

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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

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This report was reviewed on September 10, 2009.

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 Biulding, Houston, TX, 77042

This report was certified on September 10, 2009.

State of origin: Texas

D & Vankerberg

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

QAPP: Microbac OVD

This report contains a total of 72 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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

Phone: 800.373.4071 Fax: 740.373.4835

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### 00109034

# 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

Stephanic Mossburg

#### **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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Inmalpsson	Conventional Lab Supervisor	September 9, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

#### 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
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?			<b>√</b>		
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?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>001</del> (	<del>)903</del>
Analytical duplicate data				1	
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>			<b>√</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>		
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
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			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation				<del>)01</del> 0	904(
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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



00109045
Microbac Laboratories
Case Narrative
Generated at 09:49 on 2009-09-10

**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	СТуре	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.

Approved By: Michal Column

#### LABORATORY REPORT

L09090170

00109047

09/10/09 13:29

Submitted By

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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1486547
Report generated: 09/10/2009 13:29

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Micropac Laboratories inc.

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

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MICIODAC LADOTACOTTES INC.

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

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MICIODAC LADOTACOTTES INC.

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

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MICTODAC LABORACOFIES INC.

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

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Micropac Laboratories inc.

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

 ${\tt J}$  The analyte was positively identified, but the quantitation was below the RL

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Micropac Laboratories inc.

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

of 7

MICTODAC LADOTACOTTES INC.

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

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# 2.1.1.2 QC Summary Data

#### **Example 8270 Calculations**

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

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

where:		<u>Example</u>
wilele.	Ax = Area of the characteristic ion for the compound being measured:	1261197
	· · ·	1201191
	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)]

		<b>Example</b>
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)]

	<u>Example</u>
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
$Cd = (Cx) (100)/PCT_S$	<b>1153.525</b> ug/kg

<sup>\*</sup> 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 00109057

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 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

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

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

#### Step 4: Solve for analyte concentration Cx

Cx = ( Cis )( 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

### 00109058

# Microbac Laboratories Inc. Instrument Run Log

Instrument:	LCMS1	Dataset:	082609_WTD.TX	<u>T</u>	
Analyst1:	WTD	Analyst2:	NA		
Method:	6850	SOP:	HPLC06	Rev: <u>0</u>	
Maintenance Log ID:	29922				
(	Column 1 ID: KP-RPPX250		Column 2 ID:	NA	

		00.0	111 111 171200				
Workgroups:	310493						_
Internal STD:	COA14015	<u>;                                    </u>	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

### 00109059

# Microbac Laboratories Inc. Instrument Run Log

	Instrument:	LCMS1		Dataset:	090909_WTD.TX1	Γ		
	Analyst1:	WTD		Analyst2:	NA			
	Method:	6850		SOP:	HPLC06	Re	v: <u>0</u>	
Maint	enance Log ID:	30089						
	,	Column 1 ID.	VD DDDV250		Column 2 ID: 1	NI A		
Workgroups: .	311714	Column 1 ID:	KP-RPPX250	<del></del>	Column 2 ID: I	NA		
internal STD:	COA14015		Surrogate STD:	NA		Calibration ST	D	
	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	Х	10	Analyzed too dilute	
	Per clie	nt instruct	ions fraction -03 A used for Reference and M	S/MSD, due to visible moisture content variability.
8	Х	10	Analyzed too dilute	
9	X	1	Analyzed too dilute	
11	X	1	Analyzed too dilute	
17				

Page: 1 Approved: 10-SEP-

10-SEP-09
Michal Confu



Run Log ID: 30056

# Microbac Laboratories Inc. Instrument Run Log

00109060

			ument: alyst1:	LCMS1 WTD		Dataset: Analyst2:	090909_WTD.TXT NA	- -	
		M	lethod:	6850		SOP:	HPLC06	Rev: <u>0</u>	
	Mair	ntenance L	∟og ID:	30089					
			C	Column 1 ID:	KP-RPPX250		Column 2 ID: NA		
Work	groups:	311714							
	al STD:		14015		Surrogate STD:	NA			
						Comme	<u>nts</u>		
Seq.	Rerun	Dil.		Re	ason			Analytes	
				·	·		<u> </u>	<u> </u>	
į	Per clie	nt instructi	ons frac	tion -03 A use	ed for Reference a	nd MS/MSD	, due to visible moisture con	tent variability.	
18									
į	Per clie	nt instructi	ons frac	tion -03 A use	ed for Reference a	nd MS/MSE	, due to visible moisture con	tent variability.	-

Page: 2 Approved: 10-SEP-09

Michel Coder

Checklist ID: 41221

# Microbac Laboratories Inc. Data Checklist

00109061

Date:	26-AUG-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	29811
alytical 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 NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA NA
Reruns	X
Manual integrations	NA NA
Project/client specific requirements	X
rejectronent speeme regun ements	^
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA NA
Check for completeness	X
Primary Reviewer	WTD
Think y Norton	******
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

Wader De Michel Colum

CHECKLIST1 - Modified 03/05/2008

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

<u>Microbac</u>

Checklist ID: 41584

# Microbac Laboratories Inc. Data Checklist

00109062

Date:	<u>09-SEP-2009</u>
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	30056
alytical Workgroups	311714

	<u> </u>
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 NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	NA 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 NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA 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 NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA NA
Reruns	X
Manual integrations	NA 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 NA
Check for completeness	X
Primary Reviewer	WTD
Fillially Neviewel	VVID
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

Wader & Michal Carlin

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-10-2009 09:22:51

Microbac Laboratories Inc.

#### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109063

Analytical Method: 6850

Login Number: L09090170

AAB#: WG311714

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	~	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
crienc 12		COTTCCCC	Ducc				Date	11010	11014		Date	11014	11014	
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	

<sup>\* =</sup> SEE PROJECT QAPP REQUIREMENTS

HOLD\_TIMES - Modified 03/06/2008 PDF File ID: 1486247
Report generated 09/10/2009 09:43

### 00109064

#### METHOD BLANK SUMMARY

Login Number:L09090170

Blank File ID:1LM.LM00620

Prep Date:09/09/09 13:39

Analyzed Date:09/09/09 14:36

Work Group: WG311714

Blank Sample ID: WG311714-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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

Report Name: BLANK\_SUMMARY
PDF File ID: 1485995
Report generated 09/10/2009 09:43



## Microbac Laboratories Inc. METHOD BLANK REPORT

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

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



### Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

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:
 Lot#:
 Soil
 Units:
 Uni

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

LCS - Modified 03/06/2008 PDF File ID:1485997 Report generated: 09/10/2009 09:43

#### Microbac Laboratories Inc.

#### MS/MSD REPORT

	rio, riob	CEL OIL	00100067
Loginnum: L09090170	Cal ID: LCMS1- 2	6-AUG-09	workn 00139967
Instrument ID: LCMS1	Contract #:DACA56-94	-D-0020	Prep Method: 6850
Parent ID: L09090170-01	File ID: 1LM.LM00627	Dil: <u>10</u>	Method: 6850
Sample ID: L09090170-02 MS	File ID: 1LM.LM00632	Dil:10	Matrix:Soil
Sample ID:L09090170-03 MSD	File ID:1LM.LM00633	Dil:10	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

MS\_MSD - Modified 03/06/2008 PDF File ID:1485998 Report generated 09/10/2009 09:43



Conductivity Probe
Calibration Check:
<a href="f4/9">f4/9</a> /1410 µs/cm

#### Perchlorate Conductivity Check

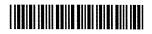
Working MCT Level: /// 000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
WG 311714- 01 TCS	10,190	NA
-oz mbih	7.4	İ
-03 LCS	7,3	
L09090170-01A	34.5 37.8	
-02A	37.8	
-0314	38.8	
-044	36.9	
-05A	23.2	
-06 p	81.0	
-07A	7.4	4
	\$ 1.50 miles	
·		

Wade i. Sol

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

DCN#80685



Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109069

Login Number: L09090170

Analytical Method: 6850

ICAL Workgroup: WG310580

Instrument ID:<u>LCMS1</u>
Initial Calibration Date:<u>26-AUG-09 12:56</u>
Column ID:<u>F</u>

Analyte	AVG RF	% RSD	LINEAR (R <sup>2</sup>	QUAD(R2)
Perchlorate	1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109070

Login Number: L09090170
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

	WG310580-02				WG310580-0	3	WG310580-04		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109071

Login Number: L09090170
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

		WG310580-0	5	WG310580-06			WG310580-07		
Analyte	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



Microbac Laboratories Inc.
INITIAL CALIBRATION DATA

00109072

Login Number: L09090170
Analytical Method: 6850

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

Column ID: F

	WG310580-08				
Analyte	CONC	RESP	RF		
Perchlorate	10.0	716000.000	1.484		



## Microbac Laboratories Inc. ALTERNATE SOURCE CALIBRATION REPORT

00109073

 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

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1486253 Report generated 09/10/2009 09:44



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

00109074

 Login Number:
 L09090170
 Run Date:
 09/09/2009
 Sample ID:
 WG311716-01

 Instrument ID:
 LCMS1
 Run Time:
 13:39
 Method:
 6850

 File ID:
 LM.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	υ

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:1486001 Report generated 09/10/2009 09:44



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1486001 Report generated 09/10/2009 09:44



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1486001 Report generated 09/10/2009 09:44



#### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds %D Criteria

#### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds %D Criteria

CCV - Modified 03/05/2008 PDF File ID: 1486000 Report generated 09/10/2009 09:44



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds %D Criteria

CCV - Modified 03/05/2008 PDF File ID:1486000 Report generated 09/10/2009 09:44



Microbac Laboratories Inc.
QCMRL SAMPLE

00109080

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1485999 Report generated 09/10/2009 09:43



Microbac Laboratories Inc.
QCMRL SAMPLE

00109081

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1485999 Report generated 09/10/2009 09:43



Microbac Laboratories Inc.

QCMRL SAMPLE

00109082

 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	1	Limits	Q
Perchlorate	2.00	2.09	105	70	- 130	

QCMRL - Modified 03/06/2007 PDF File ID:1485999 Report generated 09/10/2009 09:43



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109083

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 - 018LP

Underline = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1486002
Report generated 09/10/2009 09:44



# 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

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 I	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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1486546
Report generated: 09/10/2009 13:29

Microbac

1 OF 1

Report Number: L09090170

Report Date : September 10, 2009

00109088

Sample Number:L09090170-01 PrePrep Method:NONE Instrument: BAL001

Client ID: 04CSWHM Prep Method: D2216-90 Prep Date: 09/10/2009 08:33 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30 Analyst:CPD Dilution:1 Run Date: 09/10/2009 08:33 File ID: B1.311728-0103

Sample Tag: 01 Units:weight %

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

> 7 of

Report Number: L09090170

Report Date : September 10, 2009

00109089

Sample Number: L09090170-02
Client ID: 04CSWHM PrePrep Method:NONE Instrument: BAL001

Prep Method: D2216-90 Prep Date: 09/10/2009 08:33 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30 Analyst:CPD Dilution:1 Run Date: 09/10/2009 08:33 File ID: B1.311728-0104

Sample Tag: 01 Units:weight %

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

7 of

Report Number: L09090170

Report Date : September 10, 2009

00109090

Sample Number:L09090170-03 PrePrep Method:NONE Instrument: BAL001

Client ID: 04CSWHM Prep Method: D2216-90 Prep Date: 09/10/2009 08:33 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30 Analyst:CPD Dilution:1 Run Date: 09/10/2009 08:33 File ID: B1.311728-0105

Sample Tag: 01 Units:weight %

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

> 7 of

Report Number: L09090170

Report Date : September 10, 2009

00109091

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09090170-04
Client ID: 04CSWHMQC Prep Date: 09/10/2009 08:33
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90 Workgroup Number: WG311728
Collect Date: 09/08/2009 15:30 Analyst:CPD Dilution:1 Run Date: 09/10/2009 08:33 File ID: B1.311728-0106

Sample Tag: 01 Units:weight %

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

7 of

Report Number: L09090170

Report Date : September 10, 2009

00109092

Sample Number: L09090170-05 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLVOF-W (100) Prep Method: D2216-90 Prep Date: 09/10/2009 08:33 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311728
Collect Date: 09/08/2009 15:20 Analyst:CPD Dilution:1 Run Date: 09/10/2009 08:33 File ID: B1.311728-0107

Sample Tag: 01 Units:weight %

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

> 5 7 of

Report Number: L09090170

Report Date : September 10, 2009

00109093

Sample Number: L09090170-06 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLVOF-W Prep Method: D2216-90 Prep Date: 09/10/2009 08:33 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst:CPD Dilution:1 Run Date: 09/10/2009 08:33 File ID: B1.311728-0108

Workgroup Number: WG311728
Collect Date: 09/08/2009 15:10 Sample Tag: 01 Units:weight %

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

> 7 of

Report Number: L09090170

Report Date : September 10, 2009

00109094

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09090170-07
Client ID: 04VLVOF-S Prep Date: 09/10/2009 08:33
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90 Workgroup Number: WG311728
Collect Date: 09/08/2009 15:00 Analyst:CPD Dilution:1 Run Date: 09/10/2009 08:33 File ID: B1.311728-0109

Sample Tag: 01 Units:weight %

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

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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109096

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: Le frick Dis

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1485423
Report generated: 09/10/2009 08:34

# 3.0 Attachments

# Microbac Laboratories Inc. Analyst Listing September 10, 2009

#### Microbac Laboratories Inc. List of Valid Qualifiers September 10, 2009

00109099

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



COC NO. 090309-01

Address: 158 Starlite Drive, Marietta OH 45750

Laboratory Name: Microbac

Contact : Stephanie Mossburg

Phone: 1-800-373-4071

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

PM: Praveen Svrivastav (713.996.4588) Project Contact: Jennifer Hoang Project Name: LHAAP-04	(713.99) r Hoang 4	6.4588) g	TAT: 24 Hr Phone No: 713-996-4408 Site: Confirmation Sampling	13-996-440 lation Sam	108 mpling	20)						TAT GIICH AC
Froject #: 11/391-0009B	200		Location: Na	rnack, 17		89						181 NOOH #7
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ALLEN WILLMORE (713) 247-9292			7		· Contai	ıchloı			· · · · · ·			
	$\sum_{i}$	NU			to #	эα						Comments
Sample Number	Grab	) paped	Time	Matrix								
04CSWHM	X	9/8/2009	1530	Soil	3	×					+	+ MS/MSD
04CSWHMQC	X	9/8/2009	1530	Soil	1	×						
04VLVOF-W(100)	X	9/8/2009	1520	Soil	1	×						
04VLVOF-W	×	9/8/2009	1510	Soil	-	×						
04VLVOF-S	×	9/8/2009	1500	Soil	-	×						
								÷				
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<i>V</i>												
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Relinquished By:			BY: ROBIN ALINGER	¥ .								
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Date/Time				,								



#### **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		Temp	Tracking #	COC#	Comments
0014026	Н	3.0	<u>1Z66V7250190816702</u>	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 perservatives 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.

Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090170-02</u> 613636 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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	То	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



Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090170-06</u> 613640 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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



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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on September 16, 2009.

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 Biulding, Houston, TX, 77042

This report was certified on September 16, 2009.

State of origin: Texas

D & Vande berg

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

QAPP: Microbac OVD

This report contains a total of 63 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
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### 00109106

# 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
Sitephanic Mossburg

#### **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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Imma/fesson	Conventional Lab Supervisor	September 14, 2009
Name (Printed)	Signature	Official Title (printed)	DATE
RG-366/TRRP-13 December 2002			A1

Page 6

#### Microbac Laboratories Inc. Laboratory Review Checklist

Laboratory Name:Microbac Laboratories Inc.Laboratory Log Number:L09090223Project 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			<b>√</b>		
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>001</del> 0	<del>)911</del>
Analytical duplicate data				<del>                                     </del>	
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies			•		
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<u>·</u> ✓				
Was applicable and available technology used to lower the SQL minimize the matrix	•		<b>√</b>		
interference affects on the sample results?			•		
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
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?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing			•		
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>			<b>√</b>		
Mass spectral tuning:			•		
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):			•		
Were IS area counts and retention times within the method-required QC limits?			<b>-</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b></b>		
Dual column confirmation			•		
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):			•		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>-</b>		
Interference Check Sample (ICS) results:			•		
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions			· •		
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>		
method?			<b>'</b>		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>✓</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>∨</b>		
Proficiency test reports:			<b>V</b>		
				1	
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)	
Standards documentation			(	<del>)01</del> 0	<del>911</del>	2
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			<b>√</b>			
Compound/analyte identification procedures						
Are the procedures for compound/analyte identification documented?			<b>√</b>			
Demonstration of analyst competency (DOC)						
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>					
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>					ĺ
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC						ĺ
17025 Section 5)						
Are all the methods used to generate the data documented, verified, and validated, where	<b>√</b>					
applicable?						
Laboratory standard operating procedures (SOPs):						1
Are laboratory SOPs current and on file for each method performed?	<b>√</b>					İ

#### Microbac Laboratories Inc. Laboratory Review Checklist

Laboratory Name:
Laboratory Log Number:
Project Name:
Method:
Prep Batch Number(s):
Reviewer Name:
Laboratory Log Number:
L09090223
798-LONGHORN
PCTSOLIDS
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



00109117
Microbac Laboratories
Case Narrative
Generated at 08:16 on 2009-09-14

**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.

00109118

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.

Approved By: Michal Column

#### LABORATORY REPORT

L09090223

00109119

09/16/09 09:24

Submitted By

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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1490680
Report generated: 09/16/2009 09:24

Microbac

1 OF 1

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

 ${\tt Instrument:} \textbf{LCMS1}$ 

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

of

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  ${\tt Instrument:} \textbf{LCMS1}$ 

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

of

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: 1000Units: ug/kg  ${\tt Instrument:} \textbf{LCMS1}$ 

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

of

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: 1000Units: ug/kg  ${\tt Instrument:} \textbf{LCMS1}$ 

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

of

# 2.1.1.2 QC Summary Data

#### **Example 8270 Calculations**

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

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

		<u>Example</u>
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)]

		<b>Example</b>
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)]

		<u>Example</u>
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 weig	ht 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

#### 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

initial volume, final volume, and the dilution factor.

00109126 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 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

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

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

#### Step 4: Solve for analyte concentration Cx

Cx = ( Cis )( 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 quantiation 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

### 00109127

# Microbac Laboratories Inc. Instrument Run Log

	Instrument: Analyst1: Method:			Analyst2:	082609_WTD.TX NA HPLC06		v: <u>0</u>	
Maintena	ance Log ID:	29922						
Workgroups: 310	)493	Column 1 ID:	KP-RPPX250		Column 2 ID:	NA		
Internal STD:	COA14015		Surrogate STD:	NA		Calibration ST	D WG310580	
Co	omments:							

1	Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
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         WG310580-06 1.0 STD         1         1         STD34872         08/26/09 12:27           6         1LM.LM00464         WG310580-06 2.0 STD         1         1         STD34872         08/26/09 12:42           8         1LM.LM00465         WG310580-06 10.0 STD         1         1         STD34872         08/26/09 12:42           8         1LM.LM00466         WG310580-08 10.0 STD         1         1         STD34872         08/26/09 12:42           9         1LM.LM00467         WG310680-09 1.0 ICV         1         1         STD34873         08/26/09 13:50           10         1LM.LM00468         WG310581-01 ICS/MCT         7         1         STD34873         08/26/09 13:54           11         1LM.LM00469         WG310581-02 CCB         7         1         STD34873         08/26/09 13:54           12         1LM.LM00471         WG310581-02 CCB         1         1         STD34873         08/26/09 14:51           13         1LM.LM	1	1LM.LM00459	WG310580-01 CCB	1	1		08/26/09 11:16
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 12:42           7         1LM.LM00465         WG310580-08 10.0 STD         1         1         STD34872         08/26/09 12:56           9         1LM.LM00466         WG310580-09 1.0 ICV         1         1         STD34839         08/26/09 13:25           10         1LM.LM00468         WG310493-01 ICS/MCT         7         1         STD34873         08/26/09 13:25           11         1LM.LM00469         WG310489-01 ICCV 1.0         1         1         STD34872         08/26/09 13:39           12         1LM.LM00470         WG310489-02 CCMRL 0.2         7         1         STD34872         08/26/09 14:31           13         1LM.LM00471         WG310581-02 CCB         1         1         STD34873         08/26/09 14:09           14         1LM.LM00473         L9980563-01         7         1         STD34873         08/26/09 14:31           15         1LM.LM	2	1LM.LM00460	WG310580-02 0.1 STD	1	1	STD34872	08/26/09 11:30
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 12:56           8         1LM.LM00466         WG310580-09 1.0 ICV         1         1         STD34872         08/26/09 12:56           9         1LM.LM00467         WG310580-09 1.0 ICV         1         1         STD34873         08/26/09 13:10           10         1LM.LM00468         WG310581-01 CCV 1.0         1         1         STD34872         08/26/09 13:25           11         1LM.LM00470         WG310581-01 CCV 1.0         1         1         STD34872         08/26/09 13:39           12         1LM.LM00470         WG310581-02 CCB         1         1         STD34872         08/26/09 13:40           14         1LM.LM00471         WG310580-02 CCB         1         1         STD34873         08/26/09 14:22           15         1LM.LM00472         L09080563-01         7         1         STD34873         08/26/09 14:37           16         1LM.LM00473 </td <td>3</td> <td>1LM.LM00461</td> <td>WG310580-03 0.2 STD</td> <td>1</td> <td>1</td> <td>STD34872</td> <td>08/26/09 11:44</td>	3	1LM.LM00461	WG310580-03 0.2 STD	1	1	STD34872	08/26/09 11:44
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.LM00466         WG310580-09 1.0 IcV         1         1         STD34873         08/26/09 13:01           10         1LM.LM00468         WG310493-01 ICS/MCT         7         1         STD34873         08/26/09 13:39           11         1LM.LM00469         WG310493-01 CCV 1.0         1         1         STD34872         08/26/09 13:39           12         1LM.LM00470         WG310493-02 CCB         1         1         STD34872         08/26/09 13:39           13         1LM.LM00471         WG310581-02 CCB         1         1         STD34873         08/26/09 13:34           14         1LM.LM00472         WG310581-02 CCB         1         1         STD34873         08/26/09 14:08           14         1LM.LM00472         UG980563-02         7         1         STD34873         08/26/09 14:37           15         1LM.LM00472	4	1LM.LM00462	WG310580-04 0.5 STD	1	1	STD34872	08/26/09 11:59
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         WG310493-02 CCMRL 0.2         7         1         STD34872         08/26/09 13:35           12         1LM.LM00470         WG310493-02 CCMRL 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 14:21           16         1LM.LM00476         L09080563-03         7         1         STD34873         08/26/09 14:37           17         1LM.LM00475         L09080563-06<	5	1LM.LM00463	WG310580-05 1.0 STD	1	1	STD34872	08/26/09 12:13
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.LM00471         WG310581-02 CCB         1         1         STD34872         08/26/09 13:34           13         1LM.LM00472         L09080563-01         7         1         STD34873         08/26/09 14:02           15         1LM.LM00472         L09080563-02         7         1         STD34873         08/26/09 14:32           15         1LM.LM00473         L09080563-03         7         1         STD34873         08/26/09 14:32           16         1LM.LM00474         L09080563-03         7         1         STD34873         08/26/09 14:31           17         1LM.LM00475         L09080563-05         7         1         STD34873         08/26/09 15:06           18         1LM.LM00476         L090	6	1LM.LM00464	WG310580-06 2.0 STD	1	1	STD34872	08/26/09 12:27
9	7	1LM.LM00465	WG310580-07 5.0 STD	1	1	STD34872	08/26/09 12:42
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 14:02           15         1LM.LM00473         L09080563-02         7         1         STD34873         08/26/09 14:37           16         1LM.LM00474         L09080563-03         7         1         STD34873         08/26/09 15:06           18         1LM.LM00475         L09080563-04         7         1         STD34873         08/26/09 15:06           18         1LM.LM00476         L09080563-05         7         1         STD34873         08/26/09 15:34           20         1LM.LM00477         L09080563-06         7         1         STD34873         08/26/09 15:34           21         1LM.LM00478         L09080563-12         7 <td>8</td> <td>1LM.LM00466</td> <td>WG310580-08 10.0 STD</td> <td>1</td> <td>1</td> <td>STD34872</td> <td>08/26/09 12:56</td>	8	1LM.LM00466	WG310580-08 10.0 STD	1	1	STD34872	08/26/09 12:56
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 15:06           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 15:49           20         1LM.LM00479         L09080563-12         7         1         STD34873         08/26/09 16:49           21         1LM.LM00480         L09080563-13         7	9	1LM.LM00467	WG310580-09 1.0 ICV	1	1	STD34839	08/26/09 13:10
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         L09080563-12         7         1         STD34873         08/26/09 15:34           21         1LM.LM00479         L09080563-12         7         1         STD34873         08/26/09 16:03           22         1LM.LM00480         L09080563-13         7 <td< td=""><td>10</td><td>1LM.LM00468</td><td>WG310493-01 ICS/MCT</td><td>7</td><td>1</td><td>STD34873</td><td>08/26/09 13:25</td></td<>	10	1LM.LM00468	WG310493-01 ICS/MCT	7	1	STD34873	08/26/09 13:25
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         L09080563-12         7         1         STD34873         08/26/09 15:49           21         1LM.LM00479         L09080563-12         7         1         STD34873         08/26/09 16:49           22         1LM.LM00480         L09080563-13         7         1         STD34873         08/26/09 16:18           23         1LM.LM00481         WG310581-03 CCV 1.0         1         1	11	1LM.LM00469	WG310581-01 CCV 1.0	1	1	STD34872	08/26/09 13:39
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 15:06           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 15:34           21         1LM.LM00479         L09080563-12         7         1         STD34873         08/26/09 16:03           22         1LM.LM00480         L09080563-13         7         1         STD34873         08/26/09 16:03           23         1LM.LM00481         WG310581-03 CCV 1.0         1         1         STD34872         08/26/09 16:32           24         1LM.LM00482         WG310493-03 CCV	12	1LM.LM00470	WG310493-02 QCMRL 0.2	7	1	STD34872	08/26/09 13:54
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 16:03           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 17:01           26         1LM.LM00484         WG310495-01 MBLK </td <td>13</td> <td>1LM.LM00471</td> <td>WG310581-02 CCB</td> <td>1</td> <td>1</td> <td></td> <td>08/26/09 14:08</td>	13	1LM.LM00471	WG310581-02 CCB	1	1		08/26/09 14:08
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 16:03           23         1LM.LM00481         WG310581-03 CCV 1.0         1         1         STD34872         08/26/09 16:32           24         1LM.LM00482         WG310493-03 CCW 1.0         1         1         STD34872         08/26/09 17:01           26         1LM.LM00484         WG310495-01 MBLK         7         1         STD34873         08/26/09 17:52           27         1LM.LM00486         WG310495-03 LCSD	14	1LM.LM00472	L09080563-01	7	1	STD34873	08/26/09 14:22
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 17:01           25         1LM.LM00483         WG310495-01 MBLK         7         1         STD34873         08/26/09 17:15           27         1LM.LM00485         WG310495-02 LCS         7         1         STD34873         08/26/09 17:44           29         1LM.LM00486         WG310495-03	15	1LM.LM00473	L09080563-02	7	1	STD34873	08/26/09 14:37
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         WG310495-04 CCB         1         1         08/26/09 17:01           26         1LM.LM00484         WG310495-01 MBLK         7         1         STD34873         08/26/09 17:15           27         1LM.LM00486         WG310495-03 LCSD         7         1         STD34873         08/26/09 17:44           29         1LM.LM00486         WG310495-01 A 2X <td< td=""><td>16</td><td>1LM.LM00474</td><td>L09080563-03</td><td>7</td><td>1</td><td>STD34873</td><td>08/26/09 14:51</td></td<>	16	1LM.LM00474	L09080563-03	7	1	STD34873	08/26/09 14:51
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         STD34873         08/26/09 17:15           27         1LM.LM00486         WG310495-03 LCSD         7         1         STD34873         08/26/09 17:44           29         1LM.LM00487         L09080500-01 A 10X         7         1         STD34873         08/26/09 17:58           30         1LM.LM00488         L09080500-01 A 2X	17	1LM.LM00475	L09080563-04	7	1	STD34873	08/26/09 15:06
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         STD34873         08/26/09 17:05           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 17:58           30         1LM.LM00487         L09080500-01 A 2X         7         2         08/26/09 18:12           31         1LM.LM00489         WG310581-05 CCV 1.0         1	18	1LM.LM00476	L09080563-05	7	1	STD34873	08/26/09 15:20
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         STD34873         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	19	1LM.LM00477	L09080563-06	7	1	STD34873	08/26/09 15:34
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         STD34873         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 <td>20</td> <td>1LM.LM00478</td> <td>L09080563-07</td> <td>7</td> <td>1</td> <td>STD34873</td> <td>08/26/09 15:49</td>	20	1LM.LM00478	L09080563-07	7	1	STD34873	08/26/09 15:49
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         STD34873         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	21	1LM.LM00479	L09080563-12	7	1	STD34873	08/26/09 16:03
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	22	1LM.LM00480	L09080563-13	7	1	STD34873	08/26/09 16:18
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	23	1LM.LM00481	WG310581-03 CCV 1.0	1	1	STD34872	08/26/09 16:32
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	24	1LM.LM00482	WG310493-03 QCMRL 0.2	7	1	STD34872	08/26/09 16:46
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	25	1LM.LM00483	WG310581-04 CCB	1	1		08/26/09 17:01
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	26	1LM.LM00484	WG310495-01 MBLK	7	1		08/26/09 17:15
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	27	1LM.LM00485	WG310495-02 LCS	7	1	STD34873	08/26/09 17:29
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	28	1LM.LM00486	WG310495-03 LCSD	7	1	STD34873	08/26/09 17:44
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	29	1LM.LM00487	L09080500-01 A 10X	7	10		08/26/09 17:58
32 1LM.LM00490 WG310493-04 QCMRL 0.2 7 1 STD34872 08/26/09 18:41	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
33 1LM.LM00491 WG310581-06 CCB 1 1 1 08/26/09 18:56	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
Michal Cont

### 00109128

# Microbac Laboratories Inc. Instrument Run Log

	Instrument:	LCMS1		Dataset:	091109_WTD.TX	<u> </u>		
	Analyst1:	WTD		Analyst2:	NA			
	Method:	6850		SOP:	HPLC06		Rev: <u>0</u>	
Main	tenance Log ID:	30125						
	,	Column 1 ID:	KP-RPPX250		Column 2 ID:	NΑ		
Workgroups:		Column 1 1D.	KF-KFFA250		Column 2 ID.	INA	<del></del>	
g. oupo.	311953							
Internal STD:	COA14015		Surrogate STD:	NA		Calibration	n 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

#### $\underline{\text{Comments}}$

Reason	Analytes
Over Calibration Range	Perchlorate
Over Calibration Range	Perchlorate

Page: 1 Approved: 14-SEP-0

14-SEP-09
Michael Microbae

Checklist ID: 41221

# Microbac Laboratories Inc. Data Checklist

00109129

Date:	26-AUG-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	29811
alytical 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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA
Recoveries	NA NA
%RPD	NA 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 NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA 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
Social y Neviewer	IVIDO

Primary Reviewer:

Secondary Reviewer: 28-AUG-2009

Wader & Michal Carlin

CHECKLIST1 - Modified 03/05/2008

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

Microbac ®

Checklist ID: 41653

# Microbac Laboratories Inc. Data Checklist

00109130

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 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 NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	NA NA
Project/client specific requirements	X
rejectionent spasme regainstructio	
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA 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

Wader & Michel Colum

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-14-2009 07:52:19

Microbac ®

### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109131

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

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1488704 Report generated 09/14/2009 08:12



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### 00109132

#### 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

Report Name: BLANK\_SUMMARY
PDF File ID:1488687
Report generated 09/14/2009 08:12



## Microbac Laboratories Inc. METHOD BLANK REPORT

00109133

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

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



# Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109134

Login Number: L09090223			Analyst:WTD	Pr	Prep Method: 6850				
Instru	ment ID:LCMS1			Matrix:Soil		Method: 6850			
Workgroup	(AAB#):WG31195	3				Units:ug/kg			
	QC Key:STD			Lot #:STD35234					
Sample	ID:WG311953-03	LCS	_File	ID: 1LM.LM00718	Run Dat	e: <u>09/11/2009</u> 15:	43		
Sample	ID:WG311953-04	LCS2	File	TD:11.M.I.M00719	Run Dat	e:09/11/2009 15:	57		

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

LCS\_LCS2 - Modified 03/06/2008 PDF File ID: 1488689 Report generated: 09/14/2009 08:12

Conductivity Probe
Calibration Check:
1412 /1410 µs/cm

Perchlorate Conductivity Check

Working MCT Level: // O, 00 0 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
mc Tres	10,170	MA
M.Blk	7.7	
LCS	8.3	
LCSD	8.7	
L0909022301A	181.6	
-UZ A	189.2	
-03 A	38.7	
-04 M	37.0	· ·
	1	
·		
·		

Wader De Los

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

DCN#80717

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109136

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

Instrument ID:<u>LCMS1</u>
Initial Calibration Date:<u>26-AUG-09 12:56</u>
Column ID:<u>F</u>

Analyte	AVG RF	% RSD	LINEAR (R2	QUAD(R2)
Perchlorate	1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum

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

Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109137

Login Number: L09090223
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

	WG310580-02			WG310580-03			WG310580-04		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109138

Login Number: L09090223
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

	WG310580-05			WG310580-06			WG310580-07		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109139

Login Number: L09090223
Analytical Method: 6850

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

Column ID: F

	WG310580-08					
Analyte	CONC	RESP	RF			
Perchlorate	10.0	716000.000	1.484			

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



### Microbac Laboratories Inc. ALTERNATE SOURCE CALIBRATION REPORT

00109140

 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	

<sup>\*</sup> Exceeds %D Limit

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1488705 Report generated 09/14/2009 08:13



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1488692 Report generated 09/14/2009 08:13



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1488692 Report generated 09/14/2009 08:13



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1488692 Report generated 09/14/2009 08:13



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds %D Criteria

CCV - Modified 03/05/2008 PDF File ID:1488691 Report generated 09/14/2009 08:13



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

CCV - Modified 03/05/2008 PDF File ID:1488691 Report generated 09/14/2009 08:13



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

\* Exceeds %D Criteria

Matrix:SOIL

CCV - Modified 03/05/2008 PDF File ID:1488691 Report generated 09/14/2009 08:13



Microbac Laboratories Inc.

QCMRL SAMPLE

00109147

 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	- 1	.30	

QCMRL - Modified 03/06/2007 PDF File ID:1488690 Report generated 09/14/2009 08:12



Microbac Laboratories Inc.

QCMRL SAMPLE

00109148

 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		Limit	s	Q
Perchlorate	2.00	2.10	105	70	-	130	

QCMRL - Modified 03/06/2007 PDF File ID:1488690 Report generated 09/14/2009 08:12



Microbac Laboratories Inc.

QCMRL SAMPLE

00109149

 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	1	Limits	Q
Perchlorate	2.00	2.00	100	70	- 130	

QCMRL - Modified 03/06/2007 PDF File ID:1488690 Report generated 09/14/2009 08:12



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109150

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

<u>Underline</u> = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1488693
Report generated 09/14/2009 08:13



## 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

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: <u>389869/ 390836(GWTP)</u>

### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1490679
Report generated: 09/16/2009 09:24

Microbac

1 OF 1

Micropac Laboratories inc.

Report Number: L09090223

Report Date : September 16, 2009

00109155

Sample Number: <u>L09090223-01</u> PrePrep Method:NONE Instrument: BAL001

Client ID: 04CSWC1C Prep Method: D2216-90 Prep Date: 09/14/2009 08:43 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst: CPD
Dilution: 1 Run Date: 09/14/2009 08:43 File ID: B1.311963-0101

Workgroup Number: WG311963
Collect Date: 09/10/2009 14:45 Sample Tag: 01 Units:weight %

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

of

MICTODAC LADOTACOTTES INC.

Report Number: L09090223

Report Date : September 16, 2009

00109156

Sample Number: L09090223-02 PrePrep Method: NONE Instrument: BAL001 Prep Method: D2216-90 Prep Date: 09/14/

Client ID: 04CSFL14(8) Prep Method: D2216-90 Prep Date: 09/14/2009 08:43

Matrix: Soil Analytical Method: D2216-90 Cal Date:

Number: W2311963 Purp Date: 09/14/2009 08:43

 Workgroup Number: WG311963
 Analyst:CPD
 Run Date: 09/14/2009 08:43

 Collect Date: 09/10/2009 14:40
 Dilution: 1
 File ID: B1.311963-0102

 Sample Tag: 01
 Units: weight %

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

2 of 4

Micropac Laboratories inc.

Report Number: L09090223

Report Date : September 16, 2009

00109157

Sample Number: L09090223-03
Client ID: 04CsFL11RE(13) PrePrep Method:NONE Instrument: BAL001

Prep Method: D2216-90 Prep Date: 09/14/2009 08:43 Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG311963
Collect Date: 09/10/2009 14:35 Analyst:CPD Dilution:1 Run Date: 09/14/2009 08:43 File ID: B1.311963-0103 Sample Tag: 01 Units:weight %

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

of

Micropac Laboratories inc.

Report Number: L09090223

Report Date : September 16, 2009

00109158

Sample Number: L09090223-04 PrePrep Method:NONE Instrument: BAL001

Client ID: 04CSFL10(13) Prep Method: D2216-90 Prep Date: 09/14/2009 08:43 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311963
Collect Date: 09/10/2009 14:30 Analyst: CPD
Dilution: 1 Run Date: 09/14/2009 08:43 File ID: B1.311963-0104

Sample Tag: 01 Units: weight %

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

of

### 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109160

Workgroup (AAB#):WG311963 Analyst:CPD ADT(on):09/11/2009 13:04
Method:D2216-90 Instrument:BAL001 ADT(off):09/14/2009 08:43

SOP: <u>K0003</u> 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: Vehicle Dais

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1488249
Report generated: 09/14/2009 08:46

## 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing September 16, 2009

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

### Microbac Laboratories Inc. List of Valid Qualifiers September 16, 2009

00109163

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.

tnc. 158 Starlite 24 HOUR TAT Comments COC NO. 082409-01 Contact: Wike Porry Skellania. Phone: 4-685-208-5380 Microbac Address: 1 Mustard Offeet, 5d Laboratory Name: Cetumbia A Special Instructions 221000001643 0289 bodtem 848-WS بد Site: Confirmation Sampling Location: Karnack, TX # of Containers Phone No: 713-996-4408 Matrix S Se F Soil Soil 4:40 4:30 TAT: 24 hr 14:4S 14:35 Time Shaw Environmental & Infrastructure, Inc. Received By: Sampler Sign: <u>2</u> 000 Date PM: Praveen Svrivastav (713.996.4588) 3010 Briarpark Drive, Suite 400 Project Contact: Jennifer Hoang Grab × Date/Time 4/11/64 18:00 Project #: 117591-0009B300 Project Name: LHAAP-04 Houston, TX 77042 OYCS FUIL RE (D (8) M1352 MO OHESFLID (13) Sample Number OYCSWCIC ALLEN WILLMORE (713) 996-4400 Relinquished By: Relinquished By Sampler Print: (713)247-9292 Date/Time



### **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	Н	2.0	<u>A5606683328</u>	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 perservatives 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?

Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090223-02</u> 614013 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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	То	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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on September 16, 2009.

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 Biulding, Houston, TX, 77042

This report was certified on September 16, 2009.

State of origin: Texas

D & Vankerberg

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

QAPP: Microbac OVD

This report contains a total of 85 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive

Marietta, OH 45750

Phone: 800.373.4071 Fax: 740.373.4835

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LOOK CLOSER, GO FURTHER, DO MORE

## 00109169

# 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
Sitephanic Mossburg

### **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 enviornmental sample that includes:

- a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Inmalpsson	Conventional Lab Supervisor	September 14, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

### 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			<b>√</b>		
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>001</del> 0	<del>)917</del>
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>			<b>√</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>		
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>√</b>		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)	
Standards documentation			(	<del>)</del> 010	<del>917</del>	
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>			
sources?						
Compound/analyte identification procedures						
Are the procedures for compound/analyte identification documented?			<b>√</b>			
Demonstration of analyst competency (DOC)						
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>					
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>					
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	<b>√</b>					
applicable?						
Laboratory standard operating procedures (SOPs):						
Are laboratory SOPs current and on file for each method performed?	<b>√</b>					

#### 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.

00109181

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.

Approved By: Michel Cocher

#### LABORATORY REPORT

L09090257

00109182

09/16/09 09:24

Submitted By

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

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
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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1490684
Report generated: 09/16/2009 09:24

Microbac

1 OF 1

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

1 of 13

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

2 of 13

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

3 of 13

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 Instrument: LCMS1

Prep Method: 6850 Prep Date: 09/12/2009 14:00
Analytical Method: 6850 Cal Date: 08/26/2009 11:59

Analyst:WTD Run Date: 09/12/2009 16:24
Dilution:1000 File ID: 1LM.LM00742

Units:ug/kg

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

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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
Analytical Method: 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

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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 Instrument: LCMS1

Prep Method:6850 Prep Date:09/12/2009 14:00
Analytical Method:6850 Cal Date:08/26/2009 11:59

Analyst: WTD Run Date: 09/12/2009 19:31
Dilution: 10 File ID: 1LM.LM00755

Units: ug/kg

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

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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 Instrument: LCMS1

Prep Method: 6850 Prep Date: 09/12/2009 14:00
Analytical Method: 6850 Cal Date: 08/26/2009 12:56

Analyst: WTD Run Date: 09/12/2009 17:50
Dilution: 1000 File ID: 1LM.LM00748

Units: ug/kg

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

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MICTODAC LADOTACOTTES INC.

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

8 of 13

MICIODAC LABORATORIES INC.

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

9 of 13

Micropac Laboratories inc.

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

10 of 13

MICIODAC LADOTACOTTES INC.

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

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MICTODAC LADOTACOTTES INC.

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

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Micropac Laboratories inc.

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

#### **Example 8270 Calculations**

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

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

whore		<u>Example</u>
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)]

		<b>Example</b>
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)]

	<u>Example</u>
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
$Cd = (Cx) (100)/PCT_S$	<b>1153.525</b> ug/kg

<sup>\*</sup> 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 00109198

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 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

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

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

#### Step 4: Solve for analyte concentration Cx

Cx = ( Cis )( 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 IS from quantitation report: 203233

Area of IS from quantitation report: 1425653

Response ratio, y: 0.142554

C - v: -0.142334

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

### 00109199

# Microbac Laboratories Inc. Instrument Run Log

	Instrument: Analyst1: Method:			Analyst2:	082609_WTD.TX NA HPLC06	<u>T</u>	Rev: <u>0</u>		
Mair	itenance Log ID:	29922							
Workgroups:		Column 1 ID: KP-	RPPX250		Column 2 ID:	NA			
	310493	0	or or or or or or or or or or or or or o	NIA.		O - l'h C	OTD 1	1/0040500	_
nternal STD:	COA14015	Sur	rogate STD:	NA		Calibration	191D <u>1</u>	NG310580	
	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

Michael Con

# 00109200

# Microbac Laboratories Inc. Instrument Run Log

	LCMS1	Dataset: 091209_WTD.TX	<u>(1</u>	
Analyst1:	WTD	Analyst2: NA		
Method:	6850	SOP: HPLC06	Rev: <u>0</u>	
Maintenance Log ID:	30126			
-				
	Column 1 ID: KP-RPPX250	Column 2 ID:	NA	
Workgroups: 311982				
Internal STD: COA14015	Surrogate STD:	NA	Calibration STD	
Internal STD: COA14015  Comments:	Surrogate STD:	NA	Calibration STD	

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	Х	10	Analyzed too dilute	
20	Х	100	Analyzed too dilute	

Page: 1 Approved: 14-SEP-09

Microbac ®

Checklist ID: 41221

# Microbac Laboratories Inc. Data Checklist

00109201

Date:	26-AUG-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	29811
alytical Workgroups	310493

ANALYTICAL CONTRACTOR OF THE C	1
ANALYTICAL	1
System Performance Check	NA NA
DFTPP (GCMS)	NA NA
Endrin/DDT breakdown (8081/GCMS)	NA NA
Pentachlorophenol/benzidine tailing (GCMS)	NA NA
Eluent check (IC)/system pressure (HPLC)	NA 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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	) x
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculation (GCMS)	X
Calculations & correct factors  Compounds above calibration range	NA NA
Reruns	X
Manual integrations	NA NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	The state of the s
Case narratives	NA V
Check for completeness	X
Primary Reviewer	WTD
SUPERVISORY/SECONDARY REVIEW	1
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

Wader & Michal Carlin

CHECKLIST1 - Modified 03/05/2008

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

Checklist ID: 41654

# Microbac Laboratories Inc. Data Checklist

### 00109202

Date:	12-SEP-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	30096
alytical Workgroups	311082

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 NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA NA
Reruns	X
Manual integrations	NA NA
Project/client specific requirements	X
Toject/ellert specific requirements	
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA NA
Check for completeness	X
Primary Reviewer	WTD
Tittidi y Keviewei	VVID
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
Decorragi A reviewer	IVIDC

Primary Reviewer:

Secondary Reviewer: 14-SEP-2009

Wader & Michel Colum

CHECKLIST1 - Modified 03/05/2008 Generated: SEP-14-2009 08:40:12

#### Microbac Laboratories Inc.

# HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109203

AAB#: WG311982

Analytical Method: 6850

Login Number: L09090257

	ID	Date	TCLP	Time	Max	Q	Extract	Time	Max	Q	Run	Time	Max	Q
Client ID		Collected	Date	Held	Hold		Date	Held	Hold		Date	Held	Hold	
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	

<sup>\* =</sup> SEE PROJECT QAPP REQUIREMENTS

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1488774 Report generated 09/14/2009 09:35

Microbac \*

### 00109204

#### METHOD BLANK SUMMARY

Login Number:L09090257

Blank File ID:1LM.LM00736

Prep Date:09/12/09 14:00

Analyzed Date:09/12/09 14:58

Work Group: WG311982

Blank Sample ID: WG311982-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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



# Microbac Laboratories Inc. METHOD BLANK REPORT

00109205

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

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



# Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109206

Login	Login Number: L09090257			Analyst:WTD		Prep Method: 6850			
Instrument ID: LCMS1				Matrix:Soil		Method: 6850			
Workgroup	(AAB#):WG31198	2				Units:ug/	kg		
	QC Key:STD			Lot #:STD35234		_			
Sample	ID:WG311982-03	LCS	_File	ID:1LM.LM00737	Run_Da	ate: <u>09/12/2009</u>	15:12		
Sample	TD:WG311982-04	T.CS2	File	TD:11.M.I.M00738	Run Da	ate:09/12/2009	15:26		

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

LCS\_LCS2 - Modified 03/06/2008 PDF File ID:1488699 Report generated: 09/14/2009 09:36

Conductivity Probe Calibration Check: / 4/ος /1410 μs/cm

#### Perchlorate Conductivity Check

Working MCT Level:

10,000 

µs/cm

Sample	Conductivi	ty (µs/cm)	Pretreatment or Dilution Needed
Sample	10,120	, No.	
BIK	6.3		
Lcs	6.7	4.414	
Lesa	11.1		
L09090257-01	47.1		
-02	33.6		
-03	59.9		
-o4	58.3		·
-05	36.8		
-06	32.2		
-07	18.7	_	
-08	22.7		
-09	26.3		
-10	16.4		
-([	131.8		
-12	52.2		
-13	26.9		*
:			
	_		

Waste i. Do Ly Analyst

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

DCN#80718



Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109208

Login Number: L09090257

Analytical Method: 6850

ICAL Workgroup: WG310580

Perchlorate

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

Analyte	AVG RF	% RSD	LINEAR (R <sup>2</sup>	QUAD(R <sup>2</sup> )
	1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109209

Login Number: L09090257
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

		WG310580-0	2		WG310580-0	3	WG310580-04		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109210

Login Number: L09090257
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

		WG310580-0	5		WG310580-0	6	WG310580-07		
Analyte	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



Microbac Laboratories Inc.
INITIAL CALIBRATION DATA

00109211

Login Number: L09090257
Analytical Method: 6850

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

Column ID:F

	WG310580-08					
Analyte	CONC	RESP	RF			
Perchlorate	10.0	716000.000	1.484			

Microbac

# 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	

<sup>\*</sup> Exceeds %D Limit

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



# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1488702 Report generated 09/14/2009 09:37

Microbac ®

# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1488702 Report generated 09/14/2009 09:37



# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1488702 Report generated 09/14/2009 09:37



# Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

CCV - Modified 03/05/2008 PDF File ID:1488701 Report generated 09/14/2009 09:37



# Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

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

<sup>\*</sup> Exceeds %D Criteria

Matrix:SOIL

CCV - Modified 03/05/2008 PDF File ID:1488701 Report generated 09/14/2009 09:37



# Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

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

<sup>\*</sup> Exceeds %D Criteria

Matrix:SOIL

CCV - Modified 03/05/2008 PDF File ID:1488701 Report generated 09/14/2009 09:37



Microbac Laboratories Inc.

QCMRL SAMPLE

00109219

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1488700 Report generated 09/14/2009 09:36



Microbac Laboratories Inc.

QCMRL SAMPLE

00109220

 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	1	Limits	Q
Perchlorate	2.00	2.10	105	70	- 130	

QCMRL - Modified 03/06/2007 PDF File ID:1488700 Report generated 09/14/2009 09:36



Microbac Laboratories Inc.

QCMRL SAMPLE

00109221

 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	- 1	30	

QCMRL - Modified 03/06/2007 PDF File ID:1488700 Report generated 09/14/2009 09:36



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 - 018LP

Underline = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1488703
Report generated 09/14/2009 09:37



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109223

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

<u>Underline</u> = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1488703
Report generated 09/14/2009 09:37



# 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1490683
Report generated: 09/16/2009 09:24 1 OF 1

Report Number: L09090257

Report Date : September 16, 2009

00109228

Sample Number: L09090257-01
Client ID: 04CSFL05RE (13) PrePrep Method:NONE Instrument:BAL014

Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG311984
Collect Date: 09/11/2009 13:00 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0101 Sample Tag: 01 Units:weight %

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

13 of

Report Number: L09090257

Report Date : September 16, 2009

00109229

Sample Number: L09090257-02
Client ID: 04CSFL02RE (7) PrePrep Method:NONE Instrument:BAL014

Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0102

Workgroup Number: WG311984
Collect Date: 09/11/2009 13:05
Sample Tag: 01 Units:weight %

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

13 of

Report Number: L09090257

Report Date : September 16, 2009

00109230

Sample Number: L09090257-03
Client ID: 04CSFL09RE (13) PrePrep Method:NONE Instrument:BAL014

Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG311984
Collect Date: 09/11/2009 13:25 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0103 Sample Tag: 01 Units:weight %

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

13 of

Report Number: L09090257

Report Date : September 16, 2009

00109231

PrePrep Method:NONE Instrument:BAL014

Sample Number: L09090257-04
Client ID: 04CSWCDRE (4)L Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311984
Collect Date: 09/11/2009 13:10 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0104

Sample Tag: 01 Units:weight %

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

13 of

Report Number: L09090257

Report Date : September 16, 2009

00109232

PrePrep Method:NONE Instrument:BAL014

Sample Number: L09090257-05
Client ID: 04C5FL13 (8) Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG311984
Collect Date: 09/11/2009 13:15 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0105 Sample Tag: 01 Units:weight %

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

13 of

Report Number: L09090257

Report Date : September 16, 2009

00109233

Sample Number: L09090257-06
Client ID: 04CSWCDRE (19)U PrePrep Method:NONE Instrument:BAL014

Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG311984
Collect Date: 09/11/2009 13:20 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0106 Sample Tag: 01 Units:weight %

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

13 of

MICTODAC LADOTACOTTES INC.

Report Number: L09090257

Report Date : September 16, 2009

00109234

Cal Date:

Client ID: 04CSFL07RE (11) Prep Method: D2216-90
Matrix: Soil Analytical Method: D2216-90

Workgroup Number: W311984 Analyst: JDH Run Date: 09/14/2009 08:36
Collect Date: 09/11/2009 12:25 Dilution: 1 File ID: B14.311984-0107
Sample Tag: 01 Units: weight %

 Analyte
 CAS. Number
 Result
 Qual
 PQL
 SDL

 Percent Solids
 10-02-6
 73.7
 1.00
 1.00

7 of 13

Report Number: L09090257

Report Date : September 16, 2009

00109235

PrePrep Method:NONE Instrument:BAL014

Sample Number: L09090257-08
Client ID: 04CSWD1E Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311984
Collect Date: 09/11/2009 12:30 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0108

Sample Tag: 01 Units:weight %

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

13 of

Report Number: L09090257

Report Date : September 16, 2009

00109236

PrePrep Method:NONE Instrument:BAL014

Sample Number: L09090257-09
Client ID: 04CSWD1EQC Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311984
Collect Date: 09/11/2009 12:30 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0109

Sample Tag: 01 Units:weight %

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

13 of

Report Number: L09090257

Report Date : September 16, 2009

00109237

PrePrep Method:NONE Instrument:BAL014

Sample Number: L09090257-10
Client ID: 04CSWEF3 Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311984 Collect Date: 09/11/2009 12:35 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0110

Sample Tag: 01 Units:weight %

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

10 13 of

Report Number: L09090257

Report Date : September 16, 2009

00109238

Sample Number: L09090257-11
Client ID: 04CSFL12RE (13) PrePrep Method:NONE Instrument:BAL014

Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311984
Collect Date: 09/11/2009 12:50 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0111

Sample Tag: 01 Units:weight %

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

11 of 13

Report Number: L09090257

Report Date : September 16, 2009

00109239

PrePrep Method:NONE Instrument:BAL014

Sample Number: L09090257-12
Client ID: 04CSWR1H Prep Method: D2216-90 Prep Date: 09/14/2009 08:36 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG311984 Collect Date: 09/11/2009 12:55 Analyst: JDH
Dilution: 1 Run Date: 09/14/2009 08:36 File ID: B14.311984-0112

Sample Tag: 01 Units:weight %

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

12 13 of

MICTODAC LADOTACOTTES INC.

Report Number: L09090257

Report Date : September 16, 2009

00109240

Sample Number: L09090257-13 PrePrep Method: NONE Instrument: BAL014

 Client ID: 04CSWFR1
 Prep Method: D2216-90
 Prep Date: 09/14/2009 08:36

 Matrix: Soil
 Analytical Method: D2216-90
 Cal Date:

 Workgroup Number: WG311984
 Analyst: JDH
 Run Date: 09/14/2009 08:36

 Collect Date: 09/11/2009 12:20
 Dilution: 1
 File ID: B14.311984-0113

Sample Tag: 01 Units: weight %

 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109242

Workgroup (AAB#):WG311984 Analyst:JDH ADT(on):09/13/2009 12:41
Method:D2216-90 Instrument:BAL014 ADT(off):09/14/2009 08:36

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
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

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1488686
Report generated: 09/14/2009 08:47

# 3.0 Attachments

# Microbac Laboratories Inc. Analyst Listing September 16, 2009

#### Microbac Laboratories Inc. List of Valid Qualifiers September 16, 2009

00109245

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.

COC NO. 090309-01

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

**Laboratory Name: Microbac** 

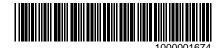
Address: 158 Starlite Drive, Marietta OH 45750

00109246

**Contact : Stephanie Mossburg** 

Phone: 1-800-373-4071

PM: Praveen Svrivasta Project Contact: Jenni Project Name: LHAAP- Project #: 117591-0009	fer Hoan 04	9	TAT: 24 Hr Phone No: 7 Site: Confir Location: Ka	nation Sa	ampling	5850)						24 HOUR TAT	
Sampler Print: ALLEN WILLMORE (713) 247-9292	Sample	er Sign:	4		# of Containers	Perchlorate (6850)						Comments	
Sample Number	Grab	Date	Time	Matrix									
04CSFL05RE(13)	х	9/11/2009	1300	Soil	1	X							
04CSFL02RE(7)	X	9/11/2009	1305	Soil	1	X							
04CSFL09RE(13)	Х	9/11/2009	1325	Soil	1	Х							
04CSWCDRE(4)L	X	9/11/2009	1310	Soil	1	Х					<u> </u>		
04CSFL13(8)	X	9/11/2009	1315	Soil	1	Х							
04CSWCDRE(19)U	х	9/11/2009	1320	Soil	1	х							
04CSFL07RE(11)	X	9/11/2009	1225	Soil	1	Х							
04CSWD1E	Х	9/11/2009	1230	Soil	1	Х							
04CSWD1EQC	Х	9/11/2009	1230	Soil	1	Х							
04CSWEF3	X	9/11/2009	1235	Soil	1	Х							
04CSFL12RE(13)	х	9/11/2009	1250	Soil	1	Х							
04CSWR1H	х	9/11/2009	1255	Soil	1	Х							
04CSWFR1	Х	9/11/2009	1220	Soil	1	Х							
						<u> </u>	<u> </u>			<u> </u>			
Religipushed By:		Received B	y: Microba	c OVD		Spec	al Instruct 22100000						
Date/Time	7	Date/T	Received:		09 10:00								
Relinquished By:	-	Receiv =	By: ROBIN	KLINGER J. V	linger	)							
Date/Time		Date/T.	-	_	) 0								



#### **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	Н	0.0	<u>A5606683471</u>	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 perservatives 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?

Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090257-02</u> 614172 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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	То	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



Internal Chain of Custody Report

**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	То	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	То	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	То	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	То	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



Internal Chain of Custody Report

**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	То	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	То	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	То	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	То	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



Microbac Laboratories Inc.

00109251

Internal Chain of Custody Report

**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	То	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

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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on September 16, 2009.

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 Biulding, Houston, TX, 77042

This report was certified on September 16, 2009.

State of origin: Texas

D & Vankerberg

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

QAPP: Microbac OVD

This report contains a total of 63 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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

Phone: 800.373.4071 Fax: 740.373.4835

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LOOK CLOSER, GO FURTHER, DO MORE

## 00109254

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

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# 1.0 Introduction

#### **Laboratory Data Package Cover Page**

00109256

A1

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

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

R10 Other problems or anomalies.

RG-366/TRRP-13 December 2002

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 repsonding 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 trus.

DEANNA I. HESSON	Damalpsson	Conventional Lab Supervisor	September 16, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

Page 5

#### 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup			<b>√</b>		
steps?					
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>001</del> 0	<del>)925</del>
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>\</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>\</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies			-		
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>\</b>				
Were all necessary corrective actions performed for the reported data?	<b>1</b>				
Was applicable and available technology used to lower the SQL minimize the matrix	•		<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			· √		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
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?			<b>V</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>			<b>√</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):			•		
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation			-		
Did dual column confirmation results meet the method-required QC?			<b>V</b>		
Tentatively identified compounds (TICs):			•		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>V</b>		
Interference Check Sample (ICS) results:			•		
Were percent recoveries within method QC limits?			<b>V</b>		
Serial dilutions, post digestion spikes, and method of standard additions			•		
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>	+	
method?			•		
Method detection limit (MDL) studies				+	
Was a MDL study performed for each reported analyte?			<b>√</b>	+	
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>▼</b>	+	
Proficiency test reports:			<b>,</b>	1	
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>	1	
evaluation studies?			"		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>)01</del> 0	925
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			<b>√</b>		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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



00109264

Microbac Laboratories

Case Narrative

Generated at 09:11 on 2009-09-16

**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.

00109265

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.

Approved By: Michal Column

#### LABORATORY REPORT

L09090276

00109266

09/16/09 11:27

Submitted By

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

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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1490969
Report generated: 09/16/2009 11:27

Microbac

1 OF 1

MICTODAC LADOTACOTTES INC.

Report Number: L09090276

Report Date : September 16, 2009

00109267

Sample Number:L09090276-01 PrePrep Method:NONE In

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

1 of 6

MICIODAC LABORATORIES INC.

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

2 of 6

MICTODAC LADOTACOTTES INC.

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

3 of 6

MICIODAC LABORATORIES INC.

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

4 of 6

MICTODAC Laboratories inc.

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

5 of 6

MICTODAC LADOTACOTTES INC.

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

#### **Example 8270 Calculations**

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

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

	10 - [(100) (010) ]/ [(100) (000)]	<u>Example</u>
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)]

		<b>Example</b>
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)]

	<u>Example</u>
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
$Cd = (Cx) (100)/PCT_S$	<b>1153.525</b> ug/kg

<sup>\*</sup> 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 00109275

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 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

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

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

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

#### Step 4: Solve for analyte concentration Cx

Cx = ( Cis )( 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 quantiation 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

## 00109276

#### Microbac Laboratories Inc. Instrument Run Log

Instrument: Analyst1: Method:	WTD	Analyst2:	082609_WTD.TXT NA HPLC06	Rev: <u>0</u>
Maintenance Log ID:	29922 Column 1 ID: KP-RPPX250		Column 2 ID: NA	

Column 2 ID: NA	_	KP-RPPX250		Maril amarina
			310493	Workgroups:
Calibration STD WG310580	IA	Surrogate STD:	COA14015	Internal STD:
			Comments:	
Calibration STD WG310580	IA	Surrogate STD:	COA14015	

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

28-AUG-09 Approved:

# Microbac Laboratories Inc. Instrument Run Log

00109277

Instrum Analy Met			Analyst2:	091509_WTD.TXT NA HPLC06	Rev: <u>0</u>	
Maintenance Loç		: KP-RPPX250		Column 2 ID: NA		
Workgroups: 312153						
Internal STD: COA14	)15	Surrogate STD:	NA	Ca	alibration 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
---------------------------------

Page: 1 Approved: 16-SEP-0

16-SEP-09 Mikel Calum

Checklist ID: 41221

# Microbac Laboratories Inc. Data Checklist

00109278

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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA
Recoveries	NA NA
%RPD	NA 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 NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA 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
Social y Neviewer	IVIDO

Primary Reviewer:

Secondary Reviewer: 28-AUG-2009

Wader De S Michel Colum

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-28-2009 08:33:35

Checklist ID: 41748

# Microbac Laboratories Inc. Data Checklist

00109279

Date:	<u>15-SEP-2009</u>
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	30153
alytical 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 NA
Alternate source standard (ICV) % Difference	NA 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 NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	NA NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA 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
	11.12
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

Wader & Michal Carlin

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-16-2009 08:36:53

Microbac Laboratories Inc.

## HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109280

Analytical Method: 6850

Login Number: L09090276

AAB#: WG312153

	ID	Date	TCLP	Time	Max	Q	Extract	Time	Max	Q	Run	Time	Max	Q
Client ID		Collected	Date	Held	Hold		Date	Held	Hold		Date	Held	Hold	
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

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1490592 Report generated 09/16/2009 09:06

Microbac ®

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### 00109281

#### METHOD BLANK SUMMARY

Login Number:L09090276

Blank File ID:1LM.LM00777

Prep Date:09/15/09 13:18

Analyzed Date:09/15/09 14:16

Work Group: WG312153

Blank Sample ID: WG312153-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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



## Microbac Laboratories Inc. METHOD BLANK REPORT

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.974	1.95	0.974	1	υ

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



## Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

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			

Ama laste a	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	
Analytes	Known	Found	% REC	Known	Found	% REC	*RPD	Limits	шис	Q
Perchlorate	1.98	2.12	107	1.96	2.06	105	3.13	80 - 120	15	

LCS\_LCS2 - Modified 03/06/2008 PDF File ID: 1490489 Report generated: 09/16/2009 09:07

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109284

Login Number: L09090276

Analytical Method: 6850

ICAL Workgroup: WG310580

Instrument ID:<u>LCMS1</u>
Initial Calibration Date:<u>26-AUG-09 12:56</u>
Column ID:<u>F</u>

Analyte	AVG RF	% RSD	LINEAR (R <sup>2</sup>	QUAD(R2)
Perchlorate	1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum

INT\_CAL - Modified 03/06/2008

PDF File ID: 1490593

Report generated 09/16/2009 09:08

Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109285

Login Number: L09090276
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

	WG310580-02			WG310580-03			WG310580-04		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109286

Login Number: L09090276
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

	WG310580-05			WG310580-06			WG310580-07		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109287

Login Number: L09090276
Analytical Method: 6850

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

Column	ID:F	

	WG310580-08				
Analyte	CONC RESP RF				
Perchlorate	10.0	716000.000	1.484		

INT\_CAL - Modified 03/06/2008

PDF File ID: 1490593

Report generated 09/16/2009 09:08



### Microbac Laboratories Inc. ALTERNATE SOURCE CALIBRATION REPORT

00109288

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	<u> </u>

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

<sup>\*</sup> Exceeds %D Limit

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1490609 Report generated 09/16/2009 09:08



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

00109289

 Login Number:
 LO9090276
 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	υ

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:1490492 Report generated 09/16/2009 09:09



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1490492 Report generated 09/16/2009 09:09



### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

\* Exceeds %D Criteria

Matrix:SOIL

CCV - Modified 03/05/2008 PDF File ID:1490491 Report generated 09/16/2009 09:08



### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds %D Criteria

Microbac

CCV - Modified 03/05/2008 PDF File ID:1490491 Report generated 09/16/2009 09:08 Microbac Laboratories Inc.

QCMRL SAMPLE

00109293

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1490490 Report generated 09/16/2009 09:07

Microbac Laboratories Inc.
QCMRL SAMPLE

00109294

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1490490 Report generated 09/16/2009 09:07



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109295

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 - 018LP

Underline = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1490493
Report generated 09/16/2009 09:09

## 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1490968
Report generated: 09/16/2009 11:27

Microbac

1 OF 1

Report Number: L09090276

Report Date : September 16, 2009

00109300

Sample Number: L09090276-01 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLV0FFL(8) Prep Method: D2216-90 Prep Date: 09/16/2009 08:32 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG312185
Collect Date: 09/12/2009 13:00 Analyst:CPD Dilution:1 Run Date: 09/16/2009 08:32 File ID: B1.312185-0101

Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 78.7 1.00 1.00

> 6 of

MICIODAC LADOTACOTTES INC.

Report Number: L09090276

Report Date : September 16, 2009

00109301

Sample Number:L09090276-02 PrePrep Method:NONE Instrument:BAL001

 Client ID: 04VLV0FW-W
 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 13:05
 Dilution: 1
 File ID: B1.312185-0102

 Analyte
 CAS. Number
 Result
 Qual
 FQL
 SDL

 Percent Solids
 10-02-6
 79.8
 1.00
 1.00

2 of 6

Report Number: L09090276

Report Date : September 16, 2009

00109302

Sample Number: L09090276-03 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLV0FW-E Prep Method: D2216-90 Prep Date: 09/16/2009 08:32 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst:CPD Dilution:1 Run Date: 09/16/2009 08:32 File ID: B1.312185-0103

Workgroup Number: WG312185
Collect Date: 09/12/2009 13:10 Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 73.8 1.00 1.00

> 6 of

Report Number: L09090276

Report Date : September 16, 2009

00109303

Sample Number: L09090276-04
Client ID: 04VLV0FW-E-QC PrePrep Method:NONE Instrument: BAL001

Prep Date: 09/16/2009 08:32
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90 Workgroup Number: WG312185
Collect Date: 09/12/2009 13:10 Analyst:CPD Dilution:1 Run Date: 09/16/2009 08:32 File ID: B1.312185-0104

Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	77.5		1.00	1.00

6 of

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
Collect Date: 09/12/2009 13:15 Analyst:CPD Dilution:1 Run Date: 09/16/2009 08:32 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

> 5 6 of

Report Number: L09090276

Report Date : September 16, 2009

00109305

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09090276-06
Client ID: 04VLV0FW-N Prep Method: D2216-90 Prep Date: 09/16/2009 08:32 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG312185
Collect Date: 09/12/2009 13:20 Analyst:CPD Dilution:1 Run Date: 09/16/2009 08:32 File ID: B1.312185-0106

Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	77.7		1.00	1.00

6 of

### 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109307

Workgroup (AAB#):WG312185 Analyst:CPD ADT(on):09/15/2009 13:00
Method:D2216-90 Instrument:BAL001 ADT(off):09/16/2009 08:32

SOP: <u>K0003</u> Rev: 9

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: Lebick Dis

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1490154
Report generated: 09/16/2009 08:36



## 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing September 16, 2009

### Microbac Laboratories Inc. List of Valid Qualifiers September 16, 2009

00109310

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



COC NO. 090309-01

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

00109311

**Contact : Stephanie Mossburg** 

Phone: 1-800-373-4071

(, ,					,				FIIO	110. 1-	000-57	3-407	'			
PM: Praveen Svrivastav Project Contact: Jennife Project Name: LHAAP-0 Project #: 117591-0009E	er Hoan 4	96.4588) g	TAT: 24 Hr Phone No: 7 Site: Confirm Location: Ka	nation S	ampling	(058)										24 HOUR TAT
Sampler Print: ALLEN WILLMORE (713) 247-9292	Sample	er Sign:	1		# of Containers	Perchlorate (6850)										Comments
Sample Number	Grab	Date	Time	Matrix									1			·
04VLVOFFL(8)	Х	9/12/2009	1300	Soil	1	Х										
04VLVOFW-W	х	9/12/2009	1305	Soil	1	Х		1				1				
04VLVOFW-E	х	9/12/2009	1310	Soil	1	Х										
04VLVOFW-E-QC	Х	9/12/2009	1310	Soil	1	Х								1		
04VLVOFW-S	Х	9/12/2009	1315	Soil	1	Х										
04VLVOFW-N	Х	9/12/2009	1320	Soil	1	Х						<u> </u>				
								*					1			
								3								1
															***************************************	
<u>.</u>																
Date/Time 9:14:09 Relinquished By:	~	_ = Rec	y: crobac OVI eived: 09/15 ROBIN KLINGI	/2009 09		•	al Instr		S	•			***************************************			
Date/Time		Daterrine		, ,	,											•

Page 60



### **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
I	0014044	Η	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 perservatives 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?

Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090276-02</u> 614678 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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	То	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



Internal Chain of Custody Report

**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	То	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	То	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



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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on September 23, 2009.

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 Biulding, Houston, TX, 77042

This report was certified on September 23, 2009.

David Vandenberg - Managing Director

i & Vanke berg

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.





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 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
Stephanic Mossburg

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA . ROBERTS	hJeanna Koberts	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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
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?			<b>√</b>		
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?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>)01</del> 0	932
Analytical duplicate data				<b>.</b>	
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>1</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
nterference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
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?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
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?			<b>√</b>		
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?			<b>√</b>		
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?	<b>1</b>				
Were data associated with manual integrations flagged on the raw data?	'		<b>√</b>		
Dual column confirmation			•		
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Fentatively identified compounds (TICs):			•		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>1</b>		
Interference Check Sample (ICS) results:			•		
Were percent recoveries within method QC limits?			<b>-</b>		
Serial dilutions, post digestion spikes, and method of standard additions			•		
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b></b>		
method?			'		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>-</b>		
Proficiency test reports:			•		
	1	1	I	1	1
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>)01</del> 0	<del>1932</del> 3
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

## 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.

ID: 2993 Approved By: En C. Tum

00109330

L09090427

09/23/09 12:36

Submitted By

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

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	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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1495140
Report generated: 09/23/2009 12:36

Microbac

Microbac Laboratories inc.

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

Micropac Laboratories inc.

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

MICTODAC LABORACOTIES INC.

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

Microbac

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) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

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 Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

#### **Example Calculation - Water:**

Slope from curve, m: 1.45
Intercept from curve, b: 0
Response of analyte, Rx: 12600
Response of Internal Standard , Ristd: 226000
Concentration of IS, Cistd (ug/L): 5.00

Response Ratio: 0.06

Amount Ratio: 0.04

Analyte Concentration, Cx (ug/L): 0.2

#### **Example Calculation - Soil:**

Analyte Concentration, Cx (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

## 00109340

## Microbac Laboratories Inc. Instrument Run Log

	Instrument: Analyst1: Method:			Analyst2:	082609_WTD.TXT NA HPLC06	Rev	: <u>0</u>
Maint	tenance Log ID:	29922					
Workgroups:	310493	Column 1 ID:	KP-RPPX250		Column 2 ID: N	IA	
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

28-AUG-09 Mila Calan



## 00109341

## Microbac Laboratories Inc. Instrument Run Log

Instrument:	LCMS1	Dataset:	092209_WTD.TXT	
Analyst1:	WTD	Analyst2:	NA	
Method:	6850	SOP:	HPLC06	Rev: <u>0</u>
Maintenance Log ID:	30240			
Workgroups: 312679, 312708	Column 1 ID: KP-RPPX250		Column 2 ID: NA	

COA14015 Surrogate STD: NA Calibration STD \_\_\_\_\_\_

Comments:

Internal STD:

2         1LM.LM00882         WG312681-02 1.0ug/L CCV         1         1         STD35408         09/22/09 13:           3         1LM.LM00883         WG312679-05 0.2ug/L QCMRL         7         1         STD35408         09/22/09 14:           4         1LM.LM00884         WG312679-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 14:           5         1LM.LM00885         WG312679-02 Z.0ug/kg LCS         7         1         STD35408         09/22/09 14:           6         1LM.LM00886         WG312679-02 Z.0ug/kg LCSD         7         1         STD35408         09/22/09 14:           7         1LM.LM00887         WG312679-04 2.0ug/kg LCSD         7         1         STD35408         09/22/09 14:           8         1LM.LM00888         L09090427-03 A 1000X         7         1000         09/22/09 15:           10         1LM.LM00890         L09090427-03 A 1000X         7         1000         09/22/09 15:           11         1LM.LM00891         L09090427-05 A 1000X         7         1000         09/22/09 15:           12         1LM.LM00892         L09090427-05 A 1000X         7         1000         09/22/09 16:           13         1LM.LM000893         L09090427-05 A 1000X         7 <th>Seq.</th> <th>File ID</th> <th>Sample Information</th> <th>Mat</th> <th>Dil</th> <th>Reference</th> <th>Date/Time</th>	Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
3 1LM.LM00883 WG312679-05 0.2ug/L OCMRL 7 1 STD35408 09/22/09 13: 4 1LM.LM00884 WG312679-01 2.0ug/kg MCT/ICS 7 1 STD35408 09/22/09 14: 5 1LM.LM00885 WG312679-02 MET BLANK 7 1 09/22/09 14: 6 1LM.LM00886 WG312679-03 2.0ug/kg LCS 7 1 STD35408 09/22/09 14: 7 1LM.LM00887 WG312679-04 2.0ug/kg LCSD 7 1 STD35408 09/22/09 14: 8 1LM.LM00888 L09090427-01 A 1000X 7 1000 09/22/09 14: 9 1LM.LM00889 L09090427-02 A 1000X 7 1000 09/22/09 15: 10 1LM.LM00890 L09090427-03 A 1000X 7 1000 09/22/09 15: 11 1LM.LM00891 L09090427-04 A 1000X 7 1000 09/22/09 15: 12 1LM.LM00891 L09090427-05 A 1000X 7 1000 09/22/09 15: 13 1LM.LM00892 L09090427-06 A 1000X 7 1000 09/22/09 15: 14 1LM.LM00893 L09090427-06 A 1000X 7 1000 09/22/09 15: 15 1LM.LM00894 WG312681-03 1.0ug/L CCV 1 1 STD35408 09/22/09 16: 16 1LM.LM00895 WG312681-04 CCB 1 1 1 STD35408 09/22/09 16: 16 1LM.LM00896 WG312681-04 CCB 1 1 1 09/22/09 16: 17 1LM.LM00897 L09090427-07 A 1000X 7 1000 09/22/09 16: 18 1LM.LM00898 L09090427-07 A 1000X 7 1000 09/22/09 16: 19 1LM.LM00899 L09090427-07 A 1000X 7 1000 09/22/09 16: 20 1LM.LM00896 WG312681-04 CCB 1 1 1 09/22/09 17: 21 1LM.LM00899 L09090427-07 A 1000X 7 1000 09/22/09 17: 22 1LM.LM00899 L09090427-07 A 100X 7 100 09/22/09 17: 23 1LM.LM00890 L09090427-07 A 100X 7 10 09/22/09 17: 24 1LM.LM00890 L09090427-07 A 100X 7 10 09/22/09 17: 25 1LM.LM00900 L09090427-07 A 100X 7 10 09/22/09 17: 26 1LM.LM00900 L09090427-07 A 10X 7 10 09/22/09 17: 27 1LM.LM00900 L09090427-07 A 10X 7 10 09/22/09 17: 28 1LM.LM00900 L09090427-07 A 10X 7 10 09/22/09 17: 29 1LM.LM00900 L09090427-07 A 10X 7 10 09/22/09 17: 20 1LM.LM00900 L09090427-07 A 10X 7 10 09/22/09 17: 21 1LM.LM00900 WG312681-05 L0ug/L CCV 1 1 1 STD35408 09/22/09 17: 22 1LM.LM00900 WG312681-05 CCB 1 1 1 STD35408 09/22/09 19: 24 1LM.LM00900 WG312681-05 CCB 1 1 1 STD35408 09/22/09 19: 25 1LM.LM00900 WG312681-05 CCB 1 1 1 STD35408 09/22/09 19: 26 1LM.LM00900 WG312681-05 CCB 1 1 STD35408 09/22/09 19: 27 1LM.LM00900 WG312681-05 CCB 1 1 STD35408 09/22/09 19: 28 1LM.LM00900 WG312681-05 CCB 1 1 STD35408 09/22/09 20: 31	1	1LM.LM00881	WG312681-01 CCB	1	1		09/22/09 13:18
4         1LM.LM00884         WG312679-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 14:           5         1LM.LM00885         WG312679-02 MET BLANK         7         1         STD35408         09/22/09 14:           6         1LM.LM00886         WG312679-03 2.0ug/kg LCS         7         1         STD35408         09/22/09 14:           7         1LM.LM00887         WG312679-04 2.0ug/kg LCSD         7         1         STD35408         09/22/09 14:           8         1LM.LM00888         L09990427-01 A 1000X         7         1000         09/22/09 14:           9         1LM.LM00889         L09090427-02 A 1000X         7         1000         09/22/09 15:           10         1LM.LM00891         L09090427-03 A 1000X         7         1000         09/22/09 15:           11         1LM.LM00891         L09090427-05 A 1000X         7         1000         09/22/09 15:           12         1LM.LM00893         L09090427-05 A 1000X         7         1000         09/22/09 16:           13         1LM.LM00893         L09090427-05 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00893         WG312681-03 1.0ug/L CCV         1         1         STD35408	2	1LM.LM00882	WG312681-02 1.0ug/L CCV	1	1	STD35408	09/22/09 13:32
5         1LM.LM00885         WG312679-02 MET BLANK         7         1         09/22/09 14:           6         1LM.LM00886         WG312679-03 2.0ug/kg LCS         7         1         STD35408         09/22/09 14:           7         1LM.LM00887         WG312679-04 2.0ug/kg LCSD         7         1         STD35408         09/22/09 14:           8         1LM.LM00888         L09090427-01 A 1000X         7         1000         09/22/09 15:           9         1LM.LM00890         L09090427-02 A 1000X         7         1000         09/22/09 15:           10         1LM.LM00891         L09090427-03 A 1000X         7         1000         09/22/09 15:           11         1LM.LM00891         L09090427-04 A 1000X         7         1000         09/22/09 15:           12         1LM.LM00892         L09090427-05 A 1000X         7         1000         09/22/09 15:           13         1LM.LM00893         L09090427-06 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312681-04 CCB         1         1         1         STD35408         09/22/09 16: </td <td>3</td> <td>1LM.LM00883</td> <td>WG312679-05 0.2ug/L QCMRL</td> <td>7</td> <td>1</td> <td>STD35408</td> <td>09/22/09 13:46</td>	3	1LM.LM00883	WG312679-05 0.2ug/L QCMRL	7	1	STD35408	09/22/09 13:46
6         1LM.LM00886         WG312679-03 2.0ug/kg LCSD         7         1         STD35408         09/22/09 14:           7         1LM.LM00887         WG312679-04 2.0ug/kg LCSD         7         1         STD35408         09/22/09 14:           8         1LM.LM00888         L09090427-01 A 1000X         7         1000         09/22/09 15:           9         1LM.LM00890         L09090427-02 A 1000X         7         1000         09/22/09 15:           10         1LM.LM00891         L09090427-03 A 1000X         7         1000         09/22/09 15:           11         1LM.LM00891         L09090427-05 A 1000X         7         1000         09/22/09 15:           12         1LM.LM00892         L09090427-06 A 1000X         7         1000         09/22/09 15:           13         1LM.LM00893         L09090427-06 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312681-04 CCB         1         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         STD35408         09/22/09 16	4	1LM.LM00884	WG312679-01 2.0ug/kg MCT/ICS	7	1	STD35408	09/22/09 14:01
7         1LM.LM00887         WG312679-04 2.0ug/kg LCSD         7         1         STD35408         09/22/09 14:           8         1LM.LM00888         L09090427-01 A 1000X         7         1000         09/22/09 15:           9         1LM.LM00889         L09090427-03 A 1000X         7         1000         09/22/09 15:           10         1LM.LM00891         L09090427-03 A 1000X         7         1000         09/22/09 15:           11         1LM.LM00891         L09090427-05 A 1000X         7         1000         09/22/09 15:           12         1LM.LM00893         L09090427-05 A 1000X         7         1000         09/22/09 16:           13         1LM.LM00893         L09090427-05 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312681-04 CCB         1         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         STD35408         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 16:	5	1LM.LM00885	WG312679-02 MET BLANK	7	1		09/22/09 14:15
8         1LM.LM00888         L09090427-01 A 1000X         7         1000         09/22/09 14:           9         1LM.LM00889         L09090427-02 A 1000X         7         1000         09/22/09 15:           10         1LM.LM00890         L09090427-03 A 1000X         7         1000         09/22/09 15:           11         1LM.LM00891         L09090427-05 A 1000X         7         1000         09/22/09 15:           12         1LM.LM00892         L09090427-06 A 1000X         7         1000         09/22/09 16:           13         1LM.LM00893         L09090427-06 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312681-04 CCB         1         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 100X         7         1000         09/22/09 17:           18         1LM.LM00898         L09090427-01 A 10X         7         10         09/22/09 18:           20         1LM.LM00900 <t< td=""><td>6</td><td>1LM.LM00886</td><td>WG312679-03 2.0ug/kg LCS</td><td>7</td><td>1</td><td>STD35408</td><td>09/22/09 14:29</td></t<>	6	1LM.LM00886	WG312679-03 2.0ug/kg LCS	7	1	STD35408	09/22/09 14:29
9	7	1LM.LM00887	WG312679-04 2.0ug/kg LCSD	7	1	STD35408	09/22/09 14:44
10	8	1LM.LM00888	L09090427-01 A 1000X	7	1000		09/22/09 14:58
11         1LM.LM00891         L09090427-04 A 1000X         7         1000         09/22/09 15:           12         1LM.LM00892         L09090427-05 A 1000X         7         1000         09/22/09 16:           13         1LM.LM00893         L09090427-06 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312679-06 0.2ug/L QCMRL         7         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 16:           18         1LM.LM00898         L09090427-07 A 100X         7         10         09/22/09 17:           19         1LM.LM00909         L09090427-03 A 10X         7         10         09/22/09 17:           20         1LM.LM00900         L09090427-04 A 100X         7         10         09/22/09 18:           22         1LM.LM00901         L09090427-03 A         7         10         09/22/09 19:           23         1LM.LM00902 <td< td=""><td>9</td><td>1LM.LM00889</td><td>L09090427-02 A 1000X</td><td>7</td><td>1000</td><td></td><td>09/22/09 15:12</td></td<>	9	1LM.LM00889	L09090427-02 A 1000X	7	1000		09/22/09 15:12
12         1LM.LM00892         L09090427-05 A 1000X         7         1000         09/22/09 15:           13         1LM.LM00893         L09090427-06 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312679-06 0.2ug/L QCMRL         7         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 17:           18         1LM.LM00898         L09090427-01 A 10X         7         10         09/22/09 17:           20         1LM.LM00900         L09090427-03 A 10X         7         10         09/22/09 18:           21         1LM.LM00901         L09090427-04 A 100X         7         10         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00904         L09090427-03 A         7         1         09/22/09 18:           25         1LM.LM00906         WG312	10	1LM.LM00890	L09090427-03 A 1000X	7	1000		09/22/09 15:27
13         1LM.LM00893         L09090427-06 A 1000X         7         1000         09/22/09 16:           14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312679-06 0.2ug/L QCMRL         7         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 17:           18         1LM.LM00898         L09090427-01 A 10X         7         10         09/22/09 17:           19         1LM.LM00999         L09090427-03 A 10X         7         10         09/22/09 18:           20         1LM.LM00901         L09090427-04 A 100X         7         100         09/22/09 18:           21         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           22         1LM.LM00903         L09090427-01 A         7         1         09/22/09 18:           23         1LM.LM00904         L09090427-03 A         7         1         STD35408         09/22/09 19:           25         1LM.LM00906	11	1LM.LM00891	L09090427-04 A 1000X	7	1000		09/22/09 15:41
14         1LM.LM00894         WG312681-03 1.0ug/L CCV         1         1         STD35408         09/22/09 16:           15         1LM.LM00895         WG312679-06 0.2ug/L QCMRL         7         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 17:           18         1LM.LM00898         L09090427-02 A 10X         7         10         09/22/09 17:           20         1LM.LM00990         L09090427-03 A 10X         7         10         09/22/09 18:           21         1LM.LM00901         L09090427-04 A 100X         7         10         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-01 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         STD35408         09/22/09 19:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26	12	1LM.LM00892	L09090427-05 A 1000X	7	1000		09/22/09 15:56
15         1LM.LM00895         WG312679-06 0.2ug/L QCMRL         7         1         STD35408         09/22/09 16:           16         1LM.LM00896         WG312681-04 CCB         1         1         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 17:           18         1LM.LM00898         L09090427-01 A 10X         7         10         09/22/09 17:           19         1LM.LM00899         L09090427-02 A 10X         7         10         09/22/09 17:           20         1LM.LM00900         L09090427-03 A 10X         7         10         09/22/09 18:           21         1LM.LM00901         L09090427-04 A 100X         7         10         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-03 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         STD35408         09/22/09 19:           26         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           27         1LM.LM00906	13	1LM.LM00893	L09090427-06 A 1000X	7	1000		09/22/09 16:10
16         1LM.LM00896         WG312681-04 CCB         1         1         09/22/09 16:           17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 17:           18         1LM.LM00898         L09090427-01 A 10X         7         10         09/22/09 17:           19         1LM.LM00899         L09090427-02 A 10X         7         10         09/22/09 17:           20         1LM.LM00900         L09090427-03 A 10X         7         10         09/22/09 18:           21         1LM.LM00901         L09090427-04 A 100X         7         10         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-03 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         09/22/09 18:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312681-06 CCB         1         1         STD35408         09/22/09 19:           28         1LM.LM00907         WG312708-01 2.0ug/kg MCT/ICS	14	1LM.LM00894	WG312681-03 1.0ug/L CCV	1	1	STD35408	09/22/09 16:24
17         1LM.LM00897         L09090427-07 A 1000X         7         1000         09/22/09 17:           18         1LM.LM00898         L09090427-01 A 10X         7         10         09/22/09 17:           19         1LM.LM00899         L09090427-02 A 10X         7         10         09/22/09 17:           20         1LM.LM00900         L09090427-03 A 10X         7         10         09/22/09 18:           21         1LM.LM00901         L09090427-04 A 100X         7         100         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-01 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         09/22/09 18:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           28         1LM.LM00907         WG312681-06 CCB         1         1         STD35408         09/22/09 19:           29         1LM.LM00909	15	1LM.LM00895	WG312679-06 0.2ug/L QCMRL	7	1	STD35408	09/22/09 16:39
18         1LM.LM00898         L09090427-01 A 10X         7         10         09/22/09 17:           19         1LM.LM00899         L09090427-02 A 10X         7         10         09/22/09 17:           20         1LM.LM00900         L09090427-03 A 10X         7         10         09/22/09 18:           21         1LM.LM00901         L09090427-04 A 100X         7         100         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-03 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         STD35408         09/22/09 19:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           27         1LM.LM00907         WG312681-06 CCB         1         1         STD35408         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 20:	16	1LM.LM00896	WG312681-04 CCB	1	1		09/22/09 16:53
19         1LM.LM00899         L09090427-02 A 10X         7         10         09/22/09 17:           20         1LM.LM00900         L09090427-03 A 10X         7         10         09/22/09 17:           21         1LM.LM00901         L09090427-04 A 100X         7         100         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-01 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         09/22/09 18:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           27         1LM.LM00907         WG312681-06 CCB         1         1         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           3	17	1LM.LM00897	L09090427-07 A 1000X	7	1000		09/22/09 17:08
20         1LM.LM00900         L09090427-03 A 10X         7         10         09/22/09 17:           21         1LM.LM00901         L09090427-04 A 100X         7         100         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-01 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         09/22/09 18:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           27         1LM.LM00907         WG312681-06 CCB         1         1         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	18	1LM.LM00898	L09090427-01 A 10X	7	10		09/22/09 17:22
21         1LM.LM00901         L09090427-04 A 100X         7         100         09/22/09 18:           22         1LM.LM00902         L09090427-07 A 10X         7         10         09/22/09 18:           23         1LM.LM00903         L09090427-01 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         09/22/09 18:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           27         1LM.LM00907         WG312681-06 CCB         1         1         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 19:           29         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           30         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408 </td <td>19</td> <td>1LM.LM00899</td> <td>L09090427-02 A 10X</td> <td>7</td> <td>10</td> <td></td> <td>09/22/09 17:36</td>	19	1LM.LM00899	L09090427-02 A 10X	7	10		09/22/09 17:36
22       1LM.LM00902       L09090427-07 A 10X       7       10       09/22/09 18:         23       1LM.LM00903       L09090427-01 A       7       1       09/22/09 18:         24       1LM.LM00904       L09090427-03 A       7       1       09/22/09 18:         25       1LM.LM00905       WG312681-05 1.0ug/L CCV       1       1       STD35408       09/22/09 19:         26       1LM.LM00906       WG312679-07 0.2 ug/L QCMRL       7       1       STD35408       09/22/09 19:         27       1LM.LM00907       WG312681-06 CCB       1       1       09/22/09 19:         28       1LM.LM00908       WG312708-01 2.0ug/kg MCT/ICS       7       1       STD35408       09/22/09 19:         29       1LM.LM00909       WG312708-02 MET BLANK       7       1       STD35408       09/22/09 20:         30       1LM.LM00910       L09080563-08 2.0ug/kg DOC1       7       1       STD35408       09/22/09 20:         31       1LM.LM00911       L09080563-09 2.0ug/kg DOC1       7       1       STD35408       09/22/09 20:	20	1LM.LM00900	L09090427-03 A 10X	7	10		09/22/09 17:51
23         1LM.LM00903         L09090427-01 A         7         1         09/22/09 18:           24         1LM.LM00904         L09090427-03 A         7         1         09/22/09 18:           25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           27         1LM.LM00907         WG312681-06 CCB         1         1         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 19:           29         1LM.LM00909         WG312708-02 MET BLANK         7         1         STD35408         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	21	1LM.LM00901	L09090427-04 A 100X	7	100		09/22/09 18:05
24       1LM.LM00904       L09090427-03 A       7       1       09/22/09 18:         25       1LM.LM00905       WG312681-05 1.0ug/L CCV       1       1       STD35408       09/22/09 19:         26       1LM.LM00906       WG312679-07 0.2 ug/L QCMRL       7       1       STD35408       09/22/09 19:         27       1LM.LM00907       WG312681-06 CCB       1       1       09/22/09 19:         28       1LM.LM00908       WG312708-01 2.0ug/kg MCT/ICS       7       1       STD35408       09/22/09 19:         29       1LM.LM00909       WG312708-02 MET BLANK       7       1       STD35408       09/22/09 20:         30       1LM.LM00910       L09080563-08 2.0ug/kg DOC1       7       1       STD35408       09/22/09 20:         31       1LM.LM00911       L09080563-09 2.0ug/kg DOC1       7       1       STD35408       09/22/09 20:	22	1LM.LM00902	L09090427-07 A 10X	7	10		09/22/09 18:20
25         1LM.LM00905         WG312681-05 1.0ug/L CCV         1         1         STD35408         09/22/09 19:           26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           27         1LM.LM00907         WG312681-06 CCB         1         1         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 19:           29         1LM.LM00909         WG312708-02 MET BLANK         7         1         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	23	1LM.LM00903	L09090427-01 A	7	1		09/22/09 18:34
26         1LM.LM00906         WG312679-07 0.2 ug/L QCMRL         7         1         STD35408         09/22/09 19:           27         1LM.LM00907         WG312681-06 CCB         1         1         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 19:           29         1LM.LM00909         WG312708-02 MET BLANK         7         1         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	24	1LM.LM00904	L09090427-03 A	7	1		09/22/09 18:48
27         1LM.LM00907         WG312681-06 CCB         1         1         1         09/22/09 19:           28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 19:           29         1LM.LM00909         WG312708-02 MET BLANK         7         1         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	25	1LM.LM00905	WG312681-05 1.0ug/L CCV	1	1	STD35408	09/22/09 19:03
28         1LM.LM00908         WG312708-01 2.0ug/kg MCT/ICS         7         1         STD35408         09/22/09 19:           29         1LM.LM00909         WG312708-02 MET BLANK         7         1         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	26	1LM.LM00906	WG312679-07 0.2 ug/L QCMRL	7	1	STD35408	09/22/09 19:17
29         1LM.LM00909         WG312708-02 MET BLANK         7         1         09/22/09 20:           30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	27	1LM.LM00907	WG312681-06 CCB	1	1		09/22/09 19:31
30         1LM.LM00910         L09080563-08 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:           31         1LM.LM00911         L09080563-09 2.0ug/kg DOC1         7         1         STD35408         09/22/09 20:	28	1LM.LM00908	WG312708-01 2.0ug/kg MCT/ICS	7	1	STD35408	09/22/09 19:46
31 1LM.LM00911 L09080563-09 2.0ug/kg DOC1 7 1 STD35408 09/22/09 20:	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:	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:	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 1 STD35408 09/22/09 21:	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:	35	1LM.LM00915	WG312708-04 0.2ug/L QCMRL	7	1	STD35408	09/22/09 21:26

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Run Log ID: 30258

## 00109342

## Microbac Laboratories Inc. Instrument Run Log

	Instrument:	LCMS1	Dataset:	092209_	WTD.TX	KT	_	
	Analyst1:	WTD	Analyst2:	NA			_	
	Method:	6850	SOP:	HPLC06			Rev: 0	_
		00040						
	Maintenance Log ID:	30240						
		olumn 1 ID: KP-RPPX250		Colun	nn 2 ID:	NA		
Workg	oups: 312679, 312708							
Internal	STD: <u>COA14015</u>	Surrogate STD:	NA					
C 1	Elle ID	Canania lafanna	-4:		N 4 = 4	Dil	Deference	Data/Tima
Seq.	File ID	Sample Information	ation		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	
			1	
9	Χ	10	Analyzed too dilute	
10	Χ	10	Analyzed too dilute	
11	Х	100	Analyzed too dilute	
17	Х	10	Analyzed too dilute	
18	Х	1	Analyzed too dilute	
			1 -	
20	Х	1	Analyzed too dilute	
			1 -	
28				
	Chad Da	avis Sam	l ple Prep DOC.	
29	J		1	
	Chad D	avis Sam	ple Prep DOC.	
30	Jilaa Di	avio Carri	T	
	Chod D	ovic Som	ple Prep DOC.	
31	Jilau Di	avis Salli	ріє г ієр DOC. Т	
	26-45	d- C	ala Programa	
	onad Da	avis Sam	ple Prep DOC.	
32				
	Chad Da	avis Sam	ple Prep DOC.	
33				
	Chad Da	avis Sam	ple Prep DOC.	

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23-SEP-09



## Microbac Laboratories Inc. Data Checklist

00109343

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 NA
Surrogate recoveries	NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA NA
Reruns	X
Manual integrations	NA NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA NA
Check for completeness	X
Primary Reviewer	WTD
	5
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

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CHECKLIST1 - Modified 03/05/2008

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



## Microbac Laboratories Inc. Data Checklist

00109344

Date:	22-SEP-2009
Analyst:	WTD
Analyst:	NA
Method:	
Instrument:	LCMS1
Curve Workgroup:	NA NA

Analytical Workgroups: 312679, 312708

Runlog ID: 30258

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 NA
Average RF	NA NA
Linear regression or higher order curve	NA NA
Alternate source standard (ICV) % Difference	NA 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 NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA 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	Х
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

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CHECKLIST1 - Modified 03/05/2008

Generated: SEP-23-2009 09:17:30



Microbac Laboratories Inc.

## HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109345

Analytical Method: 6850

Login Number: L09090427

ux Q Run Time Max

AAB#: WG312679

	ID	Date	TCLP	Time	Max	Q	Extract	Time	Max	Q	Run	Time	Max	. ~
Client ID		Collected	Date	Held	Hold		Date	Held	Hold		Date	Held	Hold	
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	

<sup>\* =</sup> SEE PROJECT QAPP REQUIREMENTS

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1494784 Report generated 09/23/2009 09:32

Microbac ®

## 00109346

#### METHOD BLANK SUMMARY

Login Number:L09090427

Blank File ID:1LM.LM00885

Prep Date:09/22/09 13:18

Analyzed Date:09/22/09 14:15

Work Group: WG312679

Blank Sample ID: WG312679-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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

Report Name: BLANK\_SUMMARY
PDF File ID:1494614
Report generated 09/23/2009 09:32



## Microbac Laboratories Inc. METHOD BLANK REPORT

00109347

Analytes	SDL PQL		Concentration	Dilution	Qualifier	
Perchlorate	0.944	1.89	0.944	1	υ	

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



## Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109348

Login Number: L0909042	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	CS File ID:1LM.LM00886	Run Date: 09/22/2009 14:29
Sample ID:WG312679-04	CS2 File ID:1LM.LM00887	Run Date:09/22/2009 14:44

Analytes	LCs			LCS2		LCS2		%RPD	%Rec Limits	RPD Lmt	_
Analytes	Known	Found	% REC	Known	Found	% REC	* & RPD	Limits	Lime	Q	
Perchlorate	2.00	2.01	101	1.82	1.76	96.5	13.5	80 - 120	15		

LCS\_LCS2 - Modified 03/06/2008 PDF File ID: 1494616 Report generated: 09/23/2009 09:32

Microbac

Conductivity Probe Calibration Check: 1402 /1410 μs/cm

## Perchlorate Conductivity Check

Working MCT Level: /O, 000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
NG3/2679-01 MCT	10,190	NA
-02 B(L	7.8	
-03 LCS	Ce , 9	
-o4 LCSD	15.2	
L09090427-01A	6-9	
- 02	15.5	
-03	11.5	
-04	28.3	
-05	28.8	
~07 <sub>0</sub>	20.7	
-07	25.5	
W6-312708-01 TES	10,230	
WG 312708-02 BIK	8.3	
L09080563-08	9.8	
-09	10.4	
-10	10.9	
-11	12.60	<b>V</b>

Waslo T. Do Analyst

9-22-09 /17:50
Date/Time

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109350

Login Number: L09090427
Analytical Method: 6850
ICAL Workgroup: WG310580

Instrument ID:<u>LCMS1</u>
Initial Calibration Date:<u>26-AUG-09 12:56</u>
Column ID:F

Analyte	AVG RF	% RSD	LINEAR (R <sup>2</sup>	QUAD(R2)
Perchlorate	1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum

INT\_CAL - Modified 03/06/2008

PDF File ID: 1494785

Report generated 09/23/2009 09:34



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109351

Login Number: L09090427
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID:F

	WG310580-02			WG310580-03			WG310580-04		
Analyte	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: 1494785 Report generated 09/23/2009 09:34

Microbac ®

Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109352

Login Number: L09090427
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

	WG310580-05			WG310580-06			WG310580-07		
Analyte	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: 1494785 Report generated 09/23/2009 09:34

Microbac

Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109353

Login Number: L09090427
Analytical Method: 6850

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

Column ID:F

	WG310580-08				
Analyte	CONC	RESP	RF		
Perchlorate	10.0	716000.000	1.484		

INT\_CAL - Modified 03/06/2008 PDF File ID: 1494785 Report generated 09/23/2009 09:34

Microbac ®

## 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	

<sup>\*</sup> Exceeds %D Limit

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1494786 Report generated 09/23/2009 09:34



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1494619 Report generated 09/23/2009 09:34



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	RDL Concentration Quali	
Perchlorate	0.100	0.200	0.100	υ

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:1494619 Report generated 09/23/2009 09:34



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	~	
Perchlorate	0.100	0.200	0.100	υ

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:1494619 Report generated 09/23/2009 09:34



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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
 Analyst:WTD

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.967	ug/L	1.39	3.30	10	

<sup>\*</sup> Exceeds %D Criteria



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.02	ug/L	1.47	2.00	10	

<sup>\*</sup> Exceeds %D Criteria

Matrix:SOIL



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	0.909	ug/L	1.31	9.10	10	

<sup>\*</sup> Exceeds %D Criteria

Matrix:SOIL



Microbac Laboratories Inc.

QCMRL SAMPLE

00109361

 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		Limit	s	Q
Perchlorate	2.00	2.09	105	70	-	130	



Microbac Laboratories Inc.

QCMRL SAMPLE

00109362

 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

Analytes	Expected	Found	% Rec		Limits		Q
Perchlorate	2.00	1.98	99.0	70	-	130	



Microbac Laboratories Inc.

QCMRL SAMPLE

00109363

 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	



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109364

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 - 018LP

Underline = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1494620
Report generated 09/23/2009 09:34



# 2.2 General Chemistry Data

## 2.2.1 Percent Solids Data

## **2.2.1.1 Raw Data**

00109368

L09090427

09/23/09 12:36

Submitted By

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

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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1495139
Report generated: 09/23/2009 12:36

Report Number: L09090427

Report Date : September 23, 2009

00109369

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09090427-01 Client ID: 04CsWC2C Prep Method: D2216-90 Prep Date: 09/23/2009 08:34 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst: CPD

Workgroup Number: WG312680
Collect Date: 09/21/2009 14:15 Run Date: 09/23/2009 08:34 File ID: B1.312680-0101 Dilution: 1 Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	74.3		1.00	1.00

7 of

Report Number: L09090427

Report Date : September 23, 2009

00109370

Sample Number: L09090427-02
Client ID: 04CsFL05RE(14) PrePrep Method:NONE Instrument: BAL001

Prep Method: D2216-90 Prep Date: 09/23/2009 08:34 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG312680
Collect Date: 09/21/2009 14:35 Run Date: 09/23/2009 08:34 File ID: B1.312680-0102 Analyst: CPD

Dilution: 1 Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	75.1		1.00	1.00

7 of

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
Collect Date: 09/21/2009 14:45 Run Date: 09/23/2009 08:34 File ID: B1.312680-0103 Analyst: CPD

Dilution: 1 Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 74.4 1.00 1.00

> of 7 3

Report Number: L09090427

Report Date : September 23, 2009

00109372

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09090427-04
Client ID: 04VLVOFFL(6) Prep Method: D2216-90 Prep Date: 09/23/2009 08:34 Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG312680
Collect Date: 09/21/2009 15:20 Run Date: 09/23/2009 08:34 File ID: B1.312680-0104 Analyst: CPD Dilution: 1 Sample Tag: 01 Units:weight %

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 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLVOFW-W(1) Prep Method: D2216-90 Prep Date: 09/23/2009 08:34 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG312680
Collect Date: 09/21/2009 15:25 Run Date: 09/23/2009 08:34 File ID: B1.312680-0105 Analyst: CPD

Dilution: 1 Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 79.0 1.00 1.00

> 5 of 7

Report Number: L09090427

Report Date : September 23, 2009

00109374

Sample Number: L09090427-06 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLVOFW-N(1) Prep Method: D2216-90 Prep Date: 09/23/2009 08:34 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG312680
Collect Date: 09/21/2009 15:30 Run Date: 09/23/2009 08:34 File ID: B1.312680-0106 Analyst: CPD

Dilution: 1 Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 77.5 1.00 1.00

> of 7

Report Number: L09090427

Report Date : September 23, 2009

00109375

Sample Number: L09090427-07 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLVOFW-S(1) Prep Method: D2216-90 Prep Date: 09/23/2009 08:34 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG312680
Collect Date: 09/21/2009 15:35 Run Date: 09/23/2009 08:34 File ID: B1.312680-0107 Analyst: CPD

Dilution: 1 Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 76.9 1.00 1.00

> 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.

% Moisture = 100 - % Solids from 1.0 calculation

### 00109377

24.99

PERCENT SOLIDS

Workgroup (AAB#):WG312680 Analyst:CPD ADT(on):09/22/2009 12:44

SAMPLE NUMBER EMPTY PAN WT 1 WET WT 2 DRY WT 3A DRY WT 3B DRY WT 3C PERCENT SOLID PERCENT MOISTURE 1.28 L09090427-01 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 21.93 1.3 27.91 77.53 L09090427-07 1.29 20.8 16.29 76.88 WG312680-01 27.38 1.28 36.43 74.25 25.75

14.76

Analyst: Le buckel pris

75.01

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1494296

WG312680-02

1.28

19.25

Report generated: 09/23/2009 08:46



## 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	

### Microbac Laboratories Inc. List of Valid Qualifiers September 23, 2009

00109380

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an 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

PM: Praveen Svrivasta Project Contact: Jennit Project Name: LHAAP- Project #: 117591-0009	fer Hoang 04		TAT: 24 Hr Phone No: 7 Site: Confirm Location: Ka	nation Sa	ampling	6850)					24 HOUR TAT
Sampler Print: ALLEN WILLMORE (713) 247-9292	EN WILLMORE (5) 247-9292		# of Containers	Perchlorate (6850)					Comments		
Sample Number	Grab	Date	Time	Matrix							
04CSWC2C	Х	9/21/2009	1415	Soil	1	Х					
04CSFL05RE(14)	Х	9/21/2009	1435	Soil	1	Х					
04CSWD2E1	Х	9/21/2009	1445	Soil	1	Х					
04VLVOFFL(6)	Х	9/21/2009	1520	Soil	1	X					
04VLVOFW-W( 1 )	x	9/21/2009	1525	Soil	1	Х					
04VLVOFW-N( 1 )	X	9/21/2009	1530	Soil	1	Х					
04VLVOFW-S( 1)	X	9/21/2009	1535	Soil	11	X					
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Date/Time 9/21/09	17:50	Date/Time									
Relinquished By:			obac OVD ved: 09/22/2	ଜଣ ଜୟ: ସ	7	22100	0001818				
Date/Time		By: R	OBIN KLINGER								
			Pohr J. F	Linge	N						

Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090427-02</u> 616332 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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	То	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



Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090427-06</u> 616336 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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



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 Biulding, 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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on September 25, 2009.

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.

State of origin: Texas

in & Vanderberg

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

QAPP: Microbac OVD

This report contains a total of 62 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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 Password: demo

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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

Stephanic Mossburg

### **Laboratory Data Package Cover Page**

00109389

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA . ROBERTS	hJeanna Roberts	Analyst III	September 25, 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: 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
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?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
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?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	<del>^ ^ `</del>	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	0010	<del>)93</del> 9
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>V</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>1</b>		
Was the ICAL curve verified for each analyte?			<b>1</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>V</b></td><td></td><td></td></mdl?<>			<b>V</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>1</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>V</b>		
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>✓</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>V</b>		
Proficiency test reports:					<u> </u>
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>✓</b>		1
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>)01</del> 0	1939
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

### 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.

ID: 3016 Approved By: En C. Tum

### LABORATORY REPORT

L09090494

00109399

09/25/09 12:26

Submitted By

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

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: <u>389869/ 390836(GWTP)</u>

### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1496952
Report generated: 09/25/2009 12:26

Microbac

1 OF 1

Microbac Laboratories inc.

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

1 of 4

MICIODAC LADOLACOLLES INC.

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

2 of 4

Microbac Laboratories inc.

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

3 of 4

Micropac Laboratories inc.

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

 ${\tt Instrument:} \textbf{LCMS1}$ 

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

of

# 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) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

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 Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

#### **Example Calculation - Water:**

Slope from curve, m: 1.45
Intercept from curve, b: 0
Response of analyte, Rx: 12600

Response of Internal Standard , Ristd: 226000 Concentration of IS, Cistd (ug/L): 5.00

Response Ratio: 0.06 Amount Ratio: 0.04

Analyte Concentration, Cx (ug/L): 0.2

#### **Example Calculation - Soil:**

Analyte Concentration, Cx (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

### 00109406

### Microbac Laboratories Inc. Instrument Run Log

Instrument:	LCMS1	Dataset:	082609_WTD.TXT	
Analyst1:	WTD	Analyst2:	NA	
Method:	6850	SOP:	HPLC06	Rev: <u>0</u>
Maintenance Log ID:	29922			
Workgroups: 310493	Column 1 ID: KP-RPPX250		Column 2 ID: NA	

COA14015 Surrogate STD: NA Calibration STD WG310580

Comments:

Internal STD:

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
						1

Comments

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### 00109407

### Microbac Laboratories Inc. Instrument Run Log

	Instrument:	LCMS1		Dataset:	092409_WTD.TXT			
	Analyst1:	WTD		Analyst2:	NA			
	Method:	6850		SOP:	HPLC06		Rev: 0	
Main	tenance Log ID:	30272						
	(	Column 1 ID:	KP-RPPX250		Column 2 ID: N	JA		
Workgroups:	312867							
nternal 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	Х	10	Analyzed too dilute	
9	X	1		
10	X	1	Analyzed too dilute	
11	X	100	Analyzed too dilute	
18				
	Data no	t needed	l	

Page: 1 Approved: 25-SEP-09

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Checklist ID: 41221

### Microbac Laboratories Inc. Data Checklist

00109408

Date:	26-AUG-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	29811
alytical 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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA
Recoveries	NA NA
%RPD	NA 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 NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	X
Manual integrations	NA NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA 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
Social y Neviewer	IVIDO

Primary Reviewer:

Secondary Reviewer: 28-AUG-2009

Wader & Michal Carlin

CHECKLIST1 - Modified 03/05/2008

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

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Checklist ID: 41973

### Microbac Laboratories Inc. Data Checklist

00109409

Date:	24-SEP-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA NA
Runlog ID:	

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 X
Secondary Reviewer	ECL
Decoridal y Veniemei	EUL

Primary Reviewer:

Secondary Reviewer: 25-SEP-2009

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CHECKLIST1 - Modified 03/05/2008
Generated: SEP-25-2009 08:42:48

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### Microbac Laboratories Inc.

#### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109410

Analytical Method: 6850

Login Number: L09090494

ıe	Max	Q	Run	Time	Max	Q
.d	Hold		Date	Held	Hold	
	28		09/24/09	.1	28	

AAB#: WG312867

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

HOLD\_TIMES - Modified 03/06/2008 PDF File ID: 1496278
Report generated 09/25/2009 08:57



### 00109411

#### METHOD BLANK SUMMARY

Login Number: L09090494

Blank File ID: 1LM.LM00939

Prep Date: 09/24/09 13:00

Analyzed Date: 09/24/09 13:58

Work Group: WG312867

Blank Sample ID: WG312867-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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



### Microbac Laboratories Inc. METHOD BLANK REPORT

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.992	1.98	0.992	1	υ

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



### Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109413

Login	Number: L0909049	94		Analyst:WTD		Prep Method: 6850	
Instru	ment ID:LCMS1			Matrix:Soil		Method: 6850	
Workgroup	(AAB#): <u>WG31286</u> 7	7				Units:ug/kg	
	QC Key:STD			Lot #:STD35441			
Sample	ID:WG312867-03	LCS	File	ID: 1LM.LM00940	Run I	Date:09/24/2009 14:12	
Sample	ID:WG312867-04	LCS2	File	ID:1LM.LM00941	Run I	Date:09/24/2009 14:27	

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	
Analytes	Known	Found	% REC	Known	Found	% REC	*RPD	LIMICS	шис	Q
Perchlorate	1.94	2.00	103	2.00	2.04	102	2.04	80 - 120	15	

LCS\_LCS2 - Modified 03/06/2008 PDF File ID: 1496176 Report generated: 09/25/2009 08:57

Conductivity Probe
Calibration Check:
/// 0 | /1410 us/cm

### Perchlorate Conductivity Check

Working MCT Level:

10,000 μs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
mc7 <sub>tcs</sub>	10,230	
B14	6.8	
LCS	G.3	
LLSD	G . T	
L09090494-01A	5.(	
-JZ A	5.7	
_03 A	4.9	
-04 A	6 (	
	± '	

Wasle T. Sof

9-2409 /11:22 Date/Time

DCN#80846



Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109415

Login Number: L09090494

Analytical Method: 6850

ICAL Workgroup: WG310580

Instrument ID:<u>LCMS1</u>
Initial Calibration Date:<u>26-AUG-09 12:56</u>
Column ID:<u>F</u>

Analyte	AVG RF	% RSD	LINEAR (R2	QUAD(R2)
Perchlorate	1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum

INT\_CAL - Modified 03/06/2008

PDF File ID: 1496280

Report generated 09/25/2009 08:58

Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109416

Login Number: L09090494
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

		WG310580-02			WG310580-0	3	WG310580-04		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109417

Login Number: L09090494
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

		WG310580-05 WG310580-06 WG310580-07			WG310580-06		7		
Analyte	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: 1496280

Report generated 09/25/2009 08:58



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109418

Login Number: L09090494
Analytical Method: 6850

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

Column ID:F

_		WG310580-0	8
Analyte	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



### Microbac Laboratories Inc. ALTERNATE SOURCE CALIBRATION REPORT

00109419

Login Number: <u>L09090494</u>	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
TCal Workgroup:WG310580	Cal ID: LCMS1 - 26-AUG-0	9

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

<sup>\*</sup> Exceeds %D Limit

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1496281 Report generated 09/25/2009 08:58



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1496179 Report generated 09/25/2009 08:58



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1496179 Report generated 09/25/2009 08:58



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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:
 WInits:
 up/L

Workgroup (AAB#):WG312867 Cal ID: LCMS1 Matrix:SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	υ

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:1496179 Report generated 09/25/2009 08:58



### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds %D Criteria

### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-03 Instrument ID: LCMS1 Run Time: 16:07
File ID: 1LM.LM00948 Analyst: WTD Method: 6850 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

CCV - Modified 03/05/2008 PDF File ID: 1496178 Report generated 09/25/2009 08:58



### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L09090494 Run Date: 09/24/2009 Sample ID: WG312868-05 Instrument ID: LCMS1 Run Time: 17:34
File ID: 1LM.LM00954 Analyst: WTD Method: 6850 QC Key: STD

Workgroup (AAB#): WG312867 Cal ID: LCMS1 - 26-AUG-09

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

<sup>\*</sup> Exceeds %D Criteria

Matrix:SOIL

CCV - Modified 03/05/2008 PDF File ID: 1496178 Report generated 09/25/2009 08:58



Microbac Laboratories Inc.

QCMRL SAMPLE

00109426

 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	- 1	L30	

QCMRL - Modified 03/06/2007 PDF File ID:1496177 Report generated 09/25/2009 08:57



Microbac Laboratories Inc.
QCMRL SAMPLE

00109427

 Login Number:
 Login 9090494
 Run Date:
 09/24/2009
 Sample ID:
 WG312867-06

 Instrument ID:
 LCMS1
 Run Time:
 16:22
 Prep Method:
 6850

 File ID:
 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	
Perchlorate	2.00	2.16	108	70	- 130	

QCMRL - Modified 03/06/2007 PDF File ID:1496177 Report generated 09/25/2009 08:57



Microbac Laboratories Inc.

QCMRL SAMPLE

00109428

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1496177 Report generated 09/25/2009 08:57



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109429

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

<u>Underline</u> = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1496180
Report generated 09/25/2009 08:58



## 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

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
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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1496951
Report generated: 09/25/2009 12:26

Microbac

1 OF 1

MICTODAC LADOTACOTTES INC.

Report Number: L09090494

Report Date : September 25, 2009

00109434

Sample Number: L09090494-01 PrePrep Method: NONE Instrument: BAL001

Workgroup Number: W312870
Collect Date: 09/23/2009 14:00
Sample Tag: 01

Dilution: 1

Units: weight %

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

Micropac Laboratories inc.

Report Number: L09090494

Report Date : September 25, 2009

00109435

Sample Number: L09090494-02 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLVOFW-W(2)N Prep Method: D2216-90 Prep Date: 09/25/2009 08:41 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst: CPD
Dilution: 1 Run Date: 09/25/2009 08:41 File ID: B1.312870-0102

Workgroup Number: WG312870
Collect Date: 09/23/2009 14:10 Sample Tag: 01 Units: weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 71.2 1.00 1.00

of

Micropac Laboratories inc.

Report Number: L09090494

Report Date : September 25, 2009

00109436

Sample Number: L09090494-03 PrePrep Method:NONE Instrument: BAL001

Client ID: 04VLVOFW-W(2)S Prep Method: D2216-90 Prep Date: 09/25/2009 08:41 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG312870
Collect Date: 09/23/2009 14:15 Analyst:CPD Dilution:1 Run Date: 09/25/2009 08:41 File ID: B1.312870-0103

Sample Tag: 01 Units: weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 74.3 1.00 1.00

of

Micropac Laboratories inc.

Report Number: L09090494

Report Date : September 25, 2009

00109437

Sample Number: L09090494-04
Client ID: 04VLVOFW-3(2) PrePrep Method:NONE Instrument: BAL001

Prep Date: 09/25/2009 08:41
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90 Workgroup Number: WG312870
Collect Date: 09/23/2009 14:30 Analyst:CPD Dilution:1 Run Date: 09/25/2009 08:41 File ID: B1.312870-0104

Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	74.2		1.00	1.00

of

#### 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109439

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: <u>K0003</u> 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: Vehicle Dais

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1496061
Report generated: 09/25/2009 08:42

## 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing September 25, 2009

ALB - ANNIE L. BROWN BRG - BRENDA R. GREGORY CAH - CHARLES A. HALL CLW - CHARISSA L. WINTERS DDE - DEBRA D. ELLIOTT DGB - DOUGLAS G. BUTCHER	AJF - AMANDA J. FICKIESEN  AML - ANTHONY M. LONG  CAA - CASSIE A. AUGENSTEIN  CEB - CHAD E. BARNES  CPD - CHAD P. DAVIS  DEL - DON E. LIGHTFRITZ  DIH - DEANNA I. HESSON  DLR - DIANNA L. RAUCH  EDA - ERIN D. AGEE  HAV - HEMA VILASAGAR  JDH - JUSTIN D. HESSON  JWS - JACK W. SHEAVES  KHR - KIM H. RHODES  LSB - LESLIE S. BUCINA  MES - MARY E. SCHILLING  MSW - MATT S. WILSON  RAH - ROY A. HALSTEAD  RLK - ROBIN L. KLINGER  SLM - STEPHANIE L. MOSSBURG  TMB - TIFFANY M. BAILEY	BLG - BRENDA L. GREENWALT CAF - CHERYL A. FLOWERS CLC - CHRYS L. CRAWFORD CSH - CHRIS S. HILL DEV - DAVID E. VANDENBERG DLB - DAVID L. BUMGARNER DR - DEANNA ROBERTS ERP - ERIN R. PORTER HJR - HOLLY J. REED JKT - JANE K. THOMPSON JYH - JI Y. HU KRA - KATHY R. ALBERTSON MDA - MIKE D. ALBERTSON MMB - MAREN M. BEERY NPM - NATHANIEL P. MILLER RB - ROBERT BUCHANAN RWC - RODNEY W. CAMPBELL SLP - SHERI L. PFALZGRAF
	TMB - TIFFANY M. BAILEY	J J, J

#### Microbac Laboratories Inc. List of Valid Qualifiers September 25, 2009

00109442

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



00109443

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

PM: Praveen Svrivastav Project Contact: Jennifo Project Name: LHAAP-0 Project #: 117591-0009E	er Hoang 4	]	TAT: 24 Hr Phone No: 7 <sup>o</sup> Site: Confirm Location: Ka	nation Sa	mpling	6850)								24 HOUR TAT
Sampler Print: ALLEN WILLMORE (713) 247-9292	Sample	er Sign:	<b>A</b>		# of Containers	Perchlorate (6850)							·	Comments
Sample Number	Grab	Date	Time	Matrix					 					
4VLVOFW-W(2)-Comp	Х	9/2 <b>3</b> /2009	1400	Soil	11	X			 					
)4VLVOFW-W(2)-N	X	9/23/2009	1410	Soil	1	X	<u> </u>	-	 					
04VLVOFW-W(2)-S	Х	9/23/2009	1415	Soil	1	X			 					
oyvevofw-3(z)	X	4/23/200A	1430	Sorc	<u>.l</u>	<b>│</b> 人								
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Date/Time		Date/Time	ı											

Page 60



**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	<u>1Z4016632210105044</u>	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 perservatives 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.

Internal Chain of Custody Report

**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	То	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	То	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	То	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	То	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 Biulding, 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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on September 29, 2009.

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.

State of origin: Texas

in & Vanderberg

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

QAPP: Microbac OVD

This report contains a total of 72 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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

Phone: 800.373.4071 Fax: 740.373.4835

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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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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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2.1.1.1 Summary Data	
2.1.1.2 QC Summary Data	
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2.2.1 Percent Solids Data	53
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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

Stephanic Mossburg

#### **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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Inmalpsson	Conventional Lab Supervisor	September 29, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

#### Microbac Laboratories Inc. Laboratory Review Checklist

Laboratory Name:Microbac Laboratories Inc.Laboratory Log Number:L09090567Project Name:798-LONGHORNMethod:PCTSOLIDSPrep 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup			<b>√</b>		
steps?					
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	001(	<del>)945</del> .
Analytical duplicate data				<del>                                     </del>	
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
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?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			✓		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td>✓</td><td></td><td></td></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?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
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?			<b>√</b>		
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?			<b>√</b>		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation				<del>)01</del> 0	9454
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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	СТуре	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.

Approved By: Michal Column

#### LABORATORY REPORT

L09090567

00109461

09/29/09 14:32

Submitted By

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

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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1499098
Report generated: 09/29/2009 14:32

Microbac

1 OF 1

Microbac Laboratories inc.

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

1 of 8

Microbac Laboratories inc.

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

2 of 8

Micropac Laboratories inc.

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: 1000Units: 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

of 8

MICIODAC LADOTACOTTES INC.

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	

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Microbac Laboratories inc.

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

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Micropac Laboratories inc.

Report Number: L09090567

Report Date : September 29, 2009

00109467

Sample Number: L09090567-06

Client ID:  $\overline{04CSFL13RE(13)-MSD}$ 

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: 100Units: 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

of 8

Micropac Laboratories inc.

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: 1000Units: 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

of 8

Microbac Laboratories inc.

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

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# 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) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

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 Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

### **Example Calculation - Water:**

Slope from curve, m: 1.45
Intercept from curve, b: 0
Response of analyte, Rx: 12600
Response of Internal Standard , Ristd: 226000
Concentration of IS, Cistd (ug/L): 5.00

Response Ratio: 0.06 Amount Ratio: 0.04

Analyte Concentration, Cx (ug/L): 0.2

### **Example Calculation - Soil:**

Analyte Concentration, Cx (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

### 00109472

# Microbac Laboratories Inc. Instrument Run Log

Instrument:	LCMS1	Dataset:	082609_WTD.TXT	
Analyst1:	WTD	Analyst2:	NA	
Method:	6850	SOP:	HPLC06	Rev: <u>0</u>
Maintenance Log ID:	29922			
Workgroups: 310493	Column 1 ID: KP-RPPX250		Column 2 ID: NA	

COA14015 Surrogate STD: NA Calibration STD WG310580

Comments:

Internal STD:

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

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### 00109473

# Microbac Laboratories Inc. Instrument Run Log

Instrument: Analyst1: Method:	WTD	Analyst2:	092809_WTD.TXT NA HPLC06	Rev:	0
Maintenance Log ID:	30303  Column 1 ID: KP-RPPX250		Column 2 ID: N	JA	
Workgroups: 313072	Column 1 ID: KP-RPPX250		Column 2 ID: I	NA	<del></del>
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
		1				1

### Comments

Seq.	Rerun	Dil.	Reason	Analytes
10	Х	100	Analyzed too dilute	
16	Х	100	Analyzed too dilute	
17	Х	100	Analyzed too dilute	

Page: 1 Approved: 29-SEP-0

29-SEP-09 En C. Fam



Checklist ID: 41221

# Microbac Laboratories Inc. Data Checklist

### 00109474

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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA
Recoveries	NA NA
%RPD	NA 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 NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA 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
Social y Neviewer	IVIDO

Primary Reviewer:

Secondary Reviewer: 28-AUG-2009

Wader De S Michel Colum

CHECKLIST1 - Modified 03/05/2008

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

Microbac ®

Checklist ID: 42039

# Microbac Laboratories Inc. Data Checklist

00109475

Date:	28-SEP-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	
Runlog ID:	
alytical Workgroups:	

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 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
<u>Data qualifiers</u>	X
Secondary Reviewer	ECL

Primary Reviewer:

Secondary Reviewer: 29-SEP-2009

Wader De En C. Zum

CHECKLIST1 - Modified 03/05/2008

Generated: SEP-29-2009 09:23:03

<u>Microbac</u>

### Microbac Laboratories Inc.

### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109476

AAB#: WG313072

Analytical Method: 6850

Login Number:L09090567

	ID	Date	TCLP	Time	Max	Q	Extract	Time	Max	Q	Run	Time	Max	Q
Client ID		Collected	Date	Held	Hold		Date	Held	Hold		Date	Held	Hold	
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	

<sup>\* =</sup> SEE PROJECT QAPP REQUIREMENTS

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1498926 Report generated 09/29/2009 12:42



Page 31

### 00109477

### METHOD BLANK SUMMARY

Login Number: L09090567

Blank File ID: 1LM.LM00961

Prep Date: 09/28/09 13:10

Analyzed Date: 09/28/09 14:07

Work Group: WG313072

Blank Sample ID: WG313072-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

### 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

Report Name: BLANK\_SUMMARY
PDF File ID:1498038
Report generated 09/29/2009 12:42



# Microbac Laboratories Inc. METHOD BLANK REPORT

00109478

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.988	1.98	0.988	1	υ

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



# Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

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:
 LLM.LM00962
 Analyst:
 WTD
 Method:
 6850

 Workgroup (AAB#):
 WG313072
 Matrix:
 Soil
 Units:
 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	

LCS - Modified 03/06/2008 PDF File ID:1498040 Report generated: 09/29/2009 12:47

00109480

LCS\_LCS2 - Modified 03/06/2008 PDF File ID:1498931 Report generated: 09/29/2009 12:42



### Microbac Laboratories Inc.

### MS/MSD REPORT

	r	IS/MSD REFORT	00100491
Loginnum: L09090567	Cal ID:I	CMS1- 26-AUG-09	Worknum 9481
Instrument ID: LCMS1	Contract #:DAG	CA56-94-D-0020	Prep Method: 6850
Parent ID: L09090567-04	File ID: 1LM.LM0	0974 Dil:100	Method: 6850
Sample ID: L09090567-05 MS	File ID:1LM.LM0	0975 Dil:100	Matrix:Soil
Sample ID:L09090567-06 MSD	File ID:1LM.LMO	0976 Dil:100	Units:ug/kg

		MS	MS	MS	MSD	MSD	MSD		%Rec	RPD	
Analyte	Parent	Spiked	Found	%Rec	Spiked	Found	%Rec	%RPD	Limits	Limit	Q
Perchlorate	2400	1.93	1770	-32500	1.98	5160	139000	97.6	80 - 120	15	*#

\* FAILS %REC LIMIT

# FAILS RPD LIMIT

MS\_MSD - Modified 09/13/2009 PDF File ID:1498041 Report generated 09/29/2009 12:42



Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

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 <sup>2</sup>	QUAD(R <sup>2</sup> )
Perchlorate		1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109483

Login Number: L09090567
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

	WG310580-0	2		WG310580-0	3	WG310580-04			
Analyte	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:1498932 Report generated 09/29/2009 12:43



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109484

Login Number: L09090567
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

		WG310580-0	5		WG310580-0	6	WG310580-07		
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109485

Login Number: L09090567
Analytical Method: 6850

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

Column ID:F

	WG310580-08		
Analyte	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484



# Microbac Laboratories Inc. ALTERNATE SOURCE CALIBRATION REPORT

00109486

 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	

<sup>\*</sup> Exceeds %D Limit

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1498945 Report generated 09/29/2009 12:43



# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1498044 Report generated 09/29/2009 08:04



# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1498044 Report generated 09/29/2009 08:04



# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1498044 Report generated 09/29/2009 08:04



# Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

CCV - Modified 03/05/2008 PDF File ID:1498043 Report generated 09/29/2009 12:43



# Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

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

\* Exceeds %D Criteria

Matrix:SOIL

CCV - Modified 03/05/2008 PDF File ID:1498043 Report generated 09/29/2009 12:43



# Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

CCV - Modified 03/05/2008 PDF File ID:1498043 Report generated 09/29/2009 12:43



Microbac Laboratories Inc.

QCMRL SAMPLE

00109493

 Login Number:
 Login Sample ID:
 WG313072-07

 Instrument ID:
 Run Time:
 13:39
 Prep Method:
 6850

 File ID:
 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	

QCMRL - Modified 03/06/2007 PDF File ID:1498042 Report generated 09/29/2009 08:04

Microbac Laboratories Inc.

QCMRL SAMPLE

00109494

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1498042 Report generated 09/29/2009 08:04



Microbac Laboratories Inc.

QCMRL SAMPLE

00109495

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1498042 Report generated 09/29/2009 08:04



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109496

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 - 018LP

<u>Underline</u> = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1498045
Report generated 09/29/2009 08:04



# 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

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: <u>389869/ 390836(GWTP)</u>

### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1499097
Report generated: 09/29/2009 14:32

Microbac

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1 OF 1

MICTODAC LADOTACOTTES INC.

Report Number: L09090567

Report Date : September 29, 2009

00109501

Sample Number: L09090567-01 PrePrep Method: NONE Instrument: BAL001

 Client ID: 04CSFL07RE(12)
 Prep Method: D2216-90
 Prep Date: 09/29/2009 08:42

 Matrix: Soil
 Analytical Method: D2216-90
 Cal Date:

 Analyte
 CAS. Number
 Result
 Qual
 PQL
 SDL

 Percent Solids
 10-02-6
 80.7
 1.00
 1.00

1 of 8

Report Number: L09090567

Report Date : September 29, 2009

00109502

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09090567-02
Client ID: 04CSWR2H Prep Date: 09/29/2009 08:42
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90 Analyst:CPD Dilution:1 Run Date: 09/29/2009 08:42 File ID: B1.313078-0102

Workgroup Number: WG313078
Collect Date: 09/25/2009 14:10 Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	81.2		1.00	1.00

8 of

Report Number: L09090567

Report Date : September 29, 2009

00109503

Sample Number: L09090567-03
Client ID: 04WCDRE(19)L PrePrep Method:NONE Instrument: BAL001

Prep Date: 09/29/2009 08:42
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90 Workgroup Number: WG313078
Collect Date: 09/25/2009 14:15 Analyst:CPD Dilution:1 Run Date: 09/29/2009 08:42 File ID: B1.313078-0103

Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.2		1.00	1.00

of 8

Report Number: L09090567

Report Date : September 29, 2009

00109504

Sample Number: L09090567-04
Client ID: 04CsFL13RE(13) PrePrep Method:NONE Instrument: BAL001 Prep Date: 09/29/2009 08:42
Cal Date:

Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90

Workgroup Number: WG313078
Collect Date: 09/25/2009 14:20 Analyst:CPD Dilution:1 Run Date: 09/29/2009 08:42 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

of 8

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: Analyst:CPD Dilution:1 Run Date: 09/29/2009 08:42 File ID: B1.313078-0105

Workgroup Number: WG313078
Collect Date: 09/25/2009 14:20 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

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09090567-06
Client ID: 04CSFL13RE(13)-MSD Prep Date: 09/29/2009 08:42
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90

Workgroup Number: WG313078
Collect Date: 09/25/2009 14:20 Analyst:CPD Dilution:1 Run Date: 09/29/2009 08:42 File ID: B1.313078-0106 Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.1		1.00	1.00

of 8

MICIODAC LADOTACOTTES INC.

Report Number: L09090567

Report Date : September 29, 2009

00109507

Sample Number: L09090567-07 PrePrep Method: NONE Instrument: BALOO1

Workgroup Number: W313078
Collect Date: 09/25/2009 14:25
Sample Tag: 01

Workgroup Number: W313078
Dilution: 1
Units: weight %

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

7 of 8

Report Number: L09090567

Report Date : September 29, 2009

00109508

Sample Number: L09090567-08
Client ID: 04CSFL14RE(13)QC PrePrep Method:NONE Instrument: BAL001

Prep Date: 09/29/2009 08:42
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90

Workgroup Number: WG313078
Collect Date: 09/25/2009 14:25 Analyst:CPD Dilution:1 Run Date: 09/29/2009 08:42 File ID: B1.313078-0108 Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	80.5		1.00	1.00

of 8

### 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.

% Moisture = 100 - % Solids from 1.0 calculation

### PERCENT SOLIDS

00109510

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: <u>K0003</u> 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: Chelynis

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1497748
Report generated: 09/29/2009 08:45



## 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing September 29, 2009

### Microbac Laboratories Inc. List of Valid Qualifiers September 29, 2009

00109513

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



221000001947

Received: 09/28/2009 09:45 By: JANE THOMPSON

Relinquished By:

Relinquished By:

## Microbac OVD
## Received: 09/28/200
## By: JANE THOMPSON

Date/Time

COC NO. 090309-01

Shaw Environmental & Infrastructure, Inc. 3010 Briarpark Drive, Suite 400

Houston, TX 77042

(713) 996-4400

Project #: 117591-0009B200 Project Name: LHAAP-04

Sampler Print:

ALLEN WILLMORE (713) 247-9292

Sample Number

04CSFL07RE(12)

04CSWR2H

Address: 158 Starlite Drive, Marietta OH 45750 Laboratory Name: Microbac

Contact: Stephanie Mossburg Phone: 1-800-373-4071

24 HOUR TAT Comments +MS/MSD Special Instructions Perchlorate (6850) × × × × × × Site: Confirmation Sampling Location: Karnack, TX # of Containers Phone No: 713-996-4408 Matrix Soil Soil Soil Soil Soil Soil **TAT: 24 Hr** 1405 1410 1415 1420 1425 1425 Time Received By: 7.2 Date/Time 9/25/2009 9/25/2009 9/25/2009 9/25/2009 9/25/2009 9/25/2009 Date Sampler Sign: PM: Praveen Svrivastav (713.996.4588) Project Contact: Jennifer Hoang Grab × × × × × ×

04CSFL14RE(13)QC

04CSFL14RE(13) 04CSFL13RE(13)

04WCDRE(19)L



### **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	<u>1Z4016632210105053</u>	090309-01	

1	Yes	Ware chimping ecolors applied?
_'	162	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 perservatives 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:

	· · · · · · · · · · · · · · · · · · ·	COC was incorrectly marked. MS/MSD should be done on ID 04CSFL13RE(13) per the client
--	---------------------------------------	---

Look closer. Go further. Do more.

Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090567-02</u> 618107 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090567-03</u> 618108 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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



Internal Chain of Custody Report

**Login:** L09090567

**Account:** 2773 **Project:** 2773.025

Samples: 8

**Due Date:** 29-SEP-2009

Bottle: 1

Seq.	Purpose	From	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090567-06</u> 618111 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090567-08</u> 618113 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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 Biulding, 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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on October 01, 2009.

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.

State of origin: Texas

in & Vankerberg

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

QAPP: Microbac OVD

This report contains a total of 60 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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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> 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

### 00109520

## Microbac REPORT L09090606 PREPARED FOR Shaw E I, Inc. WORK ID:

1.0 Introduction	
2.1 General Chromatography Data	
2.1.1 LC/MS Data (6850)	
2.1.1.1 Summary Data	
2.1.1.2 QC Summary Data	
2.2 General Chemistry Data	
2.2.1 Percent Solids Data	
2.2.1.1 Raw Data	
3.0 Attachments	55

## 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
Stephanic Mossburg

### **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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Dannalpsson	Conventional Lab Supervisor	October 1, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

### 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			<b>√</b>		
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?				<del>001</del> (	1952
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>			<b>√</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>		
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			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>)</del> 010	1952
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

### 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.

Approved By: Michal Colum

### LABORATORY REPORT

L09090606

00109533

10/01/09 10:11

Submitted By

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

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: <u>389869/ 390836(GWTP)</u>

### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1501066
Report generated: 10/01/2009 10:11

Microbac

1 OF 1

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

1 of 3

MICIODAC LADOTACOTTES INC.

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

2 of 3

MICIODAC LADOTACOTTES INC.

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

3 of 3

# 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) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

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 Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

#### **Example Calculation - Water:**

Slope from curve, m: 1.45
Intercept from curve, b: 0
Response of analyte, Rx: 12600
Response of Internal Standard , Ristd: 226000

Concentration of IS, Cistd (ug/L): 5.00

Response Ratio: 0.06 Amount Ratio: 0.04

Analyte Concentration, Cx (ug/L): 0.2

#### **Example Calculation - Soil:**

Analyte Concentration, Cx (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

### 00109539

### Microbac Laboratories Inc. Instrument Run Log

Instrument:	LCMS1	Dataset:	082609_WTD.TXT		
Analyst1:	WTD	Analyst2:	NA		
Method:	6850	SOP:	HPLC06	Rev: (	)
Maintenance Log ID:	29922				
	Column 1 ID: KP-RPPX250		Column 2 ID: N	A	
Workgroups: 310493					
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
Michal Calair

### 00109540

### Microbac Laboratories Inc. Instrument Run Log

	Instrument:	LCMS1	_ Dataset:	093009_WTD.TXT		
	Analyst1:	WTD	_ Analyst2:	NA		
	Method:	6850	SOP:	HPLC06	Rev: <u>0</u>	
Mair	ntenance Log ID:	30336	-			
		Column 1 ID: KP-RPPX250		Column 2 ID: N	A	_
Workgroups:	313268					
Internal STD:	COA14015	Surrogate STD	): <u>NA</u>		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	

Page: 1 Approved: 01-OCT-0

01-OCT-09
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Checklist ID: 41221

# Microbac Laboratories Inc. Data Checklist

00109541

Date:	26-AUG-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA
Runlog ID:	29811
alytical 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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA
Recoveries	NA NA
%RPD	NA 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 NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA 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
Social y Neviewer	IVIDO

Primary Reviewer:

Secondary Reviewer: 28-AUG-2009

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CHECKLIST1 - Modified 03/05/2008

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



Checklist ID: 42117

# Microbac Laboratories Inc. Data Checklist

### 00109542

 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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA NA
Reruns	X
Manual integrations	X
Project/client specific requirements	X
Toject/ellert specific requirements	
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA NA
Check for completeness	X
Primary Reviewer	WTD
Timary Neviews	VVID
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
Decolling A Ventemen	IVIDC

Primary Reviewer:

Secondary Reviewer: 01-OCT-2009

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CHECKLIST1 - Modified 03/05/2008

Generated: OCT-01-2009 09:24:27

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#### Microbac Laboratories Inc.

### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109543

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

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1500854 Report generated 10/01/2009 09:32



#### 00109544

#### METHOD BLANK SUMMARY

Login Number: L09090606

Blank File ID: 1LM.LM01011

Prep Date: 09/30/09 12:00

Analyzed Date: 09/30/09 12:57

Work Group: WG313268

Blank Sample ID: WG313268-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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

Report Name: BLANK\_SUMMARY
PDF File ID:1500696
Report generated 10/01/2009 09:32



### Microbac Laboratories Inc. METHOD BLANK REPORT

Analytes	SDL	PQL	Concentration	Dilution	Qualifier	
Perchlorate	0.987	1.97	0.987	1	υ	

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



### Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109546

Login	Login Number: L09090606			Analyst:WTD	Pre	p Method: 6850	
Instru	ment ID: LCMS1			Matrix: Soil		Method: 6850	
Workgroup	(AAB#):WG313268	3				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	TD-WG313268-04	T.CS2	File	TD • 1 T.M. T.MO 1 O 1 3	Run Date	•09/30/2009 13•28	

Ama last a c	LCS		LCS2			%RPD	%Rec	RPD		
Analytes	Known	Found	% REC	Known	Found	% REC	*RPD	RPD Limits	Lmt	Q
Perchlorate	1.96	2.20	113	1.96	2.22	114	0.905	80 - 120	15	

LCS\_LCS2 - Modified 03/06/2008 PDF File ID: 1500698 Report generated: 10/01/2009 09:32

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109547

Login Number: L09090606

Analytical Method: 6850

ICAL Workgroup: WG310580

Instrument ID:<u>LCMS1</u>
Initial Calibration Date:<u>26-AUG-09 12:56</u>
Column ID:<u>F</u>

Analyte	AVG RF	% RSD	LINEAR (R2	QUAD(R2)
Perchlorate	1.422	3.93		

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum

INT\_CAL - Modified 03/06/2008 PDF File ID: 1500855 Report generated 10/01/2009 09:33

Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109548

Login Number: L09090606
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

		WG310580-02			WG310580-03			WG310580-04		
Analyte	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	



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109549

Login Number: L09090606
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 26-AUG-09 12:56

Column ID: F

WG310580-05				WG310580-0	6	WG310580-07			
Analyte	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



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109550

Login Number: L09090606
Analytical Method: 6850

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

Column ID:F

	WG310580-08				
Analyte	CONC	RESP	RF		
Perchlorate	10.0	716000.000	1.484		



### Microbac Laboratories Inc. ALTERNATE SOURCE CALIBRATION REPORT

00109551

 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	

<sup>\*</sup> Exceeds %D Limit

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1500872 Report generated 10/01/2009 09:33



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	Ū

U = Result is less than MDL.

F = Result is between MDL and RL.

\* = Result is above RL.



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

00109553

 Login Number:
 L09090606
 Run Date:
 09/30/2009
 Sample ID:
 WG313269-04

 Instrument ID:
 LCMS1
 Run Time:
 15:23
 Method:
 6850

 File ID:
 11M.LM01021
 Analyst:
 WID
 Units:
 ug/L

Workgroup (AAB#):WG313268 Cal ID: LCMS1 Matrix:SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	Ū

U = Result is less than MDL.

F = Result is between MDL and RL.

\* = Result is above RL.



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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	

<sup>\*</sup> 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	

<sup>\*</sup> 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	Analyte Expected Found UNITS		UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.09	ug/L	1.58	9.00	10	

<sup>\*</sup> 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	

<sup>\*</sup> Exceeds %D Criteria



Microbac Laboratories Inc.

QCMRL SAMPLE

00109559

 Login Number:
 Login Number:
 Run Date:
 09/30/2009
 Sample ID:
 WG313268-05

 Instrument ID:
 LCMS1
 Run Time:
 12:28
 Prep Method:
 6850

 File ID:
 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	

QCMRL - Modified 03/06/2007 PDF File ID:1500699 Report generated 10/01/2009 08:06



Microbac Laboratories Inc.

QCMRL SAMPLE

00109560

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1500699 Report generated 10/01/2009 08:06



Microbac Laboratories Inc.

QCMRL SAMPLE

00109561

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1500699 Report generated 10/01/2009 08:06



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109562

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

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1500702
Report generated 10/01/2009 08:06



# 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1501065
Report generated: 10/01/2009 10:11

Microbac

1 OF 1

Micropac Laboratories inc.

Report Number: L09090606

Report Date : October 1, 2009

00109567

Sample Number: L09090606-01
Client ID: 04CsFL09RE(14) PrePrep Method:NONE Instrument: BAL001

Prep Method: D2216-90

Matrix: Soil

Workgroup Number: WG313288
Collect Date: 09/29/2009 16:40

Sample Tag: 01

Prep Date: 10/01/2009 08:28 Analytical Method: D2216-90 Cal Date: Analyst:CPD Dilution:1 Run Date: 10/01/2009 08:28 File ID: B1.313288-0101

Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.0		1.00	1.00

of 3

Micropac Laboratories inc.

Report Number: L09090606

Report Date : October 1, 2009

00109568

Sample Number: L09090606-02
Client ID: 04CSFL11RE(14) PrePrep Method:NONE Instrument: BAL001

Prep Method: D2216-90 Prep Date: 10/01/2009 08:28

Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG313288
Collect Date: 09/29/2009 16:30 Analyst:CPD Dilution:1 Run Date: 10/01/2009 08:28 File ID: B1.313288-0102

Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.6		1.00	1.00

of 3

MICTODAC LABORACOTTES INC.

Report Number: L09090606

Report Date : October 1, 2009

00109569

Sample Number:L09090606-03 PrePrep Method:NONE Instrument: BAL001

Client ID: 04CSWCM Prep Method: D2216-90 Prep Date: 10/01/2009 08:28 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst:CPD Dilution:1 Run Date: 10/01/2009 08:28 File ID: B1.313288-0103

Workgroup Number: WG313288
Collect Date: 09/29/2009 17:00 Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 85.0 1.00 1.00

> 3 of 3

19.58%

#### 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

2.0 Calculating the percent moisture of a sample.

%Solids = Percent solids present in sample.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109571

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: <u>K0003</u> 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: Lebickellas

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1500391
Report generated: 10/01/2009 08:29

# 3.0 Attachments

# Microbac Laboratories Inc. Analyst Listing October 1, 2009

ADC - ANTHONY D. CANTER ALB - ANNIE L. BROWN BRG - BRENDA R. GREGORY CAH - CHARLES A. HALL CLW - CHARISSA L. WINTERS DDE - DEBRA D. ELLIOTT DGB - DOUGLAS G. BUTCHER DLP - DOROTHY L. PAYNE ECL - ERIC C. LAWSON FJB - FRANCES J. BOLDEN JBK - JEREMY B. KINNEY JWR - JOHN W. RICHARDS KEB - KATHRYN E. BARNES LKN - LINDA K. NEDEFF MDC - MICHAEL D. COCHRAN MRT - MICHELLE R. TAYLOR PDM - PIERCE D. MORRIS REK - ROBERT E. KYER SDH - SHANA D. HINYARD	AJF - AMANDA J. FICKIESEN AML - ANTHONY M. LONG CAA - CASSIE A. AUGENSTEIN CEB - CHAD E. BARNES CPD - CHAD P. DAVIS DEL - DON E. LIGHTFRITZ DIH - DEANNA I. HESSON DLR - DIANNA L. RAUCH EDA - ERIN D. AGEE HAV - HEMA VILASAGAR JDH - JUSTIN D. HESSON JWS - JACK W. SHEAVES KHR - KIM H. RHODES LSB - LESLIE S. BUCINA MES - MARY E. SCHILLING MSW - MATT S. WILSON RAH - ROY A. HALSTEAD RLK - ROBIN L. KLINGER SLM - STEPHANIE L. MOSSBURG	AJM - ANTHONY J. MOSSBURG BLG - BRENDA L. GREENWALT CAF - CHERYL A. FLOWERS CLC - CHRYS L. CRAWFORD CSH - CHRIS S. HILL DEV - DAVID E. VANDENBERG DLB - DAVID L. BUMGARNER DR - DEANNA ROBERTS ERP - ERIN R. PORTER HJR - HOLLY J. REED JKT - JANE K. THOMPSON JYH - JI Y. HU KRA - KATHY R. ALBERTSON MDA - MIKE D. ALBERTSON MMB - MAREN M. BEERY NPM - NATHANIEL P. MILLER RB - ROBERT BUCHANAN RWC - RODNEY W. CAMPBELL SLP - SHERI L. PFALZGRAF
1		

#### Microbac Laboratories Inc. List of Valid Qualifiers October 01, 2009

00109574

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.

Microbac

COC NO. 090309-01

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

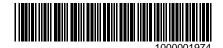
00109575

**Contact: Stephanie Mossburg** 

Phone: 1-800-373-4071

PM: Praveen Svrivasta Project Contact: Jenn Project Name: LHAAP Project #: 117591-0009	ifer Hoan -04	g	TAT: 24 Hr Phone No: 7 Site: Confirm Location: Ka	nation Sa	mpling	850)		-							24 HOUR TAT
Sampler Print: ALLEN WILLMORE (713) 247-9292	Sample	er Sign:			# of Containers	Perchlorate (6850)									Comments
Sample Number	Grab	Date	Time	Matrix				1						<u> </u>	Comments
04CSFL09RE(14)	х	9/29/2009	1640	Soil	1	Х			1.			1			
04CSFL11RE(14)	X	9/29/2009	1630	Soil	1	Х					1	1			
04CSWCM	X	9/29/2009	1700	Soil	1	Х									
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Relinquished By:  Q / Q / Q / Q / Q / Q / Q / Q / Q / Q		Received By Date/Time	:			Specia	l Instr	uctions	3	. 4,000			, , , , <u> </u>		
Relinquished By: Date/Time		Rer Mi	crobac OV ceived: 09/30	0/2009 09	1:30	221	00000	1974							
ate/Time	1	Dat By	ceived: 09/30 ERIN PORTER	₹						-		· · · · · · · · · · · · · · · · · · ·			

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#### **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	<u>1Z4016632210105071</u>	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 perservatives 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?

Internal Chain of Custody Report

**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	То	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	То	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	То	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



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 Biulding, 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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on October 01, 2009.

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.

State of origin: Texas

in & Vankerberg

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

QAPP: Microbac OVD

This report contains a total of 52 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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 L09090607 PREPARED FOR Shaw E I, Inc. WORK ID:

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2.1 General Chromatography Data	11
2.1.1 LC/MS Data (6850)	
2.1.1.1 Summary Data	
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2.2 General Chemistry Data	
2.2.1 Percent Solids Data	40
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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
Stephanic Mossburg

#### **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 enviornmental sample that includes:

- a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Inmalpsson	Conventional Lab Supervisor	October 1, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

#### Microbac Laboratories Inc. Laboratory Review Checklist

Laboratory Name:Microbac Laboratories Inc.Laboratory Log Number:L09090607Project Name:798-LONGHORNMethod:PCTSOLIDSPrep 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup			<b>√</b>		
steps?					
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>001</del> 0	<del>)958</del> !
Analytical duplicate data				<del>                                     </del>	
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			✓		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td>✓</td><td></td><td></td></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?			<b>√</b>		
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?			<b>√</b>		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>√</b>		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>)01</del> 0	9586
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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.

ID: 3075 Approved By: Milw Column

#### LABORATORY REPORT

L09090607

00109593

10/01/09 10:11

Submitted By

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

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	6850	10	30-SEP-09
04CSWR2H(1)QC	L09090607-02	6850	100	30-SEP-09

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1501070
Report generated: 10/01/2009 10:11

Microbac

1 OF 1

Microbac Laboratories inc.

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

1 of 2

Microbac

Micropac Laboratories inc.

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: 100Units: 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 of

Microbac

# 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) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

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 Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

#### **Example Calculation - Water:**

Slope from curve, m: 1.45
Intercept from curve, b: 0
Response of analyte, Rx: 12600
Response of Internal Standard , Ristd: 226000
Concentration of IS, Cistd (ug/L): 5.00

Concentration of IS, Cistd (ug/L): 5.00 Response Ratio: 0.06

Amount Ratio: 0.04

Analyte Concentration, Cx (ug/L): 0.2

#### **Example Calculation - Soil:**

Analyte Concentration, Cx (ug/L):

Amount of soil extracted (g):

Final volume of extract (mL):

Percent solids (Pct wt.)

Concentration in soil (ug/kg):

0.2

5.00

100

2.01

#### 00109598

## Microbac Laboratories Inc. Instrument Run Log

Instrument:	LCMS1	Dataset:	082609_WTD.TXT	
Analyst1:	WTD	Analyst2:	NA	
Method:	6850	SOP:	HPLC06	Rev: <u>0</u>
Maintenance Log ID:	29922			
(	Column 1 ID: KP-RPPX250		Column 2 ID: NA	

		Column 1 ID.	10 10 70200		00lanin 2 lB. <u>10 t</u>		
Workgroups:	310493						
Internal STD:	COA14015	<u> </u>	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

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### 00109599

## Microbac Laboratories Inc. Instrument Run Log

	Instrument:	LCMS1	_	093009_WTD.TXT	-	
	Analyst1:	WTD	Analyst2:	NA	_	
	Method:	6850	_ SOP:	HPLC06	Rev: 0	_
Main	itenance Log ID:	30336	_			
		Column 1 ID: KP-RPPX250	)	Column 2 ID: NA		
Workgroups:	313268					
Internal STD:	COA14015	Surrogate ST	D: <u>NA</u>	Calibra	ation 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	Х	10	Analyzed too dilute	
12	Х	100	Analyzed too dilute	

Page: 1 Approved: 01-OCT-0

01-OCT-09
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Checklist ID: 41221

# Microbac Laboratories Inc. Data Checklist

00109600

26-AUG-2009
WTD
NA
6850
LCMS1
NA NA
29811
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
	77.15
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
	55

Primary Reviewer:

Secondary Reviewer: 28-AUG-2009

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CHECKLIST1 - Modified 03/05/2008

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

Microbac

Checklist ID: 42117

# Microbac Laboratories Inc. Data Checklist

00109601

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)	Х
% D/% Drift	Х
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 NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA NA
Reruns	X
Manual integrations	X
Project/client specific requirements	X
Toject/ellert specific requirements	
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA NA
Check for completeness	X
Primary Reviewer	WTD
Tittidi y Keviewei	VVID
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X X
Data qualifiers	X
Secondary Reviewer	MDC
Decordad A Mexicane	IVIDC

Primary Reviewer:

Secondary Reviewer: 01-OCT-2009

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CHECKLIST1 - Modified 03/05/2008
Generated: OCT-01-2009 09:24:27

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#### 00109602

#### METHOD BLANK SUMMARY

Login Number:L09090607

Blank File ID:1LM.LM01011

Prep Date:09/30/09 12:00

Analyzed Date:09/30/09 12:57

Work Group: WG313268

Blank Sample ID: WG313268-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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



### Microbac Laboratories Inc. METHOD BLANK REPORT

00109603

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.987	1.97	0.987	1	υ

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



### Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109604

Login	Number: L0909060	7		Analyst:WTD	I	Prep Method: 6850	
Instru	ment ID: LCMS1			Matrix:Soil		Method: 6850	
Workgroup (AAB#):WG313268 Units:ug/kg					Units:ug/kg		
	QC Key:STD			Lot #:STD35536		_	
Sample	ID:WG313268-03	LCS	File	ID: 1LM.LM01012	Run Da	ate: <u>09/30/2009 13:13</u>	
Sample	ID:WG313268-04	LCS2	File	ID:1LM.LM01013	Run Da	ate:09/30/2009 13:28	

Analytes	LCS		LCS2			%RPD	%Rec Limits	RPD		
Analytes	Known	Found	% REC	Known	Found	% REC	*RPD	Limits Lmt	Õ	
Perchlorate	1.96	2.20	113	1.96	2.22	114	0.905	80 - 120	15	

LCS\_LCS2 - Modified 03/06/2008 PDF File ID:1500705 Report generated: 10/01/2009 08:07

Microbac

### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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



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

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	

<sup>\*</sup> Exceeds %D Criteria

CCV - Modified 03/05/2008 PDF File ID:1500707 Report generated 10/01/2009 08:07



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

Analyte	Expecte	d Found	UNITS	RF	%D	UCL	Q
Perchlorate	1.00	1.03	ug/L	1.48	3.00	10	

<sup>\*</sup> Exceeds %D Criteria

Matrix:SOIL

Microbac ®

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

CCV - Modified 03/05/2008 PDF File ID:1500707 Report generated 10/01/2009 08:07



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

CCV - Modified 03/05/2008 PDF File ID:1500707 Report generated 10/01/2009 08:07



Microbac Laboratories Inc.

QCMRL SAMPLE

00109612

 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		Limit	s	Q
Perchlorate	2.00	2.17	109	70	-	130	

QCMRL - Modified 03/06/2007 PDF File ID:1500706 Report generated 10/01/2009 08:07



Microbac Laboratories Inc.

QCMRL SAMPLE

00109613

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1500706 Report generated 10/01/2009 08:07 Microbac

Microbac Laboratories Inc.

QCMRL SAMPLE

00109614

 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	

QCMRL - Modified 03/06/2007 PDF File ID:1500706 Report generated 10/01/2009 08:07



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109615

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

<u>Underline</u> = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1500709
Report generated 10/01/2009 08:07



# 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1501069
Report generated: 10/01/2009 10:11

Microbac

1 OF 1

MICIODAC LADOTACOTTES INC.

Report Number: L09090607

Report Date : October 1, 2009

00109620

Sample Number: L09090607-01 PrePrep Method: NONE Instrument: BAL001

Client ID: 04CSWR2H(1) Prep Method: D2216-90 Prep Date: 10/01/2009 08:28

Matrix: Soil Analytical Method: D2216-90 Cal Date:

Outp Number: WG313288 Analyst: CPD Purp Date: 10/01/2009 08:28

Workgroup Number: WG313288
Collect Date: 09/29/2009 12:10
Sample Tag: 01

Workgroup Number: WG313288
Analyst: CPD
Bilution: 1
Units: weight %

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

Microbac

MICTODAC LABORACOTTES INC.

Report Number: L09090607

Report Date : October 1, 2009

00109621

Sample Number: L09090607-02 PrePrep Method:NONE Instrument: BAL001

Client ID: 04CSWR2H(1)QC Prep Method: D2216-90 Prep Date: 10/01/2009 08:28 Matrix: Soil Analytical Method: D2216-90 Cal Date: Analyst:CPD Dilution:1

Workgroup Number: WG313288
Collect Date: 09/29/2009 12:10 Run Date: 10/01/2009 08:28 File ID: B1.313288-0105 Sample Tag: 01 Units:weight %

Analyte CAS. Number Result Qual PQL SDL Percent Solids 10-02-6 79.4 1.00 1.00

> 2 of

> > Microbac

#### 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109623

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: <u>K0003</u> 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: Kelickel Dis

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1500392
Report generated: 10/01/2009 08:29

Microbac

## 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing October 1, 2009

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

#### Microbac Laboratories Inc. List of Valid Qualifiers October 01, 2009

00109626

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



COC NO. 090309-01

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

00109627

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 Perchlorate (6850) Project #: 117591-0009B200 Location: Karnack, TX 24 HOUR TAT Sampler Print: Sampler Şign;/ of Containers ALLEN WILLMORE (713) 247-9292 Comments Sample Number Grab Date Matrix Time Х Χ 04CSWR2H(1) 9/29/2009 1210 Soil X 04CSWR2H(1)QC X 9/29/2009 1210 Soil Relinquished By: Received By: **Special Instructions** Date/Time Date/Time Microbac OVD 2210000001975 Received for Relinquished By: Received: 09/30/2009 09:32 By: ERIN PORTER Ew Poten Date/Time Date/Time

Page 50



#### **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	<u>1Z4016632210105062</u>	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 perservatives 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?

Internal Chain of Custody Report

**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	То	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

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09090607-02</u> 618423 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

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 Biulding, 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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown

Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on October 05, 2009.

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.

State of origin: Texas

in & Vanderberg

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

QAPP: Microbac OVD

This report contains a total of 55 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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 L09100059 PREPARED FOR Shaw E I, Inc. WORK ID:

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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
Stephanic Mossburg

#### **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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Inmalpsson	Conventional Lab Supervisor	October 5, 2009		
Name (Printed)	Signature	Official Title (printed) DATE			

RG-366/TRRP-13 December 2002

**A**1

#### Microbac Laboratories Inc. Laboratory Review Checklist

Laboratory Name:Microbac Laboratories Inc.Laboratory Log Number:L09100059Project Name:798-LONGHORNMethod:PCTSOLIDSPrep Batch Number(s):WG313499Reviewer Name:DEANNA I. HESSON

LRC Date: DEANNA I. HESSON

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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
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?			<b>√</b>		
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?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	$\sim \sim \sim$	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>00</del> 10	<del>196</del> ,
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>			<b>√</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>		
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>√</b>		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>JU1</del> C	<del>963</del> 8
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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.

ID: 3101 Approved By: Milw Column

### LABORATORY REPORT

L09100059

00109645

10/05/09 09:48

Submitted By

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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1502777
Report generated: 10/05/2009 09:48

Microbac

1 OF 1

Micropac Laboratories inc.

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	Qual PQL		SDL	
Perchlorate	14797-73-0		Ū	1.98	0.992

U Not detected at or above adjusted sample detection limit

of 2

Microbac

Micropac Laboratories inc.

Report Number: L09100059

Report Date : October 5, 2009

00109647

Sample Number:L09100059-02

Client ID:  $\overline{ 04CSFL11RE(14)-NORTH\ WALL}$ 

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		Ū	1.96	0.981

U Not detected at or above adjusted sample detection limit

of 2

Microbac

# 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) = Rx/Ristd

x = amount ratio = concentration analyte/concentration internal standard (IS) = Cx / Cistd

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 Cx

Cx = (Cis)(x) = (5 ug/L)(0.040119) = 0.200594 ug/L

#### **Example Calculation - Water:**

Slope from curve, m: 1.45
Intercept from curve, b: -0.00242
Response of analyte, Rx: 12600

Response of Internal Standard , Ristd: 226000
Concentration of IS, Cistd (ug/L): 5.00
Response Ratio: 0.05575

Amount Ratio: 0.04012

Analyte Concentration, Cx (ug/L): 0.200594

#### **Example Calculation - Soil:**

Analyte Concentration, Cx (ug/L):

Amount of soil extracted (g):

Final volume of extract (mL):

Percent solids (Pct wt.)

Concentration in soil (ug/kg):

0.20059

5.00

100

2.005938

### 00109650

### Microbac Laboratories Inc. Instrument Run Log

Instrumen Analyst Methor	1: WTD	Analyst2:	100209_WTD.TXT NA HPLC06	Rev: <u>0</u>	
Maintenance Log II	D: <u>30365</u>				
Workgroups: 313495	Column 1 ID: KP-RPPX250		Column 2 ID: NA		
Internal STD: COA1401	Surrogate STD:	NA	Calibratio	on 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

Michal Carlain

Microbac ®

Checklist ID: 42190

### Microbac Laboratories Inc. Data Checklist

00109651

Date:	02-OCT-2009
Analyst:	WTD
Analyst:	NA
Method:	6850
Instrument:	LCMS1
Curve Workgroup:	NA NA
Runlog ID:	30423

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 NA
Blanks	X
TCL hits	X
Surrogate recoveries	NA NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA NA
MS/MSD/Sample duplicates	NA NA
Recoveries	NA NA
%RPD	NA NA
Interference check sample (ICS) (LCMS)	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA NA
Surrogate recoveries	NA NA
Internal standard areas (MS)	X
Library searches (GCMS)	NA NA
Calculations & correct factors	X
Compounds above calibration range	NA NA
Reruns	X
Manual integrations	NA NA
Project/client specific requirements	X
rejectronent speeme regun ements	^
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA NA
Check for completeness	X
Primary Reviewer	WTD
Think y Norton	******
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

Wader & S Michel Coder

CHECKLIST1 - Modified 03/05/2008
Generated: OCT-05-2009 07:13:41

Analytical Workgroups: 313495

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### Microbac Laboratories Inc.

### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109652

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
4CSFL09RE(14)-NORTH WAI	01	10/01/09					10/02/09	.8	28		10/02/09	.2	28	
4CSFL11RE(14)-NORTH WAI	02	10/01/09					10/02/09	.8	28		10/02/09	.2	28	

\* = SEE PROJECT QAPP REQUIREMENTS

HOLD\_TIMES - Modified 03/06/2008 PDF File ID: 1502639 Report generated 10/05/2009 08:52



Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008 PDF File ID:1502641 Report generated: 10/05/2009 08:52



### 00109654

#### METHOD BLANK SUMMARY

Login Number: L09100059

Blank File ID: 1LM.LM01044

Prep Date: 10/02/09 12:01

Analyzed Date: 10/02/09 15:08

Work Group: WG313495

Blank Sample ID: WG313495-02

Instrument ID: LCMS1

Method: 6850

Analyst:WTD

#### 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



### Microbac Laboratories Inc. METHOD BLANK REPORT

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.979	1.96	0.979	1	υ

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



### Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109656

Login Number: L09100059			alyst:WTD	Prep	Prep Method: 6850			
Instrument ID: LCMS1			Matrix: Soil		Method: 6850			
Workgroup (AAB#)	:WG313495				Units:ug/k	g		
QC Key	:STD		Lot #: <u>STD35590</u>					
Sample ID:WG3	13495-03 LCS	File ID:	1LM.LM01045	_Run Date:	10/02/2009 1	5:22		
Sample ID:WG3	13495-04 LCS2	File ID:	1LM.LM01046	Run Date:	10/02/2009 1	5:37		

Analytes		LCS		LCS2		%RPD	%Rec Limits	RPD Lmt		
Analytes	Known	Found	% REC	Known	Found	% REC	*RPD	LIMICS	шис	Q
Perchlorate	1.96	1.85	94.0	1.98	1.94	98.0	5.15	80 - 120	15	

LCS\_LCS2 - Modified 03/06/2008 PDF File ID: 1502516 Report generated: 10/05/2009 08:52

Microbac

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

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 <sup>2</sup>	QUAD(R <sup>2</sup> )
Perchlorate	1.682	3.87	1.00000	

R = Correlation coefficient; 0.995 minimum
R<sup>2</sup> = Coefficient of determination; 0.99 minimum



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109658

Login Number: L09100059
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 02-OCT-09 13:42

Column ID:F

	WG313487-02				WG313487-03			WG313487-04		
Analyte	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	



Microbac Laboratories Inc. INITIAL CALIBRATION DATA

00109659

Login Number: L09100059
Analytical Method: 6850

Instrument ID: LCMS1

Initial Calibration Date: 02-OCT-09 13:42

Column ID: F

		WG313487-05			WG313487-06			WG313487-07		
Analyte	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



Microbac Laboratories Inc.
INITIAL CALIBRATION DATA

00109660

Login Number: L09100059
Analytical Method: 6850

Instrument ID: LCMS1
Initial Calibration Date: 02-OCT-09 13:42

Column	ID:F	
--------	------	--

	WG313487-08				
Analyte	CONC	RESP	RF		
Perchlorate	10.0	342000.000	1.651		



### Microbac Laboratories Inc. ALTERNATE SOURCE CALIBRATION REPORT

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

ALT - Modified 09/06/2007 Version 1.5 PDF File ID:1502640 Report generated 10/05/2009 08:52



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

00109662

 Login Number:
 L09100059
 Run Date:
 10/02/2009
 Sample ID:
 WG313487-01

 Instrument ID:
 LCMS1
 Run Time:
 12:01
 Method:
 6850

 File ID:
 11M.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	υ

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:1502520 Report generated 10/05/2009 08:52



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1502520 Report generated 10/05/2009 08:52



### Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1502520 Report generated 10/05/2009 08:52



### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds %D Criteria

CCV - Modified 03/05/2008 PDF File ID:1502519 Report generated 10/05/2009 08:52



### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

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	

<sup>\*</sup> Exceeds %D Criteria

CCV - Modified 03/05/2008 PDF File ID:1502519 Report generated 10/05/2009 08:52



Microbac Laboratories Inc.

QCMRL SAMPLE

00109667

 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

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	2.00	1.90	95.0	70 - 130	

QCMRL - Modified 03/06/2007 PDF File ID:1502517 Report generated 10/05/2009 08:52 Microbac ®

Microbac Laboratories Inc.

QCMRL SAMPLE

00109668

 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		Q	
Perchlorate	2.00	2.05	103	70	- 130	

QCMRL - Modified 03/06/2007 PDF File ID:1502517 Report generated 10/05/2009 08:52



Microbac Laboratories Inc.
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

00109669

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

<u>Underline</u> = Response outside limits

INTERNAL\_STD\_ICAL - Modified 03/06/2008
 PDF File ID: 1502642
Report generated 10/05/2009 08:52



Microbac Laboratories Inc. INTERNAL STANDARD AREA SUMMARY (COMPARED TO AVERAGE OF ICAL)

00109670

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

<u>Underline</u> = Response outside limits

INTERNAL\_STD\_AVG\_ICAL - Modified 08/11/2009 PDF File ID: 1502521
Report generated 10/05/2009 08:57



# 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1502776
Report generated: 10/05/2009 09:48

Microbac

1 OF 1

Micropac Laboratories inc.

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

Analyst:CPD Dilution:1

PrePrep Method:NONE

Prep Method: D2216-90

Analytical Method: D2216-90

Prep Date: 10/03/2009 08:22
Cal Date:

Instrument: BAL001

Run Date: 10/03/2009 08:22 File ID: B1.313499-0101

Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	90.1		1.00	1.00

2 of

Microbac

Microbac Laboratories inc.

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

Microbac

### 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109678

Workgroup (AAB#):WG313499 Analyst:CPD ADT(on):10/02/2009 12:27
Method:D2216-90 Instrument:BAL001 ADT(off):10/03/2009 08:22

SOP: <u>K0003</u> 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: Chicke Dis

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1502186
Report generated: 10/03/2009 08:23

Microbac

# 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing October 5, 2009

#### Microbac Laboratories Inc. List of Valid Qualifiers October 05, 2009

00109681

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.

Microbac

#### COC NO. 090309-01

00109682

Shaw Environmental & Infrastructure, Inc. 3010 Briarpark Drive, Suite 400 Houston, TX 77042

Date/Time

**Laboratory Name: Microbac** 

Address: 158 Starlite Drive, Marietta OH 45750

Contact : Stephanie Mossburg

Phone: 1-800-373-4071 (713) 996-4400 PM: Praveen Svrivastav (713.996.4588) TAT: 24 Hr Phone No: 713-996-4408 24 HOUR TAT Project Contact: Jennifer Hoang Site: Confirmation Sampling Perchlorate (6850) Project Name: LHAAP-04 Location: Karnack, TX Project #: 117591-0009B200 of Containers Sample/ Sigh: Sampler Print: ALLEN WILLMORE Comments (713) 247-9292 Matrix Time Date Grab Sample Number X 1 Soil 1600 X 10/1/2009 04CSFL09RE(14)-North Wall Х 1 Soil 1630 10/1/2009 04CSFL11RE(14)-North Wall +MS/MSD Special Instructions Received By: Relinquished by: 2210000002045 Microbac OVD Received: 10/02/2009 09:43 17:30 Date/Time By: ERIN PORTER Date/Time Remarks: Received for Laboratory By: Relinquished By:

Page 53

Date/Time



**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	<u>1Z4016632210105080</u>	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 perservatives 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.

Internal Chain of Custody Report

**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	То	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	То	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



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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on August 20, 2009.

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.

State of origin: Texas

1) & Vande berg

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

QAPP: Microbac OVD

This report contains a total of 60 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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

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LOOK CLOSER, GO FURTHER, DO MORE

### 00109687

# Microbac REPORT L09080361 PREPARED FOR Shaw E I, Inc. WORK ID:

1.0 Introduction	4
2.1 Metals Data	
2.1.1 Metals CVAA Data (Mercury)	17
2.1.1.1 Summary Data	
2.1.1.2 QC Summary Data	22
2.2 General Chemistry Data	
2.2.1 Percent Solids Data	48
2.2.1.1 Raw Data	
3.0 Attachments	55

# 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
Sityphanic Mossburg

#### **Laboratory Data Package Cover Page**

00109690

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

SHERI L. PFALZGRAF	Eher L. Habarat	Chemist II	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: 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td><b>√</b></td><td></td><td></td><td></td><td></td></mql,>	<b>√</b>				
Were calculations checked by a peer or supervisor?	<b>/</b>				
Were all analyte identifications checked by a peer or supervisor?	<b>V</b> ✓				
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?	<b>✓</b>				
If required for the project, TICs reported?	<b>'</b>		<b>-</b>		
Surrogate recovery data			•		
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			1		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	<b>√</b>				
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?< td=""><td><b>\</b></td><td></td><td></td><td></td><td></td></rl?<>	<b>\</b>				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	<b>\</b>				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	<b>√</b>				
Were LCSs analyzed at the required frequency?	<b>/</b>				
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?			<b>V</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)		
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	0010	<del>)969</del> 2
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			<b>√</b>		
Were analytical duplicates analyzed at the appropriate frequency?			<b>√</b>		
Were RPDs or relative standard deviations within the laboratory QC limits?			<b>√</b>		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	<b>√</b>				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	<b>√</b>				
Are unadjusted MQLs included in the laboratory data package?	<b>√</b>				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
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?			<b></b>		
Were percent RSDs or correlation coefficient criteria met?	<b>√</b>		•		
Was the number of standards recommended in the method used for all analytes?	<b>√</b>				
Were all points generated between the lowest and highest standard used to calculate the	<b>√</b>				
curve?	•				
Are ICAL data available for all instruments used?	<b>√</b>				
Has the initial calibration curve been verified using an appropriate second source standard?	<b>√</b>				
Initial and continuing calibration verification (ICV and CCV) and continuing	· ·				
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	<b>√</b>				
Were percent differences for each analyte within the method-required QC limits?	<b>∨</b>				
Was the ICAL curve verified for each analyte?	<b>V</b>				
Was the absolute value of the analyte concentration in the inorganic CCB <rl?< td=""><td><b>∨</b></td><td></td><td></td><td></td><td></td></rl?<>	<b>∨</b>				
•	· ·				
Mass spectral tuning: Was the appropriate compound for the method used for tuning?					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		1
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?	<b>√</b>				
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?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the	<b>√</b>				
method?  Method detection limit (MDL) studies					
	/				
Was a MDL study performed for each reported analyte?	<b>√</b>				
Is the MDL either adjusted or supported by the analysis of DCSs?	<b>√</b>				
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				)01C	9693
Are all standards used in the analyses NIST-traceable or obtained from other appropriate	<b>√</b>				
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	<b>√</b>				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Drunalpsson	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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			<b>√</b>		
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>001</del> 0	1969
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			<b>√</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>		
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>√</b>		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>)</del> 010	9698
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1469615
Report generated: 08/20/2009 09:32

Microbac

1 OF 1

MICIODAC LADOTACOTIES INC.

Report Number: L09080361

Report Date : August 20, 2009

00109704

Sample Number: L09080361-01 PrePrep Method: NONE Instrument: HYDRA Client ID: 04CSEF1 Prep Method: 7471A Prep Date: 08/18/

Client ID: 04CSEF1 Prep Method: 7471A Prep Date: 08/18/2009 11:47
Matrix: Soil Analytical Method: 7471A Cal Date:

 Analyte
 CAS. Number
 Result
 Qual
 PQL
 SDL

 Mercury, Total
 7439-97-6
 0.0204
 J
 0.119
 0.0119

 ${\tt J}$  The analyte was positively identified, but the quantitation was below the RL

of 2

Microbac

Micropac Laboratories inc.

Report Number: L09080361

Report Date : August 20, 2009

00109705

Sample Number: L09080361-02 PrePrep Method:NONE Instrument: HYDRA

Prep Method: 7471A
Analytical Method: 7471A Prep Date: 08/18/2009 11:47
Cal Date: 08/19/2009 11:10 Client ID: 04CSEF2 Matrix: Soil Workgroup Number: WG309978
Collect Date: 08/17/2009 13:25 Analyst:**SLP** 

Run Date:08/19/2009 11:38 File ID:HY.081909.113833 Percent Solid:85.5 Dilution: 1 Sample Tag: 01 Units:mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.128		0.109	0.0109

2 of

Microbac

## 2.1.1.2 QC Summary Data

#### 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:	Example:
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	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:	Example:
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	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)	6.67
Px = Percent solids of sample (%wt)	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 Revison 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

BLOCK\_DIG - Modified 07/22/2008

PDF ID: 1468036
Report generated: 08/18/2009 13:28

Microbac

Reviewer: Euro Poten

#### atories Inc. 00109709

#### Microbac Laboratories Inc.

Instrument Run Log

Instrument:	HYDRA	Dataset:	081909B.PRN	
Analyst1:	SLP	Analyst2:	N/A	
Method:	7471A	SOP:	ME405	Rev: 9
Maintenance Log ID:	29839			

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	ССВ		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	ССВ		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	ССВ		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

Page: 1 Approved: August 20, 2009

Maren Beery



Run Log ID: 29698

#### 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			

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	ССВ		1		08/19/09 12:48

Page: 2 Approved: August 20, 2009

Maren Beery



Checklist ID: 41030

#### Microbac Laboratories Inc. Data Checklist

00109711

Date:	19-AUG-2009
Analyst:	SLP
Analyst:	<u>NA</u>
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

Sheri L. Harging Maren Beery

CHECKLIST1 - Modified 03/05/2008 Generated: AUG-20-2009 08:26:50



#### Microbac Laboratories Inc.

#### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109712

Analytical Method: 7471A

Login Number:L09080361

•	Max	Q	Run	Time	Max	Q
l	Hold		Date	Held	Hold	

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

HOLD\_TIMES - Modified 03/06/2008 PDF File ID: 1469494
Report generated 08/19/2009 15:47

Microbac

#### 00109713

#### METHOD BLANK SUMMARY

Login Number: L09080361

Blank File ID: HY.081909.113036

Prep Date: 08/18/09 11:46

Work Group: WG309978

Blank Sample ID: WG309946-03

Instrument ID: HYDRA

Method: 7471A

Analyzed Date: 08/19/09 11:30
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



## Microbac Laboratories Inc. METHOD BLANK REPORT

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury, Total	0.0100	0.100	0.0100	1	υ

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



## Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

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	LC	S Lim	its	Q
Mercury, Total	0.265	0.278	105	80	-	120	

LCS - Modified 03/06/2008 PDF File ID:1469497 Report generated: 08/19/2009 15:47

Microbac <sup>©</sup>

## Microbac Laboratories Inc. MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

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	

<sup>\*</sup> FAILS %REC LIMIT

NOTE: This is an internal quality control sample.

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<sup>#</sup> FAILS RPD LIMIT

## Microbac Laboratories Inc. MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

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	

<sup>\*</sup> FAILS %REC LIMIT

NOTE: This is an internal quality control sample.

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<sup>#</sup> FAILS RPD LIMIT

## Microbac Laboratories Inc. POST SPIKE REPORT

00109718

 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	С	Sample Result	С	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

Microbac

Microbac Laboratories Inc. INITIAL CALIBRATION SUMMARY

00109719

Login Number: L09080361
Analytical Method: 7471A
ICAL Worknum: WG310119

Workgroup (AAB#): WG309978

Instrument ID: HYDRA

Initial Calibration Date: 08/19/2009 11:14

	WG3	10119-01	WG3	10119-02	WG310119-03		WG310119-04		WG310119-05		WG310119-06	
Analyte	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

Microbac

Microbac Laboratories Inc. INITIAL CALIBRATION SUMMARY

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

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## Microbac Laboratories Inc. INITIAL CALIBRATION BLANK (ICB)

 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	υ

ICB - Modified 07/14/2009 PDF File ID:1469501 Report generated 08/19/2009 15:47



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

File ID:HY.081909.112823 Analyst:SLP Units
Workgroup (AAB#):WG309978 Cal ID: HYDRA - 19-AUG-09

Analytes MDL RDL Concentration Qualifier

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.

Matrix:SOIL

\* = Result is above RL.

CCB - Modified 03/05/2008 PDF File ID:1469503 Report generated 08/19/2009 15:47

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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

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	Ū

U = Result is less than MDL.

F = Result is between MDL and RL.

Matrix:SOIL

\* = Result is above RL.

CCB - Modified 03/05/2008 PDF File ID:1469503 Report generated 08/19/2009 15:47



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

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	Ū

U = Result is less than MDL.

F = Result is between MDL and RL.

Matrix:SOIL

\* = Result is above RL.

CCB - Modified 03/05/2008 PDF File ID:1469503 Report generated 08/19/2009 15:47



00109725

Login Number: L09080361 Run Date: 08/19/2009 Sample ID: WG310119-16 Instrument ID: HYDRA Run Time: 12:48

Analyst: SLP Method: 7471A 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	υ

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



## Microbac Laboratories Inc. INITIAL CALIBRATION VERIFICATION (ICV) (Alternate Source)

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	

<sup>\*</sup> Exceeds LIMITS Limit

ICV - Modified 03/06/2008 PDF File ID: 1469500 Report generated 08/19/2009 15:47



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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID:1469502 Report generated 08/19/2009 15:47



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

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Mercury, Total	0.00200	0.00213	mg/L	107	80 - 120	

<sup>\*</sup> Exceeds LIMITS Criteria

Matrix:SOIL

CCV - Modified 03/05/2008 PDF File ID:1469502 Report generated 08/19/2009 15:47



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

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Mercury, Total	0.00200	0.00203	mg/L	102	80 - 120	

<sup>\*</sup> Exceeds LIMITS Criteria

Matrix:SOIL

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CCV - Modified 03/05/2008 PDF File ID:1469502 Report generated 08/19/2009 15:47

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

Norkgroup (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	

<sup>\*</sup> Exceeds LIMITS Criteria

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## 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1469614
Report generated: 08/20/2009 09:32

Microbac

1 OF 1

Micropac Laboratories inc.

Report Number: L09080361

Report Date : August 20, 2009

00109735

PrePrep Method:NONE

Sample Number: L09080361-01
Client ID: 04CSEF1 Prep Method: D2216-90

Matrix: Soil Analytical Method: D2216-90

Workgroup Number: WG309940
Collect Date: 08/17/2009 13:15 Analyst:CPD Dilution:1 Units:weight %

Sample Tag: 01

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	

2 of

Microbac

Micropac Laboratories inc.

Report Number: L09080361

Report Date : August 20, 2009

00109736

Sample Number: L09080361-02
Client ID: 04CSEF2 PrePrep Method:NONE Instrument: BAL001 Prep Date: 08/19/2009 08:55
Cal Date:

Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90

Workgroup Number: WG309940
Collect Date: 08/17/2009 13:25 Analyst:CPD Dilution:1 Run Date: 08/19/2009 08:55 File ID: B1.309940-0124

Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL	
Percent Solids	10-02-6	85.5		1.00	1.00	

2 of

Microbac

#### 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109738

 Workgroup
 (AAB#):WG309940
 Analyst:CPD
 ADT(on):08/18/2009
 11:25

 Method:D2216-90
 Instrument:BAL001
 ADT(off):08/19/2009
 08:55

SOP: <u>K0003</u> Rev: 9

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

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1467924
Report generated: 08/19/2009 09:00



## 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing August 20, 2009

#### Microbac Laboratories Inc. List of Valid Qualifiers August 20, 2009

00109741

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



COC NO. (DATE-01)

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

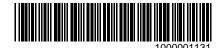
00109742

**Contact : Stephanie Mossburg** 

Phone: 1-800-373-4071

PM: Praveen Svrivasta Project Contact: Jennit Project Name: LHAAP- Project #: 117591-0009	fer Hoan 04		TAT: 24 Hr Phone No: 7 Site: Confirm Location: Ka	nation S	ampling					,			
Sampler Print:	Sample	er Sign:			ers	7471							
ALLEN WILLMORE (713) 247-9292	M.	Ill			# of Containers	Mercury-7471							Comments
Sample Number	Grab	Date	Time	Matrix									
04CSEF1		8/17/09	13:15	Soil	1	χ						24- hour 5	TAT!
OYCSEFA	х	8/17/09	13:25	Soil		χ						24 hour	TAT!)
	X			Soil									
	Х			Soil									
	Х			Soil	·								
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Date/Time		╚═┈	\ audt	A							 		

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#### **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	Н	2.0	<u>1Z66V7250193574101</u>	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 perservatives 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.

Internal Chain of Custody Report

**Login:** L09080361

**Account:** 2773 **Project:** 2773.025

Samples: 2

**Due Date:** 19-AUG-2009

 Samplenum
 Container
 ID
 Products

 L09080361-01
 606733
 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<sup>\*</sup>Sample extract/digestate

 Samplenum
 Container
 ID
 Products

 L09080361-02
 606734
 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<sup>\*</sup>Sample extract/digestate



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 Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

kalbertson@microbac.com smossburg@microbac.com tlong@microbac.com afickiesen@microbac.com abrown@microbac.com

This report was reviewed on August 20, 2009.

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.

State of origin: Texas

1) & Vande berg

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

QAPP: Microbac OVD

This report contains a total of 70 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive

Marietta, OH 45750

Phone: 800.373.4071 Fax: 740.373.4835

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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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User ID: jdoe@abc.com Password: demo

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LOOK CLOSER, GO FURTHER, DO MORE

### 00109747

# Microbac REPORT L09080399 PREPARED FOR Shaw E I, Inc. WORK ID:

1.0 Introduction	
2.1 Metals Data	
2.1.1 Metals CVAA Data (Mercury)	
2.1.1.1 Summary Data	
2.1.1.2 QC Summary Data	
2.2 General Chemistry Data	
2.2.1 Percent Solids Data	
2.2.1.1 Raw Data	53
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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
Sityphanic Mossburg

#### **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 enviornmental sample that includes:

- a) Items consistant 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) revocery and precision:

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

MAREN M. BEERY	Maren Been	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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td><b>√</b></td><td></td><td></td><td></td><td></td></mql,>	<b>√</b>				
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?	<b>√</b>				
Were sample quantitation limits reported for all analytes not detected?	<b>√</b>				
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	<b>√</b>				
Were blanks analyzed at the appropriate frequency?	<b>√</b>				
Were method blanks taken through the entire analytical process, including preparation and,	<b>√</b>				
if applicable, cleanup procedures?					
Were blank concentrations <rl?< td=""><td><b>√</b></td><td></td><td></td><td></td><td></td></rl?<>	<b>√</b>				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	<b>√</b>				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	<b>√</b>				
Were LCSs analyzed at the required frequency?	<b>1</b>				
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?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data			-		
Were the project/method specified analytes included in the MS and MSD?	<b>1</b>				
Were MS/MSD analyzed at the appropriate frequency?	<b>√</b>				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	· /				

Description	Yes	No	NA(1)		
Were MS/MSD RPDs within laboratory QC limits?	<b>√</b>			<del>()()1(</del>	9752
Analytical duplicate data	-			<del>                                     </del>	<del>,                                    </del>
Were appropriate analytical duplicates analyzed for each matrix?			<b>1</b>		
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?	<b>√</b>				
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?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	· ✓				
Was applicable and available technology used to lower the SQL minimize the matrix	<b>√</b>				
interference affects on the sample results?	•				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			<b></b>		
Were percent RSDs or correlation coefficient criteria met?	<b>√</b>		<b>, ,</b>	+	
Was the number of standards recommended in the method used for all analytes?	<b>√</b>				
Were all points generated between the lowest and highest standard used to calculate the	<b>√</b>				
curve?	<b>'</b>				
Are ICAL data available for all instruments used?	<b>√</b>				
Has the initial calibration curve been verified using an appropriate second source standard?	<b>∨</b> ✓				
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	<b>√</b>				
Were percent differences for each analyte within the method-required QC limits?	<b>∨</b>				
Was the ICAL curve verified for each analyte?	<b>V</b>				
· · · · · · · · · · · · · · · · · · ·	<b>V</b>				
Was the absolute value of the analyte concentration in the inorganic CCB <rl?< td=""><td><b>√</b></td><td></td><td></td><td></td><td></td></rl?<>	<b>√</b>				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
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?			<b>√</b>		
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?	<b>√</b>				
Is the MDL either adjusted or supported by the analysis of DCSs?	<b>√</b>				+
Proficiency test reports:	•			+	
Was the laboratory's performance acceptable on the applicable proficiency tests or	<b>√</b>				
evaluation studies?	•				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation				)010	975
Are all standards used in the analyses NIST-traceable or obtained from other appropriate	<b>√</b>				
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	<b>√</b>				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Inmalpsson	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:L09080399Project Name:798-LONGHORNMethod:PCTSOLIDSPrep 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>\</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples			-		
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):			•		
Were all COCs included in the LCS?			<b>√</b>		
Was each LCS taken through the entire analytical procedure, including prep and cleanup			<i>-</i>		
steps?					
Were LCSs analyzed at the required frequency?			<b>√</b>		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the			<i>-</i>		
MDL used to calculate the SQLs?			•		
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data			-		
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			· √		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			1		
were the time the state of the					

Description	Yes	No	NA(1)	$\sim$	$\sim$ $\sim$	)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>00</del> 10	<del>J97</del>	5
Analytical duplicate data						П
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>					П
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>					
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>					
Method quantitation limits (MQLs):						П
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>			
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>			
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>			
Other problems/anomalies						
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>					
Were all necessary corrective actions performed for the reported data?	<b>√</b>					
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>			
interference affects on the sample results?						
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>			
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>			
Was the number of standards recommended in the method used for all analytes?			<b>√</b>			
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>			
curve?						
Are ICAL data available for all instruments used?			<b>√</b>			
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>			
Initial and continuing calibration verification (ICV and CCV) and continuing						
calibration blank (CCB):						
Was the CCV analyzed at the method-required frequency?			<b>√</b>			
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>			
Was the ICAL curve verified for each analyte?			<b>√</b>			
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td><td></td></mdl?<>			<b>√</b>			
Mass spectral tuning:						
Was the appropriate compound for the method used for tuning?			<b>√</b>			
Were ion abundance data within the method-required QC limits?			<b>√</b>			
Internal standards (IS):						$\neg$
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>			
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?	<b>√</b>					
Were data associated with manual integrations flagged on the raw data?			<b>√</b>			
Dual column confirmation						
Did dual column confirmation results meet the method-required QC?			<b>√</b>			
Tentatively identified compounds (TICs):						
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>			
Interference Check Sample (ICS) results:						
Were percent recoveries within method QC limits?			<b>√</b>			П
Serial dilutions, post digestion spikes, and method of standard additions						
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>			$\neg$
method?						
Method detection limit (MDL) studies						
Was a MDL study performed for each reported analyte?			<b>√</b>			$\exists$
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>√</b>			$\neg$
Proficiency test reports:						$\exists$
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>			$\exists$
evaluation studies?						

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<del>)</del> 010	1975
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			<b>√</b>		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

#### 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1470381
Report generated: 08/20/2009 13:37

Microbac

1 OF 1

Report Number: L09080399

Report Date : August 20, 2009

00109764

Sample Number:L09080399-01 PrePrep Method:NONE Instrument: HYDRA

Client ID: 04CSWRQ Prep Method: 7471A Prep Date: 08/19/2009 11:39 Matrix: Soil Analytical Method: 7471A Cal Date: 08/20/2009 09:49 Run Date: 08/20/2009 10:42
File ID: HY. 082009.104248
Percent Solid: 83.3 Workgroup Number: WG310174
Collect Date: 08/18/2009 14:15 Analyst: SLP Dilution: 1

Sample Tag: 01 Units: mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0129	J	0.113	0.0113

 $\ensuremath{\mathtt{J}}$  The analyte was positively identified, but the quantitation was below the RL

Microbac

7

of

Report Number: L09080399

Report Date : August 20, 2009

00109765

PrePrep Method:NONE

Sample Number: L09080399-02
Client ID: 04CsWRQ-MS Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49 Prep Method: 7471A
Analytical Method: 7471A Matrix: Soil Analyst: SLP

Run Date: 08/20/2009 10:44
File ID: HY. 082009.104434
Percent Solid: 83.3 Workgroup Number: WG310174
Collect Date: 08/18/2009 14:15 Dilution: 1 Sample Tag: 01 Units:mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.335		0.113	0.0113

of 7

Report Number: L09080399

Report Date : August 20, 2009

00109766

PrePrep Method:NONE

Sample Number: L09080399-03
Client ID: 04CSWRQ-MSD Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49 Prep Method: 7471A
Analytical Method: 7471A Matrix: Soil Workgroup Number: WG310174
Collect Date: 08/18/2009 14:15 Analyst: SLP

Run Date:08/20/2009 10:50 File ID:HY.082009.105006 Percent Solid:83.3 Dilution: 1 Sample Tag: 01 Units:mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.318		0.113	0.0113

7 of

Report Number: L09080399

Report Date : August 20, 2009

00109767

Sample Number:L09080399-04 PrePrep Method:NONE Instrument: HYDRA

Client ID: 04CSWOH Prep Method: 7471A Prep Date: 08/19/2009 11:39 Matrix: Soil Analytical Method: 7471A Cal Date: 08/20/2009 09:49 Workgroup Number: WG310174
Collect Date: 08/18/2009 14:20 Run Date: 08/20/2009 10:52
File ID: HY. 082009.105202
Percent Solid: 84.8 Analyst: SLP Dilution: 1

Sample Tag: 01 Units: mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0231	J	0.109	0.0109

 $\ensuremath{\mathtt{J}}$  The analyte was positively identified, but the quantitation was below the RL

7 of

Report Number: L09080399

Report Date : August 20, 2009

00109768

Sample Number:L09080399-05 PrePrep Method:NONE Instrument: HYDRA

Client ID: 04CSWOP Prep Method: 7471A Prep Date: 08/19/2009 11:39 Matrix: Soil Analytical Method: 7471A Cal Date: 08/20/2009 09:49 Workgroup Number: WG310174
Collect Date: 08/18/2009 08:15 Run Date: 08/20/2009 10:55
File ID: HY. 082009.105551
Percent Solid: 83.6 Analyst: SLP Dilution: 1

Sample Tag: 01 Units: mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6	0.0526	J	0.119	0.0119

 $\ensuremath{\mathtt{J}}$  The analyte was positively identified, but the quantitation was below the RL

Microbac

7

of

5

Report Number: L09080399

Report Date : August 20, 2009

00109769

PrePrep Method:NONE

Sample Number: L09080399-06
Client ID: 04CSWOP-QC Instrument: HYDRA
Prep Date: 08/19/2009 11:39
Cal Date: 08/20/2009 09:49 Prep Method: 7471A
Analytical Method: 7471A Matrix: Soil

Run Date: 08/20/2009 09:19
Run Date: 08/20/2009 10:57
File ID: HY. 082009.105733
Percent Solid: 82.2 Workgroup Number: WG310174
Collect Date: 08/18/2009 08:15 Analyst: SLP Dilution: 1

Sample Tag: 01 Units:mg/kg

Analyte	CAS. Number	Result	Qual PQL		SDL	
Mercury, Total	7439-97-6	0.124		0.120	0.0120	

7 of

Report Number: L09080399

Report Date : August 20, 2009

00109770

Sample Number:L09080399-07 PrePrep Method:NONE Instrument: HYDRA

Client ID: 04CSWFR Prep Method: 7471A Prep Date: 08/19/2009 11:39 Matrix: Soil Analytical Method: 7471A Cal Date: 08/20/2009 09:49 Workgroup Number: WG310174
Collect Date: 08/18/2009 15:30 Run Date: 08/20/2009 10:59
File ID: HY. 082009.105925
Percent Solid: 82.3 Analyst: SLP Dilution: 1

Sample Tag: 01 Units: mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL	
Mercury, Total	7439-97-6	0.0120	J	0.114	0.0114	

 $\ensuremath{\mathtt{J}}$  The analyte was positively identified, but the quantitation was below the RL

Microbac

7

of

# 2.1.1.2 QC Summary Data

#### 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:	Example:
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	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:	Example:
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	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)	6.67
Px = Percent solids of sample (%wt)	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 Revison 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: Bunda Yugory

BLOCK\_DIG - Modified 07/22/2008

PDF ID: 1469187
Report generated: 08/19/2009 12:32

### 00109774

#### Microbac Laboratories Inc.

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
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	ССВ		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	ССВ		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



#### 00109775

#### Microbac Laboratories Inc.

Instrument Run Log

Instrument:	HYDRA	Dataset:	082009A.PRN	
Analyst1:	SLP	Analyst2:	N/A	
Method:	7471A	SOP:	ME405	Rev: <u>9</u>
Maintenance Log ID:	29855			

Workgroups: 310174, 310076

Comments: 310174, 310076

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	ССВ		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	ССВ		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	ССВ		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	ССВ		1		08/20/09 12:00

Page: 2 Approved: August 20, 2009

Maren Beery



Checklist ID: 41052

# Microbac Laboratories Inc. Data Checklist

00109776

Date:	20-AUG-2009
Analyst:	SLP
Analyst:	NA
Method:	7471A
Instrument:	HYDRA
Curve Workgroup:	
Runlog ID:	
rtarnog rb.	27710

Analytical Workgroups: 310174, 310076

<u>Calibration/Linearity</u>	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 Secondary Reviewer: 20-AUG-2009

Sheri L. Hargue Maren Beery

CHECKLIST1 - Modified 03/05/2008

Generated: AUG-20-2009 13:18:11



### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109777

AAB#: WG310174

Analytical Method: 7471A

Login Number:L09080399

	ID	Date	TCLP	Time	Max	Q	Extract	Time	Max	Q	Run	Time	Max	Q
Client ID		Collected	Date	Held	Hold		Date	Held	Hold		Date	Held	Hold	
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	

<sup>\* =</sup> SEE PROJECT QAPP REQUIREMENTS

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1470121 Report generated 08/20/2009 12:25



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#### 00109778

#### METHOD BLANK SUMMARY

Login Number: L09080399

Blank File ID: HY.082009.100341

Prep Date: 08/19/09 11:39

Work Group: WG310174

Blank Sample ID: WG310050-02

Instrument ID: HYDRA

Method: 7471A

Analyzed Date: 08/20/09 10:03
Analyst: SLP

#### 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



# Microbac Laboratories Inc. METHOD BLANK REPORT

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury, Total	0.00962	0.0962	0.00962	1	υ

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



# Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

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

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury, Total	0.261	0.263	101	80 - 120	

LCS - Modified 03/06/2008 PDF File ID:1470124 Report generated: 08/20/2009 12:25

#### MS/MSD REPORT

		MS/MSD REFO	KI	00100781
Loginnum: L09080399	Cal ID:	HYDRA- 20-AU	JG-09	Worknum WG3109781
Instrument ID: HYDRA	Contract	#:DACA56-94-D-0	0020	Prep Method: 7471A
Parent ID: L09080399-01	File ID: <u>H</u>	Y.082009.104248	Dil:1	Method: 7471A
Sample ID: L09080399-02 MS	File ID: <u>H</u>	Y.082009.104434	Dil:1	Matrix:Soil
Sample ID: L09080399-03 MSD	_File ID:H	Y.082009.105006	Dil:1	Units:mg/kg
				Percent Solid:83.3

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
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

Ms\_MsD - Modified 03/06/2008 PDF File ID:1470125 Report generated 08/20/2009 12:25



# Microbac Laboratories Inc. POST SPIKE REPORT

00109782

Sample Login ID: <u>L09080399</u> Worknum: <u>WG310174</u>

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	С	Sample Result	С	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

Microbac Laboratories Inc. INITIAL CALIBRATION SUMMARY

00109783

Login Number:L09080399
Analytical Method:7471A

ICAL Worknum:WG310194

Workgroup (AAB#):WG310174

Instrument ID: HYDRA

Initial Calibration Date: 08/20/2009 09:49

	WG310194-01		WG310194-02		WG310194-03		WG3	10194-04	WG3	10194-05	WG3	10194-06
Analyte	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

Microbac Laboratories Inc. INITIAL CALIBRATION SUMMARY

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



# Microbac Laboratories Inc. INITIAL CALIBRATION BLANK (ICB)

 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	υ

ICB - Modified 07/14/2009 PDF File ID:1470128 Report generated 08/20/2009 12:25



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	1.50	0.150	Ū

U = Result is less than MDL.

F = Result is between MDL and RL.

Matrix:SOIL

\* = Result is above RL.

CCB - Modified 03/05/2008 PDF File ID:1470130 Report generated 08/20/2009 12:25



## Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

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:1470130 Report generated 08/20/2009 12:25



# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

U = Result is less than MDL.

F = Result is between MDL and RL.

\* = Result is above RL.



# Microbac Laboratories Inc. CONTINUING CALIBRATION BLANK (CCB)

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	υ

U = Result is less than MDL.

F = Result is between MDL and RL.

\* = Result is above RL.



# Microbac Laboratories Inc. INITIAL CALIBRATION VERIFICATION (ICV) (Alternate Source)

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



<sup>\*</sup> Exceeds LIMITS Limit

00109791

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Mercury, Total	0.00200	0.00191	mg/L	95.5	80 - 120	

<sup>\*</sup> Exceeds LIMITS Criteria

Microbac ®

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	

<sup>\*</sup> 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	

<sup>\*</sup> 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

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Mercury, Total	0.00200	0.00206	mg/L	103	80 - 120	

<sup>\*</sup> Exceeds LIMITS Criteria

Matrix:SOIL



# 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1470380
Report generated: 08/20/2009 13:37

Microbac

1 OF 1

MICIODAC LADOTACOTTES INC.

Report Number: L09080399

Report Date : August 20, 2009

00109799

Sample Number: L09080399-01 PrePrep Method: NONE Instrument: BAL001

 Client ID: 04CSWRQ
 Prep Method: D2216-90
 Prep Date: 08/20/2009 09:28

 Matrix: Soil
 Analytical Method: D2216-90
 Cal Date:

Workgroup Number: WG310090 Analyst: CPD Run Date: 08/20/2009 09:28
Collect Date: 08/18/2009 14:15
Sample Tag: 01 Units: weight %

 Analyte
 CAS. Number
 Result
 Qual
 PQL
 SDL

 Percent Solids
 10-02-6
 83.3
 1.00
 1.00

1 of 7

MICTODAC LABORACOTTES INC.

Report Number: L09080399

Report Date : August 20, 2009

00109800

Sample Number:L09080399-02 PrePrep Method:NONE Instrument: BAL001

Client ID: 04CSWRQ-MS Prep Method: D2216-90 Prep Date: 08/20/2009 09:28 Matrix: Soil Analytical Method: D2216-90 Cal Date: Workgroup Number: WG310090 Collect Date: 08/18/2009 14:15 Analyst:CPD Dilution:1 Run Date: 08/20/2009 09:28 File ID: B1.310090-0102

Sample Tag: 01 Units:weight %

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

> 7 of

MICTODAC LABORACOTTES INC.

Report Number: L09080399

Report Date : August 20, 2009

00109801

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09080399-03
Client ID: 04CSWRQ-MSD Prep Method: D2216-90 Prep Date: 08/20/2009 09:28 Matrix: Soil Analytical Method: D2216-90 Cal Date:

Workgroup Number: WG310090 Collect Date: 08/18/2009 14:15 Analyst:CPD Dilution:1 Run Date: 08/20/2009 09:28 File ID: B1.310090-0103 Sample Tag: 01 Units:weight %

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

> 7 of

MICIODAC LADOTACOTIES INC.

Report Number: L09080399

Report Date : August 20, 2009

00109802

Sample Number:L09080399-04 PrePrep Method:NONE Instrument:BAL001

 Client ID: 04CSWOH
 Prep Method: D2216-90
 Prep Date: 08/20/2009 09:28

 Matrix: Soil
 Analytical Method: D2216-90
 Cal Date:

 Workgroup Number: W310090
 Analyst:CPD
 Run Date: 08/20/2009 09:28

 Collect Date: 08/18/2009 14:20
 Dilution: 1
 File ID: B1.310090-0104

 Sample Tag: 01
 Units: weight %

 Analyte
 CAS. Number
 Result
 Qual
 PQL
 SDL

 Percent Solids
 10-02-6
 84.8
 1.00
 1.00

4 of 7

Micropac Laboratories inc.

Report Number: L09080399

Report Date : August 20, 2009

00109803

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09080399-05
Client ID: 04CSWOP Prep Date: 08/20/2009 09:28
Cal Date: Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90

Workgroup Number: WG310090
Collect Date: 08/18/2009 08:15 Analyst:CPD Dilution:1 Run Date: 08/20/2009 09:28 File ID: B1.310090-0105

Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.6		1.00	1.00

5 of 7

Micropac Laboratories inc.

Report Number: L09080399

Report Date : August 20, 2009

00109804

PrePrep Method:NONE Instrument: BAL001

Sample Number: L09080399-06
Client ID: 04CSWOP-QC Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90

Prep Date: 08/20/2009 09:28
Cal Date: Workgroup Number: WG310090
Collect Date: 08/18/2009 08:15
Sample Tag: 01 Analyst:CPD Dilution:1 Run Date: 08/20/2009 09:28 File ID: B1.310090-0106

Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.2		1.00	1.00

of 7

MICIODAC LADOTACOTTES INC.

Report Number: L09080399

Report Date : August 20, 2009

00109805

Sample Number:L09080399-07 PrePrep Method:NONE Instrument:BAL001

 Client ID: 04CSWFR
 Prep Method: D2216-90
 Prep Date: 08/20/2009 09:28

 Matrix: Soil
 Analytical Method: D2216-90
 Cal Date:

 Workgroup Number: WG310090
 Analyst: CPD
 Run Date: 08/20/2009 09:28

 Collect Date: 08/18/2009 15:30
 Dilution: 1
 File ID: B1.310090-0107

 Sample Tag: 01
 Units: weight %

 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.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00109807

Workgroup (AAB#):WG310090 Analyst:CPD ADT(on):08/19/2009 14:14

Method:D2216-90 Instrument:BAL001 ADT(off):08/20/2009 09:28

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 1.28 27.41 L09080399-01 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 23.97 1.3 28.84 82.32 L09080412-02 1.28 34.02 33.25 97.65 L09080412-03 1.27 35.73 95.97 34.34 L09080412-04 1.29 35.66 34.14 95.58 1.28 L09080412-05 36.07 32.89 90.86 L09080412-06 1.27 30.72 90.98 33.64 L09080412-07 1.28 17.04 16.06 93.78 L09080412-08 1.29 26.54 24.3 91.13

Analyst: Ve buck Dis

93.68

91.83

94.52

93.29

90.31

93.43

92.15

97.65

92.15

97.54

91.57

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1469305

L09080412-09

L09080412-10

L09080412-11

L09080412-12

L09080412-13

L09080412-14

L09080412-15

WG310090-01

WG310090-02

WG310090-03

WG310090-04

1.28

1.28

1.28

1.29

1.28

1.28

1.28

1.28

1.28

1.3

1.27

24.24

23.18

32.3

23.51

30.9

31.11

26.77

34.02

26.77

24.07

27.13

22.79

21.39

30.6

22.02

28.03

29.15

24.77

33.25

24.77

23.51

24.95

Report generated: 08/20/2009 09:30

Microbac

2.352

7.846

2.459

8.430

# 3.0 Attachments

# Microbac Laboratories Inc. Analyst Listing August 20, 2009

### Microbac Laboratories Inc. List of Valid Qualifiers August 20, 2009

00109810

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



COC NO. (DATE-01)

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

00109811

**Contact: Stephanie Mossburg** 

Phone: 1-800-373-4071

PM: Praveen Svrivastav Project Contact: Jennif Project Name: LHAAP-( Project #: 117591-0009E	er Hoan )4		TAT: 24 Hr Phone No: 7 Site: Confirm Location: Ka	nation S	Sampling														
Sampler Print: ALLEN WILLMORE (713) 247-9292	Sampl	er Sign:			# of Containers	Mercury-7471										Co	mments		
Sample Number	Grab	Date	Time	Matrix															
OULSWRQ	х	9/18/09	14:15	Soil	1	λ													
O405WRQ-MS	х	9/18/09	14:15	Soil	1	χ													
O4RSWRO-MSD	х	8/18/09	14:15	Soil	1	χ				·								1	
O4CSW QH	Х	18/09	14:20	Soil	1	X													
04csw 07	Х	4/18/09	8:15	Soil	ſ	K													
O4CSWBP-ac		8/18/09	8:15	Soil	ı	٧									·				
04CSWFR	X	8/18/09	15:30	Soil															
	Х			Soil															
	X			Soil							<u> </u>								
	X			Soil					·		<u> </u>								
	Х			Soil							ļ			ļ					
	X			Soil							ļ								
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11.1-1		Received E	Microba					10000001											
Date/Time 8/18/09	17:30	Date/Tim	By: ROBII																1
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Date/Time		Date/Time		w															

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### **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	Н	1.0	<u>1Z66V7250196737966</u>	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 perservatives 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?

Internal Chain of Custody Report

**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	То	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

<sup>\*</sup>Sample extract/digestate

 Samplenum
 Container
 ID
 Products

 L09080399-02
 607189
 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<sup>\*</sup>Sample extract/digestate

 Samplenum
 Container ID
 Products

 L09080399-03
 607190
 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<sup>\*</sup>Sample extract/digestate



F1 - Volatiles Freezer in Login V1 - Volatiles Refrigerator in Login

W1 - Walkin Cooler in Login



Internal Chain of Custody Report

**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	То	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

<sup>\*</sup>Sample extract/digestate

 Samplenum
 Container ID
 Products

 L09080399-05
 607192
 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<sup>\*</sup>Sample extract/digestate

 Samplenum
 Container ID
 Products

 L09080399-06
 607193
 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<sup>\*</sup>Sample extract/digestate

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09080399-07</u> 607194 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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

<sup>\*</sup>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

Harry Behzadi, Ph.D. Laboratory Director

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.

# 00109816s:

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Section 5: Metals Analysis - QC Data Summaries	<b>19</b>
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5.2: Inst QC MA7415: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,	
Tl,V,Zn	29
<b>5.3:</b> Inst QC MA7418: Hg	51
<b>5.4:</b> Inst QC MA7420: Sb,As,Ba,Ca,Pb,Mn,Se	63
5.5: Prep QC MP16808: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,	
Tl,V,Zn	94
<b>5.6:</b> Prep QC MP16809: Hg	99
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U



### **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	Matri Code	<del></del>	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



#### 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.

4 of 113

ACCUTEST.

#### 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.

	Date: August 17, 2009
Ellen Pampel, Inorganic QA (signature on file)	<del></del>

Monday, August 17, 2009

Narrative prepared by:





**Section 3** 

### Sample Results

Report of Analysis



### **Report of Analysis**

Page 1 of 1

 Client Sample ID:
 04CONC01

 Lab Sample ID:
 F67138-6R
 Date Sampled:
 08/05/09

 Matrix:
 SO - Soil
 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 <sup>2</sup>	SW846 3050B <sup>4</sup>
Antimony	0.23 B	2.9	0.23	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Arsenic	2.3	0.39	0.17	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Barium	270	39	1.9	mg/kg	4	08/12/09	08/13/09 RS	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Beryllium	0.24	0.24	0.097	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Cadmium	0.54	0.19	0.049	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Calcium	23500	240	4.9	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Chromium	11.5	0.49	0.078	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Cobalt	2.0 B	2.4	0.040	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Copper	34.9	1.2	0.10	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Iron	7200	4.9	1.3	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Lead	9.3	4.9	0.22	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Magnesium	896	240	4.9	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Manganese	148	0.73	0.024	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Mercury	0.045 B	0.067	0.0096	mg/kg	1	08/12/09	08/12/09 DM	1 SW846 7471A <sup>1</sup>	SW846 7471A <sup>5</sup>
Nickel	4.6	1.9	0.16	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Potassium	403 B	490	4.9	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Selenium	0.15 U	4.9	0.15	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Silver	0.21 B	0.49	0.058	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Sodium	81.4 B	490	40	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Thallium <sup>b</sup>	1.7 U	2.5	1.7	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Vanadium	13.5	2.4	0.032	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Zinc	44.1	0.97	0.18	mg/kg	1	08/12/09	08/12/09 RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>

(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 U = Indicates a result < SDL

SDL = Sample Detection Limit B = Indicates a result > = SDL but < MQL



### **Report of Analysis**

Page 1 of 1

Client Sample ID: 04CONC01

Lab Sample ID: F67138-6RA **Date Sampled:** 08/05/09 **Matrix:** SO - Soil **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	MQL	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 <sup>3</sup>
Barium	2.1	D005	100	1.0	0.20	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>
Cadmium	0.0012 B	D006	1.0	0.0050	0.0010	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>
Chromium	0.019	D007	5.0	0.010	0.0020	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>
Lead <sup>b</sup>	0.0040 U	D008	5.0	0.10	0.0040	mg/l	2	08/12/09	08/13/09 RS	SW846 6010B <sup>3</sup>
Mercury	0.0015 U	D009	0.20	0.010	0.0015	mg/l	1	08/13/09	08/13/09 DM	SW846 7470A <sup>2</sup>
Selenium <sup>b</sup>	0.040 U	D010	1.0	0.10	0.040	mg/l	2	08/12/09	08/13/09 RS	SW846 6010B <sup>3</sup>
Silver	0.0014 U	D011	5.0	0.010	0.0014	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>

(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.

MQL = Method Quantitation Lissip L = Sample Detection Limit

MCL = Maximum Contamination Level (40 CFR 261 6/96)

U = Indicates a result < SDL

 $B = \ Indicates \ a \ result > = \ SDL \ but < \ MQL$ 



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### **Report of Analysis**

 Client Sample ID:
 04CONC02

 Lab Sample ID:
 F67138-7R
 Date Sampled:
 08/05/09

 Matrix:
 SO - Soil
 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	Ву	Method	Prep Method
Aluminum	4330	10	1.0	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Antimony b	0.96 U	12	0.96	mg/kg	4	08/12/09	08/13/09	RS	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Arsenic b	3.3	1.6	0.72	mg/kg	4	08/12/09	08/13/09	RS	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Barium	58.8	10	0.50	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Beryllium	0.34	0.25	0.10	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Cadmium	0.14 B	0.20	0.050	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Calcium	68700	1000	20	mg/kg	4	08/12/09	08/13/09	RS	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Chromium	20.4	0.50	0.080	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Cobalt	3.7	2.5	0.042	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Copper	7.4	1.3	0.11	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Iron	5650	5.0	1.3	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Lead b	4.3 B	20	0.90	mg/kg	4	08/12/09	08/13/09	RS	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Magnesium	907	250	5.0	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Manganese	350	3.0	0.10	mg/kg	4	08/12/09	08/13/09	RS	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Mercury	0.011 U	0.076	0.011	mg/kg	1	08/12/09	08/12/09	DM	SW846 7471A <sup>1</sup>	SW846 7471A <sup>5</sup>
Nickel	9.1	2.0	0.16	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Potassium	390 B	500	5.0	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Selenium <sup>b</sup>	0.62 U	20	0.62	mg/kg	4	08/12/09	08/13/09	RS	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Silver	0.13 B	0.50	0.060	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Sodium	202 B	500	42	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Thallium <sup>b</sup>	3.4 U	5.0	3.4	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Vanadium	19.4	2.5	0.033	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Zinc	19.3	1.0	0.19	mg/kg	1	08/12/09	08/12/09	RS	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>

(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 U = Indicates a result < SDL

SDL = Sample Detection Limit B = Indicates a result > = SDL but < MQL



### **Report of Analysis**

Page 1 of 1

Client Sample ID: 04CONC02

Lab Sample ID: F67138-7RA **Date Sampled:** 08/05/09 Matrix: SO - Soil **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	MQL	SDL	Units	DF	Prep	Analyzed By	Method
Arsenic <sup>b</sup>	0.011 U	D004	5.0	0.10	0.011	mg/l	2	08/12/09	08/13/09 RS	SW846 6010B <sup>3</sup>
Barium	1.0	D005	100	1.0	0.20	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>
Cadmium	0.0010 U	D006	1.0	0.0050	0.0010	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>
Chromium	0.056	D007	5.0	0.010	0.0020	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>
Lead <sup>b</sup>	0.0040 U	D008	5.0	0.10	0.0040	mg/l	2	08/12/09	08/13/09 RS	SW846 6010B <sup>3</sup>
Mercury	0.0015 U	D009	0.20	0.010	0.0015	mg/l	1	08/13/09	08/13/09 DM	SW846 7470A <sup>2</sup>
Selenium <sup>b</sup>	0.040 U	D010	1.0	0.10	0.040	mg/l	2	08/12/09	08/13/09 RS	SW846 6010B <sup>3</sup>
Silver	0.0014 U	D011	5.0	0.010	0.0014	mg/l	1	08/12/09	08/12/09 RS	SW846 6010B <sup>1</sup>

(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.

MQL = Method Quantitation LissipL = Sample Detection Limit

MCL = Maximum Contamination Level (40 CFR 261 6/96)

U = Indicates a result < SDL

 $B = \ Indicates \ a \ result > = \ SDL \ but < \ MQL$ 



**Section 4** 

IT'S ALL IN THE CHEMISTRY

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form



3.4

Shaw Environmental & Infrastructure, Inc.

3010 Briarpark Drive, Suite 400

3010 Briarpark Drive Houston, TX 77042 (713) 996-4400	, Suite	400							Con	tact : ne: 1	Sue	Bell		ı Ku.	010,	F67138	_
Project Contact: Jennife Project Name: LHAAP-0	Project Name: LHAAP-04         Site: 0           Project #: 117591-0009B300         Locat				713-996-4408											24 Hour Tm!!	
Sampler Print: ALLEN WILLMORE (713)247-9292	Sampler Sign:		1	# of Containers	Perchlorate (314.0)										Comments		
Sample Number	Grab	Date	Time	Matrix		ļ	ļ						<u> </u>		<u> </u>		-
04NSO1 (0.2)	Х	8/5/09	10:05	Solls	1	X	<u> </u>						ļ		<b>_</b>		1,
(C-S) 605(PD)	X	8/5/69	10:40	Soils		, k							-		-		1/2
04DS03 (0-3)	X	8/5/09	11:00	Soils	1.	X							<del> </del>				13
04DSOH (0-2)	X	8/5/67	11:65	Soils		X	-			-			-				1
04DSOS (U-4)		815/09	0:20	Soils		X		-					-			SOIL ADHERED TO CONCRETE SAMPLE.	D
BHCONG 01	X	8/5/67	12:45	Soils		X							-		-	SOIL ADHERED TO CONCRETE SAMPLE IN ZIPLOCK BAG	A Silvery
OH CONCOS	X	8/5/09	13:55	Soils		<u> </u>	+								-	In Theore DIA	<u> </u>
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Date/Time UPS		Date/Time	<b>1</b> (1)		99:30												

F67138R: Chain of Custody

Page 1 of 3



A CONTROL A BOD A TODIES	SAMDI E DECEIPT CONFIRMATION	00109827
ACCUTEST LABORATORIES S  ACCUTEST'S JOB NUMBER:	ACCOTEST COORDIA	HER TED ED
TECHNICIAN SIGNATURE/DATE $\xi \cdot 7 \cdot 2 \cdot \sqrt{2}$	TECHNICIAN SIGNATURE/DATE (C 8-6-09	ASBD 12/17/07

F67138R: Chain of Custody

Page 2 of 3



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

CSR:

Deliverable: TAT (Days): REDT1

Sample #:

Change: and TAL Metals on this sample on a RUSH TAT.

Per Jen H @ Shaw via e-mail 08.11.09, run TCLP Metals

04CONC01

F67138-6

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



		e: Accutest Southeast	Date: 08/17/2009										
		SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67138R										
Rev	viewer Name:	Ellen Pampel	Batch Number(s): MA7414, MA7415, MP16809, MP16812, MP16814										
# <sup>1</sup>	Analysis <sup>2</sup>	Description	on	Yes	No	NA <sup>3</sup>	NR <sup>4</sup>	ER #					
	OI	CHAIN-OF-CUSTODY (COC):											
		1) Were all samples included on a completed C		X									
		2) Did the samples requiring chemical preserva		X									
		3) Were samples requiring thermal preservation		X									
	OI	4) Were the samples in the appropriate containe		X									
	OI	SAMPLE AND QUALITY CONTROL (QC) I  1) Are all field sample ID numbers cross-refere		v									
		2) Are all laboratory ID numbers cross-reference		X									
	OI	TEST REPORTS:	sed to the corresponding QC data?	Λ									
	Oi	1) Were samples prepared and analyzed within	holding times?	X									
		2) Were reported results within calibration rang		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 tentative				X							
		7) Were results reported on a dry weight basis?	1 1	X									
	О	SURROGATE RECOVERY DATA:											
		1) Were surrogates added prior to extraction?				X							
		2) Were surrogate percent recoveries in all sam	ples within the laboratory QC			X							
		acceptance criteria?											
	OI	TEST REPORTS FOR BLANK SAMPLES:	_										
	1) Were appropriate type(s) of blanks analyzed?			X									
		2) Were method blanks taken through the entire		X									
		preparation and, if applicable, cleanup procedur	res?										
	OI	3) Were blanks free of detected compounds?  LABORATORY CONTROL SAMPLES (LCS	۵).	X									
	Oi	1) Was each LCS prepared from a source extern		X									
		2) Were all project-required analytes included in		X									
		3) Was each LCS taken through the entire analy		X									
		and, if applicable, cleanup procedures?	rical procedure, meraaming proparation	2.									
		4) Were LCSs analyzed at the required frequency	ey?	X									
		5) Were LCS percent recoveries within the labor		X									
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE D											
		1) Were all project-required analytes included it	n the MS and MSD?	X									
		2) Were MS/MSD analyzed at the appropriate f		X									
		3) Were MS percent recoveries within the labor			X			2					
		4) Were MSD percent recoveries and relative p	ercent differences (RPDs) within the		X			2					
	O.	laboratory QC acceptance criteria?											
	OI	ANALYTICAL DUPLICATE DATA:	16 1 4:0	37									
		1) Were appropriate analytical duplicates analy		X									
		2) Were analytical duplicates analyzed at the ap 3) Were RPDs or relative standard deviations w		Λ	X			2					
		criteria?	Tullin the laboratory QC acceptance		Λ								
	OI	METHOD QUANTITATION LIMITS (MQLs)	)•										
		Is the concentration of the lowest non-zero calib		X				1					
		reported?	and the second s										
	OI	The ND listed on the hard copy reports and/or I	EDD represents non detection of the			X							
		target analyte at a concentration below the MDI	L.										
	OI	VALIDATION RESULTS FOR NON-REFER	ENCE METHODS										
		Were all samples prepared and analyzed using a	a Reference Method?	X									
	OI	OTHER PROBLEMS/ANOMALIES:											
		Are all known problems, anomalies or special c		X									
		analytical limits) associated with the data noted	in the Laboratory Review Checklist										
	Ī	and Exception Reports?											



		CHECKLIST (continued): SUPPORTING DATA 2: Accutest Southeast Date: 08/17/2009	)					
			Jumber: F67138R					
			: MA7414, MA7415,	MA74	18 M	A 7/120	MP168	208
,	iewer runne.	MP16809, MP16		IVIA /4	10, IVI	A /420,	WIF 100	000,
<i>‡</i> 1	Analysis <sup>2</sup>	Description		Yes	No	$NA^3$	NR <sup>4</sup>	ER #
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICAL)	CV):					
		1) Were response factors (RFs) and/or relative response factors (R	RFs) within the	X				
		method-required QC acceptance criteria?						
		2) Were percent RSDs or correlation coefficient criteria met?		X				
		3) Were the number of standards recommended in the method used	I for all analytes?	X				
		4) Were all points generated between the lowest and highest standard	ard used to calculate	X				
		the curve?						
		5) Are ICV data available for all instruments used?		X				
		6) Has the calibration curve been verified using a NIST-traceable s	econd 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 accept	ance 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 accep	ance criteria?			X		
	О	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance				X		
		2) Were IS retention times within the method-required QC accepta				X		
	OI	Tr						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed	l 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	lumn confirmation results meet the method-required QC acceptance			X		
		criteria?						
		2) Were all percent differences less than 25%?				X		
	О	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data review	red?			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 METH	IOD OF					
		STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC a	cceptance criteria		X			2
	0.4	specified in the method?						
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS				77		
	O.	Are all non-Reference Methods documented and validated (NELA	C 5.10.2.1)?			X		
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:	141-	37				
		Are MDL studies for each analyte in a given matrix current, on file	e, less than a year	X				
	OI	old?						
	OI	STANDARDS TRACEABILITY:		X				
	OI	Are all standards used in the analyses NIST-traceable?  DOCUMENTATION OF WATER AND REAGENTS QUALITY		Λ				
	Oi	Is documentation of the quality of water and reagents used in the a		X				
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:	naryses on the?	Λ				
	OI	Are the procedures for compound identification documented?		X				
	OI	DEMONSTRATION OF ANALYST CAPABILITY:		Λ				
	OI	1) Was demonstration of capability conducted according to NELA	C Annendiy 5C2	X				
		was demonstration of capability conducted according to NELA     Is documentation of the analyst's demonstration of capability or		X				
		3) Is documentation of the analyst's proficiency up-to-date and on		X				1
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):	IIIC!	Λ				
	Oi	Are proficiency testing or interlaboratory comparison results on fil	a?	X				
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SO		Λ				
	Oi			X				
		Are laboratory SOPs current and on file for each method performe			l	l	<u> </u>	Щ_

<sup>1</sup> Items identified by the letter "R" should be submitted to TNRCC in the Data Package. Items identified by the letter "S" should be retained and made available to the TNRCC upon request for a period of three years after the data are submitted.



 $<sup>^{2}</sup>$  O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

NA = Not applicable;

NR = Not Reviewed;

<sup>&</sup>lt;sup>5</sup> ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEV	W CHECKLIST (continued): Exception Reports	
Laboratory Na	me: Accutest Southeast	Date: 08/17/2009
Project Name	e: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67138R
Reviewer Nam	ne: 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 equ	ual 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 w department	rith the laboratory's QA/QC



### 1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

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

This data package consists of:

X X		ture page, the laboratory review checklist, and the following reportable data:	
X	R1	ld chain-of-custody documentation;	
X	R2	mple identification cross-reference;	
Ķ	R3	st reports (analytical data sheets) for each environmental sample that includes:	
		Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10	
		dilution factors,	
		preparation methods,	
		cleanup methods, and	
		if required for the project, tentatively identified compounds (TICs).	
	R4	rrogate recovery data including:	
		Calculated recovery (%R), and	
		The laboratory's surrogate QC limits.	
Ķ	R5	st reports/summary forms for blank samples;	
Ķ	R6	st reports/summary forms for laboratory control samples (LCSs) including:	
		LCS spiking amounts,	
		Calculated %R for each analyte, and	
		The laboratory's LCS QC limits.	
Ķ	R7	st reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:	
		Samples associated with the MS/MSD clearly identified,	
		MS/MSD spiking amounts,	
		Concentration of each MS/MSD analyte measured in the parent and spiked samples,	
		Calculated %Rs and relative percent differences (RPDs), and	
		The laboratory's MS/MSD QC limits	
Ķ	R8	poratory analytical duplicate (if applicable) recovery and precision:	
		the amount of analyte measured in the duplicate,	
		the calculated RPD, and	
		the laboratory's QC limits for analytical duplicates.	
Х	R9	t of method quantitation limits (MQLs) for each analyte for each method and matrix;	
		ner problems or anomalies.	
X	The I	ption Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.	
Rel		: I am responsible for the release of this laboratory data package. This data package has been reviewed by the	
		d is complete and technically compliant with the requirements of the methods used, except where noted by the	
		the attached exception reports. By me signature below, I affirm to the best of my knowledge, all	
		malies, observed by the laboratory as having the potential to affect the quality of the data, have been identified	
	the labora	in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would aff	ec
	the quality	the data.	
Che	ck, if appl	le: [] This laboratory is an in-house laboratory controlled by the person responding to rule. The official	ıl
	signing th	ver page of the rule-required report (for example, the APAR) in which these data are used is responsible for	
	releasing	data package and is by signature affirming the above release statement is true.	
	T-11	1 0 61 1 00 00 00 00 00 00 00 00 00 00 00 00	
		ampel On file Inorganic QA 08/17/09	
	Nam	Signature: Title: Date:	







**Section 5** 

### Metals Analysis

### 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



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Analyst: DM Parameters: Hg

Date Analyzed: 08/12/09 Run ID: MA7414

Methods: SW846 7471A

Time	Sample Description	Dilution PS Factor Recov	Comments
		1	STD01REP1
	MA7414-STD2		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	
		1	
12:09	ZZZZZZ	1	
12:11	ZZZZZZ	1	



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN Analyst: DM Parameters: Hg

Date Analyzed: 08/12/09 Run ID: MA7414

Methods: SW846 7471A

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		
Last r	F67138-7R eportable sample ZZZZZZ	/prep for	job F671	38R
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		
Last r	MA7414-CCB6 eportable CCB fo			and standards

Refer to raw data for calibration curve and standards.

# 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: Metal	RL	IDL	11:15 ICB1 raw	final	11:20 CCB1 raw	final	11:42 CCB2 raw	final	12:03 CCB3 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

Page 1



## 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: Metal	RL	IDL	12:29 CCB4 raw	final	12:49 CCB5 raw	final	13:08 CCB6 raw	final
Mercury	1.0	.14	-0.010	<1.0	0.0	<1.0	0.0050	<1.0



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN QC Limits: 90 to 110 % Recovery Date Analyzed: 08/12/09 Run ID: MA7414

Methods: SW846 7471A Units: ug/l

Time: Sample ID: Metal	ICV True	11:12 ICV1 Results	% Rec	CCV True	11:18 CCV1 Results	% Rec	CCV True	11:40 CCV2 Results	% Rec
Mercury	3	3.1	103.3	3	2.9	96.7	3	3.1	103.3

### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN QC Limits: 90 to 110 % Recovery Date Analyzed: 08/12/09 Run ID: MA7414

Methods: SW846 7471A Units: ug/l

Time: Sample ID: Metal	CCV True	12:01 CCV3 Results	% Rec	CCV True	12:27 CCV4 Results	% Rec	CCV True	12:47 CCV5 Results	% Rec
Mercury	3	3.1	103.3	3	3.1	103.3	3.0	3.0	100.0

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 Run ID: MA7414 QC Limits: 90 to 110 % Recovery Units: ug/l

(\*) Outside of QC limits

(anr) Analyte not requested

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#### HIGH STANDARD CHECK SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20812S1.PRN QC Limits: 95 to 105 % Recovery Date Analyzed: 08/12/09 Run ID: MA7414

Methods: SW846 7471A

Units: ug/l



#### LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 7471A

Units: ug/l

File ID: H20812S1.PRN QC Limits: 80 to 120 % Recovery

Run ID: MA7414

Date Analyzed: 08/12/09

Time: Sample ID: Metal	CRI True	CRIA True	11:17 CRI1 Results	% Rec	13:04 CRI2 Results	% Rec
Mercury	0.20		0.18	90.0	0.23	115.0

## 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

Run ID: MA7415 Analyst: RS

 ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

Time	Sample Description	Dilution Factor	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	



## 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 Run ID: MA7415 Analyst: RS

 ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

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		





## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 6010B

File ID: IR081209.ASC Date Analyzed: 08/12/09

Run ID: MA7415 Analyst: RS  ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

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		



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 6010B

File ID: IR081209.ASC Date Analyzed: 08/12/09

Run ID: MA7415 Analyst: RS  ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

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			
Last r	MP16812-B3 eportable sample, ZZZZZZ		job F671:	138R	
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			
Last r	MA7415-CCB14 eportable CCB for to raw data for (	r job F67		and standards.	

## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 6010B

File ID: IR081209.ASC Date Analyzed: 08/12/09 Run ID: MA7415 Analyst: RS

 ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

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



## 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 Run ID: MA7415

Analyst: RS  ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

Time	Sample Description	Istd#1
<u> </u>	ZZZZZZ	
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



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 6010B

File ID: IR081209.ASC Date Analyzed: 08/12/09 Run ID: MA7415 Analyst: RS

 ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

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





## 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 Run ID: MA7415 Analyst: RS

 ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

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 = Re	R = Reference for ISTD limits. ! = Outside limits.							



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

Run ID: MA7415 Analyst: RS

 ${\tt Parameters: Al,Sb,As,Ba,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Ni,K,Se,Ag,Na,Tl,V,Zn}$ 

Time Description Istd#1

LEGEND:

<u>Istd#</u> <u>Parameter</u> Istd#1 Yttrium <u>Limits</u> 60-125 %

## 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

QC DIMITES. 16:	suic \ Ki			Kuii i	D. MA/415	,	onics. as	1/ ±	4.7 <200			
Time: Sample ID: Metal		IDL	09:13 ICB1 raw	final	09:40 CCB1 raw	final	10:01 CCB2 raw	final	CCB3	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		



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC QC Limits: result < RL

Date Analyzed: 08/12/09 Run ID: MA7415

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal		IDL	11:28 CCB4 raw	final	12:00 CCB5 raw	final	12:45 CCB6 raw	final	13:27 CCB7 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		3.6	0.53		1.5	<10		<10		<10
	10			<10			2.1		-0.37	
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



### 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

QC DIMITES: 16	5410 · 102			Ruii 1	D. MA/415	,	onics. as	)/ ±	0 1.3 <200 0 0.79 <6.0 4.6 <10			
Time: Sample ID: Metal		IDL	13:38 CCB8 raw	final	15:12 CCB9 raw	final	15:55 CCB10 raw	final	CCB11	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



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## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC QC Limits: result < RL

Date Analyzed: 08/12/09 Run ID: MA7415

Methods: SW846 6010B Units: ug/l

Time:			17:20		18:02		18:42	
Sample ID:			CCB12	61. 1	CCB13	61. 1	CCB14	61. 3
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	3.0	.10	0.01	.23	7.11	.20
			0.000	~E0	0.000	~E0	0.000	~E0
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



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/12/09 Run ID: MA7415

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal	ICV True	09:08 ICV1 Results	% Rec	CCV True	09:35 CCV1 Results	% Rec	CCV True	09:57 CCV2 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	



## 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			EG: U8/12/ ID: MA7415		Units: ug	7/1 7/1	
Time: Sample ID: Metal		10:42 CCV3 Results	% Rec	CCV True	11:24 CCV4 Results	% Rec	CCV True	11:55 CCV5 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

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## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

Run ID: MA7415

Units: ug/l

File ID: IR081209.ASC Date Analyzed: 08/12/09 Methods: SW846 6010B

QC Limits: 90 to 110 % Recovery

2								,  –		
Time: Sample ID: Metal	CCV	12:40 CCV6 Results	% Rec	CCV True	13:22 CCV7 Results	% Rec	CCV True	13:33 CCV8 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	





## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/12/09 Run ID: MA7415

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal	CCV True	15:07 CCV9 Results	% Rec	CCV True	15:50 CCV10 Results	% Rec	CCV True	16:32 CCV11 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



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/12/09 Run ID: MA7415

Methods: SW846 6010B Units: ug/l

								J, -	
Time: Sample ID: Metal	CCV	17:15 CCV12 Results	% Rec	CCV True	17:57 CCV13 Results	% Rec	CCV True	18:38 CCV14 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



### HIGH STANDARD CHECK SUMMARY

# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081209.ASC QC Limits: 95 to 105 % Recovery Date Analyzed: 08/12/09 Run ID: MA7415

Methods: SW846 6010B

Units: ug/l

QC LIMITES: 93	00 103 %	Recovery		Rull ID: MA/415	Units. ug/i
Time: Sample ID: Metal	HSTD True	09:05 HSTD1 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		



### 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

QC DIMITES. CKI	1 70-130%	CRIA 70-	-130%	Kuii 1	D. MA/413		onics. ug	]/ ±		
Time: Sample ID: Metal		CRIA True	09:16 CRIA1 Results	% Rec	09:22 CRIA2 Results	% Rec	09:24 CRI1 Results	% Rec	18:24 CRIA3 Results	% Rec
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

<sup>(\*)</sup> Outside of QC limits
(anr) Analyte not requested

<sup>(</sup>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 QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA7415

Date Analyzed: 08/12/09 Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal		CRIA True	18:27 CRI2 Results	% Rec
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		



### 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

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Time: Sample ID: Metal		ICSAB True	09:29 ICSA1 Results	% Rec	09:31 ICSAB1 Results	% Rec	18:31 ICSA2 Results	% Rec	18:34 ICSAB2 Results	% Rec	
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	



### 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		D: M.	A7418	
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Time	Sample Description	Dilution PS Factor 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	



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN Methods: SW846 7470A

Analyst: DM Parameters: Hg

Date Analyzed: 08/13/09 Run ID: MA7418

Para	meters: Hg			
Time	-	Dilution Factor		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		
Last r	MP16814-B3 eportable sample MA7418-CCV5	1 e/prep for 1	job F671	38R
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		

### 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 Run ID: MA7418

Methods: SW846 7470A

Time	Sample Description	Dilution PS Factor 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	
Last r	MA7418-CCB9 eportable CCB fo to raw data for	1 or job F67138R calibration curve	and standards.

# 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: Metal	RL	IDL	10:46 ICB1 raw	final	10:51 CCB1 raw	final	11:15 CCB2 raw	final	11:36 CCB3 raw	final
Mercury	1.0	.14	-0.069	<1.0	-0.071	<1.0	-0.11	<1.0	-0.069	<1.0



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN QC Limits: result < RL

Date Analyzed: 08/13/09 Run ID: MA7418

Methods: SW846 7470A Units: ug/l

Time: Sample ID:			12:00 CCB4		12:14 CCB5		12:53 CCB6		13:15 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

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: Metal	RL	IDL	13:40 CCB8 raw	final	13:45 CCB9 raw	final
Mercury	1.0	.14	-0.074	<1.0	-0.071	<1.0

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7418

Methods: SW846 7470A Units: ug/l

Time: Sample ID: Metal	ICV True	10:44 ICV1 Results	% Rec	CCV True	10:50 CCV1 Results	% Rec	CCV True	11:13 CCV2 Results	% Rec
Mercury	3.0	3.0	100.0	3	3.2	106.7	3	3.1	103.3



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7418

Methods: SW846 7470A Units: ug/l

Time: Sample ID: Metal	CCV True	11:35 CCV3 Results	% Rec	CCV True	11:58 CCV4 Results	% Rec	CCV True	12:12 CCV5 Results	% Rec
Mercury	3	3.1	103.3	3	3.1	103.3	3.0	3.0	100.0

# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7418

Methods: SW846 7470A Units: ug/l

Time: Sample ID: Metal	CCV True	12:52 CCV6 Results	% Rec	CCV True	13:14 CCV7 Results	% Rec	CCV True	13:38 CCV8 Results	% Rec
Mercury	3	2.9	96.7	3	2.9	96.7	3	2.9	96.7

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Methods: SW846 7470A Run ID: MA7418 Units: ug/l

### HIGH STANDARD CHECK SUMMARY

Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN QC Limits: 95 to 105 % Recovery Date Analyzed: 08/13/09 Run ID: MA7418

Methods: SW846 7470A

Units: ug/l



### LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: F67138R
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: H20813W1.PRN QC Limits: 80 to 120 % Recovery Date Analyzed: 08/13/09 Run ID: MA7418

Methods: SW846 7470A Units: ug/l

Sample ID: Metal	CRI True	CRIA True	CRI1 Results	% Rec	CRI2 Results	% Rec
Time:	GD.T	CD T A	10:48		13:42	

# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B

Time	Sample Description	Dilution PS Factor 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	



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B

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		



### 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

Anal	e ID: IR081309.A lyst: RS ameters: Sb,As,Ba			Oate Analyzed: 08/13/09 Methods: SW846 6010B Run ID: MA7420
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		
Last r	MP16808-S2 reportable sample MA7420-CCV10	20 e/prep for 1	job F67	7138R
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		



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B

Time	Sample Description	Dilution PS Factor 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	



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B

Time	Sample Description	Dilution PS Factor 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	
	ZZZZZZ		
20:06	ZZZZZZ	1	



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B

Time	Sample Description	Dilution PS Factor 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	



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B

Analyst: RS 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		
	MA7420-CCB22	1		

Last reportable CCB for job F67138R

Refer to raw data for calibration curve and 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 Run ID: MA7420

Methods: SW846 6010B

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



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

Methods: SW846 6010B

File ID: IR081309.ASC Analyst: RS

Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Date Analyzed: 08/13/09

Run ID: MA7420

Time	Sample Description	Istd#1
	MP16812-S2	
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



### 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 Run ID: MA7420

Analyst: RS	
Parameters:	Sb, As, Ba, Ca, Pb, Mn, S

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



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Analyst: RS

Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Date Analyzed: 08/13/09

Run ID: MA7420

Methods: SW846 6010B

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



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B

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



### 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 Run ID: MA7420

Analyst: RS	
Parameters:	Sb, As, Ba, Ca, Pb, Mn, Se

20:09 ZZZZZZ 5931 20:12 ZZZZZZ 5992 20:16 MA7420-CCV18 6601 20:20 MA7420-CCB18 6836 20:24 MP16820-D2 5842 20:38 MP16820-B2 6187 20:30 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-SD1 5839 20:53 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 6817 21:25 ZZZZZZ 6676 21:28 ZZZZZZ 6676 21:38 ZZZZZZ 6676 21:38 ZZZZZZ 6726 21:38 ZZZZZZ 6726 21:40 MA7420-CCB20 6851 21:50 ZZZZZZ 6587 21:51 ZZZZZZ 6587 21:52 ZZZZZZ 6587 21:53 ZZZZZZ 6587 21:54 MA7420-CCB20 6851 21:55 ZZZZZZ 6559 22:03 ZZZZZZ 6559 22:03 ZZZZZZ 6559	Time	Sample Description	Istd#1
20:16 MA7420-CCV18 6601 20:20 MA7420-CCB18 6836 20:24 MP16820-D2 5842 20:32 MP16820-B2 6173 20:33 MP16821-MB1 6779 20:39 MP16821-B1 6714 20:43 F67194-3 4664 20:46 MP16821-SD1 5839 20:50 MP16821-SD1 5839 20:50 MP16821-SD1 4675 21:00 MA7420-CCV19 6737 21:04 MA7420-CCB19 6879 21:11 ZZZZZZ 5915 21:14 ZZZZZZ 6817 21:25 ZZZZZZ 6672 21:28 ZZZZZZ 6672 21:38 ZZZZZZ 6672 21:38 ZZZZZZ 6716 21:44 MA7420-CCV20 6674 21:46 MA7420-CCV20 6674 21:46 MA7420-CCV20 6653 21:50 ZZZZZZ 6587 21:14 MA7420-CCV20 6653 21:51 ZZZZZZ 6587 21:14 MA7420-CCV20 6657 21:28 ZZZZZZ 6635 21:50 ZZZZZZ 6587 21:14 MA7420-CCV20 6674 21:14 MA7420-CCV20 6654 21:14 MA7420-CCV20 6654 21:14 MA7420-CCV20 6655 21:15 ZZZZZZ 6587 22:15 ZZZZZZ 6587	20:09	ZZZZZZ	5931
20:20 MA7420-CCB18 6836 20:24 MP16820-D2 5842 20:38 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 6676 21:28 ZZZZZZ 6637 21:28 ZZZZZZ 6612 21:35 ZZZZZZ 6726 21:38 ZZZZZZ 6716 21:44 MA7420-CCB20 6851 21:50 ZZZZZZ 6557 22:55 ZZZZZZ 6557 22:55 ZZZZZZ 6587 22:56 ZZZZZZ 6587 22:57 ZZZZZZ 6587 22:58 ZZZZZZ 6587 22:50 ZZZZZZ 6559	20:12	ZZZZZZ	5992
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 21:11 ZZZZZZ 5915 21:14 ZZZZZZ 5807 21:18 ZZZZZZ 6817 21:21 ZZZZZZ 6817 21:22 ZZZZZ 6672 21:32 ZZZZZZ 6632 21:33 ZZZZZZ 6726 21:34 MA7420-CCB20 6851 21:44 MA7420-CCB20 6851 21:50 ZZZZZZ 6587 22:00 ZZZZZZ 6559	20:16	MA7420-CCV18	6601
20:28 MP16820-MB2 6187 20:32 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-CCB19 6879 21:08 MP16821-S2 4547 21:11 ZZZZZZ 5915 21:14 ZZZZZZ 6817 21:25 ZZZZZZ 66726 21:38 ZZZZZZ 66726 21:38 ZZZZZZ 6612 21:38 ZZZZZZ 6716 21:40 MA7420-CCB20 6851 21:41 MA7420-CCB20 6851 21:42 MA7420-CCB20 6857 21:43 ZZZZZZ 6532 21:53 ZZZZZZ 65587 22:00 ZZZZZZ 6559	20:20	MA7420-CCB18	6836
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-CCB19 6879 21:04 MA7420-CCB19 6879 21:14 ZZZZZZ 5915 21:14 ZZZZZZ 5807 21:18 ZZZZZZ 6817 21:25 ZZZZZZ 6672 21:28 ZZZZZZ 6672 21:32 ZZZZZZ 66637 21:32 ZZZZZZ 6612 21:33 ZZZZZZ 6716 21:44 MA7420-CCB20 6851 21:40 MA7420-CCB20 6851 21:41 MA7420-CCB20 6851 21:42 MA7420-CCB20 6851 21:53 ZZZZZZ 6532 21:53 ZZZZZZ 6587 22:00 ZZZZZZ 6587	20:24	MP16820-D2	5842
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 6817 21:25 ZZZZZZ 6676 21:28 ZZZZZZ 6676 21:28 ZZZZZZ 6672 21:35 ZZZZZZ 6716 21:42 MA7420-CCV20 6674 21:46 MA7420-CCB20 6851 21:50 ZZZZZZ 6587 22:00 ZZZZZZ 6587 22:00 ZZZZZZ 6587	20:28	MP16820-MB2	6173
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 21:11 ZZZZZZ 5915 21:14 ZZZZZZ 5915 21:14 ZZZZZZ 6817 21:25 ZZZZZZ 6676 21:28 ZZZZZZ 66676 21:28 ZZZZZZ 66637 21:35 ZZZZZZ 6716 21:42 MA7420-CCV20 6674 21:46 MA7420-CCB20 6851 21:50 ZZZZZZ 6587 22:00 ZZZZZZ 6587 22:00 ZZZZZZ 6587	20:32	MP16820-B2	6187
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 66637 21:32 ZZZZZZ 66612 21:33 ZZZZZZ 6716 21:42 MA7420-CCV20 6674 21:46 MA7420-CCB20 6851 21:50 ZZZZZZ 6587 22:00 ZZZZZZ 6587 22:00 ZZZZZZ 6587	20:36	MP16821-MB1	6779
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       6817         21:21       ZZZZZZ       6676         21:22       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       6532         21:53       ZZZZZZ       6587         22:00       ZZZZZZ       6559	20:39	MP16821-B1	6714
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         21:22       ZZZZZZ       6637         21:23       ZZZZZZ       6612         21:35       ZZZZZZ       6726         21:38       ZZZZZZ       6716         21:42       MA7420-CCV20       6674         21:46       MA7420-CCB20       6851         21:50       ZZZZZZ       6532         21:56       ZZZZZZ       6587         22:00       ZZZZZZ       6559	20:43	F67194-3	4664
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 6817 21:25 ZZZZZZ 6676 21:28 ZZZZZZ 66676 21:28 ZZZZZZ 66637 21:32 ZZZZZZ 66612 21:35 ZZZZZZ 6716 21:42 MA7420-CCV20 6674 21:46 MA7420-CCB20 6851 21:50 ZZZZZZ 6532 21:56 ZZZZZZ 6587 22:00 ZZZZZZ 6559	20:46	MP16821-D1	4669
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 66817 21:25 ZZZZZZ 6676 21:28 ZZZZZZ 6672 21:35 ZZZZZZ 6612 21:35 ZZZZZZ 6716 21:42 MA7420-CCV20 6674 21:46 MA7420-CCB20 6851 21:50 ZZZZZZ 6587 22:00 ZZZZZZ 6559	20:50	MP16821-SD1	5839
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       6726         21:35       ZZZZZZ       6716         21:42       MA7420-CCV20       6674         21:46       MA7420-CCB20       6851         21:50       ZZZZZZ       6532         21:53       ZZZZZZ       6587         22:00       ZZZZZZ       6559	20:53	MP16821-PS1	4645
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       6532         21:53       ZZZZZZ       6587         22:00       ZZZZZZ       6559	20:56	MP16821-S1	4675
21:08       MP16821-S2       4547         21:11       ZZZZZZZ       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       6532         21:53       ZZZZZZ       6587         22:00       ZZZZZZ       6559	21:00	MA7420-CCV19	6737
21:11       ZZZZZZZ       5915         21:14       ZZZZZZZ       5807         21:18       ZZZZZZZ       4958         21:21       ZZZZZZZ       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       6532         21:53       ZZZZZZ       6587         22:00       ZZZZZZ       6559	21:04	MA7420-CCB19	6879
21:14       ZZZZZZZ       5807         21:18       ZZZZZZZ       4958         21:21       ZZZZZZZ       6817         21:25       ZZZZZZZ       6676         21:28       ZZZZZZZ       6637         21:32       ZZZZZZZ       6612         21:35       ZZZZZZZ       6726         21:38       ZZZZZZZ       6716         21:42       MA7420-CCV20       6674         21:46       MA7420-CCB20       6851         21:50       ZZZZZZ       6532         21:53       ZZZZZZ       6587         22:00       ZZZZZZ       6559	21:08	MP16821-S2	4547
21:18       ZZZZZZZ       4958         21:21       ZZZZZZZ       6817         21:25       ZZZZZZZ       6676         21:28       ZZZZZZZ       6637         21:32       ZZZZZZZ       6612         21:35       ZZZZZZZ       6726         21:38       ZZZZZZZ       6716         21:42       MA7420-CCV20       6674         21:46       MA7420-CCB20       6851         21:50       ZZZZZZZ       6635         21:53       ZZZZZZZ       6532         21:56       ZZZZZZZ       6587         22:00       ZZZZZZZ       6559	21:11	ZZZZZZ	5915
21:21 ZZZZZZZ 6817 21:25 ZZZZZZZ 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 6532 21:56 ZZZZZZ 6587 22:00 ZZZZZZ 6559	21:14	ZZZZZZ	5807
21:25 ZZZZZZZ 6676 21:28 ZZZZZZZ 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 6532 21:53 ZZZZZZ 6587 22:00 ZZZZZZ 6559	21:18	ZZZZZZ	4958
21:28 ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	21:21	ZZZZZZ	6817
21:32 ZZZZZZZ 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	21:25	ZZZZZZ	6676
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	21:28	ZZZZZZ	6637
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	21:32	ZZZZZZ	6612
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	21:35	ZZZZZZ	6726
21:46 MA7420-CCB20 6851 21:50 ZZZZZZ 6635 21:53 ZZZZZZ 6532 21:56 ZZZZZZ 6587 22:00 ZZZZZZ 6559	21:38	ZZZZZZ	6716
21:50       ZZZZZZZ       6635         21:53       ZZZZZZZ       6532         21:56       ZZZZZZZ       6587         22:00       ZZZZZZZ       6559	21:42	MA7420-CCV20	6674
21:53 ZZZZZZ 6532 21:56 ZZZZZZ 6587 22:00 ZZZZZZ 6559	21:46	MA7420-CCB20	6851
21:56 ZZZZZZ 6587 22:00 ZZZZZZ 6559	21:50	ZZZZZZ	6635
22:00 ZZZZZZ 6559	21:53	ZZZZZZ	6532
	21:56	ZZZZZZ	6587
22:03 ZZZZZZ 6663	22:00	ZZZZZZ	6559
	22:03	ZZZZZZ	6663



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC Analyst: RS

Parameters: Sb,As,Ba,Ca,Pb,Mn,Se

Date Analyzed: 08/13/09

Run ID: MA7420

Methods: SW846 6010B

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
Istd#1 Yttrium <u>Limits</u> 60-125 %



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: result < RL

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B 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								



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: result < RL

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal	RL	IDL	11:55 CCB4 raw	final	12:18 CCB5 raw	final	13:00 CCB6 raw	final	13:42 CCB7 raw	final
Aluminum	200	11	- u w		- uw	111101	_aw		_ aw	111101
			0.050							
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								



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: result < RL

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal		IDL	13:53 CCB8 raw	final	14:25 CCB9 raw	final	14:56 CCB10 raw	final	15:30 CCB11 raw	final
			14#	TINGI	Tuw	TINGI	IGW	TINGT	Taw	111101
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								

# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: result < RL

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal	RL	IDL	15:51 CCB12 raw	final	16:48 CCB13 raw	final	17:30 CCB14 raw	final	18:12 CCB15 raw	final
Aluminum	200	11	- u w		- uw	111101	_aw	111101	_ aw	111141
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								



# Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: result < RL

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal		IDL	18:54 CCB16 raw	final	19:38 CCB17 raw	final	20:20 CCB18 raw	final	21:04 CCB19 raw	final
Aluminum	200	11								
Antimony	6.0	4.5	2.2	<6.0	1.4	<6.0	1.3	<6.0	1.7	<6.0
Arsenic	10	3.6	-2.8	<10	-3.2	<10	-3.1	<10	-0.87	<10
Barium	200	5	0.24	<200	0.21	<200	0.11	<200	0.15	<200
Beryllium	4.0	1								
Cadmium	5.0	1	anr							
Calcium	1000	100	11.4	<1000	8.2	<1000	4.6	<1000	6.8	<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	0.39	<10	0.78	<10
Magnesium	5000	100								
Manganese	15	.5	0.21	<15	0.16	<15	0.020	<15	0.080	<15
Molybdenum	50	2.8								
Nickel	40	2.3	anr							
Potassium	10000	100								
Selenium	10	3.1	-2.0	<10	0.72	<10	3.1	<10	0.32	<10
Silver	10	1.2	anr							
Sodium	10000	500								
Thallium	10	3.4								
Tin	50	2.8								
Vanadium	50	.66								
Zinc	20	3.8								



#### 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 QC Limits: result < RL

Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal	RL	IDL	21:46 CCB20 raw	final	22:28 CCB21 raw	final	22:50 CCB22 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							

## 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

File ID: IR081309.ASC Date Analyzed: 08/13/09 Methods: SW846 6 QC Limits: 90 to 110 % Recovery Run ID: MA7420 Units: ug/l

Time: Sample ID: Metal		09:37 ICV1 Results	% Rec	CCV True	10:09 CCV1 Results	% Rec	CCV True	10:51 CCV2 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

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### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal		11:33 CCV3 Results	% Rec	CCV True	11:51 CCV4 Results	% Rec	CCV True	12:14 CCV5 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										



## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal		12:56 CCV6 Results	% Rec	CCV True	13:37 CCV7 Results	% Rec	CCV True	13:49 CCV8 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										

### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal		14:21 CCV9 Results	% Rec	CCV True	14:52 CCV10 Results	% Rec	CCV True	15:25 CCV11 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										



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal	CCV True	15:47 CCV12 Results	% Rec	CCV True	16:43 CCV13 Results	% Rec	CCV True	17:25 CCV14 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										



### Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

QC HIMITES. 30	00 110 %	Recovery		Kuii i	D. MA/420		onics. ug	) / ±		
Time: Sample ID: Metal		18:08 CCV15 Results	% Rec	CCV True	18:50 CCV16 Results	% Rec	CCV True	19:34 CCV17 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										

(\*) Outside of QC limits (anr) Analyte not requested

Zinc



## 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 21:00 Units: ug/l

Time: Sample ID: Metal		20:16 CCV18 Results	% Rec	CCV True	21:00 CCV19 Results	% Rec	CCV True	21:42 CCV20 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

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#### Login Number: F67138R Account: SEITXH - SHAW E & I

Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: 90 to 110 % Recovery Date Analyzed: 08/13/09 Run ID: MA7420 Methods: SW846 6010B Units: ug/l

Time: 22:24 22:45 Sample ID: CCV CCV21 CCV CCV22 Results % Rec Results % Rec Metal True True Aluminum Antimony 2000 1970 98.5 2000 1970 98.5 Arsenic 2000 95.0 2000 1900 95.0 1900 94.0 2000 92.0 Barium 2000 1880 1840 Beryllium Cadmium anr 103.5 40000 41200 40000 Calcium 103.0 41400 Chromium anr Cobalt Copper Iron Lead 2000 2020 101.0 2000 2030 101.5 Magnesium 2000 1970 98.5 Manganese 2000 1970 98.5 Molybdenum Nickel anr Potassium Selenium 2000 1970 98.5 2000 1970 98.5 Silver anr Sodium Thallium Tin

(\*) Outside of QC limits
(anr) Analyte not requested

Vanadium Zinc



#### HIGH STANDARD CHECK SUMMARY

## Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: IR081309.ASC QC Limits: 95 to 105 % Recovery Date Analyzed: 08/13/09 Run ID: MA7420

Methods: SW846 6010B Units: ug/l

Time: Sample ID: Metal	HSTD True	09:34 HSTD1 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			



Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

Date Analyzed: 08/13/09 Methods: SW846 6010B File ID: IR081309.ASC QC Limits: CRI 70-130% CRIA 70-130% Run ID: MA7420 Units: ug/l

Time: Sample ID: Metal		CRIA True	09:50 CRIA1 Results	% Rec	09:56 CRI1 Results	% Rec	22:32 CRIA2 Results	% Rec	22:35 CRI2 Results	% Rec
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								

<sup>(\*)</sup> Outside of QC limits (anr) Analyte not requested

<sup>(</sup>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

QC DIMITES. 00	CO 120 %	Kecovery		Kuii 1	D. MA/420		Unites. ug	/ L		
Time: Sample ID: Metal	ICSA True	ICSAB True	10:01 ICSA1 Results	% Rec	10:03 ICSAB1 Results	% Rec	22:38 ICSA2 Results	% Rec	22:42 ICSAB2 Results	% Rec
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

Page 1



#### 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



#### 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

Prep Date:

08/12/09

08/12/09

Methods: SW846 6010B

Units: mg/kg

rrep bace.			00/12/09					00/12/05	
Metal	F67214-3 Original		RPD	QC Limits	F67214-3 Original		Spikelot MPFLICP1		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.
- $\begin{tabular}{ll} \textbf{(b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.} \end{tabular}$
- (c) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.



#### 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		Spikelot MPFLICP1		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  $\,$

- (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		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



### Login Number: F67138R Account: SEITXH - SHAW E & I

Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16808 Methods: SW846 6010B Matrix Type: SOLID Units: ug/l

08/12/09 Prep Date:

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).



#### 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: MP16809 Matrix Type: SOLID

Methods: SW846 7471A Units: mg/kg

Prep Date:

08/12/09

Associated samples MP16809: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes (\*) Outside of QC limits  $\begin{tabular}{ll} \end{tabular}$ 



#### MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: F67138R Account: SEITXH - SHAW E & I

Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16809 Matrix Type: SOLID

Methods: SW846 7471A Units: mg/kg

08/12/09

08/12/09 Prep Date:

Metal	F67214-3 Original		RPD	QC Limits	F67214-3 Original		Spikelot HGFLWS1		QC 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  $\hfill \hfill$ 

(N) Matrix Spike Rec. outside of QC limits  $\,$ 



#### 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: MP16809 Matrix Type: SOLID

Methods: SW846 7471A Units: mg/kg

Prep Date:

08/12/09

Me	etal	BSP Result	Spikelot HGFLWS1		QC Limits
Me	ercury	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  $\begin{tabular}{ll} \end{tabular}$ 



#### SERIAL DILUTION RESULTS SUMMARY

Login Number: F67138R Account: SEITXH - SHAW E & I

Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16809 Matrix Type: SOLID

Methods: SW846 7471A Units: ug/l

Prep Date:

08/12/09

Associated samples MP16809: F67138-6R, F67138-7R

Results < IDL are shown as zero for calculation purposes (\*) Outside of QC limits  $\begin{tabular}{ll} \end{tabular}$ 

#### 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	I
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

#### 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 Methods: SW846 6010B Matrix Type: LEACHATE Units:  $\mbox{mg/l}$ 

Prep Date: 08/12/09 08/12/09

rrep bace.			00/12/05					00/12/05	
Metal	F67176-2 Original		RPD	QC Limits	F67176-2 Original		Spikelot MPFLICP1		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

Prep Date:

08/12/09

Methods: SW846 6010B

Units: mg/l

Metal	F67176-2 Original		Spikelot MPFLICP1		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 Methods: SW846 6010B Matrix Type: LEACHATE Units:  $\mbox{mg/l}$ 

Prep Date: 08/12/09 08/12/09

Metal	BSP Result	Spikelot MPFLICP1		QC Limits	BSP Result	Spikelot MPFLICP1		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		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 Methods: SW846 6010B Matrix Type: LEACHATE 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).

\_\_\_\_\_



#### 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: MP16814 Matrix Type: LEACHATE Methods: SW846 7470A

Units: mg/l

08/13/09 08/13/09 08/13/09 Prep Date:

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  $\begin{tabular}{ll} \end{tabular}$ (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: MP16814 Matrix Type: LEACHATE Methods: SW846 7470A Units: mg/l

Prep Date:

08/13/09

08/13/09

Metal	F67176-2 Original		RPD	QC Limits	F67176-2 Original		Spikelot HGFLWS1		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  $\hfill \hfill$ 

(N) Matrix Spike Rec. outside of QC limits  $\,$ 

#### 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: MP16814 Matrix Type: LEACHATE 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		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  $\begin{tabular}{ll} \end{tabular}$ 



#### 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: MP16814 Matrix Type: LEACHATE Methods: SW846 7470A

Units: mg/l

Prep Date:

08/13/09

Associated samples MP16814: F67138-6RA, F67138-7RA

Results < IDL are shown as zero for calculation purposes (\*) Outside of QC limits  $% \left( \frac{1}{2}\right) =0$ 

#### SERIAL DILUTION RESULTS SUMMARY

Login Number: F67138R Account: SEITXH - SHAW E & I Project: Longhorn Army Ammunitions Plant, Karnack, TX

QC Batch ID: MP16814 Methods: SW846 7470A

Matrix Type: LEACHATE Units: ug/l

08/13/09 Prep Date:

Metal	F67176- Origina	2 1 SDL 1:5	%DIF	QC 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  $\begin{tabular}{ll} \end{tabular}$ 



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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.

Kathy Albertson Stephanie Mossburg Tony Long Amanda Fickiesen Annie Brown Team Chemist/Data Specialist Team Chemist/Data Specialist Team Chemist/Data Specialist Client Services Specialist Client Services Specialist

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This report was reviewed on August 10, 2009.

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.

State of origin: Texas

1) & Vande berg

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

QAPP: Microbac OVD

This report contains a total of 186 pages.

David Vandenberg - Managing Director

Look closer. Go further. Do more.





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

Phone: 800.373.4071 Fax: 740.373.4835

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LOOK CLOSER, GO FURTHER, DO MORE

# 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
Sityphanic Mossburg

00109933

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

SHERI L. PFALZGRAF	Signature Official Title (printed) DATE	August 10, 2009	
Name (Printed)	Signature	Official Title (printed)	DATE
RG-366/TRRP-13 December 2002			A1

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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?	<b>√</b>				
Were sample quantitation limits reported for all analytes not detected?	<b>√</b>				
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	<b>√</b>				
Were blanks analyzed at the appropriate frequency?	<b>√</b>				
Were method blanks taken through the entire analytical process, including preparation and,	<b>√</b>				
if applicable, cleanup procedures?					
Were blank concentrations <rl?< td=""><td><b>√</b></td><td></td><td></td><td></td><td></td></rl?<>	<b>√</b>				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	<b>√</b>				
Was each LCS taken through the entire analytical procedure, including prep and cleanup	<b>√</b>				
steps?					
Were LCSs analyzed at the required frequency?	<b>√</b>				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	<b>√</b>				
Does the detectability data document the laboratory's capability to detect the COCs at the	<b>√</b>				
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	<del></del>	
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>001</del> (	<del>)993</del>
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			<b>√</b>		
Were analytical duplicates analyzed at the appropriate frequency?			<b>√</b>		
Were RPDs or relative standard deviations within the laboratory QC limits?			<b>√</b>		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	<b>√</b>				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	<b>√</b>				
Are unadjusted MQLs included in the laboratory data package?	<b>√</b>				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix	<b>√</b>				
interference affects on the sample results?					
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?	<b>√</b>				
Was the number of standards recommended in the method used for all analytes?	<b>√</b>				
Were all points generated between the lowest and highest standard used to calculate the	<b>√</b>				
curve?					
Are ICAL data available for all instruments used?	<b>√</b>				
Has the initial calibration curve been verified using an appropriate second source standard?	<b>√</b>				
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	<b>√</b>				
Were percent differences for each analyte within the method-required QC limits?	<b>√</b>				
Was the ICAL curve verified for each analyte?	<b>√</b>				
Was the absolute value of the analyte concentration in the inorganic CCB < RL?	<b>√</b>				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	<b>√</b>				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the	<b>√</b>				
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	<b>√</b>				
Is the MDL either adjusted or supported by the analysis of DCSs?	<b>√</b>				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or	<b>√</b>				
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation				)01C	<del>1993</del> 6
Are all standards used in the analyses NIST-traceable or obtained from other appropriate	<b>√</b>				
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	<b>√</b>				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

Laboratory Name:
Laboratory Log Number:
Project Name:
Method:
Prep Batch Number(s):
Reviewer Name:
L09080107
798-LONGHORN
6010
WG309218
Reviewer Name:
SHERI L. PFALZGRAF
LRC Date:
August 10, 2009

#### **EXCEPTIONS REPORT**

### **ER# - Description**

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

00109938

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 enviornmental sample that includes:

- a) Items consistant 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) revocery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for anlytical 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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SHERI L. PFALZGRAF	Signature Official Title (printed)	August 10, 2009	
Name (Printed)	Signature	Official Title (printed)	DATE
RG-366/TRRP-13 December 2002			A1

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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td><b>√</b></td><td></td><td></td><td></td><td></td></mql,>	<b>√</b>				
Were calculations checked by a peer or supervisor?	<b>/</b>				
Were all analyte identifications checked by a peer or supervisor?	<b>V</b> ✓				
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?	<b>✓</b>				
If required for the project, TICs reported?	<b>'</b>		<b>-</b>		
Surrogate recovery data			•		
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			1		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	<b>√</b>				
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?< td=""><td><b>\</b></td><td></td><td></td><td></td><td></td></rl?<>	<b>\</b>				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	<b>\</b>				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	<b>√</b>				
Were LCSs analyzed at the required frequency?	<b>/</b>				
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?			<b>V</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	0010	<del>)994</del>
Analytical duplicate data				1	
Were appropriate analytical duplicates analyzed for each matrix?			<b>√</b>		
Were analytical duplicates analyzed at the appropriate frequency?			<b>√</b>		
Were RPDs or relative standard deviations within the laboratory QC limits?			<b>√</b>		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	<b>√</b>				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	<b>√</b>				
Are unadjusted MQLs included in the laboratory data package?	<b>√</b>				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix	<b>√</b>				
interference affects on the sample results?					
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?	<b>√</b>				
Was the number of standards recommended in the method used for all analytes?	<b>√</b>				
Were all points generated between the lowest and highest standard used to calculate the	<b>\</b>				
curve?					
Are ICAL data available for all instruments used?	<b>\</b>				
Has the initial calibration curve been verified using an appropriate second source standard?	<b>\</b>				
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	<b>\</b>				
Were percent differences for each analyte within the method-required QC limits?	<b>\</b>				
Was the ICAL curve verified for each analyte?	<b>√</b>				
Was the absolute value of the analyte concentration in the inorganic CCB < RL?	<b>\</b>				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			<b>√</b>		
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?	<b>√</b>				
Were data associated with manual integrations flagged on the raw data?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the	<b>√</b>				1
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	<b>√</b>				
Is the MDL either adjusted or supported by the analysis of DCSs?	<b>√</b>				1
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or	<b>√</b>				
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation				<del>)010</del>	<del>1994</del> 1
Are all standards used in the analyses NIST-traceable or obtained from other appropriate	<b>√</b>				
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	<b>√</b>				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

Laboratory Name:
Laboratory Log Number:
Project Name:
Method:
Prep Batch Number(s):
Reviewer Name:
LBO080107
798-LONGHORN
WG309222
Reviewer Name:
LRC Date:
Microbac Laboratories Inc.
L09080107
W98-LONGHORN
A471
PREP Batch Number(s):
WG309222
SHERI L. PFALZGRAF
August 10, 2009

#### **EXCEPTIONS REPORT**

### **ER# - Description**

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

00109943

This data Package consists of:

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  - a) Items consistant 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) revocery and precision:

- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for anlytical 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	Dannalpsson	Conventional Lab Supervisor	August 10, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

Laboratory Name:Microbac Laboratories Inc.Laboratory Log Number:L09080107Project Name:798-LONGHORNMethod:PHPrep 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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td><b>√</b></td><td></td><td></td><td></td><td></td></mql,>	<b>√</b>				
Were calculations checked by a peer or supervisor?	<b>1</b>				
Were all analyte identifications checked by a peer or supervisor?	<b>'</b>		<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			✓ ✓		
Were all results for soil and sediment samples reported on a dry weight basis?			<b>√</b>		
Were % moisture (or solids) reported for all soil and sediment samples?			<b>√</b>		
If required for the project, TICs reported?			<b>√</b>		
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?< td=""><td></td><td></td><td>✓</td><td></td><td></td></mql?<>			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	<b>√</b>				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	<b>√</b>				
Were LCSs analyzed at the required frequency?	<b>\</b>				
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			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data			•		
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<u>√</u>	<del>001(</del>	<del>)994</del>
Analytical duplicate data				1	
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies			-		
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<u>√</u>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			· /		
curve?			,		
Are ICAL data available for all instruments used?	<b>√</b>				
Has the initial calibration curve been verified using an appropriate second source standard?	<u>·</u> ✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	<b>√</b>				
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?	<b>√</b>		<b>V</b>		
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td><b>√</b></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>	<b>√</b>		<b>√</b>		
•			<b>V</b>		
Mass spectral tuning: Was the appropriate compound for the method used for tuning?					
Was the appropriate compound for the method used for tuning? Were ion abundance data within the method-required QC limits?			<b>√</b>		
			<b>√</b>		
Internal standards (IS): Were IS area counts and retention times within the method-required QC limits?					
			<b>√</b>		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
	<b>√</b>				
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?  Were data associated with manual integrations flagged on the raw data?	· ·		<b>V</b>		
Dual column confirmation			<b>V</b>		
			<b>1</b>		
Did dual column confirmation results meet the method-required QC?			<b>V</b>		
Tentatively identified compounds (TICs):  If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>\</b>		
			<b>V</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
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?			<b>√</b>		
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?			<b>√</b>		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation			(	<b>)</b> 010	19946
Are all standards used in the analyses NIST-traceable or obtained from other appropriate	<b>√</b>				
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	<b>√</b>				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

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**

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

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Dannalpsson	Conventional Lab Supervisor	August 10, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

Laboratory Name:Microbac Laboratories Inc.Laboratory Log Number:L09080107Project Name:798-LONGHORNMethod:PCTSOLIDSPrep Batch Number(s):WG309174Reviewer Name:DEANNA I. HESSON

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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?	<b>√</b>				
Were % moisture (or solids) reported for all soil and sediment samples?	<b>√</b>				
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and,			<b>√</b>		
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
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?			<b>√</b>		
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?			<b>√</b>		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Description	Yes	No	NA(1)	<u> </u>	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>00</del> 10	<del>)99</del> :
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?			<b>√</b>		
Were all points generated between the lowest and highest standard used to calculate the			<b>√</b>		
curve?					
Are ICAL data available for all instruments used?			<b>√</b>		
Has the initial calibration curve been verified using an appropriate second source standard?			<b>√</b>		
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			<b>√</b>		
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?			<b>√</b>		
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			<b>√</b>		
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?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
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			<b>√</b>		
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
Is the MDL either adjusted or supported by the analysis of DCSs?			<b>√</b>		
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				)01C	<del>199</del> 5
Are all standards used in the analyses NIST-traceable or obtained from other appropriate			<b>√</b>		
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			<b>√</b>		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

Laboratory Name:
Laboratory Log Number:
Project Name:
Method:
Prep Batch Number(s):
Reviewer Name:
Laboratory Log Number:
L09080107
P798-LONGHORN
PCTSOLIDS
WG309174
Reviewer Name:
DEANNA I. HESSON
LRC Date:
August 10, 2009

#### **EXCEPTIONS REPORT**

### **ER# - Description**

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

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Dannalpsson	Conventional Lab Supervisor	August 10, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

Laboratory Name:
Laboratory Log Number:
Project Name:
Method:
Prep Batch Number(s):
Reviewer Name:
Laboratory Log Number:
L09080107
P798-LONGHORN
FLASHPOINT
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	<b>√</b>				
receipt?					
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration<="" other="" raw="" td="" values="" were=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql,>			<b>√</b>		
standards?					
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?			<b>√</b>		
Were sample quantitation limits reported for all analytes not detected?			<b>√</b>		
Were all results for soil and sediment samples reported on a dry weight basis?			<b>√</b>		
Were % moisture (or solids) reported for all soil and sediment samples?			<b>√</b>		
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	<b>√</b>				
Were blanks analyzed at the appropriate frequency?	<b>√</b>				
Were method blanks taken through the entire analytical process, including preparation and,	<b>√</b>				
if applicable, cleanup procedures?					
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	<b>√</b>				
Was each LCS taken through the entire analytical procedure, including prep and cleanup	<b>√</b>				
steps?					
Were LCSs analyzed at the required frequency?	<b>√</b>				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	<b>√</b>				
Does the detectability data document the laboratorys capability to detect the COCs at the			<b>√</b>		
MDL used to calculate the SQLs?					
Was the LCSD RPD within QC limits?	<b>√</b>				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			<b>√</b>		
Were MS/MSD analyzed at the appropriate frequency?			<b>√</b>		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		

Yes	No	NA(1)	NR(2)	ER(3)
		<b>√</b>	0010	)995
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Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation				<del>1010</del>	9956
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	<b>√</b>				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	<b>√</b>				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

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.

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

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 enviornmental sample that includes:
  - a) Items consistant 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) revocery and precision:

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

DEANNA I. HESSON	Dannalpsson	Conventional Lab Supervisor	August 10, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002

**A**1

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?	<b>√</b>				
Were all departures from standard conditions described in an exception report?	<b>√</b>				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	<b>√</b>				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	<b>√</b>				
Test reports					
Were all samples prepared and analyzed within holding times?	<b>√</b>				
Other than those results <mql, all="" bracketed="" by="" calibration="" other="" raw="" standards?<="" td="" values="" were=""><td><b>√</b></td><td></td><td></td><td></td><td></td></mql,>	<b>√</b>				
Were calculations checked by a peer or supervisor?	<b>√</b>				
Were all analyte identifications checked by a peer or supervisor?	<b>√</b>				
Were sample quantitation limits reported for all analytes not detected?	<b>√</b>				
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?			<b>√</b>		
If required for the project, TICs reported?			<b>√</b>		
Surrogate recovery data					
Were surrogates added prior to extraction?			<b>√</b>		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			<b>√</b>		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			<b>√</b>		
Were blanks analyzed at the appropriate frequency?			<b>√</b>		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			<b>√</b>		
Were blank concentrations <mql?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mql?<>			<b>√</b>		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	<b>√</b>				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	<b>√</b>				
Were LCSs analyzed at the required frequency?	<b>√</b>				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			<b>√</b>		
Does the detectability data document the laboratorys capability to detect the COCs at the	<b>√</b>		<b>√</b>		
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?			<b>√</b>		
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)	~~~	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			<b>√</b>	<del>00</del> 10	<del>)99</del> 6
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	<b>√</b>				
Were analytical duplicates analyzed at the appropriate frequency?	<b>√</b>				
Were RPDs or relative standard deviations within the laboratory QC limits?	<b>√</b>				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			<b>√</b>		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			<b>√</b>		
Are unadjusted MQLs included in the laboratory data package?			<b>√</b>		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	<b>√</b>				
Were all necessary corrective actions performed for the reported data?	<b>√</b>				
Was applicable and available technology used to lower the SQL minimize the matrix			<b>√</b>		
interference affects on the sample results?					
Were response factors and/or relative response factors for each analyte within QC limits?			<b>√</b>		
Were percent RSDs or correlation coefficient criteria met?			<b>√</b>		
Was the number of standards recommended in the method used for all analytes?	<b>√</b>				
Were all points generated between the lowest and highest standard used to calculate the	<b>√</b>				
curve?					
Are ICAL data available for all instruments used?	<b>√</b>				
Has the initial calibration curve been verified using an appropriate second source standard?	<b>√</b>				
Initial and continuing calibration verification (ICV and CCV) and continuing					
calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	<b>√</b>				
Were percent differences for each analyte within the method-required QC limits?			<b>√</b>		
Was the ICAL curve verified for each analyte?	<b>√</b>				
Was the absolute value of the analyte concentration in the inorganic CCB <mdl?< td=""><td></td><td></td><td><b>√</b></td><td></td><td></td></mdl?<>			<b>√</b>		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			<b>√</b>		
Were ion abundance data within the method-required QC limits?			<b>√</b>		
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?			<b>√</b>		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			<b>√</b>		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			<b>√</b>		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			<b>√</b>		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the			<b>√</b>		
method?					
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			<b>√</b>		
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			<b>√</b>		
evaluation studies?					

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation				<del>)</del> 010	<del>1996</del>
Are all standards used in the analyses NIST-traceable or obtained from other appropriate	<b>√</b>				
sources?					
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	<b>√</b>				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	<b>√</b>				
Is documentation of the analyst's competency up-to-date and on file?	<b>√</b>				
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	<b>√</b>				
applicable?					
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	<b>√</b>				

Laboratory Name:
Laboratory Log Number:
Project Name:
Method:
Prep Batch Number(s):
Reviewer Name:
L09080107
798-LONGHORN
REACTIVITY
WG309302, WG309303
DEANNA I. HESSON
LRC Date:
August 10, 2009

#### **EXCEPTIONS REPORT**

#### **ER# - Description**

- (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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1462597
Report generated: 08/10/2009 17:06

Microbac

1 OF 1

Micropac Laboratories inc.

Report Number: L09080107

Collect Date: 08/05/2009 10:05

Workgroup Number: WG309257

Sample Tag: 01

Report Date : August 10, 2009

00109967

Analytical Method:6010B
Analyst:PDM
Dilution:1
Units:mg/L

InstrumentPE-ICP2
Prep Date:08/07/2009 08:59
Cal Date:08/07/2009 09:44
Run Date08/07/2009 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		Ū	.1	.025	D006	1
Chromium, TCLP	7440-47-3		Ū	.2	.025	D007	5
Lead, TCLP	7439-92-1		Ū	1	.1	D008	5
Selenium, TCLP	7782-49-2		Ū	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

1 of 5

Microbac

Report Number: L09080107

Report Date : August 10, 2009

00109968

Sample Number: L09080107-02 PrePrep
Client ID: 04DS02 (0-2) Prep
Matrix: Leachate Analytical

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

InstrumentPE-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

2 of 5

Report Number: L09080107

Report Date : August 10, 2009

00109969

Sample Number:L09080107-03 PrePrep Method:1311
Client ID: 04DS03 (0-3) Prep Method: 3015
Matrix:Leachate Analytical Method: 6010E

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

InstrumentPE-ICP2
Prep Date:08/07/2009 08:59
Cal Date:08/07/2009 09:44
Run Date08/07/2009 18:11
File ID:P2.080709.181111

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		Ū	1	.1	D004	5
Barium, TCLP	7440-39-3	1.01		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		Ū	.1	.025	D006	1
Chromium, TCLP	7440-47-3		Ū	.2	.025	D007	5
Lead, TCLP	7439-92-1		Ū	1	.1	D008	5
Selenium, TCLP	7782-49-2		Ū	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

3 of 5

Report Number: L09080107

Report Date : August 10, 2009

00109970

Sample Number: L09080107-04 PrePrep Meth
Client ID: 04DS04 (0-2) Prep Meth
Matrix: Leachate Analytical Meth

Workgroup Number: WG309257

Collect Date: 08/05/2009 11:05

Sample Tag: 01

 PrePrep Method:1311
 InstrumentPE-ICP2

 Prep Method:3015
 Prep Date: 08/07/2009 08:59

 Analytical Method:6010B
 Cal Date: 08/07/2009 09:44

 Analyst:PDM
 Run Date 08/07/2009 18:17

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

4 of 5

Report Number: L09080107

Sample Tag: 01

Report Date : August 10, 2009

00109971

Sample Number: **L09080107-05** PrePrep Method:1311 Client ID: 04DS05 (0-4) Prep Method: 3015 Matrix: Leachate Analytical Method: 6010B

Analyst: PDM Workgroup Number: WG309257 Collect Date: 08/05/2009 10:20 Dilution:1 Units:mg/L

InstrumentPE-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

CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
7440-38-2		U	1	.1	D004	5
7440-39-3	0.677		.1	.025	D005	100
7440-43-9		U	.1	.025	D006	1
7440-47-3		U	.2	.025	D007	5
7439-92-1		U	1	.1	D008	5
7782-49-2		U	.8	.4	D010	1
7440-22-4		Ū	.1	.05	D011	5
	7440-38-2 7440-39-3 7440-43-9 7440-47-3 7439-92-1 7782-49-2	7440-38-2 7440-39-3 7440-43-9 7440-47-3 7439-92-1 7782-49-2	7440-38-2 U 7440-39-3 0.677 7440-43-9 U 7440-47-3 U 7439-92-1 U 7782-49-2 U	7440-38-2 U 1 7440-39-3 0.677 .1 7440-43-9 U .1 7440-47-3 U .2 7439-92-1 U 1 7782-49-2 U .8	7440-38-2     U     1     .1       7440-39-3     0.677     .1     .025       7440-43-9     U     .1     .025       7440-47-3     U     .2     .025       7439-92-1     U     1     .1       7782-49-2     U     .8     .4	7440-38-2     U     1     .1     D004       7440-39-3     0.677     .1     .025     D005       7440-43-9     U     .1     .025     D006       7440-47-3     U     .2     .025     D007       7439-92-1     U     1     .1     D008       7782-49-2     U     .8     .4     D010

U Not detected at or above adjusted sample detection limit

5 5 of

# 2.1.1.2 QC Summary Data

#### 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:	Example:
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	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:	Example:
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	Example:
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
Cdry = Concentration calculated as dry weight (mg/kg)	6.25

#### 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:	Example:
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	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:	Example:
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	Example:
Cx = Concentration calculated as received (wet basis) Px = Percent solids of sample (%wt)	5 80
Cdry = Concentration calculated as dry weight (mg/kg)	6.25

#### 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:	Example:
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	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:	Example:
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	Example:
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
	ć 25
Cdry = Concentration calculated as dry weight (mg/kg)	6.25



Document Control No.: 102300s 109976

#### **TCLP Non-Volatile**

<u> </u>		r			
Analys	st/Date	Analyst/Date			
CAF/8	206-09	Ruce	3.07.09		
Time	Temp	Time	Temp		
On	On °C	Off	Off°C		
14:00	23°	0700	73		

											duction		
Jug#	Sample #			ests	Method		id#	Matrix*	%Solid	Yes	No	Int. Wt. (g)	Fluid Vol. (1
<u> 61+</u>	08-0060-01	M		<b>SV</b>	1311	N	A	$\omega$	125		V	100	150
	-02	1	(SPK)	1			١	1			V	1	
	-43			L							V		
	-04							·			V		
<u></u>	-05								1	1			
D	8-0101-02	m	EMS		1311	FF	58	5/5	100		V	100.03	2000
	-01		RS				Ī .		1		V	100.04	1
	<b>~0.3</b>		MSD								V	100.03	
	08-0102-01											100.06	
	08-0107-01										1	100.05	
	-02										1	100.01	
	~03										1	100.00	
	704										V	100.09	
	-05					-						100.01	
NIA	FBLK	J	-			FI-7	458	NIA	NA		1	2000	
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Peer Review By:	Supervisor Review	
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		-
Comments: Filtered	SK's processed @ 10:00	
Agrator speed is 30 ± 2 tpm umes		

Workgroup: WG309218

Analyst:VC

Spike Analyst: VC

Run Date: 08/07/2009 08:59

Method: 3015

SOP: ME407 Revison 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: Week Colley

Reviewer:

MW\_DIG - Modified 07/02/2008

PDF ID: 1460726 Report generated: 08/07/2009 10:41



Instrument Run Log

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	ССВ		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	ССВ		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	ССВ		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	ССВ		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

August 10, 2009 Approved: Page: 1

Sheri L. Rakgraf



Instrument Run Log

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	ССВ		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	ССВ		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	ССВ		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

August 10, 2009 Approved: Page: 2

Sheri L. Kakgraf



Instrument Run Log

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 20:10
95	P2.080709.202259	WG309274-31	ССВ		1		08/07/09 20:22

#### Comments

Seq.	Rerun Dil.	Rerun Dil. Reason Analytes					
6	6						
	Reanalyzed due to marginal ICB failure.						
7	7						
	Reanalyzed due t	o marginal ICB failure.					

August 10, 2009 Approved: Page: 3

Sheri L. Rakgraf



Checklist ID: 40712

# Microbac Laboratories Inc. Data Checklist

00109981

Date:	<u>07-AUG-2009</u>
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

Pierce Morris Sheri L. Habourd

CHECKLIST1 - Modified 03/05/2008 Generated: AUG-10-2009 15:00:43

### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00109982

AAB#: WG309257

Analytical Method: 6010B

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	. ~
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

HOLD\_TIMES - Modified 03/06/2008 PDF File ID:1461844 Report generated 08/10/2009 09:53



### 00109983

#### METHOD BLANK SUMMARY

Login Number: L09080107

Blank File ID: P2.080709.160448

Prep Date: 08/07/09 08:59

Analyzed Date: 08/07/09 16:04

Work Group: WG309257

Blank Sample ID: WG309218-03

Instrument ID: PE-ICP2

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



## Microbac Laboratories Inc. METHOD BLANK REPORT

00109984

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Arsenic, TCLP	0.100	1.00	0.100	1	υ
Barium, TCLP	0.0250	0.100	0.0250	1	υ
Cadmium, TCLP	0.0250	0.100	0.0250	1	υ
Chromium, TCLP	0.0250	0.200	0.0250	1	υ
Lead, TCLP	0.100	1.00	0.100	1	υ
Selenium, TCLP	0.400	0.800	0.400	1	υ
Silver, TCLP	0.0500	0.100	0.0500	1	υ

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



### Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00109985

 Login Number:
 L09080107
 Run Date:
 08/07/2009
 Sample ID:
 WG309218-04

 Instrument ID:
 Prep Method:
 3015

File ID:<u>P2.080709.161127</u> Analyst:<u>PDM</u> Method:<u>6010B</u>

Workgroup (AAB#):<u>WG309257</u> Matrix:<u>Leachate</u> Units:<u>mg/L</u>

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	

LCS - Modified 03/06/2008 PDF File ID:1461847 Report generated: 08/10/2009 09:53

### Microbac Laboratories Inc. MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00109986

 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
 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	

<sup>\*</sup> FAILS %REC LIMIT

NOTE: This is an internal quality control sample.

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WG\_MS\_MSD\_DRYWT - Modified 03/07/2008 PDF File ID:1461848 Report generated 08/10/2009 09:53

<sup>#</sup> FAILS RPD LIMIT

Serial Dilution Report

 Login:
 L09080107
 Worknum:
 WG309257

 Instrument:
 PE-ICP2
 Method:
 6010B

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	1 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.

 ${\tt F}$  = 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



#### Microbac Laboratories Inc. POST SPIKE REPORT

Sample Login ID: L09080107 Worknum: WG309257

Instrument ID: PE-ICP2

Method: 6010B

Post Spike ID: WG309257-01 File ID: P2.080709.163122 Dil:1 Units: mg/L Sample ID: <u>L09080060-01</u> File ID: <u>P2.080709.162446</u> Dil: <u>Matrix: Leachate</u>

Analyte	Post Spike Result	С	Sample Result	С	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

POST\_SPIKE - Modified 03/06/2008 PDF File ID: 1461843 Report generated: 08/10/2009 09:53

#### Microbac Laboratories Inc. Initial Calibration Summary

00109989

Workgroup (AAB#): Login: L09080107 WG309257 Instrument ID: PE-ICP2

Initial Calibration Date: 07-AUG-2009 09:44 Analytical Method: 6010B ICAL Worknum: WG309274

	WG309	WG309274-01		274-02	WG309	274-03	WG309	274-04	WG309	274-05	]	
	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

INT\_CAL\_ICP - Modified 03/06/2008 PDF File I D: 1461851

Report generated: 10-AUG-2009 09:54

### Microbac Laboratories Inc. INITIAL CALIBRATION BLANK (ICB)

 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	υ
BARIUM	.0025	.01	.0025	υ
CADMIUM	.0025	.01	.0025	υ
CHROMIUM	.0025	.02	.0025	υ
LEAD	.01	.1	.01	υ
SELENIUM	.04	.08	.04	υ
SILVER	.005	.01	.005	Ŭ

ICB - Modified 07/14/2009 PDF File ID:1461853 Report generated 08/10/2009 09:54



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	υ
Barium	0.00250	0.0100	0.00250	υ
Cadmium	0.00250	0.0100	0.00250	υ
Chromium	0.00250	0.0200	0.00250	υ
Lead	0.0100	0.100	0.0100	υ
Selenium	0.0400	0.0800	0.0400	υ
Silver	0.00500	0.0100	0.00500	υ

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:1461856 Report generated 08/10/2009 09:54

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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	υ
Barium	0.00250	0.0100	0.00250	υ
Cadmium	0.00250	0.0100	0.00250	υ
Chromium	0.00250	0.0200	0.00250	υ
Lead	0.0100	0.100	0.0100	υ
Selenium	0.0400	0.0800	0.0400	υ
Silver	0.00500	0.0100	0.00500	υ

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:1461856 Report generated 08/10/2009 09:54



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	υ
Barium	0.00250	0.0100	0.00250	υ
Cadmium	0.00250	0.0100	0.00250	υ
Chromium	0.00250	0.0200	0.00250	υ
Lead	0.0100	0.100	0.0100	Ū
Selenium	0.0400	0.0800	0.0400	υ
Silver	0.00500	0.0100	0.00500	υ

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:1461856 Report generated 08/10/2009 09:54



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	υ
Barium	0.00250	0.0100	0.00250	υ
Cadmium	0.00250	0.0100	0.00250	υ
Chromium	0.00250	0.0200	0.00250	υ
Lead	0.0100	0.100	0.0100	υ
Selenium	0.0400	0.0800	0.0400	Ū
Silver	0.00500	0.0100	0.00500	υ

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:1461856 Report generated 08/10/2009 09:54

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#### Microbac Laboratories Inc. INITIAL CALIBRATION VERIFICATION (ICV) (Alternate Source)

00109995

 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	

<sup>\*</sup> Exceeds LIMITS Limit

ICV - Modified 03/06/2008 PDF File ID: 1461852 Report generated 08/10/2009 09:54



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:
 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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID:1461855 Report generated 08/10/2009 09:54



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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID:1461855 Report generated 08/10/2009 09:54



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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID:1461855 Report generated 08/10/2009 09:54



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 Method: 6010B

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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID: 1461855 Report generated 08/10/2009 09:54



### Microbac Laboratories Inc. INTERFERENCE CHECK SAMPLES

### 00110000

Login number: L09080107 Workgroup (AAB#): WG309257

Instrument ID: PE-ICP2

 Sol. A: WG309274-10
 File ID: P2.080709.102027

 Sol. AB: WG309274-11
 File ID: P2.080709.102608

Method:6010B
Units:mg/L
Matrix:Leachate

	Sol. A				Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q	
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).

ICS - Modified 03/06/2008 PDF File ID:1461854 Report generated 08/10/2009 09:54



### Microbac Laboratories Inc. INTERELEMENT CORRECTION FACTORS (ANNUALLY)

 Login Number:
 L09080107
 Date:
 02/02/2009

 Insturment ID:
 PE-ICP2
 Method:
 6010B

Analyte	Wave Length					
_		AG	AL	AS	В	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

CORR\_FACTORS - Modified 03/05/2008 PDF File ID:1461860 Report generated: 08/10/2009 09:54



### Microbac Laboratories Inc. INTERELEMENT CORRECTION FACTORS (ANNUALLY)

 Login Number:
 L09080107
 Date:
 02/02/2009

 Insturment ID:
 PE-ICP2
 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

CORR\_FACTORS - Modified 03/05/2008 PDF File ID:1461860 Report generated: 08/10/2009 09:54



### Microbac Laboratories Inc. INTERELEMENT CORRECTION FACTORS (ANNUALLY)

 Login Number:
 L09080107
 Date:
 02/02/2009

 Insturment ID:
 PE-ICP2
 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

CORR\_FACTORS - Modified 03/05/2008 PDF File ID:1461860 Report generated: 08/10/2009 09:54

## Microbac Laboratories Inc. INTERELEMENT CORRECTION FACTORS (ANNUALLY)

 Login Number:
 L09080107
 Date:
 02/02/2009

 Insturment ID:
 PE-ICP2
 Method:
 6010B

	Wave					
Analyte	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

CORR\_FACTORS - Modified 03/05/2008 PDF File ID:1461860 Report generated: 08/10/2009 09:54



## Microbac Laboratories Inc. INTERELEMENT CORRECTION FACTORS (ANNUALLY)

 Login Number:
 L09080107
 Date:
 02/02/2009

 Insturment ID:
 PE-ICP2
 Method:
 6010B

Analyte	Wave Length	SB	SE	sı	SN	SR
ALUMINUM	396.15	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

CORR\_FACTORS - Modified 03/05/2008 PDF File ID:1461860 Report generated: 08/10/2009 09:54



## Microbac Laboratories Inc. INTERELEMENT CORRECTION FACTORS (ANNUALLY)

 Login Number:
 L09080107
 Date:
 02/02/2009

 Insturment ID:
 PE-ICP2
 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

CORR\_FACTORS - Modified 03/05/2008 PDF File ID:1461860 Report generated: 08/10/2009 09:54



 Login Number:
 L09080107
 Date:
 06/30/2009

 Insturment ID:
 PE-ICP2
 Method:
 6010B

	Integration Time	Concentration
Analyte	(Sec.)	(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.

LINEAR\_RANGE - Modified 03/06/2008 PDF File ID:1461849 Report generated: 08/10/2009 09:54



# 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1462598
Report generated: 08/10/2009 17:06

Microbac

1 OF 1

Microbac Laboratories inc.

Report Number: L09080107

Report Date : August 10, 2009

00110011

Sample Number: <u>L09080107-01</u> Client ID: <u>04DS01 (0-2)</u>

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		Ū	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

1 of 5

Micropac Laboratories inc.

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

5 of

Micropac Laboratories inc.

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		Ū	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

5 3 of

MICIODAC LADOTACOTTES INC.

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

cal Method:7470A
cal 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		Ū	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

4 of 5

MICIODAC LADOTACOTTES INC.

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

InstrumentHYDRA

Prep Date:08/07/2009 09:00

Cal Date:08/07/2009 14:31

Run Date08/07/2009 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

5 of 5

# 2.1.2.2 QC Summary Data

#### 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:	Example:
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	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:	Example:
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	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)	6.67
Px = Percent solids of sample (%wt)	80
Cdry = Concentration calculated as dry weight (ug/kg)	8.33

8.33 ug/kg = 0.00833 mg/kg



Document Control No.: 10230021 41 0001 8

#### **TCLP Non-Volatile**

nalyst(s): <u>RWC</u>, <u>CAF</u> Date: <u>8-06-09</u>

Analys	st/Date	Analy	st/Date
CAF/8	206-09	Ruce	3.07.09
Time	Temp	Time	Temp
On	On °C	Off	Off°C
14:00	230	0700	23

							Size Re	duction		
Jug#	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Yes	No	Int. Wt. (g)	Fluid Vol. (mL)
filt	08-0060-01	ME SV	1311	NA	W	15		V	100	160
	-02 -03	1(SPK) 1			1	١		V	<b>\</b>	
	-03							V		
	-04							V		
	-05	1 1				上	-			
AD_	08-0101-02	me ms	1311	F1758	<u> 5/5</u>	100		V	100.03	2000
	-01	RS				1		V	100.04	1
	-03	msp						V	100.03	
	08-0102-01								100.06	
	10-7010-80							/	100.05	
									100.01	
	-02 -03							1	100.00	
	704							V	100.09	
	-05								100.01	
. N/A	9FBLK	<u></u>		F1-758 F1-758	NIA	NA		1	2000	
$\mathcal{D}'$	08-0131-01	ME	1311	F1-758	3/5	100		1	100.00	2000
						,			,00.00	
								$\overline{}$		e'
<u> </u>									<u> </u>	-
			2 /							
		0 06.01								· · · · · · · · · · · · · · · · · · ·
L		1,80								
		8.06.01						***********		

*Matrix Code = (S-solid) (SS-sand,	soil or sludge) (P-paint) (O-organic) (W-water or waste)	
Agitator speed is $30 \pm 2$ 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 Revison 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

7         L09080060-01         SAMP         17         4 mL         40 mL         08/1           8         WG309222-02         REF         17         4 mL         40 mL         08/1           9         L09080060-02         SAMP         17         4 mL         40 mL         08/1           10         L09080060-03         SAMP         17         4 mL         40 mL         08/1           11         L09080060-04         SAMP         17         4 mL         40 mL         08/1           12         L09080060-05         SAMP         17         4 mL         40 mL         08/1           13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17         4 mL         40 mL         08/1           17         L09080107-02         SAMP         17         4 mL         40 mL         08/1           18         L09080107-04         SAMP <t< th=""><th></th><th>SAMPLE #</th><th>Type</th><th>Matrix</th><th>Initial Amount</th><th>Final Volume</th><th>Spike Amount</th><th>Due Date</th></t<>		SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
3         WG309188-01         FBLK         17         4 mL         40 mL         4 mL         40 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         4 mL         40 mL         08/1.	1	WG309222-03	BLANK	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         08/1           6         L09080058-01         SAMP         17         4 mL         40 mL         08/1           7         L09080060-01         SAMP         17         4 mL         40 mL         08/1           8         WG309222-02         REF         17         4 mL         40 mL         08/1           9         L09080060-02         SAMP         17         4 mL         40 mL         08/1           10         L09080060-03         SAMP         17         4 mL         40 mL         08/1           11         L09080060-04         SAMP         17         4 mL         40 mL         08/1           12         L09080060-05         SAMP         17         4 mL         40 mL         08/1           13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080107-01         SAMP         17 <td>2</td> <td>WG309031-01</td> <td>FBLK</td> <td>17</td> <td>4 mL</td> <td>40 mL</td> <td></td> <td></td>	2	WG309031-01	FBLK	17	4 mL	40 mL		
5         WG309222-01         REF         17         4 mL         40 mL         08/1           6         L09080058-01         SAMP         17         4 mL         40 mL         08/1           7         L09080060-01         SAMP         17         4 mL         40 mL         08/1           8         WG309222-02         REF         17         4 mL         40 mL         08/1           9         L09080060-02         SAMP         17         4 mL         40 mL         08/1           10         L09080060-03         SAMP         17         4 mL         40 mL         08/1           11         L09080060-04         SAMP         17         4 mL         40 mL         08/1           12         L09080060-05         SAMP         17         4 mL         40 mL         08/1           13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17	3	WG309188-01	FBLK	17	4 mL	40 mL		
6         L09080058-01         SAMP         17         4 mL         40 mL         08/1           7         L09080060-01         SAMP         17         4 mL         40 mL         08/1           8         WG309222-02         REF         17         4 mL         40 mL         08/1           9         L09080060-02         SAMP         17         4 mL         40 mL         08/1           10         L09080060-03         SAMP         17         4 mL         40 mL         08/1           11         L09080060-04         SAMP         17         4 mL         40 mL         08/1           12         L09080060-05         SAMP         17         4 mL         40 mL         08/1           13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17         4 mL         40 mL         08/1           17         L09080107-02         SAMP <td< td=""><td>4</td><td>WG309222-04</td><td>LCS</td><td>17</td><td>4 mL</td><td>40 mL</td><td>4 mL</td><td></td></td<>	4	WG309222-04	LCS	17	4 mL	40 mL	4 mL	
7         L09080060-01         SAMP         17         4 mL         40 mL         08/1           8         WG309222-02         REF         17         4 mL         40 mL         08/1           9         L09080060-02         SAMP         17         4 mL         40 mL         08/1           10         L09080060-03         SAMP         17         4 mL         40 mL         08/1           11         L09080060-04         SAMP         17         4 mL         40 mL         08/1           12         L09080060-05         SAMP         17         4 mL         40 mL         08/1           13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17         4 mL         40 mL         08/1           17         L09080107-02         SAMP         17         4 mL         40 mL         08/1           18         L09080107-03         SAMP <t< td=""><td>5</td><td>WG309222-01</td><td>REF</td><td>17</td><td>4 mL</td><td>40 mL</td><td></td><td></td></t<>	5	WG309222-01	REF	17	4 mL	40 mL		
8         WG309222-02         REF         17         4 mL         40 mL         08/1           9         L09080060-02         SAMP         17         4 mL         40 mL         08/1           10         L09080060-03         SAMP         17         4 mL         40 mL         08/1           11         L09080060-04         SAMP         17         4 mL         40 mL         08/1           12         L09080060-05         SAMP         17         4 mL         40 mL         08/1           13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17         4 mL         40 mL         08/1           17         L09080107-02         SAMP         17         4 mL         40 mL         08/1           18         L09080107-03         SAMP         17         4 mL         40 mL         08/1           19         L09080107-04         SAMP         <	6	L09080058-01	SAMP	17	4 mL	40 mL		08/12/09
9	7	L09080060-01	SAMP	17	4 mL	40 mL		08/14/09
10       L09080060-03       SAMP       17       4 mL       40 mL       08/1         11       L09080060-04       SAMP       17       4 mL       40 mL       08/1         12       L09080060-05       SAMP       17       4 mL       40 mL       08/1         13       L09080060-06       SAMP       17       4 mL       40 mL       08/1         14       L09080060-07       SAMP       17       4 mL       40 mL       08/1         15       L09080060-08       SAMP       17       4 mL       40 mL       08/1         16       L09080107-01       SAMP       17       4 mL       40 mL       08/1         17       L09080107-02       SAMP       17       4 mL       40 mL       08/1         18       L09080107-03       SAMP       17       4 mL       40 mL       08/1         19       L09080107-04       SAMP       17       4 mL       40 mL       08/1         20       L09080107-05       SAMP       17       4 mL       40 mL       4 mL         21       WG309222-05       MS       17       4 mL       40 mL       40 mL       4 mL	8	WG309222-02	REF	17	4 mL	40 mL		
11         L09080060-04         SAMP         17         4 mL         40 mL         08/1           12         L09080060-05         SAMP         17         4 mL         40 mL         08/1           13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17         4 mL         40 mL         08/1           17         L09080107-02         SAMP         17         4 mL         40 mL         08/1           18         L09080107-03         SAMP         17         4 mL         40 mL         08/1           19         L09080107-04         SAMP         17         4 mL         40 mL         08/1           20         L09080107-05         SAMP         17         4 mL         40 mL         4 mL           21         WG309222-05         MS         17         4 mL         40 mL         4 mL	9	L09080060-02	SAMP	17	4 mL	40 mL		08/14/09
12     L09080060-05     SAMP     17     4 mL     40 mL     08/1       13     L09080060-06     SAMP     17     4 mL     40 mL     08/1       14     L09080060-07     SAMP     17     4 mL     40 mL     08/1       15     L09080060-08     SAMP     17     4 mL     40 mL     08/1       16     L09080107-01     SAMP     17     4 mL     40 mL     08/1       17     L09080107-02     SAMP     17     4 mL     40 mL     08/1       18     L09080107-03     SAMP     17     4 mL     40 mL     08/1       19     L09080107-04     SAMP     17     4 mL     40 mL     08/1       20     L09080107-05     SAMP     17     4 mL     40 mL     4 mL       21     WG309222-05     MS     17     4 mL     40 mL     4 mL	10	L09080060-03	SAMP	17	4 mL	40 mL		08/14/09
13         L09080060-06         SAMP         17         4 mL         40 mL         08/1           14         L09080060-07         SAMP         17         4 mL         40 mL         08/1           15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17         4 mL         40 mL         08/1           17         L09080107-02         SAMP         17         4 mL         40 mL         08/1           18         L09080107-03         SAMP         17         4 mL         40 mL         08/1           19         L09080107-04         SAMP         17         4 mL         40 mL         08/1           20         L09080107-05         SAMP         17         4 mL         40 mL         4 mL           21         WG309222-05         MS         17         4 mL         40 mL         4 mL	11	L09080060-04	SAMP	17	4 mL	40 mL		08/14/09
14     L09080060-07     SAMP     17     4 mL     40 mL     08/1       15     L09080060-08     SAMP     17     4 mL     40 mL     08/1       16     L09080107-01     SAMP     17     4 mL     40 mL     08/1       17     L09080107-02     SAMP     17     4 mL     40 mL     08/1       18     L09080107-03     SAMP     17     4 mL     40 mL     08/1       19     L09080107-04     SAMP     17     4 mL     40 mL     08/1       20     L09080107-05     SAMP     17     4 mL     40 mL     08/1       21     WG309222-05     MS     17     4 mL     40 mL     4 mL	12	L09080060-05	SAMP	17	4 mL	40 mL		08/14/09
15         L09080060-08         SAMP         17         4 mL         40 mL         08/1           16         L09080107-01         SAMP         17         4 mL         40 mL         08/1           17         L09080107-02         SAMP         17         4 mL         40 mL         08/1           18         L09080107-03         SAMP         17         4 mL         40 mL         08/1           19         L09080107-04         SAMP         17         4 mL         40 mL         08/1           20         L09080107-05         SAMP         17         4 mL         40 mL         08/1           21         WG309222-05         MS         17         4 mL         40 mL         4 mL	13	L09080060-06	SAMP	17	4 mL	40 mL		08/14/09
16     L09080107-01     SAMP     17     4 mL     40 mL     08/1       17     L09080107-02     SAMP     17     4 mL     40 mL     08/1       18     L09080107-03     SAMP     17     4 mL     40 mL     08/1       19     L09080107-04     SAMP     17     4 mL     40 mL     08/1       20     L09080107-05     SAMP     17     4 mL     40 mL     08/1       21     WG309222-05     MS     17     4 mL     40 mL     4 mL	14	L09080060-07	SAMP	17	4 mL	40 mL		08/14/09
17     L09080107-02     SAMP     17     4 mL     40 mL     08/1       18     L09080107-03     SAMP     17     4 mL     40 mL     08/1       19     L09080107-04     SAMP     17     4 mL     40 mL     08/1       20     L09080107-05     SAMP     17     4 mL     40 mL     08/1       21     WG309222-05     MS     17     4 mL     40 mL     4 mL	15	L09080060-08	SAMP	17	4 mL	40 mL		08/14/09
18     L09080107-03     SAMP     17     4 mL     40 mL     08/1       19     L09080107-04     SAMP     17     4 mL     40 mL     08/1       20     L09080107-05     SAMP     17     4 mL     40 mL     08/1       21     WG309222-05     MS     17     4 mL     40 mL     4 mL	16	L09080107-01	SAMP	17	4 mL	40 mL		08/10/09
19     L09080107-04     SAMP     17     4 mL     40 mL     08/1       20     L09080107-05     SAMP     17     4 mL     40 mL     08/1       21     WG309222-05     MS     17     4 mL     40 mL     4 mL	17	L09080107-02	SAMP	17	4 mL	40 mL		08/10/09
20     L09080107-05     SAMP     17     4 mL     40 mL     08/10       21     WG309222-05     MS     17     4 mL     40 mL     4 mL	18	L09080107-03	SAMP	17	4 mL	40 mL		08/10/09
21 WG309222-05 MS 17 4 mL 40 mL 4 mL	19	L09080107-04	SAMP	17	4 mL	40 mL		08/10/09
	20	L09080107-05	SAMP	17	4 mL	40 mL		08/10/09
22 WG309222-06 MS 17 4 mL 40 mL 4 mL	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	23	WG309222-07	MSD	17	4 mL	40 mL	4 mL	

Analyst:

BLOCK\_DIG - Modified 07/22/2008 PDF ID: 1460998
Report generated: 08/07/2009 11:59



#### 00110020

#### Microbac Laboratories Inc.

Instrument Run Log

Instrument:	HYDRA	Dataset:	080709B.PRN		
Analyst1:	PDM	Analyst2:	N/A		
Method:	7470A	SOP:	ME404	Rev: <u>11</u>	
	00707				

Maintenance Log ID: 29707

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	ССВ		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	ССВ		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

Sheri L. Hakgraf



Run Log ID: 29526

#### Microbac Laboratories Inc.

00110021

Instrument Run Log

 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

Workgroups: 309268

Comments:

Coa							
Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.080709.153604	WG309279-16	ССВ		1		08/07/09 15:36

Page: 2 Approved: August 10, 2009

Sheri L. Hakgraf



Checklist ID: 40700

#### Microbac Laboratories Inc. Data Checklist

00110022

Date:	<u>07-AUG-2009</u>
Analyst:	PDM
Analyst:	NA
Method:	7470A
Instrument:	HYDRA
Curve Workgroup:	309279
Runlog ID:	29526
alytical 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

Sheri L. Hakgad

CHECKLIST1 - Modified 03/05/2008 Generated: AUG-10-2009 10:23:22

Microbac Laboratories Inc.

### HOLDING TIMES EQUIVALENT TO AFCEE FORM 9

00110023

Analytical Method: 7470A

Login Number: L09080107

AAB#: WG309268

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	~	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

HOLD\_TIMES - Modified 03/06/2008 PDF File ID: 1461406 Report generated 08/07/2009 15:48



Page 96

#### 00110024

#### METHOD BLANK SUMMARY

Login Number: L09080107

Blank File ID: HY.080709.144204

Prep Date: 08/07/09 09:00

Analyzed Date: 08/07/09 14:42

Work Group: WG309268

Blank Sample ID: WG309222-03

Instrument ID: HYDRA

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



## Microbac Laboratories Inc. METHOD BLANK REPORT

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury	0.00100	0.00200	0.00100	1	υ

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



## Microbac Laboratories Inc. LABORATORY CONTROL SAMPLE (LCS)

00110026

Analytes	Expected	Found	% Rec	LC	S Limits	Q
Mercury	0.0400	0.0416	104	85	- 115	

LCS - Modified 03/06/2008 PDF File ID:1461409 Report generated: 08/07/2009 15:48

## Microbac Laboratories Inc. MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00110027

Loginnum: <u>L09080107</u>	Cal ID: <u>HYDRA</u> -	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: <u>HY.080709.150459</u> Dil: <u>1</u>	Units:mg/L
Sample ID:WG309222-07 MSD	File ID: HY.080709.150643 Dil:1	

		MS	MS	MS	MSD	MSD	MSD		%Rec	RPD	
Analyte	Parent	Spiked	Found	%Rec	Spiked	Found	%Rec	%RPD	Limits	Limit	Q
Mercury	ND	0.0400	0.0424	106	0.0400	0.0412	103	2.87	85 - 115	20	

<sup>\*</sup> FAILS %REC LIMIT
# FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac ®

## Microbac Laboratories Inc. POST SPIKE REPORT

00110028

Sample Login ID: <u>L09080107</u> Worknum: <u>WG309268</u>

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	С	Sample Result	С	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

Microbac Laboratories Inc. INITIAL CALIBRATION SUMMARY

00110029

Login Number:L09080107
Analytical Method:7470A
ICAL Worknum:WG309279

Workgroup (AAB#): WG309268

Instrument ID: HYDRA

Initial Calibration Date: 08/07/2009 14:31

	WG3	09279-01	WG3	09279-02	WG3	WG309279-03 WG309279-04		WG309279-05		WG309279-06		
Analyte	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

Microbac Laboratories Inc. INITIAL CALIBRATION SUMMARY

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

## Microbac Laboratories Inc. INITIAL CALIBRATION BLANK (ICB)

 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	υ

ICB - Modified 07/14/2009 PDF File ID:1461413 Report generated 08/07/2009 15:48



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	υ

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:1461415 Report generated 08/07/2009 15:48

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	υ

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:1461415 Report generated 08/07/2009 15:48

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	Ū

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:1461415 Report generated 08/07/2009 15:48

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

 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.

Matrix:LEACHATE

\* = Result is above RL.

CCB - Modified 03/05/2008 PDF File ID:1461415 Report generated 08/07/2009 15:48

#### Microbac Laboratories Inc. INITIAL CALIBRATION VERIFICATION (ICV) (Alternate Source)

00110036

 Login Number: L09080107
 Run Date: 08/07/2009
 Sample ID: WG309279-07

 Instrument ID: HYDRA
 Run Time: 14:33
 Method: 7470A

 Units:ug/L File ID: HY. 080709.143345 Analyst: PDM 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	

<sup>\*</sup> Exceeds LIMITS Limit

ICV - Modified 03/06/2008 PDF File ID: 1461412 Report generated 08/07/2009 15:48



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID:1461414 Report generated 08/07/2009 15:48



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID:1461414 Report generated 08/07/2009 15:48



## Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Mercury, Total	0.00200	0.00192	mg/L	96.0	80 - 120	

<sup>\*</sup> Exceeds LIMITS Criteria

Matrix:LEACHATE

CCV - Modified 03/05/2008 PDF File ID:1461414 Report generated 08/07/2009 15:48



### Microbac Laboratories Inc. CONTINUING CALIBRATION VERIFICATION (CCV)

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	

<sup>\*</sup> Exceeds LIMITS Criteria

CCV - Modified 03/05/2008 PDF File ID:1461414 Report generated 08/07/2009 15:48



# 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

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: <u>389869/ 390836(GWTP)</u>

### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1462596
Report generated: 08/10/2009 17:06

Microbac

1 OF 1

MICIODAC LADOTACOTTES INC.

Report Number: L09080107

Report Date : August 10, 2009

00110045

Sample Number: L09080107-01 PrePrep Method: NONE Instrument: BAL001 Prep Method: D2216-90 Prep Date: 08/07/

 Client ID: 04DS01 (0-2)
 Prep Method: D2216-90
 Prep Date: 08/07/2009 08:39

 Matrix: Soil
 Analytical Method: D2216-90
 Cal Date:

Workgroup Number: \( \mathbb{W} \) 309174 \\ Collect Date: \( \mathbb{O} \) 8/05/2009 \( \mathbb{D} \) 10:05 \\ Sample Tag: \( \mathbb{O} \) 1 \\ Units: \( \mathbb{W} \) eight \( \mathbb{W} \)

 Analyte
 CAS. Number
 Result
 Qual
 PQL
 SDL

 Percent Solids
 10-02-6
 84.8
 1.00
 1.00

1 of 5

MICIODAC LADOTACOTTES INC.

Report Number: L09080107

Report Date : August 10, 2009

00110046

Sample Number: L09080107-02 PrePrep Method: NONE Instrument: BAL001 Prep Method: D2216-90 Prep Date: 08/07/

 Client ID: 04DS02 (0-2)
 Prep Method: D2216-90
 Prep Date: 08/07/2009 08:39

 Matrix: Soil
 Analytical Method: D2216-90
 Cal Date:

Workgroup Number: W3309174
Collect Date: 08/05/2009 10:40
Sample Tag: 01

Workgroup Number: W3309174
Analyst: JDH
Dilution: 1

Units: weight %

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

2 of 5

Report Number: L09080107

Report Date : August 10, 2009

00110047

Sample Number: <u>L09080107-03</u> Client ID: <u>04Ds03 (0-3)</u>

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

> 5 of

Report Number: L09080107

Report Date : August 10, 2009

00110048

Sample Number: <u>L09080107-04</u> Client ID: <u>04DS04 (0-2)</u> PrePrep Method:NONE Instrument: BAL001

Prep Method: D2216-90 Matrix: Soil Analytical Method: D2216-90

Prep Date: 08/07/2009 08:39
Cal Date: Analyst: JDH
Dilution: 1 Run Date: 08/07/2009 08:39 File ID: B1.309174-0143

Workgroup Number: WG309174
Collect Date: 08/05/2009 11:05 Sample Tag: 01 Units:weight %

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.1		1.00	1.00

5 of

MICTODAC LABORACOTTES INC.

Report Number: L09080107

Report Date : August 10, 2009

00110049

Sample Number: <u>L09080107-05</u> Client ID: <u>04Ds05 (0-4)</u>

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 5 of

19.58%

### 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

2.0 Calculating the percent moisture of a sample.

%Solids = Percent solids present in sample.

% Moisture = 100 - % Solids from 1.0 calculation

#### PERCENT SOLIDS

00110051

Workgroup (AAB#):WG309174 Analyst:JDH ADT(on):08/06/2009 15:54
Method:D2216-90 Instrument:BAL001 ADT(off):08/07/2009 08:39

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 1.33 L09070709-01 16.42 12.36 73.09 L09070709-02 1.34 20.81 15.84 74.47 T-09070709-03 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 87.37 23.98 21.12 L09070709-10 1.32 22.88 20.56 89.24 L09070709-11 1.35 25.33 20.58 80.19 1.31 L09070709-12 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 1.32 25.34 21.59 84.39 L09070709-16 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 1.3 22.1 L09070709-20 25.88 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 T-09070709-24 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 T-09070709-27 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 83.76 29.62 25.02 L09080106-02 1.31 32.43 81.91 26.8 1.31 L09080106-03 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 1.35 L09080107-02 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



#### PERCENT SOLIDS

00110052

Workgroup (AAB#):WG309174 Analyst:JDH ADT(on):08/06/2009 15:54
Method:D2216-90 Instrument:BAL001 ADT(off):08/07/2009 08:39

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
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:

PERCENT\_SOLIDS - Modified 04/24/2008

PDF ID: 1460001
Report generated: 08/07/2009 08:57

## 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

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: <u>389869/ 390836(GWTP)</u>

### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1462599
Report generated: 08/10/2009 17:06

Microbac

1 OF 1

MICIODAC LADOTACOTTES INC.

Report Number: L09080107

Report Date : August 10, 2009

00110056

Sample Number: L09080107-01 PrePrep Method: NONE Instrument: BURET

Client ID: 04DS01 (0-2) Prep Method: SW7.34 Prep Date: 08/10/2009 07:31

Matrix: Soil Analytical Method: SW7.34 Cal Date:

Analytical Method: SW7.34 Prep Date: 08/10/2009 07:31

Workgroup Number: \( \overline{\text{W3309303}} \)
Collect Date: \( \overline{\text{08/05/2009 10:05}} \)
Units: \( \overline{\text{mg/kg}} \)

Workgroup Number: \( \overline{\text{W3309303}} \)
Units: \( \overline{\text{mg/kg}} \)

Run Date: \( \overline{\text{08/10/2009 07:31}} \)
File ID: \( \overline{\text{ET.0908100731-04}} \)
Units: \( \overline{\text{mg/kg}} \)

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

of 5

MICIODAC LADOTACOTTES INC.

Report Number: L09080107

Report Date : August 10, 2009

00110057

Sample Number: L09080107-02 PrePrep Method: NONE Instrument: BURET

Client ID: 04DS02 (0-2) Prep Method: SW7.34 Prep Date: 08/10/2009 07:31

Matrix: Soil Analytical Method: SW7.34 Cal Date:

Oup Number: WG309303 Analyst: DLP Run Date: 08/10/2009 07:31

Workgroup Number: \( \overline{\text{N3309303}} \)
Collect Date: \( \overline{\text{08/05/2009 10:40}} \)
Units: \( \overline{\text{mg/kg}} \)

Workgroup Number: \( \overline{\text{0309303}} \)
Units: \( \overline{\text{mg/kg}} \)

Run Date: \( \overline{\text{08/10/2009 07:31}} \)
File ID: \( \overline{\text{ET.0908100731-05}} \)

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

of 5

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		Ū	100	50.0

U Not detected at or above adjusted sample detection limit

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110059

Sample Number: L09080107-04 PrePrep Method:NONE Instrument: BURET

Client ID: 04DS04 (0-2) Prep Method: SW7.34 Prep Date: 08/10/2009 07:31 Matrix: Soil Analytical Method: SW7.34 Cal Date: Run Date: 08/10/2009 07:31 File ID: ET. 0908100731-07 Analyst: DLP

Workgroup Number: WG309303 Collect Date: 08/05/2009 11:05 Dilution: 1 Units: mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		Ū	100	50.0

U Not detected at or above adjusted sample detection limit

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110060

Sample Number: <u>L09080107-05</u> Client ID: <u>04Ds05 (0-4)</u> PrePrep Method:NONE Instrument: BURET

Prep Method: SW7.34 Prep Date: 08/10/2009 07:31 Matrix: Soil Analytical Method: SW7.34 Cal Date: Run Date: 08/10/2009 07:31 File ID: ET. 0908100731-08 Analyst: DLP

Workgroup Number: WG309303 Collect Date: 08/05/2009 10:20 Dilution: 1 Units: mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		Ū	100	50.0

U Not detected at or above adjusted sample detection limit

of 5

5

## 2.2.2.2 QC Summary Data

### **Example Calculations - Reactive Sulfide**

$$A = \frac{((B * C) - (D * E) * 16000}{F * G} = sulfide (mg / L)$$

$$\frac{A * I}{J} = reactive \ sulfide (mg / Kg)$$

### **Example Calculation:**

B (mL of lodine): 15 C (N of lodine): 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 K7	332 Revision	#:				
☐ Other					buret	
LCS:	Da	aily Dilution:				
non-reacted LCS	Da	aily Dilution	=	_		
Iodine standardization (0.0	25 N and 0.1	N)				
mLN t				mI.	N titrant:	
Volume I:					1	
Normality I:						
Stock standardization (in d						
mL I 1)						
N I 1)					= stock conc (r	ng/L)
mL 0.025 titrant 1)						<i>O</i> ,
SAMPLE	Grams Reacted	Volume Titrated	mL Iodine	N Iodine	mLN Sodium Thiosulfa	te
BLANK	X	200		<del> </del>		
Non-reacted LCS ( mg/L)	X	200				
	А	100		<del>                                     </del>		
Reacted ( mg/L)		100				
				† †		
				<del>                                     </del>		
DUP:				+ +		
·		<u> </u>				
Analyst:			Date / Time:			

DCN#80377



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## **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

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: <u>389869/ 390836(GWTP)</u>

### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1462600
Report generated: 08/10/2009 17:06 1 OF 1

Report Number: L09080107

Report Date : August 10, 2009

00110068

Sample Number: <u>L09080107-01</u> Client ID: <u>04DS01 (0-2)</u>

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: 0S09080713213001

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	7.78			

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110069

Sample Number: <u>L09080107-02</u> Client ID: <u>04DS02 (0-2)</u>

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: 0S09080713214601

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	9.22			

of 5

Report Number: L09080107

Report Date : August 10, 2009

00110070

Sample Number: <u>L09080107-03</u> Client ID: <u>04Ds03 (0-3)</u>

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: 0S09080713220101

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	6.45			

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110071

Sample Number: <u>L09080107-04</u> Client ID: <u>04DS04 (0-2)</u>

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: 0S09080713221601

Result Analyte CAS. Number Qual PQL SDL Corrosivity pH 10-29-7 8.51

> of 5

Report Number: L09080107

Report Date : August 10, 2009

00110072

Sample Number: <u>L09080107-05</u> Client ID: <u>04Ds05 (0-4)</u>

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: 0S09080713223301

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	10-29-7	5.84			

5 5 of

## 2.2.3.2 QC Summary Data

Checklist ID: 40677

### Microbac Laboratories Inc. Data Checklist

00110074

Date:	<u>06-AUG-2009</u>
Analyst:	DLP
Analyst:	<u>NA</u>
Method:	PH
Instrument:	ORION 4-STAR
Curve Workgroup:	NA
Runlog ID:	
alytical Workgroups:	WG309137

Calibration/Linearity	08-06-09
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	
LCS/LCS Dup	
MS/MSD	
Duplicate	Χ
Upload Results	
Client Forms	Χ
QC Violation Sheet	
Case Narratives	
Signed Raw Data	Χ
STD/LCS on benchsheet	Χ
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	Χ
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
07-AUG-2009

Secondary Reviewer:
07-AUG-2009

Authority Page

Annal poon

CHECKLIST1 - Modified 03/05/2008 Generated: AUG-07-2009 13:32:39



### **2.2.3.3** Raw Data

WORKGROUP: WG309137

### pН

Sample	Calibration Buffers	Water Misc. Liquid	50% Slurry Of Solid	50% Water Org. Liq. Mix	
LCS 6 548 3350 4	7,4,10	5.98			SW846 9040C/9045D
08-082-01	7, .,,	1	7.40		SM 4500-H(+)-B
40			7.49		EPA 150.1
08-107-01			7.78		
02			9.22		SOP K1501 Rev //
-03			6.45		
-04			8.51		
05			5.84		
					Circle Instrument
					Orion 4-Star
			!		Orion 710A #1
					Orion 710A #2
					Sargent - Welch
DUP08-082-01		1	7.40		
LCS 95/2 33494		9.00			

Analyst: Dustly Page Date: 08-06-09/1100

DCN#80347



# 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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1462601
Report generated: 08/10/2009 17:06

Microbac

1 OF 1

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 Instrument: PRECISION Prep Method: 1010 Prep Date: 08/06/2009 14:15 Analytical Method: 1010 Cal Date:

Analyst: JBK
Dilution: 1 Run Date: 08/06/2009 14:15 File ID: PR09080713170808

Units: Degrees C

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		70.0	>		

> Result is greater than the associated numerical value.

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110081

Sample Number: L09080107-02 PrePrep Method:NONE Instrument: PRECISION

Client ID: 04DS02 (0-2) Prep Method: 1010 Prep Date: 08/06/2009 14:15 Matrix: Soil Analytical Method: 1010 Cal Date: Workgroup Number: WG309164
Collect Date: 08/05/2009 10:40 Run Date: 08/06/2009 14:15 File ID: PR09080713170809 Analyst: JBK Dilution: 1

Units: Degrees C

Analyte CAS. Number Result Qual PQL SDL Ignitability 70.0 >

> Result is greater than the associated numerical value.

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110082

Sample Number: L09080107-03 PrePrep Method:NONE Instrument: PRECISION

Client ID: 04DS03 (0-3) Prep Method: 1010 Prep Date: 08/06/2009 14:15 Matrix: Soil Analytical Method: 1010 Cal Date: Workgroup Number: WG309164
Collect Date: 08/05/2009 11:00 Run Date: 08/06/2009 14:15 File ID: PR09080713170810 Analyst: JBK Dilution: 1

Units: Degrees C

Analyte CAS. Number Result Qual PQL SDL Ignitability 72.0 >

> Result is greater than the associated numerical value.

5 of

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

Instrument: PRECISION

Prep Date: 08/06/2009 14:15

Cal Date: Run Date: 08/06/2009 14:15 File ID: PR09080713170811

Units: Degrees C

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		68.0	>		

> Result is greater than the associated numerical value.

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110084

Sample Number: <u>L09080107-05</u> Client ID: <u>04Ds05 (0-4)</u> PrePrep Method:NONE

Matrix: Soil

Workgroup Number: WG309164
Collect Date: 08/05/2009 10:20

Instrument: PRECISION Prep Method: 1010 Prep Date: 08/06/2009 14:15 Analytical Method: 1010 Cal Date: Analyst: JBK
Dilution: 1 Run Date: 08/06/2009 14:15 File ID: PR09080713170812

Units: Degrees C

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		74.0	>		

> Result is greater than the associated numerical value.

5 of

5

## 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.

Checklist ID: 40651

### Microbac Laboratories Inc. Data Checklist

00110087

Date:	<u>06-AUG-2009</u>
Analyst:	JBK
Analyst:	<u>NA</u>
Method:	FLASH
Instrument:	PRECISION
Curve Workgroup:	<u>NA</u>
Runlog ID:	
nalytical Workgroups:	WG309164

Calibration/Linearity	01/2009
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	Х
LCS/LCS Dup	X
MS/MSD	
Duplicate	Х
Upload Results	X
Client Forms	Χ
QC Violation Sheet	
Case Narratives	
Signed Raw Data	Χ
STD/LCS on benchsheet	Χ
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	Х
Primary Reviewer	JBK
Secondary Reviewer	DIH
Comments	

Primary Reviewer: 06-AUG-2009 Secondary Reviewer: 07-AUG-2009

Ale Dannalpsson

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-07-2009 13:35:41



### **2.2.4.3** Raw Data

### FLASHPOINT

CS: STD 3	$\frac{2/\sqrt{3}}{RE:} \frac{3/\sqrt{C}}{RESS}$	ure:	44,3	
MPERATUR	(E:   1 KESS	UKE	,,,,	
P K1010 R	evision #: Method	i SW846 1010		
	Instrum		Marten Closed Cup	Tester
CAMPLE	DESCRIPTION	INITIAL TEMP(C)	COMMENTS or FLASHPOINT	FINAL RESULT (C)
SAMPLE LCS	DESCRIPTION	1 Le	flashezu	26
LCS DUP	p- Xylene	14	flash @ 27	27
Blank	DIHOO	17	no flost @ 69	>69
07-652-15	PE	8	flashe 55	55
97-714-01	dirty water	15	flame out alex	768
77-704-01	Soil unable to sti-	20	flame exter74	774
7-107-01	clay soil lunable to stir	18	flame exte 70	770
-02	+	20	flame exter 70	770
-03	Soil lunable to Stir	20	flame 4x e72	772
-04	etay soil lunable to sin	22	flame cut & 68	768
-05	Sandy clay lungble to-St.r	22	+14me 4+6 74	774
IR 652-15	Pa	-2	flashe 53	53
DUP://)7-0/	(dito).	20	flame exte 72	772
**************************************				
NALYST:<	2-K		DATE: S/4	109 @ 14/5
			, ,	
* mil	5 K- 2 Leafer on hind for	enclusis		
V/ 65	52-15-3 bother combined for	unu y - 17	. 0	( )
~ ~ Kerun	- sample (original) cooled in ori	ginal Cup	in freezer and	re-anaryted.

DCN#80355

### Microbac Laboratories Inc. FLASH CALCULATIONS

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

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: <u>389869/ 390836(GWTP)</u>

#### 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

L1\_A\_PROD - Modified 03/06/2008 PDF File ID: 1462602 Report generated: 08/10/2009 17:06

Microbac

1 OF 1

Report Number: L09080107

Report Date : August 10, 2009

00110094

Sample Number: L09080107-01 PrePrep Method:NONE Instrument: UV-120-1V

Client ID: 04DS01 (0-2) Prep Method: SW7.33 Prep Date: 08/10/2009 07:30 Matrix: Soil Analytical Method: SW7.33 Cal Date: Run Date: 08/10/2009 07:30 File ID: 1v.0908100730-03 Analyst: DLP

Workgroup Number: WG309302 Collect Date: 08/05/2009 10:05 Dilution: 1 Units:mg/kg

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		Ū	9.99	4.99

U Not detected at or above adjusted sample detection limit

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110095

Sample Number: L09080107-02 PrePrep Method:NONE Instrument: UV-120-1V

Client ID: 04DS02 (0-2) Prep Method: SW7.33 Prep Date: 08/10/2009 07:30 Matrix: Soil Analytical Method: SW7.33 Cal Date: Run Date: 08/10/2009 07:30 File ID: 1V.0908100730-04 Analyst: DLP

Workgroup Number: WG309302 Collect Date: 08/05/2009 10:40 Dilution: 1 Units:mg/kg

CAS. Number 57-12-5 Qual Analyte Result PQL SDL Reactivity, Cyanide υ 9.94 4.97

U Not detected at or above adjusted sample detection limit

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110096

Sample Number: L09080107-03 PrePrep Method:NONE Instrument: UV-120-1V

Client ID: 04DS03 (0-3) Prep Method: SW7.33 Prep Date: 08/10/2009 07:30 Matrix: Soil Analytical Method: SW7.33 Cal Date: Workgroup Number: WG309302 Collect Date: 08/05/2009 11:00 Run Date: 08/10/2009 07:30 File ID: 1V.0908100730-05 Analyst: DLP

Dilution: 1 Units: mg/kg

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

5 of

Report Number: L09080107

Report Date : August 10, 2009

00110097

Sample Number: L09080107-04 PrePrep Method:NONE Instrument: UV-120-1V

Client ID: 04DS04 (0-2) Prep Method: SW7.33 Prep Date: 08/10/2009 07:30 Matrix: Soil Analytical Method: SW7.33 Cal Date: Workgroup Number: WG309302 Collect Date: 08/05/2009 11:05 Run Date: 08/10/2009 07:30 File ID: 1V.0908100730-06 Analyst: DLP

Dilution: 1 Units: mg/kg

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

5 of

MICIODAC LADOTACOTTES INC.

Report Number: L09080107

Report Date : August 10, 2009

00110098

 Client ID: 04DS05 (0-4)
 Prep Method: SW7.33
 Prep Date: 08/10/2009 07:30

 Matrix: Soil
 Analytical Method: SW7.33
 Cal Date:

 Workgroup Number: WG309302
 Analyst: DLP
 Run Date: 08/10/2009 07:30

 Collect Date: 08/05/2009 10:20
 Dilution: 1
 File ID: 1V.0908100730-07

Units: mg/kg File 1D: 1V.0908100730-07

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		Ū	9.95	4.97

U Not detected at or above adjusted sample detection limit

Microbac

5

of

5

## 2.2.5.2 QC Summary Data

### 2.2.5.3 Raw Data

WG 307298110101

Parameter: REACT - CN

Spectrophotometer: UU-120-1V

Calibration (Curve) standard stock: Std 33348

Concentration: 968 mg/L

Recipe for preparation of curve standards found in: SOP: <u>K7332</u> Revision: <u>8</u> Page: <u>8</u>

Second Source Stock: Std 33349 (concentration: 1020 mg/s

Daily Preparation:  $\frac{5(1026)/250 = 20.4}{(3(20.4)/(602)} 2.04$ concentration =  $\frac{5(2.04)/250 = 20.204}{(2.04)/50 = 0.204}$ 

Calibration Standards (mg/L)	Volume	Cell Size	Wavelength	Absorbance
0,00	50	1	578	0.000
0.01936	1		,	0.027
0.01936				0.053
0.0968				0.138
0.1936				0.284
0.2904				0.414
0.3872				0.557
249 0.204	J			0.298
		3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3		
	1/	,	Nego mid	14 100 0 101
Analyst:	-7KG		Date/Time:	/14/09 @104

DCN#80111



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### Microbac Laboratories Inc. INITIAL CALIBRATION

Workgroup: WG307248
Analytical Method: 846
Instrument ID: UV-120-1V

Analyst:<u>JBK</u>
Initial Calibration Date:07/16/2009

Analyte: CYANIDE

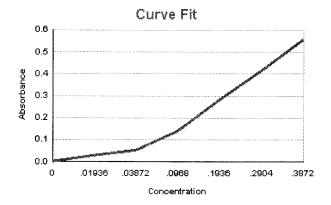
Number of Points: 7

Slope: 1.43990

Y-Intercept: -0.000635703

Coef. Of Correlation (R<sup>2</sup>): 0.999810 Coef. Of Correlation (R): 0.999905

Concentration X	Absorbance Y	<b>X</b> <sup>2</sup>	X * Y	Y-Fitted (mX <sup>2</sup> +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



WG\_ICAL\_CAL\_WET - Modified 03/06/2008
Report generated 07/16/2009 11:18



#### Microbac Laboratories Inc. ALTERNATE SOURCE REPORT

00110103

Workgroup #: WG307248

File ID: 1V.0907161040-08

CCV ID: WG307248-08

Units: mg/kg

Analyst: JBK

Instrument ID: UV-120-1V

Run Date: 07/16/2009

Run Time: 10:40

Analyte: CYANIDE Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.204	0.207	1.46	1.5	

\* Exceeds %D Limit

CCC Calibrtion Check Compounds SPCC System Performance Check Compounds

WET\_WG\_SSCV - Modified 03/06/2008 Report generated 07/16/2009 11:19

### **Reactive Cyanide**

LCS:				
CCV:		DP: <u>K7332</u> Re	vision#	
Daily Dilution:	Cı	ırve ID:		
		ec:		
Sample	Grams Reacted	Dilution	Cell Size	Aborbance @ 578nm
CCV:	_ NA			
LCS:	_			
DUP:	_			

DCN#80376



Page 177

Analyst: \_\_\_\_\_\_ Date/Time: \_\_\_\_\_

## 3.0 Attachments

## Microbac Laboratories Inc. Analyst Listing August 10, 2009

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

#### Microbac Laboratories Inc. List of Valid Qualifiers August 10, 2009

00110107

STD\_ND=U Qualkey:

Qualifier Description

> 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.
- 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
- N-nitrosodiphenylamine cannot be separated from diphenylamine.
   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 an are matrix dependent.



00110108

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

PM: Praveen Svrivastav Project Contact: Jennife Project Name: LHAAP-0	er Hoang	TAT: 24 Hr Phone No: 7 Site: Confirm			6	(8270)		METAL						**RCI Reactivity Cyanide-SW7.33
Project #: 117591-0009E		Location: Ka	rnack, T	rx	Cs (826	SVOCs (82		RCRA 81						Reactivity Sulfide-SW7.34 Corrosivity pH-9045D Ignitability-1010
ALLEN WILLMORE (713) 247-9292	U. Ill			# of Containers	TCLP VOCs (8260)	TCLP SV	**RCI	TELP PR						24 - HOUR TAT  Comments
Sample Number	Grab Date	Time	Matrix											
O4DS01 (0-2)	x 8/5/09	10:05	Soil	3			8	J						
(G-0) GOZDPO	x 8/5/09	10:40	Soil	4			3_	١						
04DS03 (0-3)	x 8/5/09	11:00	Soil	4		ļ	3	1						
040504 (0-2)	x \$/5/09	11:05	Soil	4			3	1						
04D505 (0-4)	x 3/5/09	10:20	Soil	Щ			3							
	X		Soil				ļ							
	X		Soil											
	X //		Soil		·		<u> </u>							
	X		Soil	1			ļ							
	X		Soil	-//			<u> </u>				<u> </u>			
	X		Sei											
	X		Soil											
	X		Soil				<u> </u>		$\sqrt{}$					
	X		Soil	<u></u>			<del> </del>					<b>,</b>	_	
	X		Soil											
Relinquished By:	Received	Ву:	I		Speci	al Inst	ruction	is C	24.	Hou	DR 7	TAT	}	
Date/Time 8/5/09 17	∵30 Date/Time	. =	<b>≡</b> M;	robac 0'	i.,									
Relinquished By:		for Labora	Rece	robac U' ived: 08/0 ERIN PORTE	6/2009	Ø9:5Ø	ı	221	000000	932				
Date/Time	Date/Time			and -	Po	7.							·····	

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**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	Н	2.0	<u>1Z66V7250192947684</u>		

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 perservatives 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.

Internal Chain of Custody Report

**Login:** L09080107

**Account:** 2773 **Project:** 2773.025

Samples: 5

**Due Date:** 10-AUG-2009

<u>Samplenum</u> <u>Container ID</u> <u>Products</u> <u>L09080107-01</u> 603861 TC-EX

Bottle: 1

Seq.	Purpose	From	То	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	То	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		06-AUG-2009 11:17	ERE	

Samplenum Container ID Products

**L09080107-01** 603862 REACTC REACTS

Bottle: 1

Seq.	Purpose	From	То	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

 L09080107-01
 603863
 PCT-S

Bottle: 1

Seq.	Purpose	From	То	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> <u>L09080107-02</u> 603864 TC-EX

Bottle: 1

Seq.	Purpose	From	То	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	То	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



00110111

Internal Chain of Custody Report

**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	То	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	То	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> <u>L09080107-03</u> 603867 TC-EX

Bottle: 1

Seq.	Purpose	From	То	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	То	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		06-AUG-2009 11:17	ERE	

<u>Samplenum</u> <u>Container ID</u> <u>Products</u>

**L09080107-03** 603868 REACTC REACTS

Bottle: 1

Seq.	Purpose	From	То	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



A2 - Sample Archive (AMBIENT)



F1 - Volatiles Freezer in Login

V1 - Volatiles Refrigerator in Login

W1 - Walkin Cooler in Login

Internal Chain of Custody Report

**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	То	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> <u>L09080107-04</u> 603870 TC-EX

Bottle: 1

Seq.	Purpose	From	То	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	То	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	То	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	То	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



Internal Chain of Custody Report

**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	То	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	То	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	То	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