	<10	
Cobalt	50	.83	0.040	<50	0.17	<50	0.050	<50	
Copper	25	2.1	0.27	<25	0.20	<25	-0.25	<25	
Iron	300	23	-2.2	<300	0.71	<300	-3.2	<300	
Lead	5.0	2	2.9	<10	2.1	<10	2.0	<10	
Magnesium	5000	100	3.3	<5000	1.3	<5000	8.9	<5000	
Manganese	15	.5	0.070	<15	0.080	<15	0.070	<15	
Molybdenum	50	2.8							
Nickel	40	2.3	0.010	<40	0.38	<40	0.59	<40	
Potassium	10000	100	260	<10000	199	<10000	210	<10000	
Selenium	10	3.1	2.2	<10	0.48	<10	3.0	<10	
Silver	10	1.2	0.27	<10	-0.18	<10	-0.43	<10	
Sodium	10000	500	127	<10000	-190	<10000	-97	<10000	
Thallium	10	3.4	3.0	<10	-0.61	<10	0.14	<10	
Tin	50	2.8							
Vanadium	50	.66	-0.080	<50	-0.080	<50	0.080	<50	
Zinc	20	3.8	0.13	<20	0.11	<20	0.15	<20	

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7415 Units: ug/l

Time: Sample ID:	ICV	09:08 ICV1		CCV	09:35 CCV1		CCV	09:57 CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	40000	40100	100.3	40000	40000	100.0	40000	39500	98.8
Antimony	2000	2020	101.0	2000	2020	101.0	2000	1990	99.5
Arsenic	2000	1890	94.5	2000	1900	95.0	2000	1890	94.5
Barium	2000	1990	99.5	2000	1990	99.5	2000	1960	98.0
Beryllium	2000	1970	98.5	2000	1970	98.5	2000	1970	98.5
Cadmium	2000	1980	99.0	2000	1980	99.0	2000	1990	99.5
Calcium	40000	40400	101.0	40000	40600	101.5	40000	40700	101.8
Chromium	2000	1960	98.0	2000	1960	98.0	2000	1960	98.0
Cobalt	2000	1980	99.0	2000	1990	99.5	2000	1980	99.0
Copper	2000	1950	97.5	2000	1960	98.0	2000	1930	96.5
Iron	40000	40000	100.0	40000	40100	100.3	40000	39900	99.8
Lead	2000	1970	98.5	2000	1970	98.5	2000	1980	99.0
Magnesium	40000	41000	102.5	40000	40900	102.3	40000	40800	102.0
Manganese	2000	1990	99.5	2000	1990	99.5	2000	1980	99.0
Molybdenum									
Nickel	2000	1980	99.0	2000	1990	99.5	2000	1980	99.0
Potassium	40000	40500	101.3	40000	40400	101.0	40000	39800	99.5
Selenium	2000	1970	98.5	2000	1960	98.0	2000	1970	98.5
Silver	250	245	98.0	250	244	97.6	250	241	96.4
Sodium	40000	40600	101.5	40000	40400	101.0	40000	40100	100.3
Thallium	2000	2020	101.0	2000	2010	100.5	2000	2010	100.5
Tin									
Vanadium	2000	1970	98.5	2000	1980	99.0	2000	1960	98.0
Zinc	2000	1970	98.5	2000	1980	99.0	2000	2000	100.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7415 Units: ug/l

Time: Sample ID:	CCV	10:42 CCV3		CCV	11:24 CCV4		CCV	11:55 CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	40000	39800	99.5	40000	39900	99.8	40000	39800	99.5
Antimony	2000	2010	100.5	2000	2010	100.5	2000	2020	101.0
Arsenic	2000	1900	95.0	2000	1910	95.5	2000	1910	95.5
Barium	2000	1960	98.0	2000	1960	98.0	2000	1960	98.0
Beryllium	2000	1980	99.0	2000	1990	99.5	2000	1990	99.5
Cadmium	2000	2000	100.0	2000	2010	100.5	2000	2010	100.5
Calcium	40000	41000	102.5	40000	41100	102.8	40000	41200	103.0
Chromium	2000	1980	99.0	2000	1980	99.0	2000	1980	99.0
Cobalt	2000	2000	100.0	2000	2000	100.0	2000	2000	100.0
Copper	2000	1930	96.5	2000	1940	97.0	2000	1940	97.0
Iron	40000	40300	100.8	40000	40300	100.8	40000	40300	100.8
Lead	2000	2000	100.0	2000	1990	99.5	2000	2000	100.0
Magnesium	40000	41100	102.8	40000	41200	103.0	40000	41200	103.0
Manganese	2000	2000	100.0	2000	2000	100.0	2000	1990	99.5
Molybdenum									
Nickel	2000	1990	99.5	2000	2000	100.0	2000	2000	100.0
Potassium	40000	40000	100.0	40000	40100	100.3	40000	40100	100.3
Selenium	2000	1980	99.0	2000	1980	99.0	2000	1980	99.0
Silver	250	243	97.2	250	245	98.0	250	244	97.6
Sodium	40000	40600	101.5	40000	40400	101.0	40000	40500	101.3
Thallium	2000	2030	101.5	2000	2030	101.5	2000	2030	101.5
Tin									
Vanadium	2000	1980	99.0	2000	1990	99.5	2000	1980	99.0
Zinc	2000	2020	101.0	2000	2020	101.0	2000	2020	101.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7415 Units: ug/l

Time: Sample ID:	CCV	12:40 CCV6		CCV	13:22 CCV7		CCV	13:33 CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	40000	40000	100.0	40000	39700	99.3	40000	39500	98.8
Antimony	2000	2030	101.5	2000	2020	101.0	2000	1990	99.5
Arsenic	2000	1920	96.0	2000	1920	96.0	2000	1880	94.0
Barium	2000	1980	99.0	2000	1970	98.5	2000	1970	98.5
Beryllium	2000	2000	100.0	2000	1990	99.5	2000	1960	98.0
Cadmium	2000	2020	101.0	2000	2010	100.5	2000	1970	98.5
Calcium	40000	41600	104.0	40000	41600	104.0	40000	40700	101.8
Chromium	2000	1990	99.5	2000	1990	99.5	2000	1950	97.5
Cobalt	2000	2010	100.5	2000	2010	100.5	2000	1980	99.0
Copper	2000	1960	98.0	2000	1940	97.0	2000	1940	97.0
Iron	40000	40600	101.5	40000	40300	100.8	40000	39700	99.3
Lead	2000	2000	100.0	2000	1990	99.5	2000	1970	98.5
Magnesium	40000	41500	103.8	40000	41400	103.5	40000	40700	101.8
Manganese	2000	2010	100.5	2000	2000	100.0	2000	1970	98.5
Molybdenum									
Nickel	2000	2010	100.5	2000	2000	100.0	2000	1970	98.5
Potassium	40000	40500	101.3	40000	40100	100.3	40000	40100	100.3
Selenium	2000	1980	99.0	2000	1980	99.0	2000	1970	98.5
Silver	250	245	98.0	250	243	97.2	250	242	96.8
Sodium	40000	40600	101.5	40000	40400	101.0	40000	39900	99.8
Thallium	2000	2040	102.0	2000	2020	101.0	2000	2000	100.0
Tin									
Vanadium	2000	2000	100.0	2000	1990	99.5	2000	1970	98.5
Zinc	2000	2030	101.5	2000	2020	101.0	2000	1970	98.5

(*) Outside of QC limits

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7415 Units: ug/l

Time: Sample ID:	CCV	15:07 CCV9		CCV	15:50 CCV10		CCV	16:32 CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	40000	39200	98.0	40000	39900	99.8	40000	39300	98.3
Antimony	2000	1980	99.0	2000	2020	101.0	2000	1990	99.5
Arsenic	2000	1870	93.5	2000	1910	95.5	2000	1890	94.5
Barium	2000	1930	96.5	2000	1970	98.5	2000	1940	97.0
Beryllium	2000	1950	97.5	2000	1990	99.5	2000	1960	98.0
Cadmium	2000	1970	98.5	2000	2020	101.0	2000	1980	99.0
Calcium	40000	40000	100.0	40000	40900	102.3	40000	40300	100.8
Chromium	2000	1940	97.0	2000	1980	99.0	2000	1950	97.5
Cobalt	2000	1960	98.0	2000	2000	100.0	2000	1970	98.5
Copper	2000	1890	94.5	2000	1930	96.5	2000	1900	95.0
Iron	40000	39700	99.3	40000	40500	101.3	40000	39800	99.5
Lead	2000	1970	98.5	2000	2010	100.5	2000	1980	99.0
Magnesium	40000	40300	100.8	40000	41100	102.8	40000	40500	101.3
Manganese	2000	1940	97.0	2000	1980	99.0	2000	1950	97.5
Molybdenum									
Nickel	2000	1970	98.5	2000	2010	100.5	2000	1970	98.5
Potassium	40000	39400	98.5	40000	39800	99.5	40000	39400	98.5
Selenium	2000	1960	98.0	2000	1990	99.5	2000	1960	98.0
Silver	250	242	96.8	250	246	98.4	250	242	96.8
Sodium	40000	39800	99.5	40000	40400	101.0	40000	40100	100.3
Thallium	2000	2000	100.0	2000	2040	102.0	2000	2000	100.0
Tin									
Vanadium	2000	1940	97.0	2000	1980	99.0	2000	1950	97.5
Zinc	2000	1960	98.0	2000	2010	100.5	2000	1980	99.0

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7415 Units: ug/l

Time: Sample ID:	CCV	17:15 CCV12		CCV	17:57 CCV13		CCV	18:38 CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum	40000	40100	100.3	40000	39800	99.5	40000	39900	99.8
Antimony	2000	2020	101.0	2000	2010	100.5	2000	2020	101.0
Arsenic	2000	1910	95.5	2000	1900	95.0	2000	1920	96.0
Barium	2000	1990	99.5	2000	1970	98.5	2000	1970	98.5
Beryllium	2000	1980	99.0	2000	1970	98.5	2000	1980	99.0
Cadmium	2000	2000	100.0	2000	1990	99.5	2000	2010	100.5
Calcium	40000	40800	102.0	40000	40500	101.3	40000	41100	102.8
Chromium	2000	1970	98.5	2000	1960	98.0	2000	1980	99.0
Cobalt	2000	1990	99.5	2000	1980	99.0	2000	2000	100.0
Copper	2000	1940	97.0	2000	1930	96.5	2000	1930	96.5
Iron	40000	40300	100.8	40000	40000	100.0	40000	40500	101.3
Lead	2000	1990	99.5	2000	1980	99.0	2000	2000	100.0
Magnesium	40000	41000	102.5	40000	40700	101.8	40000	41100	102.8
Manganese	2000	1980	99.0	2000	1970	98.5	2000	1980	99.0
Molybdenum									
Nickel	2000	2000	100.0	2000	1990	99.5	2000	2010	100.5
Potassium	40000	40300	100.8	40000	39900	99.8	40000	39800	99.5
Selenium	2000	1980	99.0	2000	1990	99.5	2000	1990	99.5
Silver	250	246	98.4	250	244	97.6	250	245	98.0
Sodium	40000	40700	101.8	40000	40700	101.8	40000	40300	100.8
Thallium	2000	2040	102.0	2000	2020	101.0	2000	2030	101.5
Tin									
Vanadium	2000	1980	99.0	2000	1970	98.5	2000	1980	99.0
Zinc	2000	1980	99.0	2000	1970	98.5	2000	2010	100.5

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
 QC Limits: 95 to 105 % Recovery Run ID: MA7415 Units: ug/l

Time: Sample ID:	HSTD	09:05 HSTD1	
Metal	True	Results	% Rec
Aluminum	80000	81200	101.5
Antimony	4000	4020	100.5
Arsenic	4000	4030	100.8
Barium	4000	4000	100.0
Beryllium	4000	3990	99.8
Cadmium	4000	3990	99.8
Calcium	80000	80200	100.3
Chromium	4000	4010	100.3
Cobalt	4000	3990	99.8
Copper	4000	4030	100.8
Iron	80000	80200	100.3
Lead	4000	4000	100.0
Magnesium	80000	80800	101.0
Manganese	4000	3990	99.8
Molybdenum			
Nickel	4000	3990	99.8
Potassium	80000	76100	95.1
Selenium	4000	4010	100.3
Silver	500	500	100.0
Sodium	80000	78100	97.6
Thallium	4000	4000	100.0
Tin			
Vanadium	4000	4010	100.3
Zinc	4000	4000	100.0

(*) Outside of QC limits
 (anr) Analyte not requested

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA7415 Units: ug/l

Time: Sample ID:	CRI	CRIA	09:16 CRIA1	% Rec	09:22 CRIA2	% Rec	09:24 CRIA1	% Rec	18:24 CRIA3	% Rec
Metal	True	True	Results		Results		Results		Results	
Aluminum	400	200	194	97.0					197	98.5
Antimony	10	5.0	4.7	94.0					6.7	134.0*(a)
Arsenic	20	10			10.8	108.0			9.2	92.0
Barium	400	200	198	99.0					197	98.5
Beryllium	10	5.0	5.3	106.0					5.3	106.0
Cadmium	10	5.0	5.2	104.0					5.4	108.0
Calcium	2000	1000	1070	107.0					1090	109.0
Chromium	20	10	10	100.0					9.9	99.0
Cobalt	100	50	51.9	103.8					52.0	104.0
Copper	50	25	25.2	100.8					24.8	99.2
Iron	600	300	268	89.3					274	91.3
Lead	10	5.0					11.5	115.0		
Magnesium	10000	5000	5020	100.4					4990	99.8
Manganese	30	15	15.6	104.0					15.5	103.3
Molybdenum	100	50								
Nickel	80	40	42.6	106.5					42.0	105.0
Potassium	20000	10000	9010	90.1					8990	89.9
Selenium	20	10	9.4	94.0					12.3	123.0
Silver	20	10	9.8	98.0					9.5	95.0
Sodium	20000	10000	9020	90.2					9000	90.0
Thallium	20	10	10.2	102.0					10.5	105.0
Tin	100	50								
Vanadium	100	50	50.7	101.4					50.6	101.2
Zinc	40	20	22.2	111.0					22.2	111.0

(*) Outside of QC limits

(anr) Analyte not requested

(a) Possible instrument baseline drift.

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA7415 Units: ug/l

Time: Sample ID:		CRI	CRIA	18:27 CRI2	% Rec
Metal	True	True	Results		
Aluminum	400	200			
Antimony	10	5.0			
Arsenic	20	10			
Barium	400	200			
Beryllium	10	5.0			
Cadmium	10	5.0			
Calcium	2000	1000			
Chromium	20	10			
Cobalt	100	50			
Copper	50	25			
Iron	600	300			
Lead	10	5.0	11.4	114.0	
Magnesium	10000	5000			
Manganese	30	15			
Molybdenum	100	50			
Nickel	80	40			
Potassium	20000	10000			
Selenium	20	10			
Silver	20	10			
Sodium	20000	10000			
Thallium	20	10			
Tin	100	50			
Vanadium	100	50			
Zinc	40	20			

(*) Outside of QC limits
(anr) Analyte not requested

5.2.5
5

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B
QC Limits: 80 to 120 % Recovery Run ID: MA7415 Units: ug/l

Time: Sample ID:	ICSA	ICSAB	09:29 ICSA1	% Rec	09:31 ICSAB1	% Rec	18:31 ICSA2	% Rec	18:34 ICSAB2	% Rec
Metal	True	True	Results		Results		Results		Results	
Aluminum	500000	500000	499000	99.8	495000	99.0	484000	96.8	489000	97.8
Antimony		1000	-1.5		1030	103.0	0.15		1020	102.0
Arsenic		1000	2.0		1010	101.0	-2.5		1010	101.0
Barium		500	0.84		534	106.8	0.75		527	105.4
Beryllium		500	0.080		502	100.4	0.17		500	100.0
Cadmium		1000	0.030		987	98.7	-0.28		988	98.8
Calcium	500000	500000	452000	90.4	444000	88.8	441000	88.2	442000	88.4
Chromium		500	0.45		478	95.6	0.44		475	95.0
Cobalt		500	1.4		507	101.4	1.2		505	101.0
Copper		500	-4.4		529	105.8	-4.5		520	104.0
Iron	200000	200000	190000	95.0	195000	97.5	186000	93.0	194000	97.0
Lead		1000	-2.3		970	97.0	-3.2		973	97.3
Magnesium	500000	500000	513000	102.6	519000	103.8	499000	99.8	515000	103.0
Manganese		500	0.50		498	99.6	0.45		491	98.2
Molybdenum		1000	-1.2		1000	100.0	-1.2		997	99.7
Nickel		1000	0.43		931	93.1	0.40		936	93.6
Potassium			241		-170		260		-140	
Selenium		1000	1.6		979	97.9	-1.1		992	99.2
Silver		1000	0.78		1060	106.0	0.25		1050	105.0
Sodium			-91		154		13.5		351	
Thallium		1000	-0.070		943	94.3	-8.5		935	93.5
Tin		1000	0.63		910	91.0	-1.9		897	89.7
Vanadium		500	1.4		515	103.0	0.71		511	102.2
Zinc		1000	-0.44		953	95.3	-0.46		951	95.1

(*) Outside of QC limits

(anr) Analyte not requested

Accutest Laboratories Instrument Runlog
Inorganics AnalysesLogin Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TXFile ID: H20813W1.PRN
Analyst: DM
Parameters: HgDate Analyzed: 08/13/09 Methods: SW846 7470A
Run ID: MA7418

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:32	MA7418-STD1	1		STD01REP1
10:34	MA7418-STD2	1		STD02REP1
10:35	MA7418-STD3	1		STD03REP1
10:37	MA7418-STD4	1		STD04REP1
10:39	MA7418-STD5	1		STD05REP1
10:41	MA7418-STD6	1		STD06REP1
10:43	MA7418-HSTD1	1		
10:44	MA7418-ICV1	1		
10:46	MA7418-ICB1	1		
10:48	MA7418-CRI1	1		
10:50	MA7418-CCV1	1		
10:51	MA7418-CCB1	1		
10:54	MP16813-MB1	1		
10:55	MP16813-B1	1		
10:57	F67181-2	1		(sample used for QC only; not part of login F67138R)
10:59	MP16813-D1	1		
11:01	MP16813-SD1	5		
11:03	MP16813-S1	1		
11:05	MP16813-S2	1		
11:08	ZZZZZZ	1		
11:09	ZZZZZZ	1		
11:11	ZZZZZZ	1		
11:13	MA7418-CCV2	1		
11:15	MA7418-CCB2	1		
11:16	ZZZZZZ	1		
11:18	ZZZZZZ	1		
11:21	ZZZZZZ	1		
11:23	ZZZZZZ	1		
11:24	ZZZZZZ	1		
11:26	ZZZZZZ	1		
11:28	ZZZZZZ	1		
11:30	ZZZZZZ	1		
11:31	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN
Analyst: DM
Parameters: Hg

Date Analyzed: 08/13/09 Methods: SW846 7470A
Run ID: MA7418

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:33	ZZZZZZ	1		
11:35	MA7418-CCV3	1		
11:36	MA7418-CCB3	1		
11:38	ZZZZZZ	1		
11:40	ZZZZZZ	1		
11:42	MP16814-MB1	1		
11:44	MP16814-B1	1		
11:47	F67176-2	1		(sample used for QC only; not part of login F67138R)
11:49	MP16814-D1	1		
11:51	MP16814-SD1	5		
11:53	MP16814-S1	1		
11:54	ZZZZZZ	1		
11:56	F67138-6RA	1		
11:58	MA7418-CCV4	1		
12:00	MA7418-CCB4	1		
12:02	F67138-7RA	1		
12:04	ZZZZZZ	1		
12:05	MP16814-MB2	1		
12:07	MP16814-B2	1		
12:09	MP16814-MB3	1		
12:11	MP16814-B3	1		
----->	Last reportable sample/prep for job F67138R			
12:12	MA7418-CCV5	1		
12:14	MA7418-CCB5	1		
12:33	ZZZZZZ	5		
12:35	ZZZZZZ	5		
12:36	MP16817-MB1	1		
12:39	MP16817-B1	1		
12:40	F67219-1A	1		(sample used for QC only; not part of login F67138R)
12:43	MP16817-D1	1		
12:45	MP16817-SD1	5		
12:47	MP16817-S1	1		
12:48	MP16817-S2	1		
12:50	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
Analyst: DM Run ID: MA7418
Parameters: Hg

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:52	MA7418-CCV6	1		
12:53	MA7418-CCB6	1		
12:55	ZZZZZZ	1		
12:57	ZZZZZZ	1		
12:59	ZZZZZZ	1		
13:01	ZZZZZZ	1		
13:03	ZZZZZZ	1		
13:04	ZZZZZZ	1		
13:06	ZZZZZZ	1		
13:08	ZZZZZZ	1		
13:10	ZZZZZZ	1		
13:12	ZZZZZZ	1		
13:14	MA7418-CCV7	1		
13:15	MA7418-CCB7	1		
13:17	ZZZZZZ	1		
13:19	F67219-14A	1		(sample used for QC only; not part of login F67138R)
13:21	ZZZZZZ	1		
13:23	ZZZZZZ	1		
13:25	ZZZZZZ	1		
13:27	ZZZZZZ	1		
13:29	ZZZZZZ	1		
13:31	MP16817-MB2	1		
13:33	MP16817-B2	1		
13:35	MP16817-D2	1		
13:38	MA7418-CCV8	1		
13:40	MA7418-CCB8	1		
13:42	MA7418-CRI2	1		
13:43	MA7418-CCV9	1		
13:45	MA7418-CCB9	1		
-----> Last reportable CCB for job F67138R Refer to raw data for calibration curve and standards.				

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA7418 Units: ug/l

Time: Sample ID:			10:46 ICB1		10:51 CCB1		11:15 CCB2		11:36 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	1.0	.14	-0.069	<1.0	-0.071	<1.0	-0.11	<1.0	-0.069	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

5.3.1
5

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA7418 Units: ug/l

Time:			12:00		12:14		12:53		13:15	
Sample ID:			CCB4		CCB5		CCB6		CCB7	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Mercury	1.0	.14	-0.071	<1.0	-0.072	<1.0	-0.080	<1.0	-0.076	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

5.3.1
5

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: result < RL Run ID: MA7418 Units: ug/l

Time:			13:40		13:45	
Sample ID:			CCB8		CCB9	
Metal	RL	IDL	raw	final	raw	final
Mercury	1.0	.14	-0.074	<1.0	-0.071	<1.0

(*) Outside of QC limits
(anr) Analyte not requested

5.3.1
5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA7418 Units: ug/l

Time:		10:44		10:50		11:13			
Sample ID:	ICV	ICV1		CCV	CCV1		CCV	CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3.0	3.0	100.0	3	3.2	106.7	3	3.1	103.3

(*) Outside of QC limits
(anr) Analyte not requested

5.3.2
5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA7418 Units: ug/l

Time:		11:35		11:58		12:12	
Sample ID:	CCV	CCV3		CCV	CCV4		CCV
Metal	True	Results	% Rec	True	Results	% Rec	True
Mercury	3	3.1	103.3	3	3.1	103.3	3.0

(*) Outside of QC limits
(anr) Analyte not requested

5.3.2
5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA7418 Units: ug/l

Time:		12:52		13:14		13:38			
Sample ID:	CCV	CCV6		CCV	CCV7		CCV	CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Mercury	3	2.9	96.7	3	2.9	96.7	3	2.9	96.7

(*) Outside of QC limits
(anr) Analyte not requested

5.3.2
5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: 90 to 110 % Recovery Run ID: MA7418 Units: ug/l

Time:	13:43
Sample ID:	CCV
	CCV9
Metal	True
Results	% Rec
Mercury	3
	2.9
	96.7

(*) Outside of QC limits
(anr) Analyte not requested

5.3.2
5

HIGH STANDARD CHECK SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: 95 to 105 % Recovery Run ID: MA7418 Units: ug/l

Time:		10:43	
Sample ID:		HSTD1	
Metal	True	Results	% Rec
Mercury	6.0	6.0	100.0

(*) Outside of QC limits
(anr) Analyte not requested

5.3.3
5

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Date Analyzed: 08/13/09 Methods: SW846 7470A
QC Limits: 80 to 120 % Recovery Run ID: MA7418 Units: ug/l

Time:			10:48		13:42	
Sample ID:	CRI	CRIA	CRI1		CRI2	
Metal	True	True	Results	% Rec	Results	% Rec
Mercury	0.20		0.18	90.0	0.18	90.0

(*) Outside of QC limits
(anr) Analyte not requested

5.3.4
5

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Dilution Factor	PS Recov	Comments
09:34	MA7420-HSTD1	1		
09:37	MA7420-ICV1	1		
09:44	MA7420-ICB1	1		
09:50	MA7420-CRIA1	1		
09:56	MA7420-CRI1	1		
10:01	MA7420-ICSA1	1		
10:03	MA7420-ICSAB1	1		
10:09	MA7420-CCV1	1		
10:14	MA7420-CCB1	1		
10:17	MP16806-S1	2		
10:20	MP16806-S2	2		
10:24	ZZZZZZ	4		
10:27	ZZZZZZ	2		
10:31	ZZZZZZ	2		
10:34	ZZZZZZ	2		
10:37	ZZZZZZ	2		
10:41	ZZZZZZ	2		
10:44	ZZZZZZ	2		
10:48	ZZZZZZ	4		
10:51	MA7420-CCV2	1		
10:55	MA7420-CCB2	1		
10:59	ZZZZZZ	2		
11:02	ZZZZZZ	4		
11:06	ZZZZZZ	50		
11:09	ZZZZZZ	20		
11:12	F67138-6R	4		
11:16	F67138-7R	4		
11:19	F67176-2	2		(sample used for QC only; not part of login F67138R)
11:23	MP16812-D1	2		
11:26	MP16812-SD1	10		
11:30	MP16812-S1	2		
11:33	MA7420-CCV3	1		
11:37	MA7420-CCB3	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Dilution Factor	PS Recov	Comments
11:41	MP16812-S2	2		
11:44	F67138-6RA	2		
11:48	F67138-7RA	2		
11:51	MA7420-CCV4	1		
11:55	MA7420-CCB4	1		
12:14	MA7420-CCV5	1		
12:18	MA7420-CCB5	1		
12:21	MP16815-MB1	1		
12:25	MP16815-B1	1		
12:28	F67230-1	1		(sample used for QC only; not part of login F67138R)
12:32	MP16815-D1	1		
12:35	MP16815-SD1	5		
12:39	MP16815-PS1	1		
12:42	MP16815-S1	1		
12:45	MP16815-S2	1		
12:49	ZZZZZZ	1		
12:52	ZZZZZZ	1		
12:56	MA7420-CCV6	1		
13:00	MA7420-CCB6	1		
13:03	ZZZZZZ	1		
13:07	ZZZZZZ	1		
13:10	ZZZZZZ	1		
13:14	ZZZZZZ	1		
13:17	ZZZZZZ	1		
13:20	ZZZZZZ	1		
13:24	ZZZZZZ	1		
13:27	ZZZZZZ	1		
13:31	ZZZZZZ	1		
13:34	ZZZZZZ	1		
13:37	MA7420-CCV7	1		
13:42	MA7420-CCB7	1		
13:49	MA7420-CCV8	1		
13:53	MA7420-CCB8	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:57	ZZZZZZ	1		
14:00	ZZZZZZ	1		
14:04	ZZZZZZ	1		
14:07	ZZZZZZ	1		
14:10	ZZZZZZ	1		
14:14	ZZZZZZ	1		
14:17	ZZZZZZ	1		
14:21	MA7420-CCV9	1		
14:25	MA7420-CCB9	1		
14:30	F67214-3	10		(sample used for QC only; not part of login F67138R)
14:33	MP16808-D1	10		
14:37	MP16808-SD1	50		
14:40	MP16808-S1	10		
14:48	MP16808-S2	20		
----->	Last reportable sample/prep for job F67138R			
14:52	MA7420-CCV10	1		
14:56	MA7420-CCB10	1		
15:01	MP16818-MB1	1		
15:05	MP16818-B1	1		
15:08	F67247-21	1		(sample used for QC only; not part of login F67138R)
15:12	MP16818-D1	1		
15:15	MP16818-SD1	5		
15:18	MP16818-PS1	1		
15:22	MP16818-S1	1		
15:25	MA7420-CCV11	1		
15:30	MA7420-CCB11	1		
15:33	ZZZZZZ	1		
15:36	ZZZZZZ	1		
15:40	ZZZZZZ	1		
15:43	ZZZZZZ	1		
15:47	MA7420-CCV12	1		
15:51	MA7420-CCB12	1		
16:09	MP16816-MB1	1		
16:13	MP16816-B1	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:16	F67247-1	1		(sample used for QC only; not part of login F67138R)
16:19	MP16816-D1	1		
16:23	MP16816-SD1	5		
16:26	MP16816-PS1	1		
16:30	MP16816-S1	1		
16:33	MP16816-S2	1		
16:36	ZZZZZZ	1		
16:40	ZZZZZZ	1		
16:43	MA7420-CCV13	1		
16:48	MA7420-CCB13	1		
16:51	ZZZZZZ	1		
16:54	ZZZZZZ	1		
16:58	ZZZZZZ	1		
17:01	ZZZZZZ	1		
17:05	ZZZZZZ	1		
17:08	ZZZZZZ	1		
17:12	ZZZZZZ	1		
17:15	ZZZZZZ	1		
17:18	ZZZZZZ	1		
17:22	ZZZZZZ	1		
17:25	MA7420-CCV14	1		
17:30	MA7420-CCB14	1		
17:33	ZZZZZZ	1		
17:36	ZZZZZZ	1		
17:40	ZZZZZZ	1		
17:43	ZZZZZZ	1		
17:47	ZZZZZZ	1		
17:50	ZZZZZZ	1		
17:53	ZZZZZZ	1		
17:58	MP16819-MB1	1		
18:01	MP16819-B1	1		
18:05	F67219-1A	1		(sample used for QC only; not part of login F67138R)
18:08	MA7420-CCV15	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:12	MA7420-CCB15	1		
18:16	MP16819-D1	1		
18:19	MP16819-SD1	5		
18:23	MP16819-S1	1		
18:26	MP16819-S2	1		
18:30	ZZZZZZ	1		
18:33	ZZZZZZ	1		
18:36	ZZZZZZ	1		
18:40	ZZZZZZ	1		
18:43	ZZZZZZ	1		
18:47	ZZZZZZ	1		
18:50	MA7420-CCV16	1		
18:54	MA7420-CCB16	1		
18:58	ZZZZZZ	1		
19:01	ZZZZZZ	1		
19:05	ZZZZZZ	1		
19:09	MP16819-MB2	1		
19:12	MP16819-B2	1		
19:17	MP16820-MB1	1		
19:20	MP16820-B1	1		
19:24	F67219-11A	1		(sample used for QC only; not part of login F67138R)
19:27	MP16820-D1	1		
19:30	MP16820-SD1	5		
19:34	MA7420-CCV17	1		
19:38	MA7420-CCB17	1		
19:42	MP16820-S1	1		
19:45	MP16820-S2	1		
19:49	ZZZZZZ	1		
19:52	ZZZZZZ	1		
19:55	F67219-14A	1		(sample used for QC only; not part of login F67138R)
19:59	ZZZZZZ	1		
20:02	ZZZZZZ	1		
20:06	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:09	ZZZZZZ	1		
20:12	ZZZZZZ	1		
20:16	MA7420-CCV18	1		
20:20	MA7420-CCB18	1		
20:24	MP16820-D2	1		
20:28	MP16820-MB2	1		
20:32	MP16820-B2	1		
20:36	MP16821-MB1	1		
20:39	MP16821-B1	1		
20:43	F67194-3	1		(sample used for QC only; not part of login F67138R)
20:46	MP16821-D1	1		
20:50	MP16821-SD1	5		
20:53	MP16821-PS1	1		
20:56	MP16821-S1	1		
21:00	MA7420-CCV19	1		
21:04	MA7420-CCB19	1		
21:08	MP16821-S2	1		
21:11	ZZZZZZ	1		
21:14	ZZZZZZ	1		
21:18	ZZZZZZ	1		
21:21	ZZZZZZ	1		
21:25	ZZZZZZ	1		
21:28	ZZZZZZ	1		
21:32	ZZZZZZ	1		
21:35	ZZZZZZ	1		
21:38	ZZZZZZ	1		
21:42	MA7420-CCV20	1		
21:46	MA7420-CCB20	1		
21:50	ZZZZZZ	1		
21:53	ZZZZZZ	1		
21:56	ZZZZZZ	1		
22:00	ZZZZZZ	1		
22:03	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Dilution Factor	PS Recov	Comments
22:07	ZZZZZZ	1		
22:10	ZZZZZZ	1		
22:14	ZZZZZZ	1		
22:17	ZZZZZZ	1		
22:20	ZZZZZZ	1		
22:24	MA7420-CCV21	1		
22:28	MA7420-CCB21	1		
22:32	MA7420-CRIA2	1		
22:35	MA7420-CRI2	1		
22:38	MA7420-ICSA2	1		
22:42	MA7420-ICSAB2	1		
22:45	MA7420-CCV22	1		
22:50	MA7420-CCB22	1		
-----> Last reportable CCB for job F67138R Refer to raw data for calibration curve and standards.				

5.4
5

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Istd#1
09:34	MA7420-HSTD1	6323
09:37	MA7420-ICV1	6509
09:44	MA7420-ICB1	6705 R
09:50	MA7420-CRIA1	6647
09:56	MA7420-CRI1	6685
10:01	MA7420-ICSA1	5977
10:03	MA7420-ICSAB1	6051
10:09	MA7420-CCV1	6531
10:14	MA7420-CCB1	6735
10:17	MP16806-S1	6807
10:20	MP16806-S2	6923
10:24	ZZZZZZ	6652
10:27	ZZZZZZ	6785
10:31	ZZZZZZ	6524
10:34	ZZZZZZ	6675
10:37	ZZZZZZ	6758
10:41	ZZZZZZ	6754
10:44	ZZZZZZ	6805
10:48	ZZZZZZ	6541
10:51	MA7420-CCV2	6559
10:55	MA7420-CCB2	6699
10:59	ZZZZZZ	6534
11:02	ZZZZZZ	6585
11:06	ZZZZZZ	6977
11:09	ZZZZZZ	6762
11:12	F67138-6R	6628
11:16	F67138-7R	6508
11:19	F67176-2	5993
11:23	MP16812-D1	5981
11:26	MP16812-SD1	6491
11:30	MP16812-S1	6097
11:33	MA7420-CCV3	6463
11:37	MA7420-CCB3	6796

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Istd#1
11:41	MP16812-S2	6119
11:44	F67138-6RA	5988
11:48	F67138-7RA	6020
11:51	MA7420-CCV4	6594
11:55	MA7420-CCB4	6750
12:14	MA7420-CCV5	6560
12:18	MA7420-CCB5	6713
12:21	MP16815-MB1	6649
12:25	MP16815-B1	6622
12:28	F67230-1	6878
12:32	MP16815-D1	6849
12:35	MP16815-SD1	6741
12:39	MP16815-PS1	6840
12:42	MP16815-S1	6802
12:45	MP16815-S2	6794
12:49	ZZZZZZ	6879
12:52	ZZZZZZ	6755
12:56	MA7420-CCV6	6624
13:00	MA7420-CCB6	6762
13:03	ZZZZZZ	6979
13:07	ZZZZZZ	6927
13:10	ZZZZZZ	6637
13:14	ZZZZZZ	6972
13:17	ZZZZZZ	6740
13:20	ZZZZZZ	7158
13:24	ZZZZZZ	7354
13:27	ZZZZZZ	6860
13:31	ZZZZZZ	7078
13:34	ZZZZZZ	7360
13:37	MA7420-CCV7	6668
13:42	MA7420-CCB7	6771
13:49	MA7420-CCV8	6601
13:53	MA7420-CCB8	6799

INTERNAL STANDARD SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
 Analyst: RS Run ID: MA7420
 Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Istd#1
13:57	ZZZZZZ	7483
14:00	ZZZZZZ	7462
14:04	ZZZZZZ	7462
14:07	ZZZZZZ	6800
14:10	ZZZZZZ	7072
14:14	ZZZZZZ	7301
14:17	ZZZZZZ	7238
14:21	MA7420-CCV9	6623
14:25	MA7420-CCB9	6818
14:30	F67214-3	6924
14:33	MP16808-D1	6850
14:37	MP16808-SD1	6929
14:40	MP16808-S1	6874
14:48	MP16808-S2	6826
14:52	MA7420-CCV10	6603
14:56	MA7420-CCB10	6780
15:01	MP16818-MB1	6651
15:05	MP16818-B1	6447
15:08	F67247-21	6640
15:12	MP16818-D1	6882
15:15	MP16818-SD1	6810
15:18	MP16818-PS1	6768
15:22	MP16818-S1	6608
15:25	MA7420-CCV11	6665
15:30	MA7420-CCB11	6759
15:33	ZZZZZZ	6739
15:36	ZZZZZZ	6923
15:40	ZZZZZZ	6711
15:43	ZZZZZZ	6633
15:47	MA7420-CCV12	6612
15:51	MA7420-CCB12	6781
16:09	MP16816-MB1	6692
16:13	MP16816-B1	6410

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Istd#1
16:16	F67247-1	6594
16:19	MP16816-D1	6628
16:23	MP16816-SD1	6740
16:26	MP16816-PS1	6625
16:30	MP16816-S1	6459
16:33	MP16816-S2	6532
16:36	ZZZZZZ	6678
16:40	ZZZZZZ	6661
16:43	MA7420-CCV13	6649
16:48	MA7420-CCB13	6812
16:51	ZZZZZZ	6579
16:54	ZZZZZZ	6710
16:58	ZZZZZZ	6514
17:01	ZZZZZZ	6710
17:05	ZZZZZZ	6709
17:08	ZZZZZZ	6742
17:12	ZZZZZZ	6748
17:15	ZZZZZZ	6672
17:18	ZZZZZZ	6630
17:22	ZZZZZZ	6682
17:25	MA7420-CCV14	6682
17:30	MA7420-CCB14	6834
17:33	ZZZZZZ	6701
17:36	ZZZZZZ	6771
17:40	ZZZZZZ	6681
17:43	ZZZZZZ	6764
17:47	ZZZZZZ	6692
17:50	ZZZZZZ	6801
17:53	ZZZZZZ	6923
17:58	MP16819-MB1	7211
18:01	MP16819-B1	6739
18:05	F67219-1A	6038
18:08	MA7420-CCV15	6739

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Istd#1
18:12	MA7420-CCB15	6916
18:16	MP16819-D1	6064
18:19	MP16819-SD1	6538
18:23	MP16819-S1	6085
18:26	MP16819-S2	6079
18:30	ZZZZZZ	5794
18:33	ZZZZZZ	5846
18:36	ZZZZZZ	5839
18:40	ZZZZZZ	5743
18:43	ZZZZZZ	5881
18:47	ZZZZZZ	5850
18:50	MA7420-CCV16	6670
18:54	MA7420-CCB16	6828
18:58	ZZZZZZ	6125
19:01	ZZZZZZ	5845
19:05	ZZZZZZ	5950
19:09	MP16819-MB2	6157
19:12	MP16819-B2	6166
19:17	MP16820-MB1	6808
19:20	MP16820-B1	6734
19:24	F67219-11A	5907
19:27	MP16820-D1	5927
19:30	MP16820-SD1	6471
19:34	MA7420-CCV17	6637
19:38	MA7420-CCB17	6859
19:42	MP16820-S1	5900
19:45	MP16820-S2	5888
19:49	ZZZZZZ	5958
19:52	ZZZZZZ	5956
19:55	F67219-14A	5779
19:59	ZZZZZZ	5890
20:02	ZZZZZZ	5941
20:06	ZZZZZZ	6067

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Istd#1
20:09	ZZZZZZ	5931
20:12	ZZZZZZ	5992
20:16	MA7420-CCV18	6601
20:20	MA7420-CCB18	6836
20:24	MP16820-D2	5842
20:28	MP16820-MB2	6173
20:32	MP16820-B2	6187
20:36	MP16821-MB1	6779
20:39	MP16821-B1	6714
20:43	F67194-3	4664
20:46	MP16821-D1	4669
20:50	MP16821-SD1	5839
20:53	MP16821-PS1	4645
20:56	MP16821-S1	4675
21:00	MA7420-CCV19	6737
21:04	MA7420-CCB19	6879
21:08	MP16821-S2	4547
21:11	ZZZZZZ	5915
21:14	ZZZZZZ	5807
21:18	ZZZZZZ	4958
21:21	ZZZZZZ	6817
21:25	ZZZZZZ	6676
21:28	ZZZZZZ	6637
21:32	ZZZZZZ	6612
21:35	ZZZZZZ	6726
21:38	ZZZZZZ	6716
21:42	MA7420-CCV20	6674
21:46	MA7420-CCB20	6851
21:50	ZZZZZZ	6635
21:53	ZZZZZZ	6532
21:56	ZZZZZZ	6587
22:00	ZZZZZZ	6559
22:03	ZZZZZZ	6663

INTERNAL STANDARD SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
Analyst: RS Run ID: MA7420
Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Time	Sample Description	Istd#1
22:07	ZZZZZZ	6605
22:10	ZZZZZZ	6596
22:14	ZZZZZZ	6542
22:17	ZZZZZZ	6635
22:20	ZZZZZZ	6638
22:24	MA7420-CCV21	6600
22:28	MA7420-CCB21	6858
22:32	MA7420-CRIA2	6825
22:35	MA7420-CRI2	6761
22:38	MA7420-ICSA2	6138
22:42	MA7420-ICSAB2	6126
22:45	MA7420-CCV22	6693
22:50	MA7420-CCB22	6869

R = Reference for ISTD limits. ! = Outside limits.

LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium	60-125 %

5.4.1
5

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7420 Units: ug/l

Time: Sample ID:			09:44 ICB1		10:14 CCB1		10:55 CCB2		11:37 CCB3	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	11								
Antimony	6.0	4.5	0.31	<6.0	0.88	<6.0	1.8	<6.0	1.2	<6.0
Arsenic	10	3.6	-0.82	<10	-1.6	<10	-3.2	<10	-1.7	<10
Barium	200	5	0.040	<200	0.090	<200	0.12	<200	0.090	<200
Beryllium	4.0	1								
Cadmium	5.0	1	anr							
Calcium	1000	100	-1.8	<1000	0.98	<1000	2.3	<1000	2.1	<1000
Chromium	10	1.6	anr							
Cobalt	50	.83								
Copper	25	2.1								
Iron	300	23								
Lead	5.0	2	2.5	<10	2.0	<10	0.44	<10	0.92	<10
Magnesium	5000	100								
Manganese	15	.5	-0.080	<15	-0.050	<15	0.020	<15	0.010	<15
Molybdenum	50	2.8								
Nickel	40	2.3	anr							
Potassium	10000	100								
Selenium	10	3.1	2.6	<10	1.2	<10	0.73	<10	2.7	<10
Silver	10	1.2	anr							
Sodium	10000	500								
Thallium	10	3.4								
Tin	50	2.8								
Vanadium	50	.66								
Zinc	20	3.8								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7420 Units: ug/l

Time: Sample ID:	RL	IDL	11:55 CCB4	final	12:18 CCB5	final	13:00 CCB6	final	13:42 CCB7	final
Metal			raw		raw		raw		raw	
Aluminum	200	11								
Antimony	6.0	4.5	0.050	<6.0	3.9	<6.0	1.4	<6.0	2.0	<6.0
Arsenic	10	3.6	-0.020	<10	-2.0	<10	-3.1	<10	-5.1	<10
Barium	200	5	0.15	<200	0.090	<200	0.17	<200	0.14	<200
Beryllium	4.0	1								
Cadmium	5.0	1	anr							
Calcium	1000	100	2.8	<1000	1.1	<1000	5.0	<1000	1.4	<1000
Chromium	10	1.6	anr							
Cobalt	50	.83								
Copper	25	2.1								
Iron	300	23								
Lead	5.0	2	0.31	<10	1.6	<10	-0.070	<10	0.42	<10
Magnesium	5000	100								
Manganese	15	.5	0.020	<15	-0.020	<15	0.030	<15	0.080	<15
Molybdenum	50	2.8								
Nickel	40	2.3	anr							
Potassium	10000	100								
Selenium	10	3.1	-0.030	<10	-0.27	<10	0.61	<10	4.2	<10
Silver	10	1.2	anr							
Sodium	10000	500								
Thallium	10	3.4								
Tin	50	2.8								
Vanadium	50	.66								
Zinc	20	3.8								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7420 Units: ug/l

Time: Sample ID:			13:53 CCB8		14:25 CCB9		14:56 CCB10		15:30 CCB11	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	11								
Antimony	6.0	4.5	2.7	<6.0	2.4	<6.0	1.8	<6.0	2.6	<6.0
Arsenic	10	3.6	-0.16	<10	1.5	<10	-0.82	<10	0.67	<10
Barium	200	5	0.15	<200	0.20	<200	0.15	<200	0.28	<200
Beryllium	4.0	1								
Cadmium	5.0	1	anr							
Calcium	1000	100	2.9	<1000	3.9	<1000	3.0	<1000	2.9	<1000
Chromium	10	1.6	anr							
Cobalt	50	.83								
Copper	25	2.1								
Iron	300	23								
Lead	5.0	2	0.22	<10	0.97	<10	0.33	<10	0.76	<10
Magnesium	5000	100								
Manganese	15	.5	0.020	<15	0.040	<15	0.060	<15	0.12	<15
Molybdenum	50	2.8								
Nickel	40	2.3	anr							
Potassium	10000	100								
Selenium	10	3.1	-0.30	<10	2.3	<10	1.6	<10	1.8	<10
Silver	10	1.2	anr							
Sodium	10000	500								
Thallium	10	3.4								
Tin	50	2.8								
Vanadium	50	.66								
Zinc	20	3.8								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7420 Units: ug/l

Time: Sample ID:			15:51 CCB12		16:48 CCB13		17:30 CCB14		18:12 CCB15	
Metal	RL	IDL	raw	final	raw	final	raw	final	raw	final
Aluminum	200	11								
Antimony	6.0	4.5	0.35	<6.0	0.61	<6.0	0.10	<6.0	1.4	<6.0
Arsenic	10	3.6	-2.5	<10	-2.0	<10	0.040	<10	-4.4	<10
Barium	200	5	0.13	<200	0.21	<200	0.23	<200	0.19	<200
Beryllium	4.0	1								
Cadmium	5.0	1	anr							
Calcium	1000	100	2.2	<1000	2.8	<1000	6.1	<1000	4.9	<1000
Chromium	10	1.6	anr							
Cobalt	50	.83								
Copper	25	2.1								
Iron	300	23								
Lead	5.0	2	1.1	<10	1.2	<10	0.77	<10	0.38	<10
Magnesium	5000	100								
Manganese	15	.5	0.050	<15	0.040	<15	0.070	<15	0.12	<15
Molybdenum	50	2.8								
Nickel	40	2.3	anr							
Potassium	10000	100								
Selenium	10	3.1	-1.1	<10	-0.030	<10	2.2	<10	2.7	<10
Silver	10	1.2	anr							
Sodium	10000	500								
Thallium	10	3.4								
Tin	50	2.8								
Vanadium	50	.66								
Zinc	20	3.8								

(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7420 Units: ug/l

Time: Sample ID:	RL	IDL	18:54 CCB16	19:38 CCB17	20:20 CCB18	21:04 CCB19
Metal	raw	final	raw	final	raw	final
Aluminum	200	11				
Antimony	6.0	4.5	2.2	<6.0	1.4	<6.0
Arsenic	10	3.6	-2.8	<10	-3.2	<10
Barium	200	5	0.24	<200	0.21	<200
Beryllium	4.0	1				
Cadmium	5.0	1	anr			
Calcium	1000	100	11.4	<1000	8.2	<1000
Chromium	10	1.6	anr			
Cobalt	50	.83				
Copper	25	2.1				
Iron	300	23				
Lead	5.0	2	0.93	<10	1.2	<10
Magnesium	5000	100				
Manganese	15	.5	0.21	<15	0.16	<15
Molybdenum	50	2.8				
Nickel	40	2.3	anr			
Potassium	10000	100				
Selenium	10	3.1	-2.0	<10	0.72	<10
Silver	10	1.2	anr			
Sodium	10000	500				
Thallium	10	3.4				
Tin	50	2.8				
Vanadium	50	.66				
Zinc	20	3.8				

(*) Outside of QC limits
(anr) Analyte not requested

5.4.2

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BLANK RESULTS SUMMARY
Part 1 - Initial and Continuing Calibration Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: result < RL Run ID: MA7420 Units: ug/l

Time: Sample ID:	RL	IDL	21:46 CCB20	22:28 CCB21	22:50 CCB22			
Metal			raw	final	raw	final	raw	final
Aluminum	200	11						
Antimony	6.0	4.5	0.23	<6.0	0.12	<6.0	1.1	<6.0
Arsenic	10	3.6	-0.99	<10	-2.5	<10	-1.1	<10
Barium	200	5	0.22	<200	0.23	<200	0.28	<200
Beryllium	4.0	1						
Cadmium	5.0	1	anr					
Calcium	1000	100	7.3	<1000	7.1	<1000	13.5	<1000
Chromium	10	1.6	anr					
Cobalt	50	.83						
Copper	25	2.1						
Iron	300	23						
Lead	5.0	2	0.53	<10	0.78	<10	1.9	<10
Magnesium	5000	100						
Manganese	15	.5	0.11	<15	0.090	<15	0.18	<15
Molybdenum	50	2.8						
Nickel	40	2.3	anr					
Potassium	10000	100						
Selenium	10	3.1	3.2	<10	2.0	<10	1.9	<10
Silver	10	1.2	anr					
Sodium	10000	500						
Thallium	10	3.4						
Tin	50	2.8						
Vanadium	50	.66						
Zinc	20	3.8						

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	ICV	09:37 ICV1		CCV	10:09 CCV1		CCV	10:51 CCV2	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony	2000	2000	100.0	2000	2000	100.0	2000	1970	98.5
Arsenic	2000	1900	95.0	2000	1900	95.0	2000	1870	93.5
Barium	2000	1960	98.0	2000	1950	97.5	2000	1930	96.5
Beryllium									
Cadmium	anr								
Calcium	40000	40600	101.5	40000	40800	102.0	40000	40500	101.3
Chromium	anr								
Cobalt									
Copper									
Iron									
Lead	2000	1990	99.5	2000	1990	99.5	2000	1960	98.0
Magnesium									
Manganese	2000	1980	99.0	2000	1990	99.5	2000	1970	98.5
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2000	1970	98.5	2000	1980	99.0	2000	1950	97.5
Silver	anr								
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	CCV	11:33 CCV3		CCV	11:51 CCV4		CCV	12:14 CCV5	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony	2000	1980	99.0	2000	1990	99.5	2000	1990	99.5
Arsenic	2000	1890	94.5	2000	1910	95.5	2000	1900	95.0
Barium	2000	1960	98.0	2000	1950	97.5	2000	1950	97.5
Beryllium									
Cadmium	anr								
Calcium	40000	40700	101.8	40000	41400	103.5	40000	41100	102.8
Chromium	anr								
Cobalt									
Copper									
Iron									
Lead	2000	1960	98.0	2000	1980	99.0	2000	1980	99.0
Magnesium									
Manganese	2000	1970	98.5	2000	1990	99.5	2000	1980	99.0
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2000	1950	97.5	2000	1970	98.5	2000	1970	98.5
Silver	anr								
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	CCV	12:56 CCV6		CCV	13:37 CCV7		CCV	13:49 CCV8	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony	2000	1990	99.5	2000	2000	100.0	2000	1980	99.0
Arsenic	2000	1900	95.0	2000	1910	95.5	2000	1890	94.5
Barium	2000	1930	96.5	2000	1950	97.5	2000	1920	96.0
Beryllium									
Cadmium	anr								
Calcium	40000	41200	103.0	40000	41800	104.5	40000	40500	101.3
Chromium	anr								
Cobalt									
Copper									
Iron									
Lead	2000	1990	99.5	2000	1990	99.5	2000	1980	99.0
Magnesium									
Manganese	2000	1980	99.0	2000	2000	100.0	2000	1960	98.0
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2000	1960	98.0	2000	1980	99.0	2000	1940	97.0
Silver	anr								
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	CCV	14:21 CCV9		CCV	14:52 CCV10		CCV	15:25 CCV11	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony	2000	1980	99.0	2000	1990	99.5	2000	1970	98.5
Arsenic	2000	1890	94.5	2000	1900	95.0	2000	1890	94.5
Barium	2000	1910	95.5	2000	1930	96.5	2000	1930	96.5
Beryllium									
Cadmium	anr								
Calcium	40000	40600	101.5	40000	40800	102.0	40000	40800	102.0
Chromium	anr								
Cobalt									
Copper									
Iron									
Lead	2000	1990	99.5	2000	1990	99.5	2000	1980	99.0
Magnesium									
Manganese	2000	1960	98.0	2000	1970	98.5	2000	1960	98.0
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2000	1960	98.0	2000	1960	98.0	2000	1950	97.5
Silver	anr								
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	CCV	15:47 CCV12		CCV	16:43 CCV13		CCV	17:25 CCV14	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony	2000	2010	100.5	2000	1980	99.0	2000	1950	97.5
Arsenic	2000	1920	96.0	2000	1880	94.0	2000	1860	93.0
Barium	2000	1970	98.5	2000	1940	97.0	2000	1880	94.0
Beryllium									
Cadmium	anr								
Calcium	40000	41600	104.0	40000	40700	101.8	40000	39800	99.5
Chromium	anr								
Cobalt									
Copper									
Iron									
Lead	2000	2000	100.0	2000	1960	98.0	2000	1960	98.0
Magnesium									
Manganese	2000	1990	99.5	2000	1960	98.0	2000	1940	97.0
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2000	1980	99.0	2000	1930	96.5	2000	1930	96.5
Silver	anr								
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

5.4.3

5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	CCV	18:08 CCV15		CCV	18:50 CCV16		CCV	19:34 CCV17	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony	2000	1950	97.5	2000	1970	98.5	2000	1980	99.0
Arsenic	2000	1850	92.5	2000	1890	94.5	2000	1900	95.0
Barium	2000	1860	93.0	2000	1880	94.0	2000	1890	94.5
Beryllium									
Cadmium	anr								
Calcium	40000	39600	99.0	40000	40500	101.3	40000	41000	102.5
Chromium	anr								
Cobalt									
Copper									
Iron									
Lead	2000	1960	98.0	2000	1990	99.5	2000	2020	101.0
Magnesium									
Manganese	2000	1930	96.5	2000	1960	98.0	2000	1970	98.5
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2000	1930	96.5	2000	1980	99.0	2000	1980	99.0
Silver	anr								
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	CCV	20:16 CCV18		CCV	21:00 CCV19		CCV	21:42 CCV20	
Metal	True	Results	% Rec	True	Results	% Rec	True	Results	% Rec
Aluminum									
Antimony	2000	1990	99.5	2000	1970	98.5	2000	1970	98.5
Arsenic	2000	1920	96.0	2000	1910	95.5	2000	1920	96.0
Barium	2000	1900	95.0	2000	1860	93.0	2000	1840	92.0
Beryllium									
Cadmium	anr								
Calcium	40000	41500	103.8	40000	41400	103.5	40000	41600	104.0
Chromium	anr								
Cobalt									
Copper									
Iron									
Lead	2000	2020	101.0	2000	2020	101.0	2000	2040	102.0
Magnesium									
Manganese	2000	1990	99.5	2000	1970	98.5	2000	1980	99.0
Molybdenum									
Nickel	anr								
Potassium									
Selenium	2000	2000	100.0	2000	1980	99.0	2000	1970	98.5
Silver	anr								
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

(*) Outside of QC limits
(anr) Analyte not requested

5.4.3

5

CALIBRATION CHECK STANDARDS SUMMARY
Initial and Continuing Calibration Checks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time:		22:24		22:45			
Sample ID:	CCV	CCV21		CCV	CCV22		
Metal	True	Results	% Rec	True	Results	% Rec	
Aluminum							
Antimony	2000	1970	98.5	2000	1970	98.5	
Arsenic	2000	1900	95.0	2000	1900	95.0	
Barium	2000	1880	94.0	2000	1840	92.0	
Beryllium							
Cadmium	anr						
Calcium	40000	41200	103.0	40000	41400	103.5	
Chromium	anr						
Cobalt							
Copper							
Iron							
Lead	2000	2020	101.0	2000	2030	101.5	
Magnesium							
Manganese	2000	1970	98.5	2000	1970	98.5	
Molybdenum							
Nickel	anr						
Potassium							
Selenium	2000	1970	98.5	2000	1970	98.5	
Silver	anr						
Sodium							
Thallium							
Tin							
Vanadium							
Zinc							

(*) Outside of QC limits
(anr) Analyte not requested

HIGH STANDARD CHECK SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 95 to 105 % Recovery Run ID: MA7420 Units: ug/l

Time:		09:34	
Sample ID:	HSTD	HSTD1	
Metal	True	Results	% Rec
Aluminum			
Antimony	4000	3960	99.0
Arsenic	4000	3950	98.8
Barium	4000	3940	98.5
Beryllium			
Cadmium	anr		
Calcium	80000	78800	98.5
Chromium	anr		
Cobalt			
Copper			
Iron			
Lead	4000	3940	98.5
Magnesium			
Manganese	4000	3930	98.3
Molybdenum			
Nickel	anr		
Potassium			
Selenium	4000	3960	99.0
Silver	anr		
Sodium			
Thallium			
Tin			
Vanadium			
Zinc			

(*) Outside of QC limits
(anr) Analyte not requested

5.4.4
5

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA7420 Units: ug/l

Time: Sample ID:	CRI	CRIA	09:50 CRIA1	% Rec	09:56 CRI1	% Rec	22:32 CRIA2	% Rec	22:35 CRI2	% Rec
Metal	True	True	Results		Results		Results		Results	
Aluminum	400	200								
Antimony	10	5.0	5.3	106.0			5.9	118.0		
Arsenic	20	10	10.1	101.0			5.9	59.0*(a)		
Barium	400	200	196	98.0			186	93.0		
Beryllium	10	5.0								
Cadmium	10	5.0	anr							
Calcium	2000	1000	1060	106.0			1090	109.0		
Chromium	20	10	anr							
Cobalt	100	50								
Copper	50	25								
Iron	600	300								
Lead	10	5.0			10.9	109.0			11.2	112.0
Magnesium	10000	5000								
Manganese	30	15	15.5	103.3			15.4	102.7		
Molybdenum	100	50								
Nickel	80	40	anr							
Potassium	20000	10000								
Selenium	20	10	12.1	121.0			10.2	102.0		
Silver	20	10	anr							
Sodium	20000	10000								
Thallium	20	10								
Tin	100	50								
Vanadium	100	50								
Zinc	40	20								

(*) Outside of QC limits

(anr) Analyte not requested

(a) Possible instrument baseline drift.

INTERFERING ELEMENT CHECK STANDARDS SUMMARY
Part 1 - ICSA and ICSAB Standards

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6010B
QC Limits: 80 to 120 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID:	ICSA	ICSAB	10:01 ICSAB1	% Rec	10:03 ICSAB1	% Rec	22:38 ICSAB2	% Rec	22:42 ICSAB2	% Rec
Metal	True	True	Results		Results		Results		Results	
Aluminum	500000	500000	485000	97.0	480000	96.0	479000	95.8	474000	94.8
Antimony		1000	-0.29		1000	100.0	2.2		998	99.8
Arsenic		1000	-2.4		985	98.5	-3.9		994	99.4
Barium		500	0.65		517	103.4	0.63		495	99.0
Beryllium		500	0.050		491	98.2	0.34		500	100.0
Cadmium		1000	0.66		968	96.8	0.31		1000	100.0
Calcium	500000	500000	439000	87.8	434000	86.8	453000	90.6	447000	89.4
Chromium		500	0.76		467	93.4	0.98		475	95.0
Cobalt		500	0.67		495	99.0	0.91		505	101.0
Copper		500	-4.8		513	102.6	-5.2		487	97.4
Iron	200000	200000	186000	93.0	190000	95.0	189000	94.5	194000	97.0
Lead		1000	1.3		960	96.0	-0.83		988	98.8
Magnesium	500000	500000	500000	100.0	507000	101.4	508000	101.6	516000	103.2
Manganese		500	0.50		486	97.2	0.44		487	97.4
Molybdenum		1000	-0.95		976	97.6	0.10		986	98.6
Nickel		1000	0.50		913	91.3	0.22		932	93.2
Potassium			236		-150		240		-150	
Selenium		1000	-0.52		967	96.7	5.1		970	97.0
Silver		1000	0.41		1020	102.0	-0.47		1020	102.0
Sodium			-180		213		-77		497	
Thallium		1000	-3.1		918	91.8	-5.4		930	93.0
Tin		1000	-1.1		890	89.0	0.23		908	90.8
Vanadium		500	0.71		502	100.4	1.8		504	100.8
Zinc		1000	-0.31		941	94.1	0.58		998	99.8

(*) Outside of QC limits
(anr) Analyte not requested

5.4.6

5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16808
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 08/12/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	9.7	.53	.97	0.30	<9.7
Antimony	2.9	.22	.23	0.036	<2.9
Arsenic	0.39	.17	.17	0.066	<0.39
Barium	9.7	.24	.49	0.014	<9.7
Beryllium	0.24	.049	.097	0.0068	<0.24
Cadmium	0.19	.049	.049	0.010	<0.19
Calcium	240	4.9	4.9	1.4	<240
Chromium	0.49	.078	.078	0.014	<0.49
Cobalt	2.4	.04	.04	-0.0078	<2.4
Copper	1.2	.1	.1	0.083	<1.2
Iron	4.9	1.1	1.3	1.1	<4.9
Lead	4.9	.097	.22	0.12	<4.9
Magnesium	240	4.9	4.9	0.19	<240
Manganese	0.73	.024	.024	0.040	<0.73
Molybdenum	2.4	.14	.14		
Nickel	1.9	.11	.16	0.017	<1.9
Potassium	490	4.9	4.9	12.8	<490
Selenium	4.9	.15	.15	0.084	<4.9
Silver	0.49	.058	.058	0.020	<0.49
Sodium	490	24	40	13.3	<490
Thallium	0.49	.17	.17	-0.13	<0.49
Tin	2.4	.14	.35		
Vanadium	2.4	.032	.032	0.0083	<2.4
Zinc	0.97	.18	.18	0.16	<0.97

Associated samples MP16808: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16808
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date:

08/12/09

08/12/09

Metal	F67214-3 Original	DUP	RPD	QC Limits	F67214-3 Original	MS	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum	4260	4480	5.0	0-20	4260	5750	1590	93.9	80-120
Antimony	0.0	0.0	NC	0-20	0.0	6.8	29.4	23.1N(b)	80-120
Arsenic	0.89	0.98	9.6	0-20	0.89	80.9	118	68.0N(b)	80-120
Barium	104	107	2.8	0-20	104	188	118	71.4N(b)	80-120
Beryllium	0.52	0.54	3.8	0-20	0.52	2.9	2.94	81.0	80-120
Cadmium	0.0	0.0	NC	0-20	0.0	2.3	2.94	78.2N(b)	80-120
Calcium	17000	17500	2.9	0-20	17000	18300	1470	88.4	80-120
Chromium	9.1	9.5	4.3	0-20	9.1	17.9	11.8	74.8N(b)	80-120
Cobalt	7.7	7.5	2.6	0-20	7.7	29.7	29.4	74.8N(b)	80-120
Copper	27.2	25.9	4.9	0-20	27.2	37.9	14.7	72.8N(b)	80-120
Iron	22800	25900	12.7	0-20	22800	25900	1530	202.8(c)	80-120
Lead	7.2	6.6	8.7	0-20	7.2	29.7	29.4	76.5N(b)	80-120
Magnesium	1210	1250	3.3	0-20	1210	2330	1470	76.2N(b)	80-120
Manganese	1900	2020	6.1	0-20	1900	2020	29.4	408.2(c)	80-120
Molybdenum									
Nickel	12.4	12.0	3.3	0-20	12.4	33.7	29.4	72.5N(b)	80-120
Potassium	1030	1070	3.8	0-20	1030	2210	1470	80.3	80-120
Selenium	0.0	0.21	200.0(a)	0-20	0.0	72.6	118	61.7N(b)	80-120
Silver	0.0	0.0	NC	0-20	0.0	2.3	2.94	78.2N(b)	80-120
Sodium	49.8	57.7	14.7	0-20	49.8	1370	1470	89.8	80-120
Thallium	0.0	0.0	NC	0-20	0.0	86.0	118	73.1N(b)	80-120
Tin									
Vanadium	24.1	24.6	2.1	0-20	24.1	45.0	29.4	71.1N(b)	80-120
Zinc	27.2	27.3	0.4	0-20	27.2	47.4	29.4	68.7N(b)	80-120

Associated samples MP16808: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) RPD acceptable due to low duplicate and sample concentrations.

(b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

(c) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16808
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 08/12/09

Metal	F67214-3 Original MSD		SpikeLot MPFLICP1 % Rec		MSD RPD	QC Limit
Aluminum	4260	6020	1530	115.3	4.6	20
Antimony	0.0	5.9	28.3	20.9N(a)	14.2	20
Arsenic	0.89	79.2	113	69.2N(a)	2.1	20
Barium	104	187	113	73.4N(a)	0.5	20
Beryllium	0.52	2.8	2.83	80.6	3.5	20
Cadmium	0.0	2.2	2.83	77.8N(a)	4.4	20
Calcium	17000	18800	1410	127.3(b)	2.7	20
Chromium	9.1	18.0	11.3	78.7N(a)	0.6	20
Cobalt	7.7	29.6	28.3	77.4N(a)	0.3	20
Copper	27.2	37.4	14.1	72.1N(a)	1.3	20
Iron	22800	28000	1470	353.6(b)	7.8	20
Lead	7.2	28.2	28.3	74.3N(a)	5.2	20
Magnesium	1210	2310	1410	77.8N(a)	0.9	20
Manganese	1900	2950	28.3	3713.2(b)	37.4 (c)	20
Molybdenum						
Nickel	12.4	34.1	28.3	76.7N(a)	1.2	20
Potassium	1030	2190	1410	82.0	0.9	20
Selenium	0.0	71.1	113	62.9N(a)	2.1	20
Silver	0.0	2.2	2.83	77.8N(a)	4.4	20
Sodium	49.8	1320	1410	89.8	3.7	20
Thallium	0.0	82.7	113	73.1N(a)	3.9	20
Tin						
Vanadium	24.1	45.7	28.3	76.4N(a)	1.5	20
Zinc	27.2	48.7	28.3	76.0N(a)	2.7	20

Associated samples MP16808: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

(b) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

(c) High RPD due to possible sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16808
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 08/12/09

Metal	BSP Result	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum	1260	1290	98.0	80-120
Antimony	24.2	23.8	101.6	80-120
Arsenic	91.3	95.2	95.9	80-120
Barium	94.9	95.2	99.6	80-120
Beryllium	2.5	2.38	105.0	80-120
Cadmium	2.4	2.38	100.8	80-120
Calcium	1250	1190	105.0	80-120
Chromium	10	9.52	105.0	80-120
Cobalt	24.6	23.8	103.3	80-120
Copper	12.4	11.9	104.2	80-120
Iron	1290	1240	104.2	80-120
Lead	24.5	23.8	102.9	80-120
Magnesium	1200	1190	100.8	80-120
Manganese	24.9	23.8	104.6	80-120
Molybdenum				
Nickel	24.8	23.8	104.2	80-120
Potassium	1110	1190	93.2	80-120
Selenium	89.5	95.2	94.0	80-120
Silver	2.3	2.38	96.6	80-120
Sodium	1170	1190	98.3	80-120
Thallium	94.7	95.2	99.4	80-120
Tin				
Vanadium	24.7	23.8	103.7	80-120
Zinc	24.6	23.8	103.3	80-120

Associated samples MP16808: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16808
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: ug/l

Prep Date: 08/12/09

Metal	F67214-3 Original	SDL 1:5	%DIF	QC Limits
Aluminum	71700	87200	21.5*(a)	0-10
Antimony	0.00	0.00	NC	0-10
Arsenic	15.0	32.4	115.5(b)	0-10
Barium	1760	2200	25.4*(a)	0-10
Beryllium	8.69	11.4	31.3 (b)	0-10
Cadmium	0.00	0.00	NC	0-10
Calcium	286000	388000	35.7*(a)	0-10
Chromium	153	198	29.7*(a)	0-10
Cobalt	130	172	32.0*(a)	0-10
Copper	459	565	23.1*(a)	0-10
Iron	385000	495000	28.7*(a)	0-10
Lead	121	170	40.5*(a)	0-10
Magnesium	20300	26800	32.2*(a)	0-10
Manganese	32000	34900	9.1	0-10
Molybdenum				
Nickel	209	280	34.1*(a)	0-10
Potassium	17300	20100	16.0*(a)	0-10
Selenium	0.00	19.8		0-10
Silver	0.00	0.00	NC	0-10
Sodium	839	0.00	100.0(b)	0-10
Thallium	0.00	0.00	NC	0-10
Tin				
Vanadium	406	519	27.6*(a)	0-10
Zinc	458	625	36.5*(a)	0-10

Associated samples MP16808: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7471A
Units: mg/kg

08/12/09

08/12/09

Metal	F67214-3			QC	F67214-3		Spikelot		QC
	Original	DUP	RPD	Limits	Original	MS	HGFLWS1	% Rec	Limits
Mercury	0.0	0.0	NC	0-20	0.0	0.29	0.258	112.3	80-120

Associated samples MP16809: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7471A
Units: mg/kg

Prep Date: 08/12/09

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.26	0.25	104.0	80-120

Associated samples MP16809: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7471A
Units: ug/l

Prep Date: 08/12/09

Metal	F67214-3 Original	SDL 1:1	%DIF	QC Limits
Mercury	0.00	0.00	NC	0-10

Associated samples MP16809: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16812
Matrix Type: LEACHATE

Methods: SW846 6010B
Units: mg/l

Prep Date: 08/12/09 08/12/09 08/12/09

Metal	RL	IDL	MDL	MB raw	final	MB raw	final	MB raw	final
Aluminum	0.20	.011	.011						
Antimony	0.0060	.0045	.0045						
Arsenic	0.050	.0036	.0054	-0.00011	<0.050	0.0021	<0.050	0.00053	<0.050
Barium	1.0	.005	.2	0.00022	<1.0	0.0011	<1.0	0.00096	<1.0
Beryllium	0.0050	.001	.001						
Cadmium	0.0050	.001	.001	0.000010	<0.0050	0.000030	<0.0050	-0.00011	<0.0050
Calcium	5.0	.1	.1						
Chromium	0.010	.0016	.002	0.00011	<0.010	0.00093	<0.010	0.00058	<0.010
Cobalt	0.050	.00083	.001						
Copper	0.025	.0021	.005						
Iron	0.30	.023	.023						
Lead	0.050	.002	.002	0.0027	<0.050	0.0017	<0.050	0.0016	<0.050
Magnesium	5.0	.1	.1						
Manganese	0.015	.0005	.001						
Molybdenum	0.050	.0028	.005						
Nickel	0.040	.0023	.0023						
Potassium	10	.1	.5						
Selenium	0.050	.0031	.02	0.0014	<0.050	0.0061	<0.050	0.0074	<0.050
Silver	0.010	.0012	.0014	0.0	<0.010	0.00025	<0.010	-0.00012	<0.010
Sodium	10	.5	.5						
Thallium	0.010	.0034	.0036						
Tin	0.050	.0028	.01						
Vanadium	0.050	.00066	.005						
Zinc	0.10	.0038	.05						

Associated samples MP16812: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16812
 Matrix Type: LEACHATE

Methods: SW846 6010B
 Units: mg/l

Prep Date:

08/12/09

08/12/09

Metal	F67176-2 Original	DUP	RPD	QC Limits	F67176-2 Original	MS	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum									
Antimony									
Arsenic	0.0	0.0 (a)	NC	0-20	0.0	2.1 (a)	2.0	105.0	80-120
Barium	0.37	0.38	2.7	0-20	0.37	2.4	2.0	101.5	80-120
Beryllium									
Cadmium	0.0026	0.0026	0.0	0-20	0.0026	0.051	0.050	96.8	80-120
Calcium									
Chromium	0.0	0.0	NC	0-20	0.0	0.20	0.20	100.0	80-120
Cobalt									
Copper									
Iron									
Lead	0.0	0.0 (a)	NC	0-20	0.0	0.50 (a)	0.50	100.0	80-120
Magnesium									
Manganese									
Molybdenum									
Nickel									
Potassium									
Selenium	0.0058	0.0 (a)	200.0 (b)	0-20	0.0058	2.2 (a)	2.0	109.6	80-120
Silver	0.0	0.0	NC	0-20	0.0	0.054	0.050	108.0	80-120
Sodium									
Thallium									
Tin									
Vanadium									
Zinc									

Associated samples MP16812: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Elevated reporting limit(s) due to matrix interference.

(b) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16812
 Matrix Type: LEACHATE

Methods: SW846 6010B
 Units: mg/l

Prep Date: 08/12/09

Metal	F67176-2 Original	MSD	SpikeLot MPFLICP1	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.0	2.0 (a)	2.0	100.0	4.9	20
Barium	0.37	2.3	2.0	96.5	4.3	20
Beryllium						
Cadmium	0.0026	0.049	0.050	92.8	4.0	20
Calcium						
Chromium	0.0	0.19	0.20	95.0	5.1	20
Cobalt						
Copper						
Iron						
Lead	0.0	0.48 (a)	0.50	96.0	4.1	20
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium	0.0058	2.1 (a)	2.0	104.6	4.7	20
Silver	0.0	0.053	0.050	106.0	1.9	20
Sodium						
Thallium						
Tin						
Vanadium						
Zinc						

Associated samples MP16812: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Elevated reporting limit(s) due to matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16812
 Matrix Type: LEACHATE

Methods: SW846 6010B
 Units: mg/l

Prep Date:

08/12/09

08/12/09

Metal	BSP Result	Spikelot MPFLICP1	% Rec	QC Limits	BSP Result	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum								
Antimony								
Arsenic	2.0	2.0	100.0	80-120	2.1	2.0	105.0	80-120
Barium	2.0	2.0	100.0	80-120	2.0	2.0	100.0	80-120
Beryllium								
Cadmium	0.052	0.050	104.0	80-120	0.050	0.050	100.0	80-120
Calcium								
Chromium	0.21	0.20	105.0	80-120	0.20	0.20	100.0	80-120
Cobalt								
Copper								
Iron								
Lead	0.52	0.50	104.0	80-120	0.48	0.50	96.0	80-120
Magnesium								
Manganese								
Molybdenum								
Nickel								
Potassium								
Selenium	2.0	2.0	100.0	80-120	2.3	2.0	115.0	80-120
Silver	0.050	0.050	100.0	80-120	0.051	0.050	102.0	80-120
Sodium								
Thallium								
Tin								
Vanadium								
Zinc								

Associated samples MP16812: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16812
 Matrix Type: LEACHATE

Methods: SW846 6010B
 Units: mg/l

Prep Date: 08/12/09

Metal	BSP Result	Spikelot MPFLICP1	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	2.1	2.0	105.0	80-120
Barium	1.9	2.0	95.0	80-120
Beryllium				
Cadmium	0.049	0.050	98.0	80-120
Calcium				
Chromium	0.20	0.20	100.0	80-120
Cobalt				
Copper				
Iron				
Lead	0.47	0.50	94.0	80-120
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium	2.2	2.0	110.0	80-120
Silver	0.050	0.050	100.0	80-120
Sodium				
Thallium				
Tin				
Vanadium				
Zinc				

Associated samples MP16812: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: F67138R
 Account: SEITXH - SHAW E & I
 Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16812
 Matrix Type: LEACHATE

Methods: SW846 6010B
 Units: ug/l

Prep Date: 08/12/09

Metal	F67176-2 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	0.00	0.00	NC	0-10
Barium	370	376	1.6	0-10
Beryllium				
Cadmium	2.57	0.00	100.0(a)	0-10
Calcium				
Chromium	0.00	0.00	NC	0-10
Cobalt				
Copper				
Iron				
Lead	0.00	0.00	NC	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium	5.81	0.00	100.0(a)	0-10
Silver	0.00	0.00	NC	0-10
Sodium				
Thallium				
Tin				
Vanadium				
Zinc				

Associated samples MP16812: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7470A
Units: mg/l

Prep Date:

08/13/09

08/13/09

08/13/09

Metal	RL	IDL	MDL	MB raw	final	MB raw	final	MB raw	final
Mercury	0.0010	.00014	.00015	0.000017	<0.0010	-0.00038	<0.010	-0.00046	<0.010

Associated samples MP16814: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7470A
Units: mg/l

Prep Date:

08/13/09

08/13/09

Metal	F67176-2 Original DUP		RPD	QC Limits	F67176-2 Original MS		Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0	0.0	NC	0-20	0.0	0.029	0.030	96.7	80-120

Associated samples MP16814: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7470A
Units: mg/l

Prep Date:

08/13/09

08/13/09

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.0029	0.0030	96.7	80-120	0.028	0.030	93.3	80-120

Associated samples MP16814: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7470A
Units: mg/l

Prep Date: 08/13/09

Metal	BSP Result	Spikelot HGFLWS1	% Rec	QC Limits
Mercury	0.028	0.030	93.3	80-120

Associated samples MP16814: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7470A
Units: ug/l

Prep Date: 08/13/09

Metal	F67176-2	QC
	Original SDL 1:5	%DIF Limits
Mercury	0.00	0.00
	NC	0-10

Associated samples MP16814: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested



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Laboratory Report Number: L09080107

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

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Annie Brown	<i>Client Services Specialist</i>	abrown@microbac.com

This report was reviewed on August 10, 2009.

A handwritten signature in cursive script that reads "Stephanie Mossburg".

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 10, 2009.

A handwritten signature in cursive script that reads "David E. Vandenberg".

David Vandenberg - Managing Director

State of origin: Texas

Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX

QAPP: Microbac OVD

This report contains a total of 186 pages.

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Microbac REPORT L09080107
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080107

CHAIN OF CUSTODY: The chain of custody number was (080509-01)

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 07-AUG-09
<i>Stephanie Mossburg</i>

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

SHERI L. PFALZGRAF



Chemist II

August 10, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080107
Project Name: 798-LONGHORN
Method: 6010
Prep Batch Number(s): WG309218
Reviewer Name: SHERI L. PFALZGRAF
LRC Date: August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

00109936

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080107
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309218
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 10, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

SHERI L. PFALZGRAF



Chemist II

August 10, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080107
Project Name: 798-LONGHORN
Method: 7471
Prep Batch Number(s): WG309222
Reviewer Name: SHERI L. PFALZGRAF
LRC Date: August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

00109940

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

00109941

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080107
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309222
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 10, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

Laboratory Data Package Cover Page

00109943

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

August 10, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080107
Project Name: 798-LONGHORN
Method: PH
Prep Batch Number(s): WG309137
Reviewer Name: DEANNA I. HESSON
LRC Date: August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109945

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

00109946

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080107
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG309137
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 10, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

Laboratory Data Package Cover Page

00109948

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

August 10, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080107
Project Name: 798-LONGHORN
Method: PCTSOLIDS
Prep Batch Number(s): WG309174
Reviewer Name: DEANNA I. HESSON
LRC Date: August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109950

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

00109951

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080107
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309174
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 10, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

Laboratory Data Package Cover Page

00109953

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

August 10, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080107
Project Name: 798-LONGHORN
Method: FLASHPOINT
Prep Batch Number(s): WG309164
Reviewer Name: DEANNA I. HESSON
LRC Date: August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109955

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080107
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG309164
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 10, 2009

EXCEPTIONS REPORT

ER# - Description

Method 1010 is applicable only to liquid samples as specified in 40 CFR Part 261.21(a) (1). Section 261.21 does not define ignitability criteria, or test methods, for solid matrices. Any flashpoint data reported in this report for samples other than liquids should be considered of screening value only.

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

Laboratory Data Package Cover Page

00109958

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each environmental sample that includes:

- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) Cleanup methods, and
- e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

- a) Calculated recovery (%R) for each analyte, and
- b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

- a) LCS spiking amount,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %R and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) recovery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratory in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: ☐ This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

DEANNA I. HESSON



Conventional Lab Supervisor

August 10, 2009

Name (Printed)

Signature

Official Title (printed)

DATE

RG-366/TRRP-13 December 2002

A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name: Microbac Laboratories Inc.
Laboratory Log Number: L09080107
Project Name: 798-LONGHORN
Method: REACTIVITY
Prep Batch Number(s): WG309302, WG309303
Reviewer Name: DEANNA I. HESSON
LRC Date: August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓		✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

00109960

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

00109961

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080107
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG309302, WG309303
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 10, 2009

EXCEPTIONS REPORT

ER# - Description

Footnotes:

- (1) NA = Not applicable to method or project
- (2) NR = Not reviewed
- (3) ER# = Exception report number

2.1 Metals Data

2.1.1 Metals I C P Data

2.1.1.1 Summary Data

LABORATORY REPORT

L09080107

00109966

08/10/09 17:06

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836 (GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04DS01 (0-2)	L09080107-01	6010B	1	06-AUG-09
04DS02 (0-2)	L09080107-02	6010B	1	06-AUG-09
04DS03 (0-3)	L09080107-03	6010B	1	06-AUG-09
04DS04 (0-2)	L09080107-04	6010B	1	06-AUG-09
04DS05 (0-4)	L09080107-05	6010B	1	06-AUG-09



Report Number: L09080107

Report Date : August 10, 2009

00109967

Sample Number: L09080107-01
Client ID: 04DS01 (0-2)
Matrix: Leachate
Workgroup Number: WG309257
Collect Date: 08/05/2009 10:05
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 3015
Analytical Method: 6010B
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: PE-ICP2
Prep Date: 08/07/2009 08:59
Cal Date: 08/07/2009 09:44
Run Date: 08/07/2009 17:57
File ID: P2.080709.175755

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	.1	.1	D004	5
Barium, TCLP	7440-39-3	1.24		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1		U	.1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00109968

Sample Number: L09080107-02
Client ID: 04DS02 (0-2)
Matrix: Leachate
Workgroup Number: WG309257
Collect Date: 08/05/2009 10:40
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 3015
Analytical Method: 6010B
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: PE-ICP2
Prep Date: 08/07/2009 08:59
Cal Date: 08/07/2009 09:44
Run Date: 08/07/2009 18:04
File ID: P2.080709.180433

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	.1	.1	D004	5
Barium, TCLP	7440-39-3	3.23		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1		U	.1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00109969

Sample Number: L09080107-03
Client ID: 04DS03 (0-3)
Matrix: Leachate
Workgroup Number: WG309257
Collect Date: 08/05/2009 11:00
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 3015
Analytical Method: 6010B
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: PE-ICP2
Prep Date: 08/07/2009 08:59
Cal Date: 08/07/2009 09:44
Run Date: 08/07/2009 18:11
File ID: P2.080709.181111

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	.1	.1	D004	5
Barium, TCLP	7440-39-3	1.01		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1		U	.1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00109970

Sample Number: L09080107-04
 Client ID: 04DS04 (0-2)
 Matrix: Leachate
 Workgroup Number: WG309257
 Collect Date: 08/05/2009 11:05
 Sample Tag: 01

PrePrep Method: 1311
 Prep Method: 3015
 Analytical Method: 6010B
 Analyst: PDM
 Dilution: 1
 Units: mg/L

Instrument: PE-ICP2
 Prep Date: 08/07/2009 08:59
 Cal Date: 08/07/2009 09:44
 Run Date: 08/07/2009 18:17
 File ID: P2.080709.181748

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	.1	.1	D004	5
Barium, TCLP	7440-39-3	0.605		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1		U	.1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00109971

Sample Number: L09080107-05
Client ID: 04DS05 (0-4)
Matrix: Leachate
Workgroup Number: WG309257
Collect Date: 08/05/2009 10:20
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 3015
Analytical Method: 6010B
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: PE-ICP2
Prep Date: 08/07/2009 08:59
Cal Date: 08/07/2009 09:44
Run Date: 08/07/2009 18:24
File ID: P2.080709.182428

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	.1	.1	D004	5
Barium, TCLP	7440-39-3	0.677		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1		U	.1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system in ug/mL (ppm)

Vf = Final volume (mL)

Vi = Initial volume (mL)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/mL (mg/L)

Example:

0.1

50

50

1

0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (mg/L) (ppm)

Vf = Final volume (mL)

Vi = Initial weight (g)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/g (mg/kg)

Example:

0.1

50

1

1

5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

$Cdry$ = Concentration calculated as dry weight (mg/kg)

Example:

5

80

6.25

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system in ug/mL (ppm)

Vf = Final volume (mL)

Vi = Initial volume (mL)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/mL (mg/L)

Example:

0.1

50

50

1

0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (mg/L) (ppm)

Vf = Final volume (mL)

Vi = Initial weight (g)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/g (mg/kg)

Example:

0.1

50

1

1

5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

$Cdry$ = Concentration calculated as dry weight (mg/kg)

Example:

5

80

6.25

Example 6010 Calculations
Thermo Scientific iCAP 6500

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system in ug/mL (ppm)

Vf = Final volume (mL)

Vi = Initial volume (mL)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/mL (mg/L)

Example:

0.1

50

50

1

0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (mg/L) (ppm)

Vf = Final volume (mL)

Vi = Initial weight (g)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/g (mg/kg)

Example:

0.1

50

1

1

5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

$Cdry$ = Concentration calculated as dry weight (mg/kg)

Example:

5

80

6.25

TCLP Non-Volatile

Analyst(s): RWC, CAF
 Date: 8-06-09

Analyst/Date		Analyst/Date	
CAF/8-06-09		RWC/8-07-09	
Time On	Temp On °C	Time Off	Temp Off °C
14:00	23°	0700	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction		Int. Wt. (g)	Fluid Vol. (mL)
							Yes	No		
F1+	08-0060-01	ME SV	1311	N/A	W	<5		✓	100	100
	-02	(SPK)						✓		
	-03							✓		
	-04							✓		
	-05							✓		
D	08-0101-02	ME MS	1311	F1-758	S/S	100		✓	100.03	2000
	-01	RS						✓	100.04	
	-03	MSD						✓	100.03	
	08-0102-01							✓	100.06	
	08-0107-01							✓	100.05	
	-02							✓	100.01	
	-03							✓	100.00	
	-04							✓	100.09	
	-05							✓	100.01	
	N/A BLK			F1-758	N/A	N/A		✓	2000	
D	08-0131-01	ME	1311	F1-758	S/S	100		✓	100.00	2000

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
 Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SX's, processed @ 10:00

Peer Review By: _____

Supervisor Review: _____

Workgroup: WG309218
Analyst: VC
Spike Analyst: VC
Run Date: 08/07/2009 08:59
Method: 3015

SOP: ME407 Revision 10
Spike Solution: STD34340
Spike Witness: REK
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309218-03	BLANK	17	5 mL	50 mL	201.518 g	206.532 g		
2	WG309188-01	FBLK	17	5 mL	50 mL	201.519 g	201.51 g		
3	WG309218-04	LCS	17	5 mL	50 mL	212.165 g	212.157 g	5 mL	
4	L09080060-01	SAMP	17	5 mL	50 mL	208.904 g	208.904 g		08/14/09
5	WG309218-02	REF	17	5 mL	50 mL	206.637 g	206.627 g		
6	L09080060-02	SAMP	17	5 mL	50 mL	206.637 g	206.627 g		08/14/09
7	L09080060-03	SAMP	17	5 mL	50 mL	205.794 g	205.782 g		08/14/09
8	L09080060-04	SAMP	17	5 mL	50 mL	208.701 g	208.676 g		08/14/09
9	L09080060-05	SAMP	17	5 mL	50 mL	209.585 g	209.576 g		08/14/09
10	WG309218-01	REF	17	5 mL	50 mL	212.445 g	212.418 g		
11	L09080101-01	RS01	17	5 mL	50 mL	212.445 g	212.418 g		08/11/09
12	WG309218-05	MS	17	5 mL	50 mL	208.214 g	208.171 g	5 mL	
13	L09080101-02	MS01	17	5 mL	50 mL	208.214 g	208.171 g	5 mL	08/11/09
14	WG309218-06	MSD	17	5 mL	50 mL	207.611 g	207.575 g	5 mL	
15	L09080101-03	SD01	17	5 mL	50 mL	207.611 g	207.575 g	5 mL	08/11/09
16	L09080102-01	SAMP	17	5 mL	50 mL	209.578 g	209.578 g		08/11/09
17	L09080107-01	SAMP	17	5 mL	50 mL	210.507 g	210.51 g		08/10/09
18	L09080107-02	SAMP	17	5 mL	50 mL	212.841 g	212.832 g		08/10/09
19	L09080107-03	SAMP	17	5 mL	50 mL	210.125 g	210.124 g		08/10/09
20	L09080107-04	SAMP	17	5 mL	50 mL	207.036 g	207.036 g		08/10/09
21	L09080107-05	SAMP	17	5 mL	50 mL	210.39 g	210.385 g		08/10/09
22	L09080131-01	SAMP	17	5 mL	50 mL	209.869 g	209.866 g		08/11/09
23	WG309218-07	MS	17	5 mL	50 mL	210.643 g	210.644 g	5 mL	

Analyst: Vicki Collier

Reviewer: REK

Microbac Laboratories Inc.

Instrument Run Log

00109978

Instrument: PE-ICP2 Dataset: 080709BEC.CSV
 Analyst1: PDM Analyst2: N/A
 Method: 6010B SOP: ME660E Rev: 9
 Maintenance Log ID: 29715

Calibration Std: STD34029 ICV/CCV Std: STD34469 Post Spike: STD34340
 ICSA: STD34193 ICSAB: STD34028 Int. Std: STD34471

Workgroups: 308203,309235,309257,309239

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.080709.091749	WG309274-01	Calibration Point		1		08/07/09 09:17
2	P2.080709.092421	WG309274-02	Calibration Point		1		08/07/09 09:24
3	P2.080709.093057	WG309274-03	Calibration Point		1		08/07/09 09:30
4	P2.080709.093732	WG309274-04	Calibration Point		1		08/07/09 09:37
5	P2.080709.094408	WG309274-05	Calibration Point		1		08/07/09 09:44
6	P2.080709.094956	WG309274-06	ICV 2nd Vendor		1		08/07/09 09:49
7	P2.080709.095635	WG309274-07	ICB		1		08/07/09 09:56
8	P2.080709.100713	WG309274-08	Initial Calibration Verification		1		08/07/09 10:07
9	P2.080709.101351	WG309274-09	Initial Calib Blank		1		08/07/09 10:13
10	P2.080709.102027	WG309274-10	Interference Check		1		08/07/09 10:20
11	P2.080709.102608	WG309274-11	Interference Check		1		08/07/09 10:26
12	P2.080709.103148	WG309274-12	CCV		1		08/07/09 10:31
13	P2.080709.103826	WG309274-13	CCB		1		08/07/09 10:38
14	P2.080709.112313	WG309274-14	CCV		1		08/07/09 11:23
15	P2.080709.112952	WG309274-15	CCB		1		08/07/09 11:29
16	P2.080709.113630	WG309189-02	Method/Prep Blank	50/50	1		08/07/09 11:36
17	P2.080709.114310	WG309189-03	Laboratory Control S	50/50	1		08/07/09 11:43
18	P2.080709.114944	WG309189-04	Filter Blank		1		08/07/09 11:49
19	P2.080709.115621	L09080070-01	OUTFALL 003	50/50	1		08/07/09 11:56
20	P2.080709.120306	WG309235-01	Post Digestion Spike		1	L09080070-01	08/07/09 12:03
21	P2.080709.120941	WG309235-02	Serial Dilution		5	L09080070-01	08/07/09 12:09
22	P2.080709.121617	L09080070-02	OUTFALL 003-DIS	50/50	1		08/07/09 12:16
23	P2.080709.122301	L09080070-03	OUTFALL 009	50/50	1		08/07/09 12:23
24	P2.080709.122938	L09080070-04	OUTFALL 009-DIS	50/50	1		08/07/09 12:29
25	P2.080709.123622	L09080071-01	OUTFALL 003	50/50	1		08/07/09 12:36
26	P2.080709.124306	WG309274-16	CCV		1		08/07/09 12:43
27	P2.080709.124947	WG309274-17	CCB		1		08/07/09 12:49
28	P2.080709.125808	L09070525-24	SW2B-239-20	50/50	1		08/07/09 12:58
29	P2.080709.130441	L09070525-29	SW3A-239-20	50/50	1		08/07/09 13:04
30	P2.080709.131121	L09070525-34	SW4A-239-20	50/50	1		08/07/09 13:11
31	P2.080709.131801	WG308203-05	Post Digestion Spike		1	L09070525-34	08/07/09 13:18
32	P2.080709.132434	WG308203-06	Serial Dilution		5	L09070525-34	08/07/09 13:24
33	P2.080709.133114	L09070525-39	SW5A-239-20	50/50	1		08/07/09 13:31
34	P2.080709.133754	WG309274-18	CCV		1		08/07/09 13:37
35	P2.080709.134432	WG309274-19	CCB		1		08/07/09 13:44
36	P2.080709.135110	L09080071-02	OUTFALL 003-DIS	50/50	1		08/07/09 13:51
37	P2.080709.135723	L09080071-03	OUTFALL 009	50/50	1		08/07/09 13:57

Page: 1 Approved: August 10, 2009

Shari L. Bahgaf



Microbac Laboratories Inc.

Instrument Run Log

00109979

Instrument: PE-ICP2 Dataset: 080709BEC.CSV
 Analyst1: PDM Analyst2: N/A
 Method: 6010B SOP: ME660E Rev: 9
 Maintenance Log ID: 29715

Calibration Std: STD34029 ICV/CCV Std: STD34469 Post Spike: STD34340
 ICSA: STD34193 ICSAB: STD34028 Int. Std: STD34471

Workgroups: 308203,309235,309257,309239

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.080709.140401	L09080071-04	OUTFALL 009-DIS	50/50	1		08/07/09 14:04
39	P2.080709.141041	L09080072-01	OUTFALL 049	50/50	1		08/07/09 14:10
40	P2.080709.141724	L09080072-02	OUTFALL 049-DIS	50/50	1		08/07/09 14:17
41	P2.080709.142401	L09080094-01	OUTFALL 001/COMP	50/50	1		08/07/09 14:24
42	P2.080709.143046	L09080099-04	OUTFALL 003/COMP	50/50	1		08/07/09 14:30
43	P2.080709.143732	L09080099-06	OUTFALL 800/COMP	50/50	1		08/07/09 14:37
44	P2.080709.144406	L09080100-01	OUTFALL 002/COMP	50/50	1		08/07/09 14:44
45	P2.080709.145051	L09080112-01	OUTFALL 001/COMP	50/50	1		08/07/09 14:50
46	P2.080709.145733	WG309274-20	CCV		1		08/07/09 14:57
47	P2.080709.150414	WG309274-21	CCB		1		08/07/09 15:04
48	P2.080709.151052	L09080112-02	OUTFALL 001/GRAB	50/50	1		08/07/09 15:10
49	P2.080709.151736	L09080124-01	LTL-Z-OUTLET LCH1	50/50	1		08/07/09 15:17
50	P2.080709.152439	L09080124-02	LTL-K-EQBLK-2	50/50	1		08/07/09 15:24
51	P2.080709.153123	WG309189-01	Reference Sample		1	L09080125-01	08/07/09 15:31
52	P2.080709.153808	WG309189-05	Matrix Spike	50/50	1	L09080125-01	08/07/09 15:38
53	P2.080709.154445	WG309189-06	Matrix Spike Duplica	50/50	1	L09080125-01	08/07/09 15:44
54	P2.080709.155130	WG309274-22	CCV		1		08/07/09 15:51
55	P2.080709.155810	WG309274-23	CCB		1		08/07/09 15:58
56	P2.080709.160448	WG309218-03	Method/Prep Blank	5/50	1		08/07/09 16:04
57	P2.080709.161127	WG309218-04	Laboratory Control S	5/50	1		08/07/09 16:11
58	P2.080709.161809	WG309188-01	Fluid Blank		1		08/07/09 16:18
59	P2.080709.162446	L09080060-01	FC4-WC-WATER-01-1633	5/50	1		08/07/09 16:24
60	P2.080709.163122	WG309257-01	Post Digestion Spike		1	L09080060-01	08/07/09 16:31
61	P2.080709.163803	WG309257-02	Serial Dilution		5	L09080060-01	08/07/09 16:38
62	P2.080709.164436	WG309218-02	Reference Sample		1	L09080060-02	08/07/09 16:44
63	P2.080709.165117	WG309218-07	Matrix Spike	5/50	1	L09080060-02	08/07/09 16:51
64	P2.080709.165758	L09080060-03	FC4-WC-WATER-03-1635	5/50	1		08/07/09 16:57
65	P2.080709.170432	L09080060-04	FC4-WC-WATER-04-1636	5/50	1		08/07/09 17:04
66	P2.080709.171113	WG309274-24	CCV		1		08/07/09 17:11
67	P2.080709.171752	WG309274-25	CCB		1		08/07/09 17:17
68	P2.080709.172428	L09080060-05	FC4-WC-WATER-05-1637	5/50	1		08/07/09 17:24
69	P2.080709.173111	WG309218-01	Reference Sample		1	L09080101-01	08/07/09 17:31
70	P2.080709.173756	WG309218-05	Matrix Spike	5/50	1	L09080101-01	08/07/09 17:37
71	P2.080709.174433	WG309218-06	Matrix Spike Duplica	5/50	1	L09080101-01	08/07/09 17:44
72	P2.080709.175118	L09080102-01	13837-SSP0044	5/50	1		08/07/09 17:51
73	P2.080709.175755	L09080107-01	04DS01 (0-2)	5/50	1		08/07/09 17:57
74	P2.080709.180433	L09080107-02	04DS02 (0-2)	5/50	1		08/07/09 18:04

Page: 2 Approved: August 10, 2009

Shari L. Bahgat



Microbac Laboratories Inc.

Instrument Run Log

00109980

Instrument: PE-ICP2 Dataset: 080709BEC.CSV
 Analyst1: PDM Analyst2: N/A
 Method: 6010B SOP: ME660E Rev: 9
 Maintenance Log ID: 29715

Calibration Std: STD34029 ICV/CCV Std: STD34469 Post Spike: STD34340
 ICSA: STD34193 ICSAB: STD34028 Int. Std: STD34471

Workgroups: 308203,309235,309257,309239

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.080709.181111	L09080107-03	04DS03 (0-3)	5/50	1		08/07/09 18:11
76	P2.080709.181748	L09080107-04	04DS04 (0-2)	5/50	1		08/07/09 18:17
77	P2.080709.182428	L09080107-05	04DS05 (0-4)	5/50	1		08/07/09 18:24
78	P2.080709.183106	WG309274-26	CCV		1		08/07/09 18:31
79	P2.080709.183740	WG309274-27	CCB		1		08/07/09 18:37
80	P2.080709.184419	L09080131-01	318IDW-072709-OT01	5/50	1		08/07/09 18:44
81	P2.080709.185057	WG309191-01	Method/Prep Blank	1/50	1		08/07/09 18:50
82	P2.080709.185731	WG309191-02	Laboratory Control S	1/50	1		08/07/09 18:57
83	P2.080709.190407	WG309191-03	Laboratory Control S	1/50	1		08/07/09 19:04
84	P2.080709.191045	L09080113-01	C11458 SG VASE	1/50	1		08/07/09 19:10
85	P2.080709.191719	WG309239-01	Post Digestion Spike		1	L09080113-01	08/07/09 19:17
86	P2.080709.192354	WG309239-02	Serial Dilution		5	L09080113-01	08/07/09 19:23
87	P2.080709.193031	WG309274-28	CCV		1		08/07/09 19:30
88	P2.080709.193704	WG309274-29	CCB		1		08/07/09 19:37
89	P2.080709.194335	L09080114-01	C11482 PANEL VASE	1/50	1		08/07/09 19:43
90	P2.080709.195009	L09080115-01	C11496 FAWN	1/50	1		08/07/09 19:50
91	P2.080709.195643	L09080116-01	C11802 BIRD VASE	1/50	1		08/07/09 19:56
92	P2.080709.200317	L09080117-01	C11873 OVAL BELL	1/50	1		08/07/09 20:03
93	P2.080709.200951	L09080118-01	C11892 LAMB	1/50	1		08/07/09 20:09
94	P2.080709.201625	WG309274-30	CCV		1		08/07/09 20:16
95	P2.080709.202259	WG309274-31	CCB		1		08/07/09 20:22

Comments

Seq.	Rerun	Dil.	Reason	Analytes
6			Reanalyzed due to marginal ICB failure.	
7			Reanalyzed due to marginal ICB failure.	

Page: 3 Approved: August 10, 2009

Shari L. Bahgat



Microbac Laboratories Inc.

00109981

Data Checklist

Date: 07-AUG-2009

Analyst: PDM

Analyst: NA

Method: 6010B

Instrument: PE-ICP2

Curve Workgroup: 309274

Runlog ID: 29524

Analytical Workgroups: 308203,309235,309257,309239

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0094,0124,0125,0274,0101,0102,0107 0131
Client Forms	
Level X	
Level 3	0107
Level 4	0101,0102,0131
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	PDM
Secondary Reviewer	SLP
Comments	

Primary Reviewer:
10-AUG-2009

Secondary Reviewer:
10-AUG-2009

Pierre Morris *Shari L. Bahgat*



Analytical Method:6010B

AAB#:WG309257

Login Number:L09080107

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04DS01 (0-2)	01	08/05/09					08/07/09	2	180		08/07/09	2.3	180	
04DS02 (0-2)	02	08/05/09					08/07/09	1.9	180		08/07/09	2.3	180	
04DS03 (0-3)	03	08/05/09					08/07/09	1.9	180		08/07/09	2.3	180	
04DS04 (0-2)	04	08/05/09					08/07/09	1.9	180		08/07/09	2.3	180	
04DS05 (0-4)	05	08/05/09					08/07/09	1.9	180		08/07/09	2.3	180	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

Login Number: L09080107 Work Group: WG309257
Blank File ID: P2.080709.160448 Blank Sample ID: WG309218-03
Prep Date: 08/07/09 08:59 Instrument ID: PE-ICP2
Analyzed Date: 08/07/09 16:04 Method: 6010B
Analyst: PDM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309218-04	P2.080709.161127	08/07/09 16:11	01
04DS01 (0-2)	L09080107-01	P2.080709.175755	08/07/09 17:57	01
04DS02 (0-2)	L09080107-02	P2.080709.180433	08/07/09 18:04	01
04DS03 (0-3)	L09080107-03	P2.080709.181111	08/07/09 18:11	01
04DS04 (0-2)	L09080107-04	P2.080709.181748	08/07/09 18:17	01
04DS05 (0-4)	L09080107-05	P2.080709.182428	08/07/09 18:24	01

Report Name: BLANK_SUMMARY
PDF File ID: 1461845
Report generated 08/10/2009 09:53



Login Number: L09080107 Prep Date: 08/07/09 08:59 Sample ID: WG309218-03
Instrument ID: PE-ICP2 Run Date: 08/07/09 16:04 Prep Method: 3015
File ID: P2.080709.160448 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG309257 Matrix: Leachate Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: PE-ICP-07-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Arsenic, TCLP	0.100	1.00	0.100	1	U
Barium, TCLP	0.0250	0.100	0.0250	1	U
Cadmium, TCLP	0.0250	0.100	0.0250	1	U
Chromium, TCLP	0.0250	0.200	0.0250	1	U
Lead, TCLP	0.100	1.00	0.100	1	U
Selenium, TCLP	0.400	0.800	0.400	1	U
Silver, TCLP	0.0500	0.100	0.0500	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1461846

10-AUG-2009 09:53



Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309218-04
Instrument ID: PE-ICP2 Run Time: 16:11 Prep Method: 3015
File ID: P2.080709.161127 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG309257 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34340 Cal ID: PE-ICP-07-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, TCLP	2.00	1.85	92.3	85 - 115	
Barium, TCLP	5.00	4.91	98.1	85 - 115	
Cadmium, TCLP	0.250	0.229	91.6	85 - 115	
Chromium, TCLP	2.50	2.42	96.9	85 - 115	
Lead, TCLP	2.50	2.38	95.0	85 - 115	
Selenium, TCLP	2.00	1.82	91.2	85 - 115	
Silver, TCLP	2.00	1.90	95.2	85 - 115	

Loginnum: L09080107 Cal ID: PE-ICP2- Worknum: WG309257
 Instrument ID: PE-ICP2 Contract #: DACA56-94-D-0020 Method: 6010B
 Parent ID: WG309218-01 File ID: P2.080709.173111 Dil: 1 Matrix: WATER
 Sample ID: WG309218-05 MS File ID: P2.080709.173756 Dil: 1 Units: mg/L
 Sample ID: WG309218-06 MSD File ID: P2.080709.174433 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, TCLP	ND	2.00	1.91	95.5	2.00	1.91	95.5	0.0133	80 - 120	20	
Barium, TCLP	0.660	5.00	5.53	97.5	5.00	5.23	91.4	5.62	80 - 120	20	
Cadmium, TCLP	0.850	0.250	1.06	85.7	0.250	0.974	49.6	8.84	80 - 120	20	*
Chromium, TCLP	ND	2.50	2.46	98.3	2.50	2.32	92.8	5.77	80 - 120	20	
Lead, TCLP	0.203	2.50	2.54	93.6	2.50	2.44	89.6	3.98	80 - 120	20	
Selenium, TCLP	ND	2.00	1.81	90.5	2.00	1.82	91.2	0.792	80 - 120	20	
Silver, TCLP	ND	2.00	1.98	99.0	2.00	1.87	93.3	5.84	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Login: L09080107 Worknum: WG309257
Instrument: PE-ICP2 Method: 6010B
Serial Dil: WG309257-02 File ID: P2.080709.163803 Dil: 5 Units: mg/L
Sample: L09080060-01 File ID: P2.080709.162446 Dil: 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	ND	U	ND	U		
Barium	.0241	X	.02265	F	6.02	
Cadmium	ND	U	ND	U		
Chromium	ND	U	ND	U		
Lead	ND	U	ND	U		
Selenium	ND	U	ND	U		
Silver	ND	U	ND	U		

U = Result is below MDL.

F = Result is greater than or equal to MDL and less than the RL.

X = Result is greater than or equal to RL and less than 50 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 50 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 1461842

08/10/2009 09:53



Sample Login ID: L09080107
Instrument ID: PE-ICP2
Post Spike ID: WG309257-01
Sample ID: L09080060-01

Worknum: WG309257
Method: 6010B
Units: mg/L
Matrix: Leachate
File ID: P2.080709.163122 Dil: 1
File ID: P2.080709.162446 Dil: 1

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	0.180		0	U	.2	90.0	75 - 125	
BARIUM	0.513		0.0241		.5	98.2	75 - 125	
CADMIUM	0.0228		0	U	.025	91.4	75 - 125	
CHROMIUM	0.244		0	U	.25	97.5	75 - 125	
LEAD	0.239		0	U	.25	95.5	75 - 125	
SELENIUM	0.186		0	U	.2	93.1	75 - 125	
SILVER	0.191		0	U	.2	95.3	75 - 125	

N = % Recovery exceeds control limits

F = Result is between MDL and RL

U = Sample result is below MDL. A value of zero is used in the calculation

Microbac Laboratories Inc.
Initial Calibration Summary

00109989

Login:	<u>L09080107</u>	Workgroup (AAB#):	<u>WG309257</u>
Analytical Method:	<u>6010B</u>	Instrument ID:	<u>PE-ICP2</u>
ICAL Worknum:	<u>WG309274</u>	Initial Calibration Date:	<u>07-AUG-2009 09:44</u>

	WG309274-01		WG309274-02		WG309274-03		WG309274-04		WG309274-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	-1.05	NA	NA	.008	3.39	.4	218	.8	444	.99996	
BARIUM	0	-151	.01	825	.02	1680	1	79300	2	159000	.999999	
CADMIUM	0	0.262	.0005	20.7	.001	45.3	.05	1900	.1	3900	.99991	
CHROMIUM	0	35.3	.005	200	.01	408	.5	18900	1	38100	.999994	
LEAD	0	53.1	.005	11.3	.01	36.5	.5	1700	1	3440	.999986	
SELENIUM	0	-5.07	NA	NA	.008	3.71	.4	106	.8	217	.99989	
SILVER	0	270	.004	340	.008	751	.4	42000	.8	85100	.99998	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-09
Instrument ID: PE-ICP2 Run Time: 10:13 Method: 6010B
File ID: P2.080709.101351 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309257 Cal ID: PE-ICP2 - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.01	.1	.01	U
BARIUM	.0025	.01	.0025	U
CADMIUM	.0025	.01	.0025	U
CHROMIUM	.0025	.02	.0025	U
LEAD	.01	.1	.01	U
SELENIUM	.04	.08	.04	U
SILVER	.005	.01	.005	U

00109991

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-13
Instrument ID: PE-ICP2 Run Time: 10:38 Method: 6010B
File ID: P2.080709.103826 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109992

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-23
Instrument ID: PE-ICP2 Run Time: 15:58 Method: 6010B
File ID: P2.080709.155810 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109993

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-25
Instrument ID: PE-ICP2 Run Time: 17:17 Method: 6010B
File ID: P2.080709.171752 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00109994

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-27
Instrument ID: PE-ICP2 Run Time: 18:37 Method: 6010B
File ID: P2.080709.183740 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-08
 Instrument ID: PE-ICP2 Run Time: 10:07 Method: 6010B
 File ID: P2.080709.100713 Analyst: PDM Units: mg/L
 Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
 QC Key: STD

Analyte	Expected	Found	%REC	LIMITS	Q
Arsenic	.4	0.403	101	90 - 110	
Barium	1	1.02	102	90 - 110	
Cadmium	.05	0.0492	98.5	90 - 110	
Chromium	.5	0.508	102	90 - 110	
Lead	.5	0.502	100	90 - 110	
Selenium	.4	0.415	104	90 - 110	
Silver	.4	0.405	101	90 - 110	

* Exceeds LIMITS Limit

00109996

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-12
Instrument ID: PE-ICP2 Run Time: 10:31 Method: 6010B
File ID: P2.080709.103148 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.397	mg/L	99.2	90 - 110		
Barium		1.00	1.00	mg/L	100	90 - 110		
Cadmium		0.0500	0.0484	mg/L	96.8	90 - 110		
Chromium		0.500	0.500	mg/L	100	90 - 110		
Lead		0.500	0.491	mg/L	98.3	90 - 110		
Selenium		0.400	0.395	mg/L	98.8	90 - 110		
Silver		0.400	0.400	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria



00109997

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-22
Instrument ID: PE-ICP2 Run Time: 15:51 Method: 6010B
File ID: P2.080709.155130 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.380	mg/L	95.0	90 - 110		
Barium		1.00	0.999	mg/L	99.9	90 - 110		
Cadmium		0.0500	0.0483	mg/L	96.7	90 - 110		
Chromium		0.500	0.500	mg/L	100	90 - 110		
Lead		0.500	0.490	mg/L	98.0	90 - 110		
Selenium		0.400	0.409	mg/L	102	90 - 110		
Silver		0.400	0.400	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria



00109998

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-24
Instrument ID: PE-ICP2 Run Time: 17:11 Method: 6010B
File ID: P2.080709.171113 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.389	mg/L	97.3	90 - 110		
Barium		1.00	1.01	mg/L	101	90 - 110		
Cadmium		0.0500	0.0487	mg/L	97.5	90 - 110		
Chromium		0.500	0.502	mg/L	100	90 - 110		
Lead		0.500	0.493	mg/L	98.5	90 - 110		
Selenium		0.400	0.406	mg/L	102	90 - 110		
Silver		0.400	0.403	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria



00109999

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309274-26
Instrument ID: PE-ICP2 Run Time: 18:31 Method: 6010B
File ID: P2.080709.183106 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309257 Cal ID: PE-ICP - 07-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.376	mg/L	93.9	90 - 110		
Barium		1.00	0.997	mg/L	99.7	90 - 110		
Cadmium		0.0500	0.0479	mg/L	95.7	90 - 110		
Chromium		0.500	0.497	mg/L	99.4	90 - 110		
Lead		0.500	0.486	mg/L	97.1	90 - 110		
Selenium		0.400	0.396	mg/L	99.0	90 - 110		
Silver		0.400	0.397	mg/L	99.2	90 - 110		

* Exceeds LIMITS Criteria



Login number: L09080107
Instrument ID: PE-ICP2
Sol. A : WG309274-10
Sol. AB : WG309274-11

File ID: P2.080709.102027
File ID: P2.080709.102608

Workgroup (AAB#): WG309257
Method: 6010B
Units: mg/L
Matrix: Leachate

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Arsenic	NS	0.00645	NS	0.250	0.237	94.8	
Barium	NS	0.00173	NS	0.250	0.247	98.8	
Cadmium	NS	-0.0000700	NS	0.500	0.417	83.4	
Chromium	NS	0.000200	NS	0.250	0.244	97.6	
Lead	NS	0.00171	NS	0.500	0.468	93.6	
Selenium	NS	0.00525	NS	0.250	0.255	102	
Silver	NS	0.000610	NS	0.500	0.490	98.0	

NS = Not spiked

* = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.

= Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L09080107
Instrument ID: PE-ICP2

Date: 02/02/2009
Method: 6010B

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	396.15	0	0	0.206	0	0
ANTIMONY	206.84	0	0	-0.740	0	0
ARSENIC	188.98	0	-0.00216	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	-0.370	0.0414	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-1.07
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.107	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-0.185	0	-0.231	-0.0949	-0.230
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.207	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0.200	0	0.0400
ZINC	206.20	0	0.0753	0	0	0

Login Number: L09080107
Instrument ID: PE-ICP2

Date: 02/02/2009
Method: 6010B

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	396.15	0	0.274	0	0	0
ANTIMONY	206.84	0	0	0	0	19.8
ARSENIC	188.98	0	-0.00673	-0.0875	0	-2.91
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	-0.0105
BORON	249.68	0	0	50.1	3.51	1.50
CADMIUM	228.80	0	0	0	-5.41	0
CALCIUM	227.55	0	0	0	126	-21.8
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0.156
COPPER	327.39	0	0	0	0.380	-0.0467
IRON	239.56	0	0.0227	0	1.91	0.331
LEAD	220.35	0	-0.0247	0	0.666	-0.0700
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.638	0	0	0
MANGANESE	257.61	-1.04	0.0280	-0.755	-0.0418	-0.110
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0.623	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.0190	0	-0.633	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	-0.0100	0	0.953	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	-0.0233	0	0	0.297
VANADIUM	290.88	0	-0.00100	0	0	0
ZINC	206.20	0	-0.0333	15.3	0	-7.08

Login Number: L09080107
Instrument ID: PE-ICP2

Date: 02/02/2009
Method: 6010B

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	396.15	0	0.108	0	0	0
ANTIMONY	206.84	0	0	0	0	0
ARSENIC	188.98	0	0.00251	0	0	0
BARIUM	233.53	0	0.0520	0	0	0
BERYLLIUM	234.86	0	0.152	0	0	0
BORON	249.68	0	-4.02	0	0	0
CADMIUM	228.80	0	-0.00274	0	0	0
CALCIUM	227.55	-2.44	-4.01	0	0	0.104
CHROMIUM	267.72	0	-0.0239	0	0	0
COBALT	228.62	0	0.00949	0	0	0
COPPER	327.39	0	-0.0851	0	0.154	0.0143
IRON	239.56	0	0	0	0	0.0276
LEAD	220.35	0.551	0.103	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.174	0	0	0
MANGANESE	257.61	-0.0457	-0.156	-0.0181	-0.794	0.0147
MOLYBDENUM	202.03	0	-0.0494	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	-0.0451	0	0	0
SELENIUM	196.03	0	-1.01	0	0	-0.0113
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0.0717	-0.00209	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0.138	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.0715	0	0	-0.0400
ZINC	206.20	-0.200	-0.0563	0	0	0

Login Number: L09080107

Date: 02/02/2009

Instrument ID: PE-ICP2

Method: 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	32.9	0	0	0
ANTIMONY	206.84	0	-17.4	0	0	0
ARSENIC	188.98	0	3.66	0	0	0
BARIUM	233.53	0	-0.548	0	0	0
BERYLLIUM	234.86	-0.131	-0.529	0	-0.00974	0
BORON	249.68	0	-2.08	0	0	0
CADMIUM	228.80	0	0.0112	0	-0.0299	0
CALCIUM	227.55	0	-18.6	0	-1090	0
CHROMIUM	267.72	0.434	-0.00100	0	0	0
COBALT	228.62	0	-0.835	0	0.129	0
COPPER	327.39	0.136	-0.0774	0	0.150	0.257
IRON	239.56	0.480	0	0	0	0.407
LEAD	220.35	0.0756	-2.50	0	-0.174	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.58	0	0	0.0252
MANGANESE	257.61	0	-0.0482	-0.00916	-0.0340	-0.0413
MOLYBDENUM	202.03	-0.209	0	0	0.120	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	1.00	0	0
SELENIUM	196.03	0.451	0.199	0	0.0799	0
SILICON	251.61	0	12.9	0	0	0
SILVER	328.07	0.130	0.0781	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-0.00100	1.20	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.578	0	0	0
ZINC	206.20	0	0.180	0	-0.200	-0.100

Login Number: L09080107
Instrument ID: PE-ICP2

Date: 02/02/2009
Method: 6010B

Analyte	Wave Length	SB	SE	SI	SN	SR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	-10.6	0
ARSENIC	188.98	0	0	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	0	2.79	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	0.148	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	-0.0100	0	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-0.0924	0	0	0
MANGANESE	257.61	-0.0505	-0.0281	-0.185	-0.0445	-0.625
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	-0.0500	-0.0100	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0.200
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	-0.300	0	0	0	0

Login Number: L09080107
Instrument ID: PE-ICP2

Date: 02/02/2009
Method: 6010B

Analyte	Wave Length	TI	TL	V	ZN
ALUMINUM	396.15	0	0	0	0
ANTIMONY	206.84	0	0	-3.59	0
ARSENIC	188.98	0	0	0.0930	0
BARIUM	233.53	0	0	-1.83	0
BERYLLIUM	234.86	0	0	0	0
BORON	249.68	0	0	0	0
CADMIUM	228.80	0	0	0.0940	0
CALCIUM	227.55	0	0	19.1	0
CHROMIUM	267.72	0	0	-0.567	-0.0400
COBALT	228.62	2.21	0	0	0
COPPER	327.39	-1.05	0	-0.603	0
IRON	239.56	0	0	0	-0.0613
LEAD	220.35	-0.441	0	-0.150	0
LITHIUM	670.78	0	0	0	0
MAGNESIUM	279.08	0	0	-0.0280	0
MANGANESE	257.61	-0.00931	-0.0414	-0.0601	-0.0553
MOLYBDENUM	202.03	0	0	-0.288	0
NICKEL	231.60	0	0.617	0	0
POTASSIUM	766.49	0	0	0	0
SELENIUM	196.03	-0.220	0	0.823	0
SILICON	251.61	0	0	0	0
SILVER	328.07	0	0	-5.47	0
SODIUM	589.59	0	0	0	0
STRONTIUM	407.77	0	0	0	0
THALLIUM	190.80	-4.00	0	0	0
TIN	189.93	0	0	0	0
TITANIUM	334.94	0	0	0	0
VANADIUM	290.88	0	0	0	0
ZINC	206.20	0	0	-0.100	0

Login Number: L09080107

Date: 06/30/2009

Instrument ID: PE-ICP2

Method: 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	450.0
Antimony	10.00	45.0
Arsenic	10.00	9.0
Barium	10.00	9.0
Beryllium	10.00	4.5
Boron	10.00	45.0
Cadmium	10.00	9.0
Calcium	10.00	450.0
Chromium	10.00	45.0
Cobalt	10.00	45.0
Copper	10.00	45.0
Iron	10.00	450.0
Lead	10.00	90.0
Lithium	10.00	0.8
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	90.0
Selenium	10.00	45.0
Silicon	10.00	36.0
Silver	10.00	4.5
Sodium	10.00	180.0
Strontium	10.00	4.5
Thallium	10.00	45.0
Tin	10.00	45.0
Titanium	10.00	45.0
Vanadium	10.00	45.0
Zinc	10.00	45.0

Comments:

All analytes passed acceptance criteria at the specified concentration.

2.1.2 Metals CVAA Data (Mercury)

2.1.2.1 Summary Data

LABORATORY REPORT

L09080107

00110010

08/10/09 17:06

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04DS01 (0-2)	L09080107-01	7470A	1	06-AUG-09
04DS02 (0-2)	L09080107-02	7470A	1	06-AUG-09
04DS03 (0-3)	L09080107-03	7470A	1	06-AUG-09
04DS04 (0-2)	L09080107-04	7470A	1	06-AUG-09
04DS05 (0-4)	L09080107-05	7470A	1	06-AUG-09



Report Number: L09080107

Report Date : August 10, 2009

00110011

Sample Number: L09080107-01
Client ID: 04DS01 (0-2)
Matrix: Leachate
Workgroup Number: WG309268
Collect Date: 08/05/2009 10:05
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 7470A
Analytical Method: 7470A
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: HYDRA
Prep Date: 08/07/2009 09:00
Cal Date: 08/07/2009 14:31
Run Date: 08/07/2009 15:24
File ID: HY.080709.152432

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110012

Sample Number: L09080107-02
Client ID: 04DS02 (0-2)
Matrix: Leachate
Workgroup Number: WG309268
Collect Date: 08/05/2009 10:40
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 7470A
Analytical Method: 7470A
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: HYDRA
Prep Date: 08/07/2009 09:00
Cal Date: 08/07/2009 14:31
Run Date: 08/07/2009 15:26
File ID: HY.080709.152659

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110013

Sample Number: L09080107-03
Client ID: 04DS03 (0-3)
Matrix: Leachate
Workgroup Number: WG309268
Collect Date: 08/05/2009 11:00
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 7470A
Analytical Method: 7470A
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: HYDRA
Prep Date: 08/07/2009 09:00
Cal Date: 08/07/2009 14:31
Run Date: 08/07/2009 15:28
File ID: HY.080709.152852

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110014

Sample Number: L09080107-04
Client ID: 04DS04 (0-2)
Matrix: Leachate
Workgroup Number: WG309268
Collect Date: 08/05/2009 11:05
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 7470A
Analytical Method: 7470A
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: HYDRA
Prep Date: 08/07/2009 09:00
Cal Date: 08/07/2009 14:31
Run Date: 08/07/2009 15:30
File ID: HY.080709.153035

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110015

Sample Number: L09080107-05
Client ID: 04DS05 (0-4)
Matrix: Leachate
Workgroup Number: WG309268
Collect Date: 08/05/2009 10:20
Sample Tag: 01

PrePrep Method: 1311
Prep Method: 7470A
Analytical Method: 7470A
Analyst: PDM
Dilution: 1
Units: mg/L

Instrument: HYDRA
Prep Date: 08/07/2009 09:00
Cal Date: 08/07/2009 14:31
Run Date: 08/07/2009 15:32
File ID: HY.080709.153218

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

2.1.2.2 QC Summary Data

Example Cold Vapor Mercury Calculations

Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Diluted to Volume (mL)

Vi = Aliquot Volume (mL)

D = Manual dilution factor, if required (10X = 10)

Example:

0.1

40

40

1

Cx = Concentration of element in ppb (ug/L)

0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Diluted to volume (mL)

Ws = Aliquot weight (g)

D = Manual dilution factor

Example:

0.1

40

0.6

1

Cx = Concentration of element in ug/kg

6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

6.67

80

$Cdry$ = Concentration calculated as dry weight (ug/kg)

8.33

8.33 ug/kg = 0.00833 mg/kg

TCLP Non-Volatile

Analyst(s): RWC, CAF
 Date: 8-06-09

Analyst/Date		Analyst/Date	
CAF/8-06-09		RWC/8-07-09	
Time On	Temp On °C	Time Off	Temp Off °C
14:00	23°	0700	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction		Int. Wt. (g)	Fluid Vol. (mL)
							Yes	No		
F1+	08-0060-01	ME SV	1311	N/A	W	<5		✓	100	100
	-02	(SPK)						✓		
	-03							✓		
	-04							✓		
	-05							✓		
D	08-0101-02	ME MS	1311	F1-758	S/S	100		✓	100.03	2000
	-01	RS						✓	100.04	
	-03	MSD						✓	100.03	
	08-0102-01							✓	100.06	
	08-0107-01							✓	100.05	
	-02							✓	100.01	
	-03							✓	100.00	
	-04							✓	100.09	
	-05							✓	100.01	
	N/A BLK			F1-758	N/A	N/A		✓	2000	
D	08-0131-01	ME	1311	F1-758	S/S	100		✓	100.00	2000

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
 Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SX's, processed @ 10:00

Peer Review By: _____

Supervisor Review: _____

Workgroup: WG309222
Analyst: REK
Spike Analyst: REK
Method: 7470A
Run Date: 08/07/2009 09:00
Hotblock Start Temp: 97 @ 08:50
Hotblock End Temp: 96.1 @ 10:50

SOP: ME404 Revision 12
Spike Solution: STD34518
Spike Witness: VC
H2SO4 Lot #: COA13254
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
KMnO4 1:1 Lot #: RGT13913
K2S2O8 1:1 Lot #: RGT14066
Mercury Water ICV Lot #: STD34520
HG H2O STDS 10PPM Lot #: STD34526

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG309222-03	BLANK	17	4 mL	40 mL		
2	WG309031-01	FBLK	17	4 mL	40 mL		
3	WG309188-01	FBLK	17	4 mL	40 mL		
4	WG309222-04	LCS	17	4 mL	40 mL	4 mL	
5	WG309222-01	REF	17	4 mL	40 mL		
6	L09080058-01	SAMP	17	4 mL	40 mL		08/12/09
7	L09080060-01	SAMP	17	4 mL	40 mL		08/14/09
8	WG309222-02	REF	17	4 mL	40 mL		
9	L09080060-02	SAMP	17	4 mL	40 mL		08/14/09
10	L09080060-03	SAMP	17	4 mL	40 mL		08/14/09
11	L09080060-04	SAMP	17	4 mL	40 mL		08/14/09
12	L09080060-05	SAMP	17	4 mL	40 mL		08/14/09
13	L09080060-06	SAMP	17	4 mL	40 mL		08/14/09
14	L09080060-07	SAMP	17	4 mL	40 mL		08/14/09
15	L09080060-08	SAMP	17	4 mL	40 mL		08/14/09
16	L09080107-01	SAMP	17	4 mL	40 mL		08/10/09
17	L09080107-02	SAMP	17	4 mL	40 mL		08/10/09
18	L09080107-03	SAMP	17	4 mL	40 mL		08/10/09
19	L09080107-04	SAMP	17	4 mL	40 mL		08/10/09
20	L09080107-05	SAMP	17	4 mL	40 mL		08/10/09
21	WG309222-05	MS	17	4 mL	40 mL	4 mL	
22	WG309222-06	MS	17	4 mL	40 mL	4 mL	
23	WG309222-07	MSD	17	4 mL	40 mL	4 mL	

Analyst: REK

Reviewer: Eun P. Kim

Microbac Laboratories Inc.

Instrument Run Log

00110020

Instrument: HYDRA Dataset: 080709B.PRN
 Analyst1: PDM Analyst2: N/A
 Method: 7470A SOP: ME404 Rev: 11
 Maintenance Log ID: 29707

Calibration Std: STD34525 ICV/CCV Std: STD34520 Post Spike: STD34526
 ICSA: N/A ICSAB: N/A Int. Std: _____

Workgroups: 309268

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.080709.142127	WG309279-01	Calibration Point		1		08/07/09 14:21
2	HY.080709.142402	WG309279-02	Calibration Point		1		08/07/09 14:24
3	HY.080709.142600	WG309279-03	Calibration Point		1		08/07/09 14:26
4	HY.080709.142757	WG309279-04	Calibration Point		1		08/07/09 14:27
5	HY.080709.142943	WG309279-05	Calibration Point		1		08/07/09 14:29
6	HY.080709.143139	WG309279-06	Calibration Point		1		08/07/09 14:31
7	HY.080709.143345	WG309279-07	Initial Calibration Verification		1		08/07/09 14:33
8	HY.080709.143602	WG309279-08	Initial Calib Blank		1		08/07/09 14:36
9	HY.080709.143754	WG309279-09	CCV		1		08/07/09 14:37
10	HY.080709.144002	WG309279-10	CCB		1		08/07/09 14:40
11	HY.080709.144204	WG309222-03	Method/Prep Blank	4/40	1		08/07/09 14:42
12	HY.080709.144358	WG309222-04	Laboratory Control S	4/40	1		08/07/09 14:43
13	HY.080709.144600	WG309031-01	Fluid Blank		1		08/07/09 14:46
14	HY.080709.144747	WG309188-01	Fluid Blank		1		08/07/09 14:47
15	HY.080709.144951	L09080058-01	0907-312-1	4/40	1	WG309222-01	08/07/09 14:49
16	HY.080709.145134	WG309268-01	Post Digestion Spike		1	L09080058-01	08/07/09 14:51
17	HY.080709.145356	WG309222-05	Matrix Spike	4/40	1	L09080058-01	08/07/09 14:53
18	HY.080709.145549	L09080060-01	FC4-WC-WATER-01-1633	4/40	1		08/07/09 14:55
19	HY.080709.145732	WG309279-11	CCV		1		08/07/09 14:57
20	HY.080709.145934	WG309279-12	CCB		1		08/07/09 14:59
21	HY.080709.150157	L09080060-02	FC4-WC-WATER-02-1634	4/40	1	WG309222-02	08/07/09 15:01
22	HY.080709.150459	WG309222-06	Matrix Spike	4/40	1	L09080060-02	08/07/09 15:04
23	HY.080709.150643	WG309222-07	Matrix Spike Duplica	4/40	1	L09080060-02	08/07/09 15:06
24	HY.080709.150829	L09080060-03	FC4-WC-WATER-03-1635	4/40	1		08/07/09 15:08
25	HY.080709.151041	L09080060-04	FC4-WC-WATER-04-1636	4/40	1		08/07/09 15:10
26	HY.080709.151246	L09080060-05	FC4-WC-WATER-05-1637	4/40	1		08/07/09 15:12
27	HY.080709.151427	L09080060-06	FC4-WC-SOIL-01-1638	4/40	1		08/07/09 15:14
28	HY.080709.151652	L09080060-07	FC4-WC-SOIL-02-1639	4/40	1		08/07/09 15:16
29	HY.080709.151835	WG309279-13	CCV		1		08/07/09 15:18
30	HY.080709.152037	WG309279-14	CCB		1		08/07/09 15:20
31	HY.080709.152220	L09080060-08	FC4-WC-SOIL-03-1640	4/40	1		08/07/09 15:22
32	HY.080709.152432	L09080107-01	04DS01 (0-2)	4/40	1		08/07/09 15:24
33	HY.080709.152659	L09080107-02	04DS02 (0-2)	4/40	1		08/07/09 15:26
34	HY.080709.152852	L09080107-03	04DS03 (0-3)	4/40	1		08/07/09 15:28
35	HY.080709.153035	L09080107-04	04DS04 (0-2)	4/40	1		08/07/09 15:30
36	HY.080709.153218	L09080107-05	04DS05 (0-4)	4/40	1		08/07/09 15:32
37	HY.080709.153411	WG309279-15	CCV		1		08/07/09 15:34

Page: 1 Approved: August 10, 2009

Shari L. Bahgat



Microbac Laboratories Inc.

Instrument Run Log

00110021

Instrument: HYDRA Dataset: 080709B.PRN
Analyst1: PDM Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29707

Calibration Std: STD34525 ICV/CCV Std: STD34520 Post Spike: STD34526
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309268

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.080709.153604	WG309279-16	CCB		1		08/07/09 15:36

Page: 2 Approved: August 10, 2009

Shari L. Bahgat



Microbac Laboratories Inc.

00110022

Data Checklist

Date: 07-AUG-2009

Analyst: PDM

Analyst: NA

Method: 7470A

Instrument: HYDRA

Curve Workgroup: 309279

Runlog ID: 29526

Analytical Workgroups: 309268

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0058,0060,0107
Client Forms	X
Level X	
Level 3	0107
Level 4	
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	PDM
Secondary Reviewer	SLP
Comments	

Primary Reviewer:
07-AUG-2009

Secondary Reviewer:
10-AUG-2009

Pierre Morris *Shirley L. Babin*



Analytical Method:7470A

AAB#:WG309268

Login Number:L09080107

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
04DS01 (0-2)	01	08/05/09					08/07/09	2	28		08/07/09	2.2	28	
04DS02 (0-2)	02	08/05/09					08/07/09	1.9	28		08/07/09	2.2	28	
04DS03 (0-3)	03	08/05/09					08/07/09	1.9	28		08/07/09	2.2	28	
04DS04 (0-2)	04	08/05/09					08/07/09	1.9	28		08/07/09	2.2	28	
04DS05 (0-4)	05	08/05/09					08/07/09	1.9	28		08/07/09	2.2	28	

* = SEE PROJECT QAPP REQUIREMENTS

METHOD BLANK SUMMARY

Login Number: L09080107 Work Group: WG309268
Blank File ID: HY.080709.144204 Blank Sample ID: WG309222-03
Prep Date: 08/07/09 09:00 Instrument ID: HYDRA
Analyzed Date: 08/07/09 14:42 Method: 7470A
Analyst: PDM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309222-04	HY.080709.144358	08/07/09 14:43	01
04DS01 (0-2)	L09080107-01	HY.080709.152432	08/07/09 15:24	01
04DS02 (0-2)	L09080107-02	HY.080709.152659	08/07/09 15:26	01
04DS03 (0-3)	L09080107-03	HY.080709.152852	08/07/09 15:28	01
04DS04 (0-2)	L09080107-04	HY.080709.153035	08/07/09 15:30	01
04DS05 (0-4)	L09080107-05	HY.080709.153218	08/07/09 15:32	01

Report Name: BLANK_SUMMARY
PDF File ID: 1461407
Report generated 08/07/2009 15:48



Login Number: L09080107 Prep Date: 08/07/09 09:00 Sample ID: WG309222-03
Instrument ID: HYDRA Run Date: 08/07/09 14:42 Prep Method: 7470A
File ID: HY.080709.144204 Analyst: PDM Method: 7470A
Workgroup (AAB#): WG309268 Matrix: Leachate Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-07-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury	0.00100	0.00200	0.00100	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 1461408

07-AUG-2009 15:48



00110026

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309222-04
Instrument ID: HYDRA Run Time: 14:43 Prep Method: 7470A
File ID: HY.080709.144358 Analyst: PDM Method: 7470A
Workgroup (AAB#): WG309268 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34518 Cal ID: HYDRA-07-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury	0.0400	0.0416	104	85 - 115	



Loginnum: L09080107 Cal ID: HYDRA- Worknum: WG309268
Instrument ID: HYDRA Contract #: DACA56-94-D-0020 Method: 7470A
Parent ID: WG309222-02 File ID: HY.080709.150157 Dil: 1 Matrix: WATER
Sample ID: WG309222-06 MS File ID: HY.080709.150459 Dil: 1 Units: mg/L
Sample ID: WG309222-07 MSD File ID: HY.080709.150643 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury	ND	0.0400	0.0424	106	0.0400	0.0412	103	2.87	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Sample Login ID: L09080107

Worknum: WG309268

Instrument ID: HYDRA

Method: 7470A

Post Spike ID: WG309268-01

File ID: HY.080709.145134

Dil: 1

Units: ug/L

Sample ID: L09080058-01

File ID: HY.080709.144951

Dil: 1

Matrix: Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	0.952		0	U	1	95.2	85 - 115	

N = % Recovery exceeds control limits

F = Result is between MDL and RL

U = Sample result is below MDL. A value of zero is used in the calculation

Login Number: L09080107
Analytical Method: 7470A
ICAL Worknum: WG309279

Workgroup (AAB#): WG309268
Instrument ID: HYDRA
Initial Calibration Date: 08/07/2009 14:31

Analyte	WG309279-01		WG309279-02		WG309279-03		WG309279-04		WG309279-05		WG309279-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	83	0.200	686	1.00	3385	2.00	6553	5.00	16720	10.0	32303

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

00110030

Login Number: L09080107
Analytical Method: 7470A
ICAL Worknum: WG309279

Workgroup (AAB#): WG309268
Instrument ID: HYDRA
Initial Calibration Date: 08/07/2009 14:31

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-08
Instrument ID: HYDRA Run Time: 14:36 Method: 7470A
File ID: HY.080709.143602 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.1	.2	.1	U

00110032

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-10
Instrument ID: HYDRA Run Time: 14:40 Method: 7470A
File ID: HY.080709.144002 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00110033

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-12
Instrument ID: HYDRA Run Time: 14:59 Method: 7470A
File ID: HY.080709.145934 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00110034

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-14
Instrument ID: HYDRA Run Time: 15:20 Method: 7470A
File ID: HY.080709.152037 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00110035

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-16
Instrument ID: HYDRA Run Time: 15:36 Method: 7470A
File ID: HY.080709.153604 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



00110036

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-07
Instrument ID: HYDRA Run Time: 14:33 Method: 7470A
File ID: HY.080709.143345 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
QC Key: STD

Analyte	Expected	Found	%REC	LIMITS	Q
Mercury	2	2.05	103	90 - 110	

* Exceeds LIMITS Limit



00110037

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-09
Instrument ID: HYDRA Run Time: 14:37 Method: 7470A
File ID: HY.080709.143754 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00194	mg/L	97.0	80 - 120		

* Exceeds LIMITS Criteria



00110038

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-11
Instrument ID: HYDRA Run Time: 14:57 Method: 7470A
File ID: HY.080709.145732 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00196	mg/L	98.0	80 - 120		

* Exceeds LIMITS Criteria



00110039

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-13
Instrument ID: HYDRA Run Time: 15:18 Method: 7470A
File ID: HY.080709.151835 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00192	mg/L	96.0	80 - 120		

* Exceeds LIMITS Criteria



00110040

Login Number: L09080107 Run Date: 08/07/2009 Sample ID: WG309279-15
Instrument ID: HYDRA Run Time: 15:34 Method: 7470A
File ID: HY.080709.153411 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309268 Cal ID: HYDRA - 07-AUG-09
Matrix: LEACHATE

Analyte	Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total	0.00200	0.00186	mg/L	93.0	80 - 120		

* Exceeds LIMITS Criteria



2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09080107

00110044

08/10/09 17:06

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04DS01 (0-2)	L09080107-01	D2216-90	1	06-AUG-09
04DS02 (0-2)	L09080107-02	D2216-90	1	06-AUG-09
04DS03 (0-3)	L09080107-03	D2216-90	1	06-AUG-09
04DS04 (0-2)	L09080107-04	D2216-90	1	06-AUG-09
04DS05 (0-4)	L09080107-05	D2216-90	1	06-AUG-09



Report Number: L09080107

Report Date : August 10, 2009

00110045

Sample Number: L09080107-01
Client ID: 04DS01 (0-2)
Matrix: Soil
Workgroup Number: WG309174
Collect Date: 08/05/2009 10:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 08/07/2009 08:39
Cal Date:
Run Date: 08/07/2009 08:39
File ID: B1.309174-0140

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	84.8		1.00	1.00

1 of 5



Report Number: L09080107

Report Date : August 10, 2009

00110046

Sample Number: L09080107-02
Client ID: 04DS02 (0-2)
Matrix: Soil
Workgroup Number: WG309174
Collect Date: 08/05/2009 10:40
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 08/07/2009 08:39
Cal Date:
Run Date: 08/07/2009 08:39
File ID: B1.309174-0141

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	80.6		1.00	1.00

Report Number: L09080107

Report Date : August 10, 2009

00110047

Sample Number: L09080107-03
Client ID: 04DS03 (0-3)
Matrix: Soil
Workgroup Number: WG309174
Collect Date: 08/05/2009 11:00
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 08/07/2009 08:39
Cal Date:
Run Date: 08/07/2009 08:39
File ID: B1.309174-0142

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	81.5		1.00	1.00

Report Number: L09080107

Report Date : August 10, 2009

00110048

Sample Number: L09080107-04
Client ID: 04DS04 (0-2)
Matrix: Soil
Workgroup Number: WG309174
Collect Date: 08/05/2009 11:05
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 08/07/2009 08:39
Cal Date:
Run Date: 08/07/2009 08:39
File ID: B1.309174-0143

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.1		1.00	1.00

Report Number: L09080107

Report Date : August 10, 2009

00110049

Sample Number: L09080107-05
Client ID: 04DS05 (0-4)
Matrix: Soil
Workgroup Number: WG309174
Collect Date: 08/05/2009 10:20
Sample Tag: 01

PrePrep Method: NONE
Prep Method: D2216-90
Analytical Method: D2216-90
Analyst: JDH
Dilution: 1
Units: weight %

Instrument: BAL001
Prep Date: 08/07/2009 08:39
Cal Date:
Run Date: 08/07/2009 08:39
File ID: B1.309174-0144

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	84.2		1.00	1.00

5 of 5



1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:

WT1 = Weight, in grams, of the empty container

1.30 g

WT2 = Weight, in grams, of the container and wet sample

21.274 g

WT3 = Weight, in grams, of the container and dried sample

5.21 g

F = Factor to get units as percent weight

100

%Solids = Percent solids present in sample.

19.58%

2.0 Calculating the percent moisture of a sample.

$$\% \text{ Moisture} = 100 - \% \text{ Solids from 1.0 calculation}$$

PERCENT SOLIDS

00110051

Workgroup (AAB#): WG309174
 Method: D2216-90
 SOP: K0003 Rev: 9

Analyst: JDH
 Instrument: BAL001

ADT(on): 08/06/2009 15:54
 ADT(off): 08/07/2009 08:39

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09070709-01	1.33	16.42	12.36			73.09	
L09070709-02	1.34	20.81	15.84			74.47	
L09070709-03	1.32	22.52	15.65			67.59	
L09070709-04	1.34	15.76	14.02			87.93	
L09070709-05	1.34	15.3	11.7			74.21	
L09070709-06	1.34	15.3	11.7			74.21	
L09070709-07	1.34	15.3	11.7			74.21	
L09070709-08	1.34	15.8	13.78			86.03	
L09070709-09	1.33	23.98	21.12			87.37	
L09070709-10	1.32	22.88	20.56			89.24	
L09070709-11	1.35	25.33	20.58			80.19	
L09070709-12	1.31	18.89	16.33			85.44	
L09070709-13	1.3	17	12.16			69.17	
L09070709-14	1.31	26.92	24.14			89.14	
L09070709-15	1.29	27.22	21.55			78.13	
L09070709-16	1.32	25.34	21.59			84.39	
L09070709-17	1.32	22.82	20.25			88.05	
L09070709-18	1.32	21.16	16.72			77.62	
L09070709-19	1.33	20.33	17.35			84.32	
L09070709-20	1.3	25.88	22.1			84.62	
L09070709-21	1.3	27.76	24.25			86.73	
L09070709-22	1.31	23.74	20.88			87.25	
L09070709-23	1.31	23.74	20.88			87.25	
L09070709-24	1.31	23.74	20.88			87.25	
L09070709-25	1.32	17.53	15.36			86.61	
L09070709-26	1.32	18.4	16.09			86.48	
L09070709-27	1.31	16.5	14.62			87.62	
L09070709-28	1.33	24.32	20.63			83.95	
L09070709-29	1.31	27.82	23.92			85.29	
L09070709-30	1.3	27.85	24.75			88.32	
L09070709-31	1.32	25.66	21.9			84.55	
L09070709-32	1.32	23.86	20.02			82.96	
L09070709-33	1.31	24.8	20.49			81.65	
L09070709-34	1.33	22.76	17.95			77.55	
L09080106-01	1.3	29.62	25.02			83.76	
L09080106-02	1.31	32.43	26.8			81.91	
L09080106-03	1.31	26.72	22.09			81.78	
L09080106-04	1.31	32.43	26.8			81.91	
L09080106-05	1.31	32.43	26.8			81.91	
L09080107-01	1.34	28.06	23.99			84.77	
L09080107-02	1.35	27.6	22.5			80.57	
L09080107-03	1.32	33.99	27.94			81.48	

PERCENT SOLIDS - Modified 04/24/2008
 PDF ID: 1460001
 Report generated: 08/07/2009 08:57



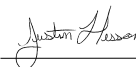
Workgroup (AAB#): WG309174
 Method: D2216-90
 SOP: K0003 Rev: 9

Analyst: JDH
 Instrument: BAL001

ADT(on): 08/06/2009 15:54
 ADT(off): 08/07/2009 08:39

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080107-04	1.32	38.4	32.15			83.14	
L09080107-05	1.32	32.99	28			84.24	
L09080127-01	1.32	12.37	4.76			31.13	
L09080128-01	1.3	28.29	21.89			76.29	
L09080128-02	1.3	28.29	21.89			76.29	
L09080128-03	1.3	28.29	21.89			76.29	
L09080128-04	1.31	26.74	19.35			70.94	
L09080128-05	1.31	27.4	19.64			70.26	
L09080128-06	1.32	19.16	14.74			75.22	
L09080128-07	1.32	18.28	11.97			62.79	
L09080128-08	1.3	19.38	12.59			62.44	
L09080130-06	1.32	36.91	32.88			88.68	
L09080130-07	1.32	29.75	25.48			84.98	
L09080130-08	1.32	34.01	28.22			82.29	
WG309174-01	1.3	25.88	22.1			84.62	15.38
WG309174-02	1.34	28.06	23.99			84.77	15.23
WG309174-03	1.32	34.01	28.22			82.29	17.71
WG309174-04	1.32	15.58	13.47			85.20	14.80
WG309174-05	1.25	24.28	20.99			85.71	14.29
WG309174-06	1.28	27.1	22.67			82.84	17.16

Analyst: _____



2.2.2 Reactivity Data

2.2.2.1 Summary Data

LABORATORY REPORT

L09080107

00110055

08/10/09 17:06

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836 (GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04DS01 (0-2)	L09080107-01	SW7.34	1	06-AUG-09
04DS02 (0-2)	L09080107-02	SW7.34	1	06-AUG-09
04DS03 (0-3)	L09080107-03	SW7.34	1	06-AUG-09
04DS04 (0-2)	L09080107-04	SW7.34	1	06-AUG-09
04DS05 (0-4)	L09080107-05	SW7.34	1	06-AUG-09



Report Number: L09080107

Report Date : August 10, 2009

00110056

Sample Number: L09080107-01
Client ID: 04DS01 (0-2)
Matrix: Soil
Workgroup Number: WG309303
Collect Date: 08/05/2009 10:05

PrePrep Method: NONE
Prep Method: SW7.34
Analytical Method: SW7.34
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: BURET
Prep Date: 08/10/2009 07:31
Cal Date:
Run Date: 08/10/2009 07:31
File ID: ET.0908100731-04

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110057

Sample Number: L09080107-02
Client ID: 04DS02 (0-2)
Matrix: Soil
Workgroup Number: WG309303
Collect Date: 08/05/2009 10:40

PrePrep Method: NONE
Prep Method: SW7.34
Analytical Method: SW7.34
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: BURET
Prep Date: 08/10/2009 07:31
Cal Date:
Run Date: 08/10/2009 07:31
File ID: ET.0908100731-05

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110058

Sample Number: L09080107-03
Client ID: 04DS03 (0-3)
Matrix: Soil
Workgroup Number: WG309303
Collect Date: 08/05/2009 11:00

PrePrep Method: NONE
Prep Method: SW7.34
Analytical Method: SW7.34
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: BURET
Prep Date: 08/10/2009 07:31
Cal Date:
Run Date: 08/10/2009 07:31
File ID: ET.0908100731-06

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110059

Sample Number: L09080107-04
Client ID: 04DS04 (0-2)
Matrix: Soil
Workgroup Number: WG309303
Collect Date: 08/05/2009 11:05

PrePrep Method: NONE
Prep Method: SW7.34
Analytical Method: SW7.34
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: BURET
Prep Date: 08/10/2009 07:31
Cal Date:
Run Date: 08/10/2009 07:31
File ID: ET.0908100731-07

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110060

Sample Number: L09080107-05
Client ID: 04DS05 (0-4)
Matrix: Soil
Workgroup Number: WG309303
Collect Date: 08/05/2009 10:20

PrePrep Method: NONE
Prep Method: SW7.34
Analytical Method: SW7.34
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: BURET
Prep Date: 08/10/2009 07:31
Cal Date:
Run Date: 08/10/2009 07:31
File ID: ET.0908100731-08

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

2.2.2.2 QC Summary Data

Example Calculations - Reactive Sulfide

$$A = \frac{((B * C) - (D * E) * 16000)}{F * G} = \text{sulfide (mg / L)}$$

$$\frac{A * I}{J} = \text{reactive sulfide (mg / Kg)}$$

Example Calculation:

B (mL of Iodine):	15
C (N of Iodine):	0.02514
D (mL of titrant):	9.4
E (N of titrant):	0.02489
16000 factor (1mL of 0.025N iodine reacts with 0.4mg sulfide):	16000
F (mL of scrubber solution used for titrating for sulfide):	100
G (dilution of sample (include 50/250 scrubber dilution)):	0.20
I (volume of NaOH placed in scrubber):	50
J (grams of sample used):	10
A=	114.5072
mg/Kg reactive sulfide=	572.536

2.2.2.3 Raw Data

REACTIVE SULFIDE

☐ EPA ch. 7 SOP K7332 Revision #: _____
☐ Other

Instrument: buret

LCS: _____
non-reacted LCS

Daily Dilution: _____
Daily Dilution = _____

Iodine standardization (0.025 N and 0.1N)

mL _____ N titrant: _____

mL _____ N titrant: _____

Volume I: _____ mL

Volume I: _____ mL

Normality I: _____

Normality I: _____

Stock standardization (in duplicate)

mL I 1) _____ 2) _____

NI 1)_____ 2)_____

mL 0.025 titrant 1)_____ 2)_____

_____ = stock conc (mg/L)

SAMPLE	Grams Reacted	Volume Titrated	mL Iodine	N Iodine	mL _____N Sodium Thiosulfate
BLANK	X	200			
Non-reacted LCS (mg/L)	X	200			
Reacted (mg/L)		100			
DUP:					

Analyst: _____

Date / Time: _____

DCN#80377



2.2.3 PH Data

2.2.3.1 Summary Data

LABORATORY REPORT

L09080107

00110067

08/10/09 17:06

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836 (GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04DS01 (0-2)	L09080107-01	9045D	1	06-AUG-09
04DS02 (0-2)	L09080107-02	9045D	1	06-AUG-09
04DS03 (0-3)	L09080107-03	9045D	1	06-AUG-09
04DS04 (0-2)	L09080107-04	9045D	1	06-AUG-09
04DS05 (0-4)	L09080107-05	9045D	1	06-AUG-09



Report Number: **L09080107**Report Date : **August 10, 2009**

00110068

Sample Number: **L09080107-01**
Client ID: **04DS01 (0-2)**
Matrix: **Soil**
Workgroup Number: **WG309137**
Collect Date: **08/05/2009 10:05**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DLP**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/06/2009 11:00**
Cal Date:
Run Date: **08/06/2009 11:00**
File ID: **OS09080713213001**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	7.78			

Report Number: **L09080107**Report Date : **August 10, 2009**

00110069

Sample Number: **L09080107-02**
Client ID: **04DS02 (0-2)**
Matrix: **Soil**
Workgroup Number: **WG309137**
Collect Date: **08/05/2009 10:40**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DLP**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/06/2009 11:00**
Cal Date:
Run Date: **08/06/2009 11:00**
File ID: **OS09080713214601**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	9.22			

Report Number: **L09080107**Report Date : **August 10, 2009**

00110070

Sample Number: **L09080107-03**
Client ID: **04DS03 (0-3)**
Matrix: **Soil**
Workgroup Number: **WG309137**
Collect Date: **08/05/2009 11:00**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DLP**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/06/2009 11:00**
Cal Date:
Run Date: **08/06/2009 11:00**
File ID: **OS09080713220101**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	6.45			

Report Number: L09080107

Report Date : August 10, 2009

00110071

Sample Number: L09080107-04
Client ID: 04DS04 (0-2)
Matrix: Soil
Workgroup Number: WG309137
Collect Date: 08/05/2009 11:05

PrePrep Method: NONE
Prep Method: 9045D
Analytical Method: 9045D
Analyst: DLP
Dilution: 1
Units: UNITS

Instrument: ORION-4STA
Prep Date: 08/06/2009 11:00
Cal Date:
Run Date: 08/06/2009 11:00
File ID: OS09080713221601

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	8.51			

Report Number: **L09080107**Report Date : **August 10, 2009**

00110072

Sample Number: **L09080107-05**
Client ID: **04DS05 (0-4)**
Matrix: **Soil**
Workgroup Number: **WG309137**
Collect Date: **08/05/2009 10:20**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DLP**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/06/2009 11:00**
Cal Date:
Run Date: **08/06/2009 11:00**
File ID: **OS09080713223301**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	5.84			

5 of 5



2.2.3.2 QC Summary Data

Microbac Laboratories Inc.

00110074

Data Checklist

Date: 06-AUG-2009

Analyst: DLP

Analyst: NA

Method: PH

Instrument: ORION 4-STAR

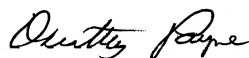
Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG309137

Calibration/Linearity	08-06-09
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	
LCS/LCS Dup	
MS/MSD	
Duplicate	X
Upload Results	
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
07-AUG-2009



Secondary Reviewer:
07-AUG-2009



2.2.3.3 Raw Data

Sample	Calibration Buffers	Water Misc. Liquid	50% Slurry Of Solid	50% Water Org. Liq. Mix
LCS 6 <u>ST-33504</u>	7.410	5.98		
08-082-01			7.40	
02			7.49	
08-107-01			7.78	
02			9.22	
-03			6.45	
-04			8.51	
05			5.84	
DUP <u>08-082-01</u>			7.40	
LCS 9 <u>ST-33444</u>		9.00		

Sargent - Welch

Analyst: Quentin Ripe Date: 08-06-09/1100

2.2.4 Method Flashpoint

2.2.4.1 Summary Data

LABORATORY REPORT

L09080107

00110079

08/10/09 17:06

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04DS01 (0-2)	L09080107-01	1010	1	06-AUG-09
04DS02 (0-2)	L09080107-02	1010	1	06-AUG-09
04DS03 (0-3)	L09080107-03	1010	1	06-AUG-09
04DS04 (0-2)	L09080107-04	1010	1	06-AUG-09
04DS05 (0-4)	L09080107-05	1010	1	06-AUG-09



Report Number: L09080107

Report Date : August 10, 2009

00110080

Sample Number: L09080107-01
Client ID: 04DS01 (0-2)
Matrix: Soil
Workgroup Number: WG309164
Collect Date: 08/05/2009 10:05

PrePrep Method: NONE
Prep Method: 1010
Analytical Method: 1010
Analyst: JBK
Dilution: 1
Units: Degrees C

Instrument: PRECISION
Prep Date: 08/06/2009 14:15
Cal Date:
Run Date: 08/06/2009 14:15
File ID: PR09080713170808

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		70.0	>		

> Result is greater than the associated numerical value.

Report Number: L09080107

Report Date : August 10, 2009

00110081

Sample Number: L09080107-02
Client ID: 04DS02 (0-2)
Matrix: Soil
Workgroup Number: WG309164
Collect Date: 08/05/2009 10:40

PrePrep Method: NONE
Prep Method: 1010
Analytical Method: 1010
Analyst: JBK
Dilution: 1
Units: Degrees C

Instrument: PRECISION
Prep Date: 08/06/2009 14:15
Cal Date:
Run Date: 08/06/2009 14:15
File ID: PR09080713170809

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		70.0	>		

> Result is greater than the associated numerical value.

Report Number: L09080107

Report Date : August 10, 2009

00110082

Sample Number: L09080107-03
Client ID: 04DS03 (0-3)
Matrix: Soil
Workgroup Number: WG309164
Collect Date: 08/05/2009 11:00

PrePrep Method: NONE
Prep Method: 1010
Analytical Method: 1010
Analyst: JBK
Dilution: 1
Units: Degrees C

Instrument: PRECISION
Prep Date: 08/06/2009 14:15
Cal Date:
Run Date: 08/06/2009 14:15
File ID: PR09080713170810

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		72.0	>		

> Result is greater than the associated numerical value.

Report Number: L09080107

Report Date : August 10, 2009

00110083

Sample Number: L09080107-04
Client ID: 04DS04 (0-2)
Matrix: Soil
Workgroup Number: WG309164
Collect Date: 08/05/2009 11:05

PrePrep Method: NONE
Prep Method: 1010
Analytical Method: 1010
Analyst: JBK
Dilution: 1
Units: Degrees C

Instrument: PRECISION
Prep Date: 08/06/2009 14:15
Cal Date:
Run Date: 08/06/2009 14:15
File ID: PR09080713170811

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		68.0	>		

> Result is greater than the associated numerical value.

Report Number: L09080107

Report Date : August 10, 2009

00110084

Sample Number: L09080107-05
Client ID: 04DS05 (0-4)
Matrix: Soil
Workgroup Number: WG309164
Collect Date: 08/05/2009 10:20

PrePrep Method: NONE
Prep Method: 1010
Analytical Method: 1010
Analyst: JBK
Dilution: 1
Units: Degrees C

Instrument: PRECISION
Prep Date: 08/06/2009 14:15
Cal Date:
Run Date: 08/06/2009 14:15
File ID: PR09080713170812

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		74.0	>		

> Result is greater than the associated numerical value.

2.2.4.2 QC Summary Data

1.0 Calculating the flashpoint of a sample.

$$Flashpoint = C + 0.033(760 - P)$$

Where:

C = Observed flashpoint (Celcius)

P = Ambient barometric pressure(mmHg) corrected for temperature and gravity.

Flashpoint = Flashpoint of the sample.

Microbac Laboratories Inc.

00110087

Data Checklist

Date: 06-AUG-2009

Analyst: JBK

Analyst: NA

Method: FLASH

Instrument: PRECISION

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG309164

Calibration/Linearity	01/2009
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JBK
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
06-AUG-2009



Secondary Reviewer:
07-AUG-2009



2.2.4.3 Raw Data

FLASHPOINT

LCS: STD 32143

TEMPERATURE: 24C

PRESSURE: 744.3

SOP K1010 **Revision #:** 12

Method SW846 1010

Instrument: Pensky Marten Closed Cup Tester[illegible]**ANALYST:**

DATE:

* 07-652-15-3 bottles combined for analysis

** Rerun - sample (original) cooled in original cup in freezer and re-analyzed.

DCN#80355



Workgroup: WG309164
Date: 06-AUG-09
Analyst: JBK

Observed Barometric Pressure: 744.3

Lowest Pressure in Bracket: 740

Temperature Correction #1: 2.97

Temperature Correction #2: 2.89

Lowest Pressure in Bracket: 700

Grav Correction #1: .48

Grav Correction #2: .42

Temperature Correction: 2.9072

Grav Correction: .44658

Corrected Barometric Pressure: 757.38622

Correction for Flash: .08625474

2.2.5 Reactive Cyanide Data

2.2.5.1 Summary Data

LABORATORY REPORT

L09080107

00110093

08/10/09 17:06

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836 (GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04DS01 (0-2)	L09080107-01	SW7.33	1	06-AUG-09
04DS02 (0-2)	L09080107-02	SW7.33	1	06-AUG-09
04DS03 (0-3)	L09080107-03	SW7.33	1	06-AUG-09
04DS04 (0-2)	L09080107-04	SW7.33	1	06-AUG-09
04DS05 (0-4)	L09080107-05	SW7.33	1	06-AUG-09



Report Number: L09080107

Report Date : August 10, 2009

00110094

Sample Number: L09080107-01
Client ID: 04DS01 (0-2)
Matrix: Soil
Workgroup Number: WG309302
Collect Date: 08/05/2009 10:05

PrePrep Method: NONE
Prep Method: SW7.33
Analytical Method: SW7.33
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: UV-120-1V
Prep Date: 08/10/2009 07:30
Cal Date:
Run Date: 08/10/2009 07:30
File ID: 1V.0908100730-03

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	9.99	4.99

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110095

Sample Number: L09080107-02
Client ID: 04DS02 (0-2)
Matrix: Soil
Workgroup Number: WG309302
Collect Date: 08/05/2009 10:40

PrePrep Method: NONE
Prep Method: SW7.33
Analytical Method: SW7.33
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: UV-120-1V
Prep Date: 08/10/2009 07:30
Cal Date:
Run Date: 08/10/2009 07:30
File ID: 1V.0908100730-04

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	9.94	4.97

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110096

Sample Number: L09080107-03
Client ID: 04DS03 (0-3)
Matrix: Soil
Workgroup Number: WG309302
Collect Date: 08/05/2009 11:00

PrePrep Method: NONE
Prep Method: SW7.33
Analytical Method: SW7.33
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: UV-120-1V
Prep Date: 08/10/2009 07:30
Cal Date:
Run Date: 08/10/2009 07:30
File ID: 1V.0908100730-05

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	9.96	4.98

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110097

Sample Number: L09080107-04
Client ID: 04DS04 (0-2)
Matrix: Soil
Workgroup Number: WG309302
Collect Date: 08/05/2009 11:05

PrePrep Method: NONE
Prep Method: SW7.33
Analytical Method: SW7.33
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: UV-120-1V
Prep Date: 08/10/2009 07:30
Cal Date:
Run Date: 08/10/2009 07:30
File ID: 1V.0908100730-06

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	9.99	4.99

U Not detected at or above adjusted sample detection limit

Report Number: L09080107

Report Date : August 10, 2009

00110098

Sample Number: L09080107-05
Client ID: 04DS05 (0-4)
Matrix: Soil
Workgroup Number: WG309302
Collect Date: 08/05/2009 10:20

PrePrep Method: NONE
Prep Method: SW7.33
Analytical Method: SW7.33
Analyst: DLP
Dilution: 1
Units: mg/kg

Instrument: UV-120-1V
Prep Date: 08/10/2009 07:30
Cal Date:
Run Date: 08/10/2009 07:30
File ID: 1V.0908100730-07

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	9.95	4.97

U Not detected at or above adjusted sample detection limit

2.2.5.2 QC Summary Data

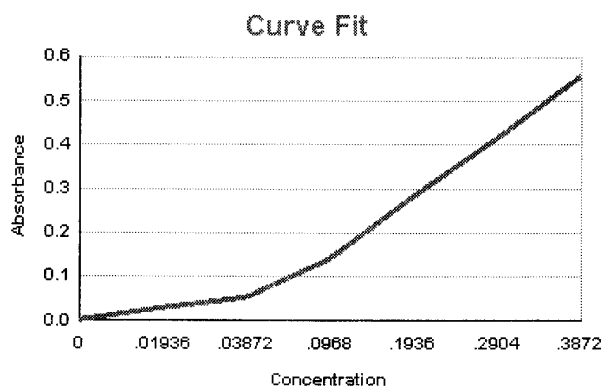
2.2.5.3 Raw Data

Workgroup:WG307248
Analytical Method:846
Instrument ID:UV-120-1V

Analyst:JBK
Initial Calibration Date:07/16/2009

Analyte: CYANIDE
Number of Points: 7
Slope: 1.43990
Y-Intercept: -0.000635703
Coef. Of Correlation (R^2): 0.999810
Coef. Of Correlation (R): 0.999905

Concentration X	Absorbance Y	X^2	$X * Y$	Y-Fitted (mX^2+B)
0.00	0.00	0.00	0.00	-0.000635703
0.0194	0.0270	0.000375	0.000523	0.0272407
0.0387	0.0530	0.00150	0.00205	0.0551171
0.0968	0.138	0.00937	0.0134	0.138746
0.194	0.284	0.0375	0.0550	0.278128
0.290	0.414	0.0843	0.120	0.417511
0.387	0.557	0.150	0.216	0.556893



Workgroup #: WG307248
File ID: 1V.0907161040-08
CCV ID: WG307248-08
Units: mg/kg
Analyte: CYANIDE

Instrument ID: UV-120-1V
Run Date: 07/16/2009
Run Time: 10:40
Analyst: JBK
Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.204	0.207	1.46	1.5	

* Exceeds %D Limit

CCC Calibration Check Compounds

SPCC System Performance Check Compounds



Reactive Cyanide

LCS: _____

CCV: _____

SOP: K7332 Revision # _____

Daily Dilution: _____

Curve ID: _____

Spec: _____

Sample	Grams Reacted	Dilution	Cell Size	Absorbance @ 578nm
CCV: _____	NA			
LCS: _____				
DUP: _____				

Analyst: _____ Date/Time: _____

DCN#80376



3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 10, 2009

ADC - ANTHONY D. CANTER	AJF - AMANDA J. FICKIESEN	AJM - ANTHONY J. MOSSBURG
ALB - ANNIE L. BROWN	AML - ANTHONY M. LONG	BLG - BRENDA L. GREENWALT
BRG - BRENDA R. GREGORY	CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAH - CHARLES A. HALL	CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLW - CHARISSA L. WINTERS	CPD - CHAD P. DAVIS	CSH - CHRIS S. HILL
DDE - DEBRA D. ELLIOTT	DEL - DON E. LIGHTFRITZ	DEV - DAVID E. VANDENBERG
DGB - DOUGLAS G. BUTCHER	DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH	DR - DEANNA ROBERTS
ECL - ERIC C. LAWSON	EDA - ERIN D. AGEE	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HAV - HEMA VILASAGAR	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON	JKT - JANE K. THOMPSON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES	JYH - JI Y. HU
KEB - KATHRYN E. BARNES	KHR - KIM H. RHODES	KRA - KATHY R. ALBERTSON
LKN - LINDA K. NEDEFF	LSB - LESLIE S. BUCINA	MDA - MIKE D. ALBERTSON
MDC - MICHAEL D. COCHRAN	MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON	NPM - NATHANIEL P. MILLER
PDM - PIERCE D. MORRIS	RAH - ROY A. HALSTEAD	RB - ROBERT BUCHANAN
REK - ROBERT E. KYER	RLK - ROBIN L. KLINGER	RWC - RODNEY W. CAMPBELL
SDH - SHANA D. HINYARD	SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TIP - TAE I. PARRISH	TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG	

Qualkey: STD_ND=U

<u>Qualifier</u>	<u>Description</u>
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound and are matrix dependent.



Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

COC NO. (DATE-01)

00110108

[illegible]



1000000932

COOLER INSPECTION

00110109



Received: 08/06/2009 09:50
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09080107

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0010638	H	2.0	1Z66V7250192947684		

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct preservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Look closer. Go further. Do more.

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Login: L09080107

Account: 2773

Project: 2773.025

Samples: 5

Due Date: 10-AUG-2009

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L09080107-01	603861	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	PREP	W1	TCL	06-AUG-2009 11:23	RWC	JKT
3	STORE	TCL	A1	07-AUG-2009 06:56	RLK	RWC

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		06-AUG-2009 11:17	ERE	

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L09080107-01	603862	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 11:31	DLP	RLK

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L09080107-01	603863	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 13:41	JDH	RLK
3	STORE	WET	A1	07-AUG-2009 08:34	RLK	CPD

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L09080107-02	603864	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	PREP	W1	TCL	06-AUG-2009 11:23	RWC	JKT
3	STORE	TCL	A1	07-AUG-2009 06:56	RLK	RWC

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		06-AUG-2009 11:17	ERE	

A1 - Sample Archive (COLD)
 A2 - Sample Archive (AMBIENT)
 F1 - Volatiles Freezer in Login
 V1 - Volatiles Refrigerator in Login
 W1 - Walkin Cooler in Login



Login: L09080107
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 10-AUG-2009

Samplenum **Container ID** **Products**
L09080107-02 603865 REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 11:31	DLP	RLK

Samplenum **Container ID** **Products**
L09080107-02 603866 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 13:41	JDH	RLK
3	STORE	WET	A1	07-AUG-2009 08:34	RLK	CPD

Samplenum **Container ID** **Products**
L09080107-03 603867 TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	PREP	W1	TCL	06-AUG-2009 11:23	RWC	JKT
3	STORE	TCL	A1	07-AUG-2009 06:56	RLK	RWC

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		06-AUG-2009 11:17	ERE	

Samplenum **Container ID** **Products**
L09080107-03 603868 REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 11:32	DLP	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



Login: L09080107

Account: 2773

Project: 2773.025

Samples: 5

Due Date: 10-AUG-2009

Samplenum **Container ID** **Products**
L09080107-03 603869 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 13:41	JDH	RLK
3	STORE	WET	A1	07-AUG-2009 08:34	RLK	CPD

Samplenum **Container ID** **Products**
L09080107-04 603870 TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	PREP	W1	TCL	06-AUG-2009 11:23	RWC	JKT
3	STORE	TCL	A1	07-AUG-2009 06:56	RLK	RWC

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		06-AUG-2009 11:17	ERE	

Samplenum **Container ID** **Products**
L09080107-04 603871 REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 11:31	DLP	RLK

Samplenum **Container ID** **Products**
L09080107-04 603872 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 13:41	JDH	RLK
3	STORE	WET	A1	07-AUG-2009 08:34	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



Login: L09080107**Account:** 2773**Project:** 2773.025**Samples:** 5**Due Date:** 10-AUG-2009

Samplenum **Container ID** **Products**
L09080107-05 603873 TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		06-AUG-2009 11:17	ERE	

Samplenum **Container ID** **Products**
L09080107-05 603874 REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 11:31	DLP	RLK

Samplenum **Container ID** **Products**
L09080107-05 603875 PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:17	ERE	
2	ANALYZ	W1	WET	06-AUG-2009 13:41	JDH	RLK
3	STORE	WET	A1	07-AUG-2009 08:34	RLK	CPD

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

