LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 11 of 16

2011

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Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2011

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

VOLUME 11 of 16

2011

A. Title: Report – Final Completion Report Non-Time-Critical Removal Action LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Shaw Environmental, Inc., Houston, Texas
Recipient: All Stakeholders
Date: August 16, 2011
Bate Stamp: 00108017 - 00109031

FINAL

COMPLETION REPORT
NON-TIME-CRITICAL REMOVAL ACTION
AT LHAAP-04
FORMER PILOT WASTEWATER TREATMENT PLANT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS



Shaw®

ON THE LINE

AUGUST 2011

Shaw® Shaw Environmental, Inc.

Date: ***August 16, 2011***

Project No.:117591

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

***Address*:** US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: *Final* Completion Report, Non-Time-Critical Removal Action at LHAAP-04, Former Pilot Wastewater Treatment Plant, Group 4, Longhorn Army Ammunition Plant
Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal ____ Other X ____

Item No:	***No. of Copies***	***Date:***	***Document Title***
1	2	August 2011	**Final Completion Report, Non-Time-Critical Removal Action at LHAAP-04, Former Pilot Wastewater Treatment Plant, Group 4, Longhorn Army Ammunition Plant, Karnack, Texas**

Aaron,
Enclosed are two copies of the above-named document. Copies have been distributed as indicated at the end of this message. Please call with any questions or comments.

Sincerely:

Praveen Srivastav
Project Manager

CC: **Distribution List:**
Mr. J. Lambert – USACE, Tulsa (sent to A. Williams for distribution)
Ms. M. Plitnik – USAEC
Ms. Rose Zeiler – BRAC-LHAAP
Mr. S. Tzhone – EPA Region 6 (2)
Ms. F. Duke– TCEQ, Austin (2)
Mr. D. Vodak– TCEQ, Tyler
Mr. P. Bruckwicki– U.S. Fish and Wildlife Service

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

August 16, 2011

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Completion Report, Non-Time-Critical Removal Action at LHAAP-04, Former Pilot Wastewater Treatment Plant, Group 4, Longhorn Army Ammunition Plant, August 2011

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
F. Duke, TCEQ, Austin, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert, USACE, Tulsa District, OK
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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
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RATCLIFF, AR 72951

August 16, 2011

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
SSDAT/Superfund Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Completion Report, Non-Time-Critical Removal Action at LHAAP-04, Former Pilot Wastewater Treatment Plant, Group 4, Longhorn Army Ammunition Plant, August 2011
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your records. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
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M. Plitnik, USAEC, TX
P. Srivastav, Shaw, Houston, TX (for project files)

FINAL
COMPLETION REPORT
NON-TIME-CRITICAL REMOVAL ACTION
AT LHAAP-04
FORMER PILOT WASTEWATER TREATMENT PLANT
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared for

U.S. Army Corps of Engineers
Tulsa District
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Prepared by

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MARC No. W912QR-04-D-0027, Shaw Project No. 117591
Task Order No. DS02

August 2011

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Acronyms and Abbreviations

ACE	Anderson Columbia Environmental
bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cy	cubic yards
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
FFA	Federal Facility Agreement
GW-Ind	soil MSC for industrial use based on groundwater protection
GWP-Ind	groundwater MSC for industrial use
GWTP	groundwater treatment plant
HDPE	high density polyethylene
LDEQ	Louisiana Department of Environmental Quality
LHAAP	Longhorn Army Ammunition Plant
MARC	Multiple Award Remediation Contract
mg/kg	milligrams per kilogram
MSC	medium-specific concentration
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
PPE	personal protective equipment
RAO	removal action objectives
RCI	reactivity, corrosivity and ignitability
RCRA	Resource Conservation and Recovery Act
SAI-Ind	soil MSC for industrial use based on inhalation, ingestion, and dermal contact
Shaw	Shaw Environmental, Inc.
TCEQ	Texas Commission on Environmental Quality
TCLP	toxicity characteristic leaching procedure
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

1.0 Introduction

1.1 General

The U.S. Army Corps of Engineers (USACE) contracted Shaw Environmental, Inc. (Shaw), under the Multiple Award Remediation Contract (MARC) Number W912QR-04-D-0027, Task Order No. DS02, to perform a removal action associated with a Site Closure at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas, a Federally-owned facility managed by the U.S. Army under the U.S. Department of Defense (DoD). The U.S. Army Environmental Command provides funding and oversight for the environmental response activities at LHAAP. The U.S. Army Base Realignment and Closure (BRAC) Division is the lead DoD organization for execution of environmental response at the LHAAP. As part of the activities associated with that task order, Shaw prepared an Engineering Evaluation/Cost Analysis (EE/CA) for LHAAP-04, Former Pilot Wastewater Treatment Plant (Shaw, 2009a), which recommended a soil removal action to protect human health and the environment by eliminating threats posed by mercury and perchlorate contaminated soils. The Final Action Memorandum for Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant, Karnack, Harrison County, Texas, approved the planned non-time-critical removal action (Shaw, 2009b). The removal action selection process is supported by documents contained in the Administrative Record for LHAAP, which is available at the Marshall Public Library.

This report documents the removal action conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] Part 300). The removal action activities included excavation of contaminated soil, disposal of soil, confirmation soil sampling, site restoration, and additional activities as required by site conditions during remediation. Removal action activities were initiated on August 4, 2009, and were completed on October 7, 2009. The survey was performed on October 8 and 28, 2009.

1.2 Report Purpose, Objectives and Organization

This report discusses the removal action activities performed at LHAAP-04, Former Pilot Wastewater Treatment Plant, which will be referred to as LHAAP-04 in the remainder of this report. The report documents the work undertaken in accordance with the requirements of the action memorandum (Shaw, 2009b), comments received from the U.S. Environmental Protection Agency (USEPA) and the Texas Commission Environmental Quality (TCEQ), and observations made during execution of the removal action. The objective of this report is to summarize the removal action field activities.

Tables, figures and appendices referenced in this report are included at the end of the text. **Section 1.0** presents the objectives, scope, background, and general field procedures. **Section 2.0** discusses the removal actions implemented for LHAAP-04. **Section 3.0** notes additional field activities beyond those described in the Final Work Plan (Shaw, 2009c). **Section 4.0** presents a list of references used in preparing this report. This report also provides the following information as appendices:

Appendix A Photographs

Appendix B Analytical Data Summary and Reports

Appendix C Waste Transportation and Disposal Documentation

Appendix D Field Reports

1.3 Background

LHAAP is located in central-east Texas in the northeastern corner of Harrison County, approximately 14 miles northeast of Marshall, Texas. The closed facility occupies approximately 1,400 of its original 8,416 acres between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of LHAAP is 3.5 miles from the Texas-Louisiana state border (see **Figure 1-1**).

Due to releases of chemicals from historic operations at LHAAP, the facility was placed on the Superfund National Priorities List (NPL) on August 9, 1990. After being listed on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the TCEQ) entered into a CERCLA Section 120 Federal Facility Agreement (FFA) for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property. Approximately 7,000 acres of the original LHAAP have been transferred to U.S. Fish and Wildlife Service (USFWS) as part of the Caddo Lake National Wildlife Refuge. The U.S. Army holds the remaining land while environmental restoration takes place in preparation for transfer to the USFWS.

LHAAP-04 is approximately 0.5 acres and is located in the central portion of LHAAP at the northwest corner of 6th and 60th Streets near the former fire station (see **Figure 1-2**). LHAAP-04 is surrounded by light duty roads. Wastewater treatment operations began at LHAAP-04 in 1984. The demolition of the Former Pilot Wastewater Treatment Facility structures, tanks, and piping, and the disposal of the associated wastes were completed in the summer of 1997 as part of the Resource Conservation and Recovery Act (RCRA) closure of the plant. The area targeted for excavation at LHAAP-04 is along the southern edge of the remaining slab, which formerly housed storage tanks for the Former Pilot Wastewater Treatment Facility.

Various sampling events were conducted at LHAAP-04 from 1993 through 2008 to assess the contamination from the operations at LHAAP-04 (Shaw, 2009b) and its impact to the soil and/or groundwater. Following RCRA closure of LHAAP-04, soil sampling was conducted (Anderson Columbia Environmental [ACE], 1997), and LHAAP-04 was approved for closure according to 30 Texas Administrative Code 335 Subchapter S, the Risk Reduction Rule Standard 2 in 1998 with the stipulation that the remaining soil contamination be addressed under CERCLA (Shaw, 2009b). The soil sampling results after 1998 delineated the perchlorate contamination in the soil at concentrations that are above the TCEQ soil Medium-Specific Concentration (MSC) for industrial use based on groundwater protection (GWP-Ind) (TCEQ, 2006). Within the perchlorate contaminated soil area is an isolated area of mercury contamination that is above the soil MSC for industrial use based on inhalation, ingestion, and dermal contact (SAI-Ind) (TCEQ, 2006). Current data do not indicate an impact to the groundwater above the groundwater MSC for industrial use (GW-Ind) for perchlorate at LHAAP-04. However, no wells exist within the current site boundary. Any installation of groundwater well(s) within the site boundary will be determined after review of this Completion Report.

The reasonably anticipated future use of the entire facility, including LHAAP-04, is as a wildlife refuge. The applicable receptor scenario for future use as a wildlife refuge is the hypothetical future maintenance worker. Once LHAAP-04 is transferred, the use will be consistent with the rest of the refuge. That includes the following activities: hunting, fishing, wildlife observation, wildlife photography, wildlife education, and wildlife interpretation.

1.4 Summary of Removal Action Activities

Field activities at LHAAP-04 included the removal of soil with contaminants above cleanup levels. Contaminated soil was excavated and disposed off site. Excavation activities were terminated at a depth where confirmation sampling results indicated that the cleanup levels were achieved or where groundwater was encountered. If groundwater was encountered, a 5-point composite sample was collected from the adjacent walls (within 1 foot above the groundwater interface) to represent the floor area (Shaw, 2009c). The chemicals of concern and cleanup levels are shown in **Table 1-1**. Confirmation sample results were below the cleanup level for all wall and floor sections of the excavation.

Field activities were performed in accordance with the requirements of the removal action work plan (Shaw, 2009c). The planned remedial activities included the following items:

- Preliminary activities (**Section 2.2.1**)
- Site preparation (**Section 2.2.2**)
- Excavation (**Section 2.2.3**)
- Confirmation sampling (**Section 2.2.4**)
- Decontamination of equipment/personnel (**Section 2.2.5**)

- Waste management (**Section 2.2.6**)
- Site restoration (**Section 2.2.7**)
- Reporting (**Section 2.2.8**)
- Summary of Additional Field Activities (**Section 3.0**)
  - Pipes
  - Plastic Liner
  - Valve Outfall
  - Additional Sampling

Unknown conditions were encountered in the field and are described in **Section 3.0**, Additional Activities. Within the original excavation areas (as identified in the Work Plan) pipes were encountered (**Section 3.1**) and a plastic liner was encountered (**Section 3.2**). A valve outfall was uncovered near the culvert on "T" Avenue, and associated sample results indicated perchlorate contamination. The additional excavation activities associated with the valve outfall area are discussed in **Section 3.3**. Since the wall confirmation results were above cleanup levels, additional investigative sampling was conducted using the backhoe to determine lateral extent limits as discussed in **Section 3.4**.

Photos were taken throughout the removal action and are included in **Appendix A**.

Table 1-1
Chemicals of Concern and Cleanup Levels

Chemical of Concern	Cleanup Level	Basis [1]
Perchlorate	7.2 mg/kg	GWP-Ind
Mercury	0.15 mg/kg	SAI-Ind

Notes:

[1] Texas Commission on Environmental Quality, Updated Examples of Standard No. 2, Appendix II Medium-Specific Concentrations (MSCs) dated March 31, 2006

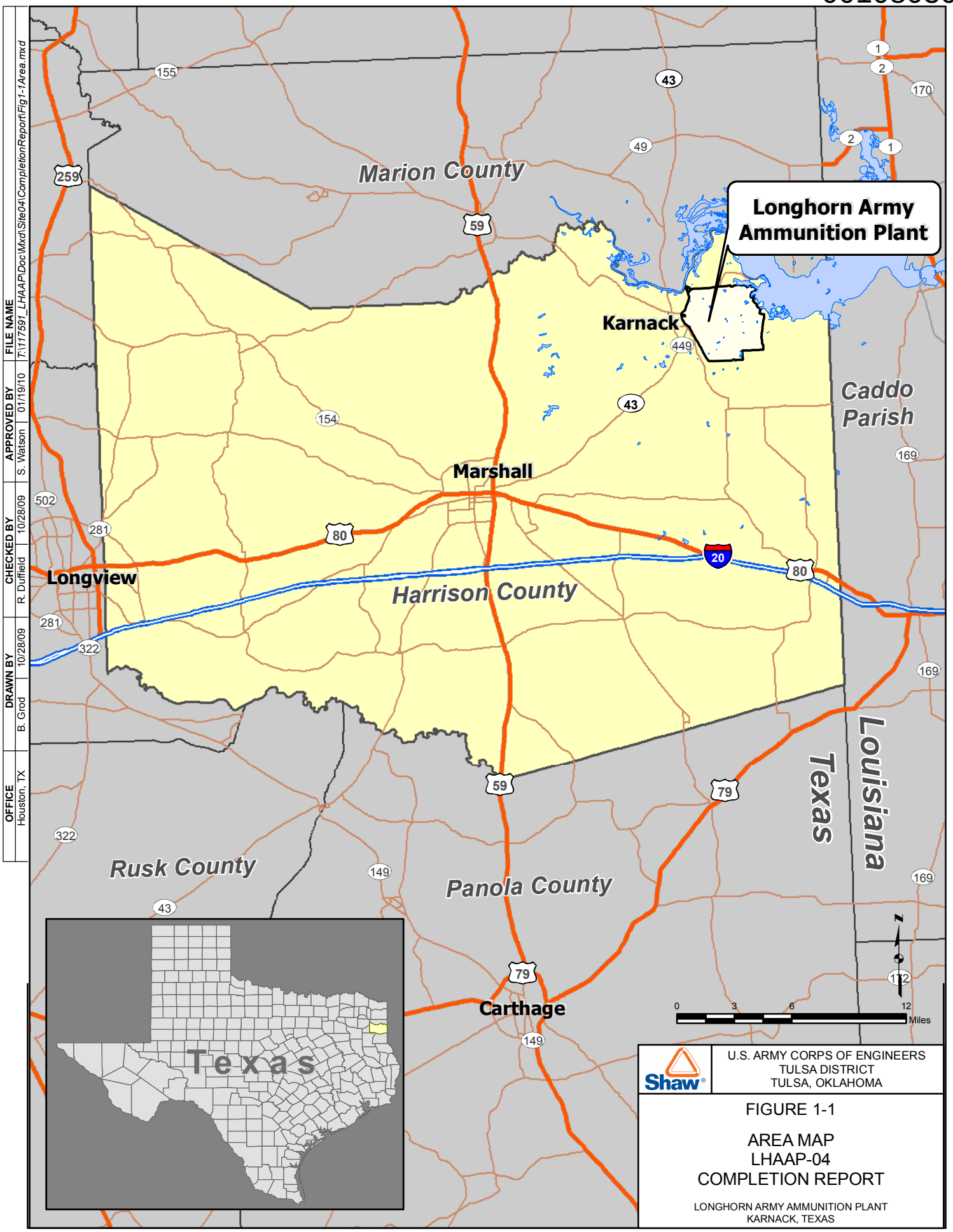
Mercury cleanup level is limited to the excavation wall adjacent to the concrete pad.

mg/kg - milligrams per kilogram

GWP-Ind - Soil MSC for industrial use based on groundwater protection

SAI-Ind - Soil MSC for industrial use based on inhalation, ingestion, and dermal contact

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Shaw

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-1

AREA MAP
LHAAP-04
COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00108031

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Houston, TX	B. Grod	10/28/09	R. Duffield	12/03/09	S. Watson	01/19/10

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N

LHAAP-04
Former Pilot Wastewater
Treatment Plant

Former Fire Station

32nd

Avenue P

6th

11th

60th

Caddo
Lake

AVE "E"

AVE "Q"

AVENUE "T"

6TH ST

LONGHORN
ARMY
AMMUNITION
PLANT

Karnack

Marshall

134

43

59

LEGEND

- Stream
- Road
- LHAAP Boundary
- Site
- Lake

N

0 1,250 2,500 5,000 Feet

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-2

SITE VICINITY MAP
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 Removal Action

2.1 Project Objective

The removal action objectives (RAOs) for LHAAP-04 are as follows:

- Protection of human health and the environment by eliminating the threat for potential releases of perchlorate from contaminated soil to groundwater.
- Protection of human health and the environment by eliminating the threat for potential releases of perchlorate and mercury from contaminated soil to surface water.
- Protection of human health by eliminating the potential for exposure to mercury contaminated surface soils for a future maintenance worker.

To achieve these objectives, excavation and off-site disposal of surface and near surface soil contaminated with perchlorate or mercury exceeding industrial use levels (**Table 1-1**) was recommended. The U.S. Army approved that alternative and USEPA and TCEQ concurred.

The removal action is consistent with the intended future use of the LHAAP as a national wildlife refuge. The proposed limits of the excavation area are presented in **Figure 2-1**.

2.2 Summary of Field Activities

Field activities at LHAAP-04 generally followed the Removal Action Work Plan (Shaw, 2009c). Confirmation sample results from the initial excavation exceeded the perchlorate cleanup level and additional excavation both deeper and wider was conducted. In the course of excavation, transite pipe was encountered; it was removed and disposed in accordance with applicable asbestos regulations. Another pipeline, constructed of clay, was encountered in the excavation area approximately 8 feet beneath the ground surface. The clay pipe within the excavation was removed. These additional activities are discussed in **Section 3.0**.

2.2.1 Preliminary Activities

Prior to commencing the removal action, a preconstruction meeting was held on August 4, 2009, between the U.S. Army, USFWS, USEPA and Shaw project management and field personnel to discuss general issues regarding implementation and schedule of field activities. Equipment and supplies were received prior to the start of work.

2.2.2 Site Preparation

Existing roads around LHAAP-04 were sufficient to access the excavation areas. Some samples of concrete were collected to determine the proper disposal for the concrete slab that would be removed. The site was inspected and the planned excavation area marked with wooden stakes

based on measurements from the concrete slab and a hand-held geographic positioning system unit. The planned excavation limits, as indicated in the Work Plan (Shaw, 2009c), are shown on **Figure 2-1**. Shrubs and vegetation smaller than four inches in diameter were cleared using the excavator. A wind sock was placed at the north end of the excavation area to facilitate air monitoring for fugitive dust emissions during excavation (see Photo 26 in **Appendix A**).

2.2.3 Excavation

The initial excavation area was marked and the soil excavation and concrete removal proceeded as planned. An additional area near a valve outfall and the culvert under Avenue "T" was also identified as requiring excavation (see **Section 3.3**). As part of the excavation, Sump 122 was removed as well as part of the concrete foundation. The concrete sump was approximately 7 feet by 7 feet by 4 feet deep (**Photo 8**). The concrete area (**Figure 2-1**) was broken into manageable pieces for handling and removal. The broken concrete was placed with the excavated soil for handling. Soil was excavated using the mechanical excavator, placed on plastic sheeting in temporary stockpiles, and then transferred using a mechanical loader into trucks for transport and disposal at an offsite landfill. If excavated soil was not loaded immediately and remained on site overnight, it was covered with plastic sheeting.

Confirmation samples were collected after the initial planned excavation (**Figure 2-1**) was completed. Several confirmation sample results exceeded the perchlorate cleanup level and additional excavation was required. **Section 2.2.4** discusses the confirmation sampling and the impact of the results on the excavation (**Appendix B**).

During excavation, pipes and a liner were encountered and removed; these additional activities are discussed in **Section 3.1** and **3.2**. Heavy rain occurred over several days of excavation. The rainwater collected in the bottom of the open excavation and was pumped out into a vacuum truck and hauled to the on-site groundwater treatment plant for treatment.

The final excavation limits extended beyond the original staked area. The completed excavation area was deeper than originally planned, with most areas excavated from two to seven feet deeper than initially expected. Excavation depths were measured with a measuring tape from the ground surface to the bottom of the excavation at the corners and along walls during excavation and ranged from 4 to 14 feet below ground surface (bgs) as indicated on **Figure 2-2**. The average excavation depth was approximately 10 feet bgs. The southern edge of the western area of the planned excavation moved approximately 25 feet to the south, and the corners of the southeastern area of the planned excavation moved farther southeast. The in-place volume of material to be excavated was originally estimated to be 840 cubic yards (cy). The surveyed dimensions shown on **Figure 2-1** show an expected volume of 1,226 cy. The final excavation including the valve outfall area is approximately 3,406 cy in-place, and the excavated material filled 220 trucks (**Appendix C**). This amount is approximately four times the original volume

due to additional excavation in areas where confirmation sample results exceeded the perchlorate cleanup level.

Excavation and soil handling activities were performed in modified Level D personal protective equipment (PPE), using standard health and safety practices to minimize airborne particle generation and exposure pathways that might place workers at risk. Air monitoring was conducted in work areas, and airborne emissions did not exceed acceptable levels, as documented in the daily reports (**Appendix D**).

2.2.4 Confirmation Sampling

Confirmation sampling was conducted concurrently with excavation activities to document that the remaining soils met established cleanup levels. A total of 95 confirmation samples and 10 quality control samples were collected during excavation activities and sent to an off-site laboratory for analysis. Samples were sent to Microbac in Marietta, Ohio, Accutest in Orlando, Florida, and Columbia Laboratory in Houston, Texas. Two methods were used for analysis of perchlorate in soil. The initial analysis was conducted using USEPA Method 314.0. Limited approved laboratories used this method. Other approved laboratories were certified for perchlorate analysis using SW846-6850. To use additional laboratories and expedite analysis, approval for SW846-6850 was requested and approval from TCEQ was obtained (TCEQ, 2009). Confirmation sample results ranged from 0.012 to 0.128 milligrams per kilogram (mg/kg) for mercury, all less than the cleanup level of 0.15 mg/kg. Confirmation sample results ranged from less than 0.0027 to 572 mg/kg for perchlorate, many of which exceeded the cleanup level of 7.2 mg/kg. Final perchlorate wall and floor confirmation samples were all below the cleanup level. **Table 2-1** lists the confirmation sample results and **Figures 2-3** through **2-8** depict the confirmation sample locations along with the sample results at various stages of excavation. **Appendix B** contains the analytical data reports.

Floor samples were labeled 04CSFL01 through 14. The 04 stands for LHAAP-04, the CS stands for confirmation sample, FL stands for floor sample, and the two digit number is used to indicate which area of the excavation floor was sampled. The floor samples in the valve outfall area were labeled 04VLVOFFL. The depth of the excavation in feet is noted at the end and enclosed in parentheses. If the floor area was resampled after additional excavation, the letters "RE" and the new depth was added to the end of the original sample name. Because of confirmation sample results exceeding the perchlorate cleanup level and subsequent additional excavation and resampling, a total of 34 floor samples were collected (does not include duplicates and split samples).

Side wall samples were labeled 04CSWxx. The 04 stands for LHAAP-04, the CS stands for confirmation sample, W stands for wall sample, and the two characters (xx) at the end correspond to corners of the excavation area to indicate which section of the excavation wall was

sampled (between the two corners). Due to additional overexcavation, some walls were subdivided, and these divisions are shown graphically on the figures. The wall samples in the valve outfall area were labeled 04VLVOF with a compass direction added at the end. If the wall area was resampled after additional excavation, the letters "RE" were added to the end of the original sample name along with a number to differentiate it, or the wall sample was named for new points defining the wall area sampled. Because of confirmation sample results exceeding the perchlorate cleanup level and subsequent additional excavation and resampling, a total of 44 wall samples were collected (does not include duplicates and split samples).

Because of the additional excavation and the resulting change to the excavation shape, a time series of figures were developed to document the changes in the excavation depth and lateral limits (**Figures 2-3** through **2-8**). The valve outfall confirmation sample result figure is included in **Section 3.0**.

The initial excavation and confirmation sampling were conducted between August 12 and 18, 2009. Approximately 1,285 cy of soil were excavated. Floor samples FL01 through FL08, and side wall samples from segments AB, BC, CJ, EF1, EF2, FR, HA, JI, JK, LI, LK, MN, ON, OP, PM, QH, and RQ were collected. **Figure 2-3** shows the locations of these samples and the extent of excavation through August 18, 2009. Ten samples showed perchlorate concentrations less than the cleanup level, and thirteen samples (floor – FL01, FL02, FL05, FL06, FL07 and side walls – CJ, JI, LI, LK, MN, ON, OP and PM) showed perchlorate concentrations greater than the cleanup level. Seven side wall samples were analyzed for mercury, and the mercury results were all below the cleanup level. Therefore, no additional confirmation samples were collected for mercury. **Table 2-1** lists confirmation sample results. Additional excavation was needed at the locations that exceeded the perchlorate cleanup level.

Additional excavation and confirmation sampling were conducted through August 27, 2009. An additional 490 cy of soil were excavated, making a total of 1,775 cy. New floor grid designations were added to allow for confirmation sampling of the deeper excavation between FL05 and FL06. Floor samples from FL01, FL02, FL05, FL06, FL07, FL11 and FL12 and side wall samples from segments CD, HM, IM, JI, LH and LK were collected. **Figure 2-4** shows the locations of these samples and the extent of excavation through August 27, 2009. Two samples (FL06 at a depth of 13 feet bgs and side wall sample LK) showed perchlorate concentrations less than the cleanup level, and eleven samples (floor – FL01, FL02, FL05, FL07, FL11, FL12 and side walls – CD, HM, IM, JI and LH) showed perchlorate concentrations greater than the cleanup level. **Table 2-1** lists confirmation sample results. Additional excavation was needed at the locations that exceeded the perchlorate cleanup level.

Additional excavation and confirmation sampling were conducted through September 8, 2009. An additional 297 cy of soil were excavated, making a total of 2,072 cy. Floor samples from

FL05, FL07, FL11 and FL12 and side wall samples from segments FH and HM, and from the southeast walls of floor areas FL05, FL11, and FL12, were collected. **Figure 2-5** shows the locations of these samples and the extent of excavation through September 8, 2009. One sample (side wall HM) showed perchlorate concentrations less than the cleanup level, and five samples (floor – FL05, FL07, FL11, FL12 and side walls FH and the southeast walls of FL05 and FL12) showed perchlorate concentrations greater than the cleanup level. **Table 2-1** lists confirmation sample results. Additional excavation was needed at the locations that exceeded the perchlorate cleanup level.

Additional excavation and confirmation sampling were conducted through September 12, 2009. Due to the lateral step outs, the floor grids on the western end of the excavation area were reconfigured to ensure that no floor sample would be greater than 750 square feet. For example, FL01 became FL13 and FL14. An additional 802 cy of soil were excavated, making a total of 2,874 cy. Floor samples from FL02, FL05, FL07, FL09, FL10, FL11, FL12, FL13 and FL14 and wall samples from side wall segments C1C, CD, D1E, EF3, FR1 and R1H were collected. **Figure 2-6** shows the locations of these samples and the extent of excavation through September 12, 2009. Six samples showed perchlorate concentrations less than the cleanup level, and ten samples (floor – FL01, FL02, FL05, FL07, FL11, FL12 and side walls – C1C, CD, D1E and R1H) showed perchlorate concentrations greater than the cleanup level. **Table 2-1** lists confirmation sample results. Additional excavation was needed at the locations that exceeded the perchlorate cleanup level.

Additional excavation and confirmation sampling were conducted through September 29, 2009. An additional 496 cy of soil were excavated, making a total of 3,370 cy. Floor samples from FL05, FL07, FL09, FL11, FL13, FL14 and side wall samples from segments C2C, CD, CM, D2E1, and R2H (twice) were collected. **Figure 2-7** shows the locations of these samples and the extent of excavation as of excavation through September 29, 2009. Eight samples showed perchlorate concentrations less than the cleanup level, and three samples (floor - FL09, FL11 and side wall – R2H) showed perchlorate concentrations greater than the cleanup level. **Table 2-1** lists confirmation sample results. Additional excavation was needed at two floor areas (FL09 and FL11). Additional excavation and sampling at side wall R2H removed the soil exceeding the perchlorate cleanup level.

Final excavation and confirmation sampling were conducted through October 1, 2009. An additional 36 cy of soil were excavated, making a total of 3,406 cy. Due to water infiltrating the excavation, samples from the floor areas of FL09 and FL11 could not be collected. However, samples were collected from the remaining north side wall just above the groundwater interface and indicated that the side wall areas had perchlorate concentrations less than the cleanup level. Thus, no additional excavation was needed to the north and due to the groundwater, no additional depth could be excavated. Thus, the excavation was complete. **Figure 2-8** shows the

final extent of excavation with floor and side wall samples noted. **Table 2-2** lists just the final floor and side wall confirmation samples for the final limits of excavation.

2.2.5 Decontamination of Equipment/Personnel

Decontamination of personnel consisted of removing any disposable PPE and washing prior to meal breaks and at the end of the work day.

Decontamination of equipment consisted of gross removal of visible contamination (soil, mud or debris) by mechanical means. Then, the equipment was loaded onto a trailer and transported to the permanent decontamination station located at the on-site groundwater treatment plant (GWTP) at LHAAP-18/24, which can accommodate large equipment for decontamination prior to leaving LHAAP. The road leading from the site to the GWTP was also checked for soil residue and none was observed.

2.2.6 Waste Management

Excavated soil was held in temporary stockpiles near the road and covered with plastic sheeting to prevent rain and wind from moving the material. Five waste characterization samples were collected from the soil stockpiles as required by the disposal facility. The five samples were collected on August 5, 2009, from representative portions of in situ soil at LHAAP-04. Sample analysis for perchlorate, toxicity characteristic leaching procedure (TCLP) RCRA metals and reactivity, corrosivity and ignitability (RCI) was conducted by off-site laboratories (Microbac and Accutest). The sample results indicated the soil was classified as non-hazardous material and could be disposed at a RCRA Subtitle D facility. **Table 2-3** presents the waste characterization sample results. Trucks carried the excavated soil to Allied Waste – Woolworth Road Landfill in Keithville, Louisiana and the excavated soil was disposed there. The Woolworth Road landfill is permitted by USEPA (Louisiana Department of Environmental Quality [LDEQ] ID #9077) to accept CERCLA waste (Shaw, 2010).

Two samples of concrete were collected from the concrete slab prior to excavation activities (04CONC01 and 04CONC02). The samples were tested for perchlorate, total metals, and TCLP RCRA metals. The metals and TCLP metals results were within acceptable limits, but the perchlorate result for 04CONC02 exceeded the perchlorate cleanup level, and the perchlorate result for 04CONC01 was only slightly below it. As a result, the concrete was broken up and disposed along with the contaminated soil rather than being used to backfill part of the excavation. **Figure 2-9** shows where the two samples were collected of the concrete and **Table 3-1** displays the test results.

The transite pipe sections found during the course of excavation were removed, wrapped in polyethylene and sent for disposal as a separate load as presumed nonfriable asbestos containing material to the Woolworth Road Landfill. Approximately 40 linear feet of pipe was removed.

Figure 2-9 shows the approximate locations where the transite pipe was found and removed for disposal.

Clay piping with a high density polyethylene (HDPE) liner was encountered traversing the excavation. As the excavation was made progressively deeper, it became necessary to remove and dispose parts of this piping. Samples were collected of the contents of the clay pipe and connected manholes, both solid and liquid, and the material was classified as non-hazardous. The removed clay pipe and HDPE liner were sent for disposal at the Woolworth Road Landfill along with the excavated soil. **Figure 2-9** shows the approximate locations of manholes and clay pipe sections that were removed for disposal.

A total of 220 truckloads of soil with a measured weight of 4,613 tons were received by the Woolworth Road Landfill. **Appendix C** contains a summary table listing each manifested truckload with weights and dates. Manifests and additional disposal documentation are also included in **Appendix C**.

Water from the excavation and decontamination liquids were pumped out as necessary and sent to the GWTP for treatment and discharge. Water from the clay pipe was tested for perchlorate, metals, semivolatile organic compounds and volatile organic compounds prior to transport to the GWTP. All constituents detected could be treated at the GWTP.

Miscellaneous waste such as the buried plastic liner, the HDPE liner from the clay pipeline, PPE, and plastic sheeting was disposed with excavated soil, or placed in plastic bags until disposal at a municipal solid waste landfill along with similar miscellaneous waste from other areas of LHAAP.

2.2.7 Site Restoration

After the excavation was completed and all confirmation sample results showed mercury or perchlorate concentrations below the cleanup levels, the site was restored by backfilling with 4,568 loose cy of clean soil, and seeding and mulching the disturbed area. The backfill was obtained from the Tony Pezaihowski (TP) backfill site (Karnack, Texas) and stockpiled adjacent to LHAAP-04 separately from excavated soil. Samples were collected from the backfill source and tested to verify the material was clean. **Table 2-4** presents the backfill source sample results. Backfill was placed on August 26 and 27, September 28, 29 and 30, and October 1 and 2, 2009, using a bulldozer. Compaction was incidental to placement. The area was graded to match the surrounding topography to ensure positive drainage. Erosion control fabric was placed to retain soil, and the entire disturbed area was seeded and mulched. The restored excavation area was surveyed on October 8 and 28, 2009 by Landmark Consultants, Inc. (see **Appendix D**). **Figure 2-2** presents the surveyed final limits of the excavation area at LHAAP-04.

2.2.8 Reporting

This Completion Report documents the removal action performed at LHAAP-04. The report includes site drawings, photographs of the work performed (**Appendix A**), sample data (**Appendix B**), and copies of manifests and other waste disposal documentation (**Appendix C**). A surveyor's report documenting the horizontal limits of the excavation area, and Daily Quality Control Reports documenting the activities conducted at LHAAP-04 are included in **Appendix D**. Additional field documents recording air monitoring, sample collection forms, supply shipping records, daily safety meetings and equipment inspections were not included in this Completion Report, but were filed with the general project files at the Shaw office in Houston, Texas.

2.3 Conclusion

The concentrations of mercury in the side walls of the excavation at LHAAP-04 were below the cleanup level (floor samples were not needed for mercury). The concentrations of perchlorate in the side walls and floors of the excavation at LHAAP-04 sometimes exceeded the cleanup level, and additional excavation was performed. However, the final perchlorate confirmation sample results for the side walls and floors were all below the cleanup level.

Thus, the RAOs to remove soils at LHAAP-04 that contained mercury and perchlorate above the cleanup levels were achieved. However, because of the groundwater infiltration, soil confirmation samples from the floor of two grids (FL09 and FL11) could not be collected to document clean closure of the site. It is probable that contaminated material might remain in the saturated zone in these grids. To evaluate this possibility, installation of a well is recommended to evaluate if there is contaminated material in the saturated zone (**Figure 2-10**).

Table 2-1
Soil Confirmation Sample Results

Location	Sample	Date	Purpose	Analyte	Result (mg/kg)	Qual	VQ	RC	DF
Mercury Excavation - All Confirmation Samples Meet Cleanup Goal									
04CSWEF	04CSEF1	8/17/09	REG	Mercury	0.0204	J	J	15	1
04CSWEF	04CSEF2	8/17/09	REG	Mercury	0.128				1
04CSWFR	04CSWFR	8/18/09	REG	Mercury	0.012	J	J	15	1
04CSWQH	04CSWQH	8/18/09	REG	Mercury	0.0231	J	J	15	1
04CSWOP	04CSWOP	8/18/09	REG	Mercury	0.0526	J	J	15	1
04CSWOP	04CSWOP-QC	8/18/09	REG	Mercury	0.124				1
04CSWRQ	04CSWRQ	8/18/09	REG	Mercury	0.0129	J	J	15	1
Perchlorate Excavation Through August 18, 2009 - Figure 2-3									
04CSFL04	04CSFL04	8/12/09	REG	Perchlorate	0.0029	U	U		1
04CSWAB	04CSWAB	8/12/09	REG	Perchlorate	0.0032	U	U		1
04CSFL01	04CSFL01 (4)	8/14/09	REG	Perchlorate	*36.4*				50
04CSFL01	04CSFL01 (4) QC	8/14/09	FD	Perchlorate	*46.2*				100
04CSFL03	04CSFL03 (4)	8/14/09	REG	Perchlorate	5.92				10
04CSWBC	04CSWBC	8/14/09	REG	Perchlorate	0.0027	U	U		1
04CSWCJ	04CSWCJ	8/14/09	REG	Perchlorate	*7.39*				15
04CSWHA	04CSWHA	8/14/09	REG	Perchlorate	0.117				1
04CSWJK	04CSWJK	8/14/09	REG	Perchlorate	0.0029	U	U		1
04CSFL02	04CSFL02 (4)	8/17/09	REG	Perchlorate	*71.6*				200
04CSFL05	04CSFL05 (7)	8/17/09	REG	Perchlorate	*229*				500
04CSWEF1	04CSWEF1	8/17/09	REG	Perchlorate	0.182				1
04CSWEF2	04CSWEF2	8/17/09	REG	Perchlorate	0.266				1
04CSWJI	04CSWJI	8/17/09	REG	Perchlorate	*81.1*				250
04CSWJI	04CSWJI-QC	8/17/09	FD	Perchlorate	*118*				500
04CSWLI	04CSWLI	8/17/09	REG	Perchlorate	*572*				1000
04CSWLK	04CSWLK	8/17/09	REG	Perchlorate	*7.7*				25
04CSFL06	04CSFL06 (10)	8/18/09	REG	Perchlorate	*7.64*				100
04CSFL07	04CSFL07 (5)	8/18/09	REG	Perchlorate	*10.1*				100
04CSFL07	04CSFL07 (5)-QC	8/18/09	FD	Perchlorate	*15.8*				100
04CSFL08	04CSFL08 (5)	8/18/09	REG	Perchlorate	0.341				1
04CSWFR	04CSWFR	8/18/09	REG	Perchlorate	0.372				1
04CSWMN	04CSWMN	8/18/09	REG	Perchlorate	*47.2*				100
04CSWON	04CSWON	8/18/09	REG	Perchlorate	*323*				500
04CSWOP	04CSWOP	8/18/09	REG	Perchlorate	*212*				500
04CSWOP	04CSWOP-QC	8/18/09	FD	Perchlorate	*302*				500
04CSWPM	04CSWPM	8/18/09	REG	Perchlorate	*42.1*				100
04CSWQH	04CSWQH	8/18/09	REG	Perchlorate	0.143				1
04CSWRQ	04CSWRQ	8/18/09	REG	Perchlorate	0.0588				1
Perchlorate Excavation Through August 27, 2009 - Figure 2-4									
04CSFL01	04CSFL01 (4) RE (W)	8/24/09	REG	Perchlorate	*33.6*				100
04CSFL01	04CSFL01(4)RE(W) SPLIT	8/24/09	SPLIT	Perchlorate	*98*				2000
04CSWCD	04CSWCDRE (2)	8/24/09	REG	Perchlorate	*45.7*				100
04CSWCD	04CSWCDRE(2)-SPLIT	8/24/09	SPLIT	Perchlorate	*78*				2000
04CSFL06	04CSFL06 (10) RE(13)	8/26/09	REG	Perchlorate	1.52				5
04CSFL06	04CSFL06(10)RE(13) SPLIT	8/26/09	SPLIT	Perchlorate	4.8				100

Table 2-1
Soil Confirmation Sample Results

Location	Sample	Date	Purpose	Analyte	Result (mg/kg)	Qual	VQ	RC	DF
04CSFL02	04CSFL02(4)RE(6)	8/27/09	REG	Perchlorate	*11*				500
04CSFL05	04CSFL05(7)RE(8)	8/27/09	REG	Perchlorate	*31*				2000
04CSFL07	04CSFL08(5)RE(7) *	8/27/09	REG	Perchlorate	*36*				2000
04CSFL11	04CSFL11(8)	8/27/09	REG	Perchlorate	*28*				2000
04CSFL12	04CSFL12(8)	8/27/09	REG	Perchlorate	*77*				2000
04CSWHM	04CSWHM	8/27/09	REG	Perchlorate	*7.6*				200
04CSWIM	04CSWIM	8/27/09	REG	Perchlorate	*45*				2000
04CSWJI	04CSWJI(4)	8/27/09	REG	Perchlorate	*440*				20000
04CSWLH	04CSWLH	8/27/09	REG	Perchlorate	*82*				2000
04CSWLK	04CSWLK(2)	8/27/09	REG	Perchlorate	0.67				50
04CSWLK	04CSWLKQC(1)	8/27/09	FD	Perchlorate	1				50
Perchlorate Excavation Through September 8, 2009 - Figure 2-5									
04CSFL05	04CSW5A	8/31/09	REG	Perchlorate	*210*				20000
04CSFL05	04CSW5B	8/31/09	REG	Perchlorate	*42*				2000
04CSFL11	04CSWI11	8/31/09	REG	Perchlorate	0.017				1
04CSFL11	04CSWC11	8/31/09	REG	Perchlorate	0.031				1
04CSFL12	04CSWC12	8/31/09	REG	Perchlorate	*50*				2000
04CSFL07	04CSFL08(6) **	9/1/09	REG	Perchlorate	*28.2*				1000
04CSFL11	04CSFL11(11)	9/1/09	REG	Perchlorate	*50.1*				1000
04CSFL12	04CSFL12(11)	9/1/09	REG	Perchlorate	*32.3*				1000
04CSWFH	04CSWFH(2)	9/1/09	REG	Perchlorate	*58.8*				1000
04CSWHM	04CSWHM	9/1/09	REG	Perchlorate	*232*				5000
04CSFL05	04CSFL05(7)RE(9)	9/3/09	REG	Perchlorate	*123*				2000
04CSWHM	04CSWHM	9/8/09	REG	Perchlorate	0.684				10
04CSWHM	04CSWHMQC	9/8/09	FD	Perchlorate	0.502				10
Perchlorate Excavation Through September 12, 2009 - Figure 2-6									
04CSFL10	04CSFL10(13)	9/10/09	REG	Perchlorate	4.89				1000
04CSFL11	04CSFL11RE(13)	9/10/09	REG	Perchlorate	*11.9*				1000
04CSFL14	04CSFL14(8)	9/10/09	REG	Perchlorate	*218*				10000
04CSWC1C	04CSWC1C	9/10/09	REG	Perchlorate	*262*				10000
04CSFL02	04CSFL02RE(7)	9/11/09	REG	Perchlorate	2.21				1000
04CSFL05	04CSFL05RE(13)	9/11/09	REG	Perchlorate	*7.99*				1000
04CSFL07	04CSFL07RE(11)	9/11/09	REG	Perchlorate	*8.7*				1000
04CSFL09	04CSFL09RE(13)	9/11/09	REG	Perchlorate	*17.4*				1000
04CSFL12	04CSFL12RE(13)	9/11/09	REG	Perchlorate	3.03				1000
04CSFL13	04CSFL13(8)	9/11/09	REG	Perchlorate	*24.9*				1000
04CSWCD	04CSWCDRE(19)U	9/11/09	REG	Perchlorate	0.087				10
04CSWCD	04CSWCDRE(4)L	9/11/09	REG	Perchlorate	*52.7*				1000
04CSWD1E	04CSWD1E	9/11/09	REG	Perchlorate	*30.3*				1000
04CSWD1E	04CSWD1EQC	9/11/09	FD	Perchlorate	*29.1*				1000
04CSWEF3	04CSWEF3	9/11/09	REG	Perchlorate	1.3				100
04CSWFR1	04CSWFR1	9/11/09	REG	Perchlorate	2.66				1000
04CSWR1H	04CSWR1H	9/11/09	REG	Perchlorate	*15.4*				1000
Perchlorate Excavation Through September 29, 2009 - Figure 2-7									
04CSFL05RE	04CSFL05RE(14)	9/21/09	REG	Perchlorate	0.0441				10

Table 2-1
Soil Confirmation Sample Results

Location	Sample	Date	Purpose	Analyte	Result (mg/kg)	Qual	VQ	RC	DF
04CSWC2C	04CSWC2C	9/21/09	REG	Perchlorate	0.0147				1
04CSWD2E1	04CSWD2E1	9/21/09	REG	Perchlorate	0.0171				1
04CSFL07	04CSFL07RE(12)	9/25/09	REG	Perchlorate	4.2				1000
04CSFL13	04CSFL13RE(13)	9/25/09	REG	Perchlorate	2.4				100
04CSFL14	04CSFL14RE(13)	9/25/09	REG	Perchlorate	2.59				1000
04CSFL14	04CSFL14RE(13)QC	9/25/09	FD	Perchlorate	3.02				1000
04CSWR2H	04CSWR2H	9/25/09	REG	Perchlorate	*9.6*				1000
04WCD	04WCDRE(19)L	9/25/09	REG	Perchlorate	6.65				1000
04CSFL09	04CSFL09RE(14)	9/29/09	REG	Perchlorate	*44.3*				1000
04CSFL11	04CSFL11RE(14)	9/29/09	REG	Perchlorate	*68.1*				1000
04CSWCM	04CSWCM	9/29/09	REG	Perchlorate	2.28				1000
04CSWR2H	04CSWR2H(1)	9/29/09	REG	Perchlorate	0.294		JI	17	10
04CSWR2H	04CSWR2H(1)QC	9/29/09	FD	Perchlorate	1.08		JI	17	100
Perchlorate Excavation Through October 1, 2009 - Figure 2-8									
04CSFL09	04CSFL09RE(14)-NORTH	10/1/09	REG	Perchlorate	0.000992	U	U		1
04CSFL11	04CSFL11RE(14)-NORTH	10/1/09	REG	Perchlorate	0.000981	U	U		1

Notes:

mg/kg - milligrams per kilogram

Qual - laboratory data qualifier

VQ - data validation qualifier

RC - reason code for qualifiers

DF - dilution factor

Mercury samples were analyzed at Microbac laboratory.

Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.

I - Bias in sample result is indeterminate.

J - The analyte was positively identified; the reported value is the estimated concentration.

U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

15 - Quantitation

17 - Field duplicate RPD criteria is exceeded

RPD - Relative percent difference

Results in ***Bold and Italic*** exceed the cleanup levels.

* - area sampled was FL07, but incorrectly labeled FL08.

** - area sampled was FL07, but incorrectly labeled FL08. Depth was incorrectly labeled as 6' instead of 8'.

Table 2-2
Final Excavation Soil Confirmation Sample Results

Location	Sample	Description	Date	Purpose	Result (mg/kg)	Qual	VQ	RC	DF
Mercury Excavation - All Confirmation Samples Meet Cleanup Goal									
04CSWEF	04CSEF1	West half, Wall EF	8/17/09	REG	0.0204	J	J	15	1
04CSWEF	04CSEF2	East half, Wall EF	8/17/09	REG	0.128				1
04CSWFR	04CSWFR	Wall FR	8/18/09	REG	0.012	J	J	15	1
04CSWOH	04CSWOH	Wall OH	8/18/09	REG	0.0231	J	J	15	1
04CSWOP	04CSWOP	Wall OP	8/18/09	REG	0.0526	J	J	15	1
04CSWOP	04CSWOP-QC	Wall OP	8/18/09	REG	0.124				1
04CSWRQ	04CSWRQ	Wall RQ	8/18/09	REG	0.0129	J	J	15	1
Perchlorate Final Excavation Limits Confirmation Samples - Figure 2-8									
04CSFL02	04CSFL02RE(7)	Floor at FL02	9/11/09	REG	2.21				1000
04CSFL03	04CSFL03 (4)	Floor at FL03	8/14/09	REG	5.92				10
04CSFL04	04CSFL04	Floor at FL04	8/12/09	REG	0.0029	U	U		1
04CSFL05RE	04CSFL05RE(14)	Floor at FL05	9/21/09	REG	0.0441				10
04CSFL06	04CSFL06 (10) RE(13)	Floor at FL06	8/26/09	REG	1.52				5
04CSFL07	04CSFL07RE(12)	Floor at FL07	9/25/09	REG	4.2				1000
04CSFL08	04CSFL08 (5)	Floor at FL08	8/18/09	REG	0.341				1
04CSFL09	04CSFL09RE(14)-NORTH	Floor at FL09	10/1/09	REG	0.000992	U	U		1
04CSFL10	04CSFL10(13)	Floor at FL10	9/10/09	REG	4.89				1000
04CSFL11	04CSFL11RE(14)-NORTH	Floor at FL11	10/1/09	REG	0.000981	U	U		1
04CSFL12	04CSFL12RE(13)	Floor at FL12	9/11/09	REG	3.03				1000
04CSFL13	04CSFL13RE(13)	Floor at FL13	9/25/09	REG	2.4				100
04CSFL14	04CSFL14RE(13)	Floor at FL14	9/25/09	REG	2.59				1000
04CSWAB	04CSWAB	Wall for AB	8/12/09	REG	0.0032	U	U		1
04CSWBC	04CSWBC	Wall for BC	8/14/09	REG	0.0027	U	U		1
04CSWC2C	04CSWC2C	Wall for C2C	9/21/09	REG	0.0147				1
04CSWCD	04CSWCDRE(19)U	Upper Wall for C2D2	9/11/09	REG	0.087				10
04CSWCM	04CSWCM	Wall for CM	9/29/09	REG	2.28				1000
04CSWD2E1	04CSWD2E1	Wall for D2E1	9/21/09	REG	0.0171				1
04CSWEF1	04CSWEF1	Upper Wall west EF	8/17/09	REG	0.182				1
04CSWEF2	04CSWEF2	Upper Wall east EF	8/17/09	REG	0.266				1
04CSWEF3	04CSWEF3	Lower Wall EF	9/11/09	REG	1.3				100
04CSWFR	04CSWFR	Wall for FR	8/18/09	REG	0.372				1
04CSWFR1	04CSWFR1	Wall for FR1 (F to R2)	9/11/09	REG	2.66				1000
04CSWHA	04CSWHA	Wall for HA	8/14/09	REG	0.117				1
04CSWHM	04CSWHM	Wall for HM	9/8/09	REG	0.684				10
04CSWLK	04CSWLK(2)	Wall for LK	8/27/09	REG	0.67				50
04CSWQH	04CSWQH	Wall for QH	8/18/09	REG	0.143				1
04CSWR2H	04CSWR2H(1)	Wall for R2H	9/29/09	REG	0.294		JI	17	10
04CSWRQ	04CSWRQ	Wall for RQ	8/18/09	REG	0.0588				1
04WCD	04WCDRE(19)L	Lower Wall for C2D2	9/25/09	REG	6.65				1000

Notes:
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier
VQ - data validation qualifier
RC - reason code for qualifiers
DF - dilution factor
Mercury samples were analyzed at Microbac laboratory.
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
I - Bias in sample result is indeterminate.
J - The analyte was positively identified; the reported value is the estimated concentration.
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
15 - Quantitation
17 - Field duplicate RPD criteria is exceeded.
RPD - Relative percent difference

Table 2-3
Waste Characterization Sample Results

	Location	04DS01					04DS02					04DS03					04DS04					04DS05				
	Sample	04DS01 (0-2)					04DS02 (0-2)					04DS03 (0-3)					04DS04 (0-2)					04DS05 (0-4)				
	Date	8/5/09					8/5/09					8/5/09					8/5/09					8/5/09				
	Purpose	Reg					Reg					Reg					Reg					Reg				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Perchlorate																										
Perchlorate	µg/kg	82.8 B		J		15 5	126000				250	55.6 B		J		15 5	12400				25	13900				50
TCLP RCRA Metals																										
Arsenic, TCLP	mg/L	0.1 U		U		1	0.1 U		U		1	0.1 U		U		1	0.1 U		U		1	0.1 U		U		1
Barium, TCLP	mg/L	1.24				1	3.23				1	1.01				1	0.605				1	0.677				1
Cadmium, TCLP	mg/L	0.025 U		U		1	0.025 U		U		1	0.025 U		U		1	0.025 U		U		1	0.025 U		U		1
Chromium, TCLP	mg/L	0.025 U		U		1	0.025 U		U		1	0.025 U		U		1	0.025 U		U		1	0.025 U		U		1
Lead, TCLP	mg/L	0.1 U		U		1	0.1 U		U		1	0.1 U		U		1	0.1 U		U		1	0.1 U		U		1
Selenium, TCLP	mg/L	0.4 U		U		1	0.4 U		U		1	0.4 U		U		1	0.4 U		U		1	0.4 U		U		1
Silver, TCLP	mg/L	0.05 U		U		1	0.05 U		U		1	0.05 U		U		1	0.05 U		U		1	0.05 U		U		1
Mercury, TCLP	mg/L	0.001 U		U		1	0.001 U		U		1	0.001 U		U		1	0.001 U		U		1	0.001 U		U		1
RCI																										
Corrosivity pH	Std Units	7.78				1	9.22				1	6.45				1	8.51				1	5.84				1
Ignitability	Deg C	70 >				1	70 >				1	72 >				1	68 >				1	74 >				1
Reactivity, Cyanide	mg/kg	4.99 U		U		1	4.97 U		U		1	4.98 U		U		1	4.99 U		U		1	4.97 U		U		1
Reactivity, Sulfide	mg/kg	50 U		U		1	50 U		U		1	50 U		U		1	50 U		U		1	50 U		U		1

Notes:

6 - Result qualified as a result of the 5X/10X blank correction

> - greater than

B - The analyte was detected in an associated blank.

DF - dilution factor

Deg C - degrees Celsius

Qual - laboratory data qualifier

µg/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

mg/L - milligrams per liter

RC - reason code for qualifiers

RCI - reactivity, corrosivity, and ignitability

RCRA - Resource Conservation and Recovery Act

REG - regular sample

Std Units - standard units for pH measurement

TCLP - toxicity characteristic leaching procedure

U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

VQ - data validation qualifier

Table 2-4
Backfill Soil Sample Results

	Location	SITE 1-TP					SITE 1-TP				
	Sample	SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/9/09					8/9/09				
	Purpose	Reg					Reg				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TAL Metals											
Aluminum, Total	mg/kg	2890				1	685				1
Antimony, Total	mg/kg	0.472	U	U		1	0.454	U	U		1
Arsenic, Total	mg/kg	2.08	J	J	15	1	0.454	U	U		1
Barium, Total	mg/kg	7.15				1	14.7				1
Beryllium, Total	mg/kg	0.0467	J	J	15	1	0.0558	J	J	15	1
Cadmium, Total	mg/kg	0.0472	U	U		1	0.0454	U	U		1
Calcium, Total	mg/kg	6.69	J	J	15	1	97.7				1
Chromium, Total	mg/kg	14.5				1	1.57				1
Cobalt, Total	mg/kg	0.311	J	J	15	1	0.592	J	J	15	1
Copper, Total	mg/kg	2.56				1	1.33				1
Iron, Total	mg/kg	10600	B	B	6	1	1370	B	B	6	1
Lead, Total	mg/kg	6.17				1	2.21	J	J	15	1
Magnesium, Total	mg/kg	49.3				1	35.9				1
Manganese, Total	mg/kg	18.3				1	128				1
Mercury, Total	mg/kg	0.0127	U	U		1	0.0122	U	U		1
Nickel, Total	mg/kg	0.933	J	J	15	1	0.827	J	J	15	1
Potassium, Total	mg/kg	108				1	56.8				1
Selenium, Total	mg/kg	0.472	U	U		1	0.582	J	J	15	1
Silver, Total	mg/kg	0.259	J	J	15	1	0.227	U	U		1
Sodium, Total	mg/kg	4.72	U	U		1	4.63	J	J	15	1
Thallium, Total	mg/kg	0.378	U	U		1	0.363	U	U		1
Vanadium, Total	mg/kg	19.8				1	2.49				1
Zinc, Total	mg/kg	3.03				1	3.45				1
VOCs - 8260B											
1,1,1,2-Tetrachloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,1,1-Trichloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,1,2,2-Tetrachloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,1,2-Trichloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,1-Dichloroethane	µg/kg	1.28	U	U		1	1.25	U	U		1
1,1-Dichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,1-Dichloropropene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,2,3-Trichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,2,3-Trichloropropane	µg/kg	1.28	U	U		1	1.25	U	U		1
1,2,4-Trichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,2,4-Trimethylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,2-Dibromo-3-Chloropropane	µg/kg	2.57	U	U		1	2.5	U	U		1
1,2-Dibromoethane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,2-Dichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,2-Dichloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,2-Dichloropropane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,3,5-Trimethylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,3-Dichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
1,3-Dichloropropane	µg/kg	0.642	U	U		1	0.624	U	U		1
1,4-Dichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
2,2-Dichloropropane	µg/kg	0.642	U	U		1	0.624	U	U		1

Table 2-4
Backfill Soil Sample Results

	Location	SITE 1-TP					SITE 1-TP				
	Sample	SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/9/09					8/9/09				
	Purpose	Reg					Reg				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
2-Butanone	µg/kg	3.21	U	U		1	3.12	U	U		1
2-Chloroethyl Vinyl Ether	µg/kg	2.57	U	U		1	2.5	U	U		1
2-Chlorotoluene	µg/kg	0.642	U	U		1	0.624	U	U		1
2-Hexanone	µg/kg	3.21	U	U		1	3.12	U	U		1
4-Chlorotoluene	µg/kg	0.642	U	U		1	0.624	U	U		1
4-Methyl-2-Pentanone	µg/kg	3.21	U	U		1	3.12	U	U		1
Acetone	µg/kg	6.42	U	U		1	6.24	U	U		1
Benzene	µg/kg	0.642	U	U		1	0.624	U	U		1
Bromobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
Bromochloromethane	µg/kg	0.642	U	U		1	0.624	U	U		1
Bromodichloromethane	µg/kg	0.642	U	U		1	0.624	U	U		1
Bromoform	µg/kg	0.642	U	U		1	0.624	U	U		1
Bromomethane	µg/kg	1.28	U	U		1	1.25	U	U		1
Carbon Disulfide	µg/kg	0.642	U	U		1	0.624	U	U		1
Carbon Tetrachloride	µg/kg	0.642	U	U		1	0.624	U	U		1
Chlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
Chlorodibromomethane	µg/kg	0.642	U	U		1	0.624	U	U		1
Chloroethane	µg/kg	1.28	U	U		1	1.25	U	U		1
Chloroform	µg/kg	0.642	U	U		1	0.624	U	U		1
Chloromethane	µg/kg	2.57	U	U		1	2.5	U	U		1
Cis-1,2-Dichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1
Cis-1,3-Dichloropropene	µg/kg	0.642	U	U		1	0.624	U	U		1
Dibromomethane	µg/kg	0.642	U	U		1	0.624	U	U		1
Dichlorodifluoromethane	µg/kg	1.28	U	U		1	1.25	U	U		1
Ethylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
Hexachlorobutadiene	µg/kg	0.642	U	U		1	0.624	U	U		1
Isopropylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
M-,P-Xylene	µg/kg	0.642	U	U		1	0.624	U	U		1
Methylene Chloride	µg/kg	1.28	U	U		1	1.25	U	U		1
Naphthalene	µg/kg	0.642	U	U		1	0.624	U	U		1
N-Butylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
N-Propylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
O-Xylene	µg/kg	0.642	U	U		1	0.624	U	U		1
P-Isopropyltoluene	µg/kg	0.642	U	U		1	0.624	U	U		1
Sec-Butylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
Styrene	µg/kg	0.642	U	U		1	0.624	U	U		1
Tert-Butylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1
Tetrachloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1
Toluene	µg/kg	0.642	U	U		1	0.624	U	U		1
Trans-1,2-Dichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1
Trans-1,3-Dichloropropene	µg/kg	0.642	U	U		1	0.624	U	U		1
Trichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1
Trichlorofluoromethane	µg/kg	1.28	U	U		1	1.25	U	U		1
Vinyl Acetate	µg/kg	1.28	U	U		1	1.25	U	U		1
Vinyl Chloride	µg/kg	1.28	U	U		1	1.25	U	U		1

Table 2-4
Backfill Soil Sample Results

	Location	SITE 1-TP					SITE 1-TP				
	Sample	SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/9/09					8/9/09				
	Purpose	Reg					Reg				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
SVOCs - 8270C											
1,2,4-Trichlorobenzene	µg/kg	124	U	U		1	120	U	U		1
1,2-Dichlorobenzene	µg/kg	124	U	U		1	120	U	U		1
1,3-Dichlorobenzene	µg/kg	124	U	U		1	120	U	U		1
1,4-Dichlorobenzene	µg/kg	124	U	U		1	120	U	U		1
2,4,5-Trichlorophenol	µg/kg	124	U	U		1	120	U	U		1
2,4,6-Trichlorophenol	µg/kg	124	U	U		1	120	U	U		1
2,4-Dichlorophenol	µg/kg	124	U	U		1	120	U	U		1
2,4-Dimethylphenol	µg/kg	124	U	U		1	120	U	U		1
2,4-Dinitrophenol	µg/kg	496	U	U		1	478	U	U		1
2,4-Dinitrotoluene	µg/kg	124	U	U		1	120	U	U		1
2,6-Dinitrotoluene	µg/kg	124	U	U		1	120	U	U		1
2-Chloronaphthalene	µg/kg	124	U	U		1	120	U	U		1
2-Chlorophenol	µg/kg	124	U	U		1	120	U	U		1
2-Methylnaphthalene	µg/kg	124	U	U		1	120	U	U		1
2-Methylphenol	µg/kg	124	U	U		1	120	U	U		1
2-Nitroaniline	µg/kg	496	U	U		1	478	U	U		1
2-Nitrophenol	µg/kg	124	U	U		1	120	U	U		1
3,3'-Dichlorobenzidine	µg/kg	248	U	U		1	239	U	U		1
3-,4-Methylphenol	µg/kg	124	U	U		1	120	U	U		1
3-Nitroaniline	µg/kg	496	U	U		1	478	U	U		1
4,6-Dinitro-2-Methylphenol	µg/kg	496	U	U		1	478	U	U		1
4-Bromophenyl-Phenylether	µg/kg	124	U	U		1	120	U	U		1
4-Chloro-3-Methylphenol	µg/kg	124	U	U		1	120	U	U		1
4-Chloroaniline	µg/kg	124	U	U		1	120	U	U		1
4-Chlorophenyl-Phenyl Ether	µg/kg	124	U	U		1	120	U	U		1
4-Nitroaniline	µg/kg	496	U	U		1	478	U	U		1
4-Nitrophenol	µg/kg	496	U	U		1	478	U	U		1
Acenaphthene	µg/kg	124	U	U		1	120	U	U		1
Acenaphthylene	µg/kg	124	U	U		1	120	U	U		1
Anthracene	µg/kg	124	U	U		1	120	U	U		1
Benzo(A)Anthracene	µg/kg	124	U	U		1	120	U	U		1
Benzo(A)Pyrene	µg/kg	124	U	U		1	120	U	U		1
Benzo(B)Fluoranthene	µg/kg	124	U	U		1	120	U	U		1
Benzo(G,H,I)Perylene	µg/kg	124	U	U		1	120	U	U		1
Benzo(K)Fluoranthene	µg/kg	124	U	U		1	120	U	U		1
Benzoic Acid	µg/kg	496	U	U		1	478	U	U		1
Benzyl Alcohol	µg/kg	124	U	U		1	120	U	U		1
Bis(2-Chloroethoxy)Methane	µg/kg	124	U	U		1	120	U	U		1
Bis(2-Chloroethyl)Ether	µg/kg	124	U	U		1	120	U	U		1
Bis(2-Chloroisopropyl)Ether	µg/kg	124	U	U		1	120	U	U		1
Bis(2-Ethylhexyl)Phthalate	µg/kg	124	U	U		1	120	U	U		1
Butylbenzylphthalate	µg/kg	124	U	U		1	120	U	U		1
Chrysene	µg/kg	124	U	U		1	120	U	U		1
Dibenzo(A,H)Anthracene	µg/kg	124	U	U		1	120	U	U		1
Dibenzofuran	µg/kg	124	U	U		1	120	U	U		1

Table 2-4
Backfill Soil Sample Results

	Location	SITE 1-TP					SITE 1-TP				
	Sample	SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/9/09					8/9/09				
	Purpose	Reg					Reg				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Diethylphthalate	µg/kg	124	U	U		1	120	U	U		1
Dimethylphthalate	µg/kg	124	U	U		1	120	U	U		1
Di-N-Butylphthalate	µg/kg	124	U	U		1	128	J	J		1
Di-N-Octylphthalate	µg/kg	124	U	U		1	120	U	U		1
Fluoranthene	µg/kg	124	U	U		1	120	U	U		1
Fluorene	µg/kg	124	U	U		1	120	U	U		1
Hexachlorobenzene	µg/kg	124	U	U		1	120	U	U		1
Hexachlorobutadiene	µg/kg	124	U	U		1	120	U	U		1
Hexachlorocyclopentadiene	µg/kg	124	U	U		1	120	U	U		1
Hexachloroethane	µg/kg	124	U	U		1	120	U	U		1
Indeno(1,2,3-Cd)Pyrene	µg/kg	124	U	U		1	120	U	U		1
Isophorone	µg/kg	124	U	U		1	120	U	U		1
Naphthalene	µg/kg	124	U	U		1	120	U	U		1
Nitrobenzene	µg/kg	124	U	U		1	120	U	U		1
N-Nitrosodiphenylamine	µg/kg	124	U	U		1	120	U	U		1
N-Nitrosodipropylamine	µg/kg	124	U	U		1	120	U	U		1
Pentachlorophenol	µg/kg	496	U	U		1	478	U	U		1
Phenanthrene	µg/kg	124	U	U		1	120	U	U		1
Phenol	µg/kg	124	U	U		1	120	U	U		1
Pyrene	µg/kg	124	U	U		1	120	U	U		1

Notes:
µg/kg - micrograms per kilogram
BF - general backfill soil
DF - dilution factor
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier
RC - reason code for qualifiers
SVOCs - semivolatile organic compounds
TALs - Target Analyte List
TP - Tony Pezaihowski backfill source
TS - topsoil
VOCs - volatile organic compounds
VQ - data validation qualifier

Qualifiers and Reason Codes:
B - The analyte was detected in an associated blank.
J - The analyte was positively identified; the reported value is the estimated concentration.
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
6 - Result qualified as a result of the 5X/10X blank correction
15 - Quantitation

00108049

LOCATION	EAST	NORTH
A	3306023.7	6959119.1
B	3306001.4	6959098.2
C	3305977.2	6959123.5
D	3305915.7	6959064.8
E	3305891.5	6959090.1
F	3305942.2	6959138.5
G	3305947.5	6959132.9
H	3305980.5	6959164.7
I	3305950.2	6959115.5
J	3305905.5	6959075.4
K	3305895.2	6959086.2
L	3305939.9	6959126.1
M	3305988.1	6959144.4
N	3305973.6	6959130.6
O	3305959.8	6959145.2
P	3305974.4	6959158.9
R	3305949.7	6959192.3
Q	3305918.9	6959162.4

Concrete to be removed.
Initial excavation depth of
5' below top of concrete.

An approximate 20' x 20' area
will be excavated to 10' bgs initially.

Approximately 5' from the edge of the slab,
a 15' x 60' area will be excavated to 7' bgs initially.

Steam Let Down Station
Heat Exchanger
Storage
40,000 Gal. AST
Evaporator
12,000 Gal. Cone Bottom Tank
Sump 122
40,000 Gal. AST
Berm
AVE "I"
6TH ST.

LEGEND

- Electrical Line Pole
- Pole Only
- Hydrant
- Road
- Initial Excavation of 4 Feet
- 4' bgs Initially
- Excavation Area Deeper than 5' bgs
- Former Location of Operational Structure
- Concrete Slab
- Site

NOTES:

A confirmation sample will be collected from the floor fo approximately every 750 square fett and from each overexcavated area.

A confirmation sample will be collected from each walll of each excavation.

bgs - below ground surface

Samples will be analyzed for perchlorate.

0 12.5 25 50 Feet

N

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

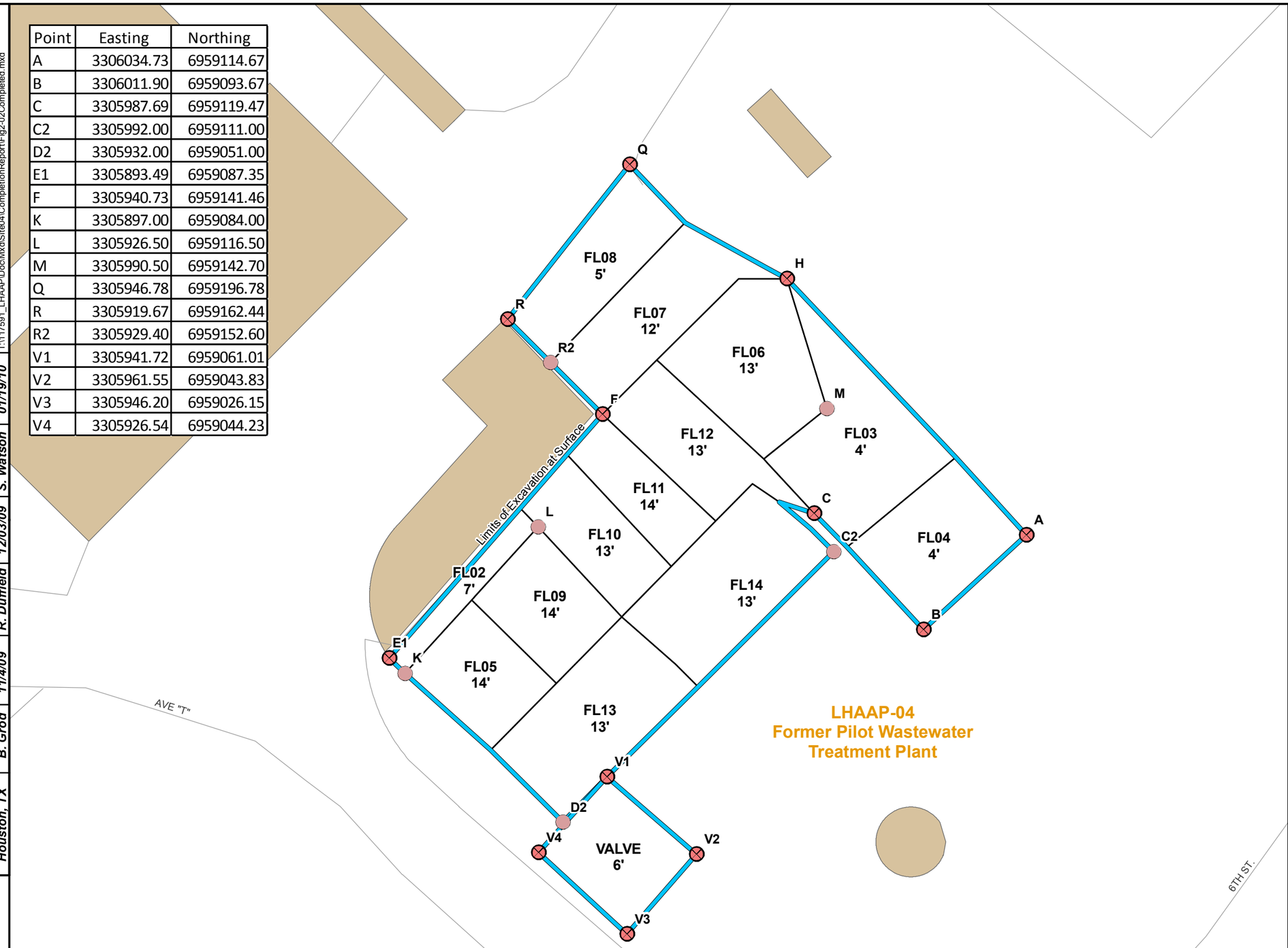
FIGURE 2-1

PLANNED EXCAVATION AREA
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

FILE PATH	T:\117591_LHAAP\Doc\MxdSite04\CompletionReport\Fig02-1Planned.mxd
APPROVED BY	S. Watson 01/19/10
CHECKED BY	R. Duffield 12/03/09
DRAWN BY	B. Grod 10/28/09
OFFICE	Houston, TX

Point	Easting	Northing
A	3306034.73	6959114.67
B	3306011.90	6959093.67
C	3305987.69	6959119.47
C2	3305992.00	6959111.00
D2	3305932.00	6959051.00
E1	3305893.49	6959087.35
F	3305940.73	6959141.46
K	3305897.00	6959084.00
L	3305926.50	6959116.50
M	3305990.50	6959142.70
Q	3305946.78	6959196.78
R	3305919.67	6959162.44
R2	3305929.40	6959152.60
V1	3305941.72	6959061.01
V2	3305961.55	6959043.83
V3	3305946.20	6959026.15
V4	3305926.54	6959044.23



LEGEND

- Extrapolated Point
- Surveyed Point
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Limits of Excavation at Surface
- Road
- Concrete Slab

NOTES:

Final surveyed point C is a different location from point C on Figure 2-1.

0 10 20 40 Feet

N

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2

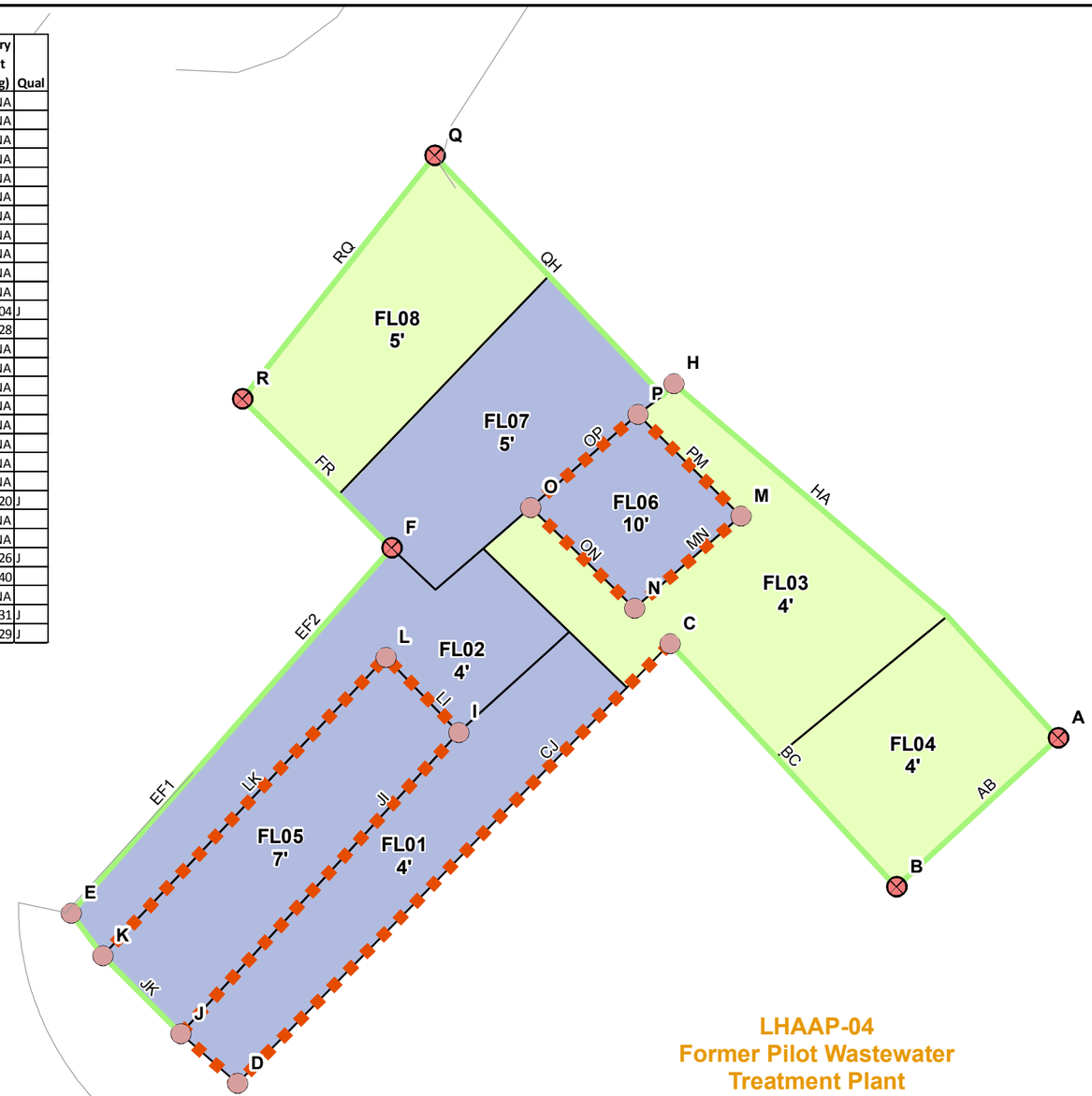
COMPLETED EXCAVATION AREA
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

FILE PATH	T:\117591_LHAAP\Docs\MxdSite04\CompletionReport\Fig2-02Completed.mxd
APPROVED BY	S. Watson 01/19/10
CHECKED BY	R. Duffield 12/03/09
DRAWN BY	B. Grod 11/4/09
OFFICE	Houston, TX

00108051

Location	Sample	Date	Perchlorate Result (mg/kg)	Qual	Mercury Result (mg/kg)	Qual
04CSFL04	04CSFL04	8/12/09	0.0029	U	NA	
04CSWAB	04CSWAB	8/12/09	0.0032	U	NA	
04CSFL01	04CSFL01 (4)	8/14/09	***36.4***		NA	
04CSFL01	04CSFL01 (4) QC	8/14/09	***46.2***		NA	
04CSFL03	04CSFL03 (4)	8/14/09	5.92		NA	
04CSWBC	04CSWBC	8/14/09	0.0027	U	NA	
04CSWCJ	04CSWCJ	8/14/09	***7.39***		NA	
04CSWHA	04CSWHA	8/14/09	0.117		NA	
04CSWJK	04CSWJK	8/14/09	0.0029	U	NA	
04CSFL02	04CSFL02 (4)	8/17/09	***71.6***		NA	
04CSFL05	04CSFL05 (7)	8/17/09	***229***		NA	
04CSWEF1	04CSWEF1	8/17/09	0.182		0.0204	J
04CSWEF2	04CSWEF2	8/17/09	0.266		0.0128	
04CSWJI	04CSWJI	8/17/09	***81.1***		NA	
04CSWJI	04CSWJI-QC	8/17/09	***118***		NA	
04CSWLI	04CSWLI	8/17/09	***572***		NA	
04CSWLK	04CSWLK	8/17/09	***7.7***		NA	
04CSFL06	04CSFL06 (10)	8/18/09	***7.64***		NA	
04CSFL07	04CSFL07 (5)	8/18/09	***10.1***		NA	
04CSFL07	04CSFL07 (5)-QC	8/18/09	***15.8***		NA	
04CSFL08	04CSFL08 (5)	8/18/09	0.341		NA	
04CSWFR	04CSWFR	8/18/09	0.372		0.0120	J
04CSWMN	04CSWMN	8/18/09	***47.2***		NA	
04CSWON	04CSWON	8/18/09	***323***		NA	
04CSWOP	04CSWOP	8/18/09	***212***		0.0526	J
04CSWOP	04CSWOP-QC	8/18/09	***302***		0.1240	
04CSWPM	04CSWPM	8/18/09	***42.1***		NA	
04CSWQH	04CSWQH	8/18/09	0.143		0.0231	J
04CSWRQ	04CSWRQ	8/18/09	0.0588		0.0129	J



LHAAP-04
Former Pilot Wastewater
Treatment Plant

LEGEND

- Extrapolated Point
- Surveyed Point
- Wall Confirmation Sample > Cleanup level
- Wall Confirmation Sample < Cleanup level
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Floor Sample > Cleanup level
- Floor Sample < Cleanup level
- Road

Abbreviations:
mg/kg - milligrams per kilogram
NA - not analyzed for mercury
Qual - laboratory data qualifier
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
J - The analyte was positively identified. The reported value is the estimated concentration of the constituent detected in the sample analyzed.

Notes:
Mercury samples were analyzed at Microbac laboratory.
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
Results in Bold and Italic exceed the cleanup levels.
Cleanup levels -
Perchlorate 7.2 mg/kg
Mercury 0.15 mg/kg

N

0 10 20 40 Feet

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-3

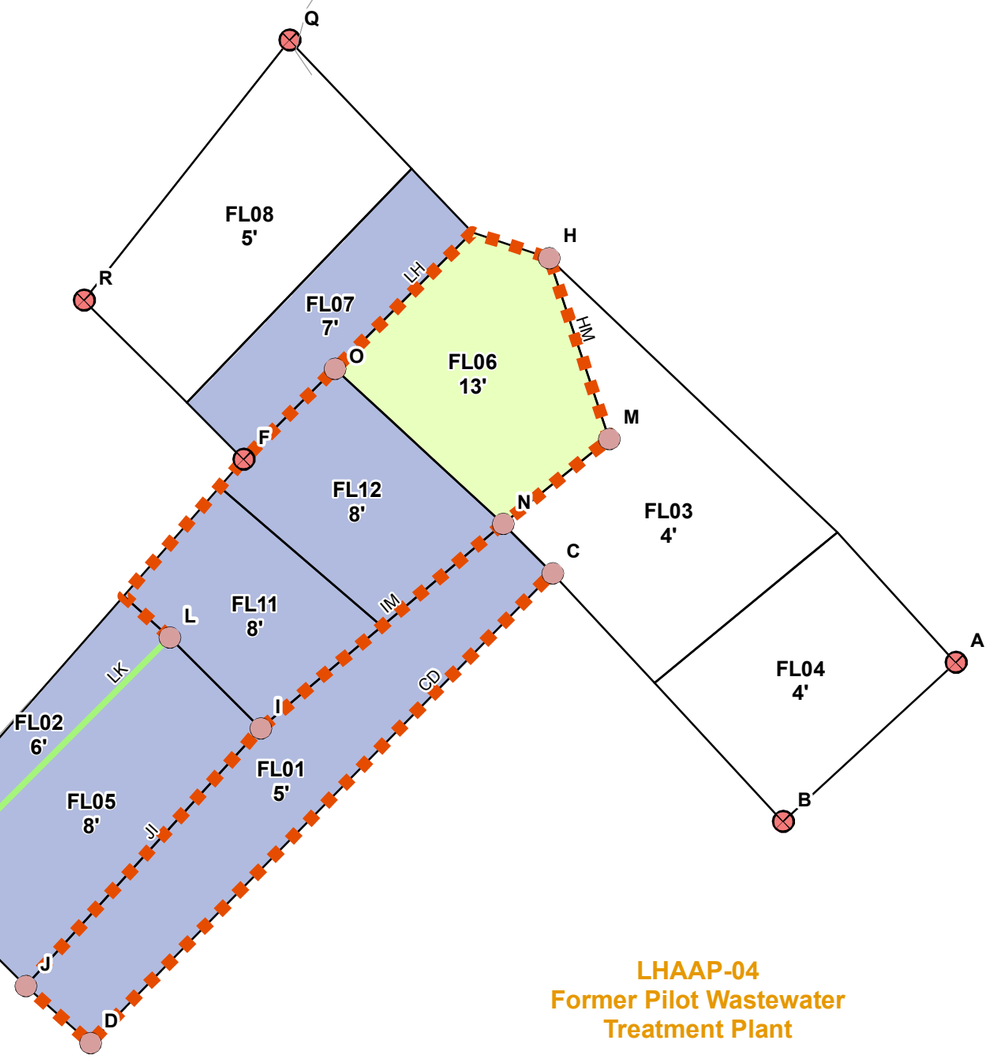
CONFIRMATION SAMPLES
AS OF AUGUST 18, 2009
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

FILE PATH	T:\117591_LHAAP\Doc\MxdSite04\CompletionReport\Fig2-03Samples8-18-09.mxd
APPROVED BY	S. Watson 01/19/10
CHECKED BY	R. Duffield 12/03/09
DRAWN BY	B. Grod 11/4/09
OFFICE	Houston, TX

00108052

Location	Sample	Date	Result (mg/kg)	Qual
04CSFL01	04CSFL01 (4) RE (W)	8/24/09	***33.6***	
04CSFL01	04CSFL01(4)RE(W) SPLIT	8/24/09	***98***	
04CSWCD	04CSWCDRE(2)-SPLIT	8/24/09	***78***	
04CSWCD	04CSWCDRE (2)	8/24/09	***45.7***	
04CSFL06	04CSFL06 (10) RE(13)	8/26/09	1.52	
04CSFL06	04CSFL06(10)RE(13) SPLIT	8/26/09	4.8	
04CSFL02	04CSFL02(4)RE(6)	8/27/09	***11***	
04CSFL05	04CSFL05(7)RE(8)	8/27/09	***31***	
04CSFL07*	04CSFL08(5)RE(7)*	8/27/09	***36***	
04CSFL11	04CSFL11(8)	8/27/09	***28***	
04CSFL12	04CSFL12(8)	8/27/09	***77***	
04CSWHM	04CSWHM	8/27/09	***7.6***	
04CSWIM	04CSWIM	8/27/09	***45***	
04CSWJI	04CSWJI(4)	8/27/09	***440***	
04CSWLH	04CSWLH	8/27/09	***82***	
04CSWLK	04CSWLK(2)	8/27/09	0.67	
04CSWLK	04CSWLKQC(1)	8/27/09	1	



LHAAP-04
Former Pilot Wastewater Treatment Plant

LEGEND

- Extrapolated Point
- Surveyed Point
- Wall Confirmation Sample > Cleanup level
- Wall Confirmation Sample < Cleanup level
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Floor Sample > Cleanup level
- Floor Sample < Cleanup level
- Road

Abbreviations:
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier

Notes:
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
* - area sampled was FL07, but sample ID incorrectly labeled FL08
Results in Bold and Italic exceed the cleanup levels.
Cleanup levels -
Perchlorate 7.2 mg/kg

0 10 20 40 Feet

N

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-4

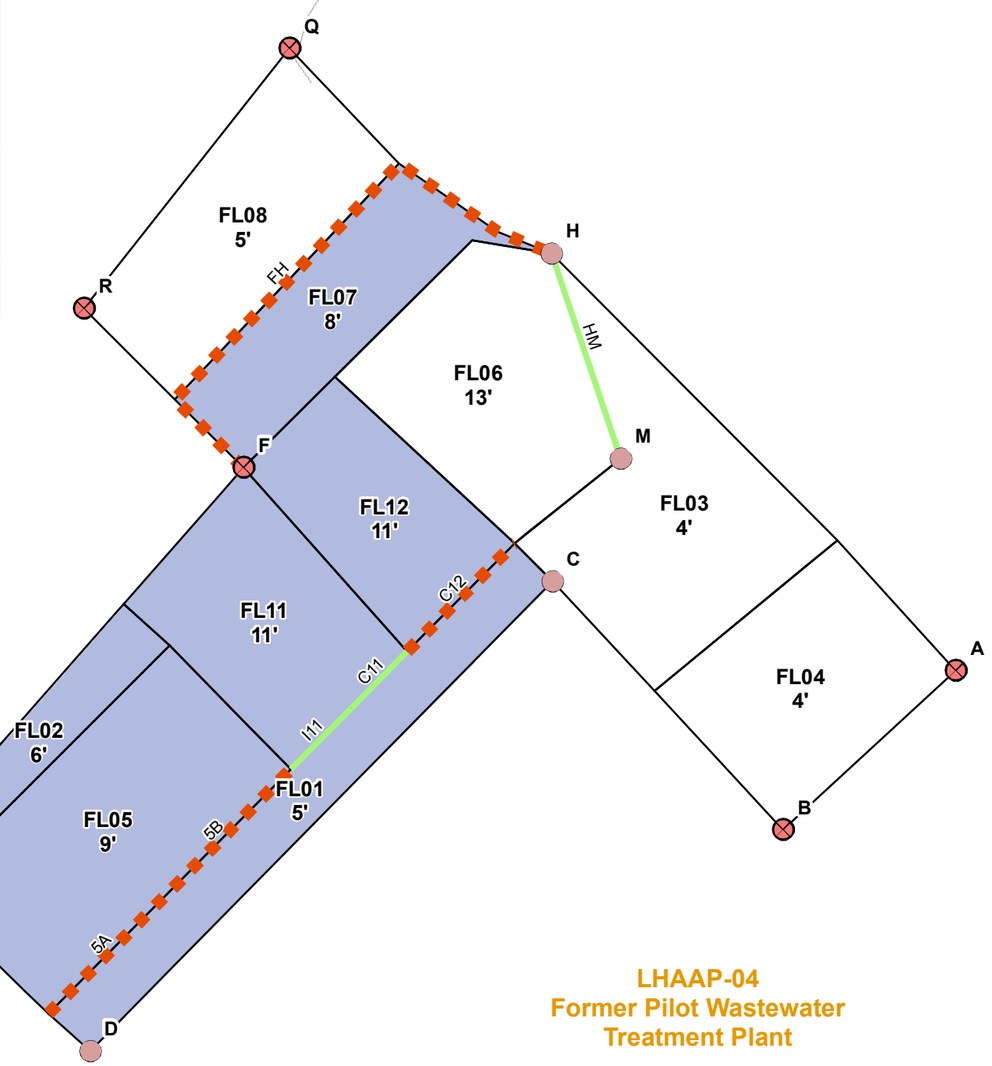
CONFIRMATION SAMPLES
AS OF AUGUST 27, 2009
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

FILE PATH	T:\117591_LHAAP\Docs\MxdSite04\CompletionReport\Fig2-04Samples8-27-09.mxd
APPROVED BY	S. Watson 01/19/10
CHECKED BY	R. Duffield 12/03/09
DRAWN BY	B. Grod 11/4/09
OFFICE	Houston, TX

00108053

Location	Sample	Date	Result (mg/kg)	Qual
04CSFL05	04CSW5A	8/31/09	***210***	
04CSFL05	04CSW5B	8/31/09	***42***	
04CSFL11	04CSWI11	8/31/09	0.017	
04CSFL11	04CSWC11	8/31/09	0.031	
04CSFL12	04CSWC12	8/31/09	***50***	
04CSFL07	04CSFL08(6) **	9/1/09	***28.2***	
04CSFL11	04CSFL11(11)	9/1/09	***50.1***	
04CSFL12	04CSFL12(11)	9/1/09	***32.3***	
04CSWFH	04CSWFH(2)	9/1/09	***58.8***	
04CSFL05	04CSFL05(7)RE(9)	9/3/09	***123***	
04CSWHM	04CSWHM	9/3/09	0.684	
04CSWHM	04CSWHMQC	9/3/09	0.502	



LHAAP-04
Former Pilot Wastewater Treatment Plant

LEGEND

- Extrapolated Point
- Surveyed Point
- Wall Confirmation Sample > Cleanup level
- Wall Confirmation Sample < Cleanup level
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Floor Sample > Cleanup level
- Floor Sample < Cleanup level
- Road

Abbreviations:
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier

Notes:
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
** - area sampled was FL07, but sample ID incorrectly labeled FL08 also, depth is incorrectly labeled as 6', should be 8'.
Results in Bold and Italic exceed the cleanup levels.
Cleanup levels -
Perchlorate 7.2 mg/kg

0 10 20 40 Feet

N

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-5

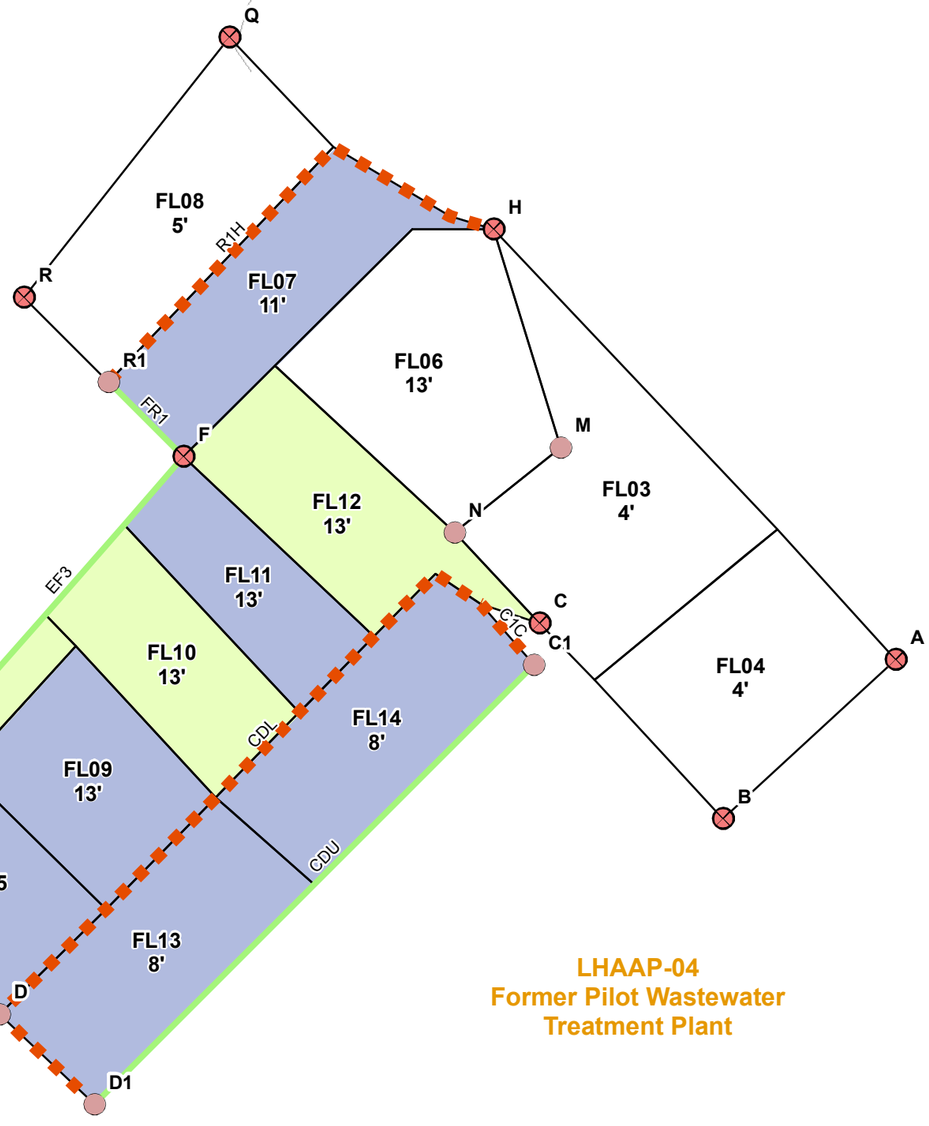
CONFIRMATION SAMPLES
AS OF SEPTEMBER 8, 2009
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Grod 11/4/09	R. Duffield 12/03/09	S. Watson 01/19/10	T:\117591_LHAAP\Docs\MxdSite04\CompletionReport\Fig2-05Samples9-8-09.mxd

00108054

Location	Sample	Date	Result (mg/kg)	Qual
04CSFL10	04CSFL10(13)	9/10/09	4.89	
04CSFL11	04CSFL11RE(13)	9/10/09	***11.9***	
04CSFL14	04CSFL14(8)	9/10/09	***218***	
04CSWC1C	04CSWC1C	9/10/09	***262***	
04CSFL02	04CSFL02RE(7)	9/11/09	2.21	
04CSFL05	04CSFL05RE(13)	9/11/09	***7.99***	
04CSFL07	04CSFL07RE(11)	9/11/09	***8.7***	
04CSFL09	04CSFL09RE(13)	9/11/09	***17.4***	
04CSFL12	04CSFL12RE(13)	9/11/09	3.03	
04CSFL13	04CSFL13(8)	9/11/09	***24.9***	
04CSWCD	04CSWCDRE(19)U	9/11/09	0.087	
04CSWCD	04CSWCDRE(4)L	9/11/09	***52.7***	
04CSWD1E	04CSWD1EQC	9/11/09	***29.1***	
04CSWD1E	04CSWD1E	9/11/09	***30.3***	
04CSWEF3	04CSWEF3	9/11/09	1.3	
04CSWFR1	04CSWFR1	9/11/09	2.66	
04CSWR1H	04CSWR1H	9/11/09	***15.4***	



LHAAP-04
Former Pilot Wastewater Treatment Plant

LEGEND

- Extrapolated Point
- Surveyed Point
- Wall Confirmation Sample > Cleanup level
- Wall Confirmation Sample < Cleanup level
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Floor Sample > Cleanup level
- Floor Sample < Cleanup level
- Road

Abbreviations:
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier

Notes:
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
Results in Bold and Italic exceed the cleanup levels.
Cleanup levels -
Perchlorate 7.2 mg/kg

N

0 10 20 40 Feet

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-6

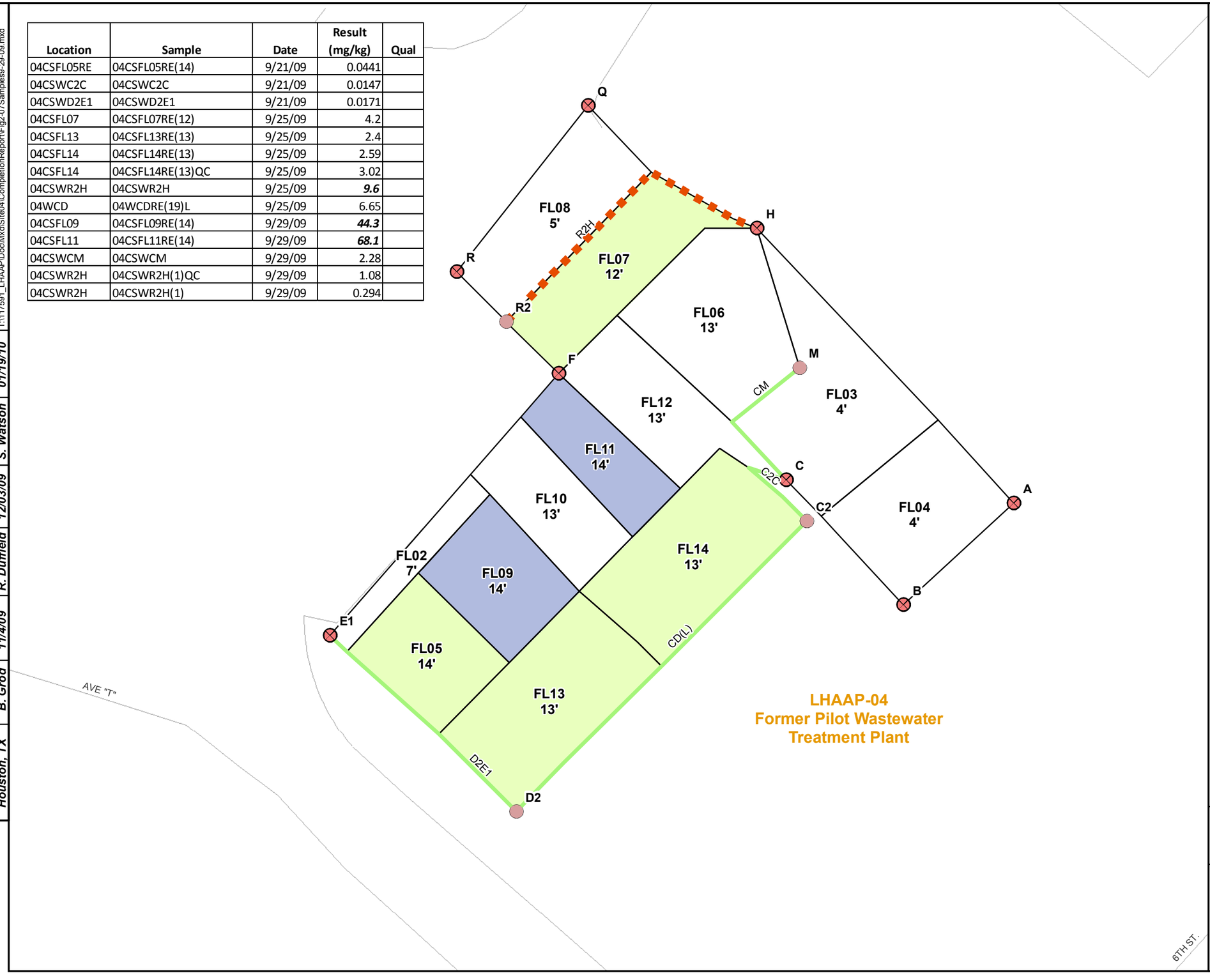
CONFIRMATION SAMPLES
AS OF SEPTEMBER 12, 2009
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

FILE PATH	T:\117591_LHAAP\Docs\MxdSite04\CompletionReport\Fig2-06Samples9-12-09.mxd
APPROVED BY	S. Watson 01/19/10
CHECKED BY	R. Duffield 12/03/09
DRAWN BY	B. Grod 11/4/09
OFFICE	Houston, TX

00108055

Location	Sample	Date	Result (mg/kg)	Qual
04CSFL05RE	04CSFL05RE(14)	9/21/09	0.0441	
04CSWC2C	04CSWC2C	9/21/09	0.0147	
04CSWD2E1	04CSWD2E1	9/21/09	0.0171	
04CSFL07	04CSFL07RE(12)	9/25/09	4.2	
04CSFL13	04CSFL13RE(13)	9/25/09	2.4	
04CSFL14	04CSFL14RE(13)	9/25/09	2.59	
04CSFL14	04CSFL14RE(13)QC	9/25/09	3.02	
04CSWR2H	04CSWR2H	9/25/09	***9.6***	
04WCD	04WCDRE(19)L	9/25/09	6.65	
04CSFL09	04CSFL09RE(14)	9/29/09	***44.3***	
04CSFL11	04CSFL11RE(14)	9/29/09	***68.1***	
04CSWCM	04CSWCM	9/29/09	2.28	
04CSWR2H	04CSWR2H(1)QC	9/29/09	1.08	
04CSWR2H	04CSWR2H(1)	9/29/09	0.294	



LHAAP-04
Former Pilot Wastewater Treatment Plant

LEGEND

- Extrapolated Point
- Surveyed Point
- Wall Confirmation Sample > Cleanup level
- Wall Confirmation Sample < Cleanup level
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Floor Sample > Cleanup level
- Floor Sample < Cleanup level
- Road

Abbreviations:
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier

Notes:
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
Results in Bold and Italic exceed the cleanup levels.
Cleanup levels -
Perchlorate 7.2 mg/kg
Wall R2H was resampled after additional excavation and fell below the cleanup level.
Wall C2-D2 is a benched wall configuration.

0 10 20 40 Feet

N

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-7

CONFIRMATION SAMPLES
AS OF SEPTEMBER 29, 2009
LHAAP-04 COMPLETION REPORT

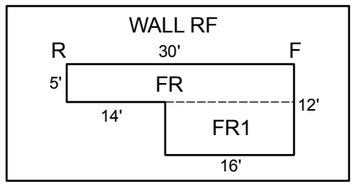
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

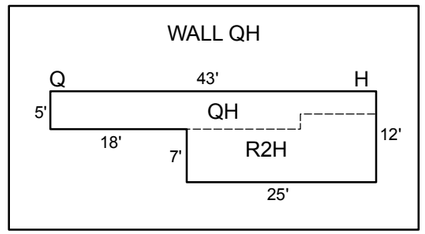
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APPROVED BY	S. Watson 01/19/10
CHECKED BY	R. Duffield 12/03/09
DRAWN BY	B. Grod 11/4/09
OFFICE	Houston, TX

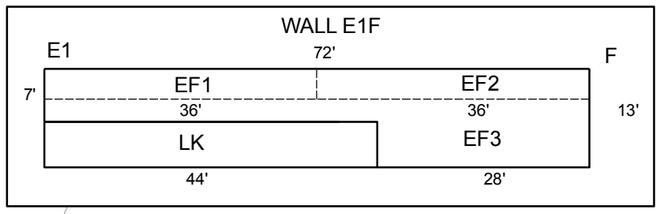
00108056

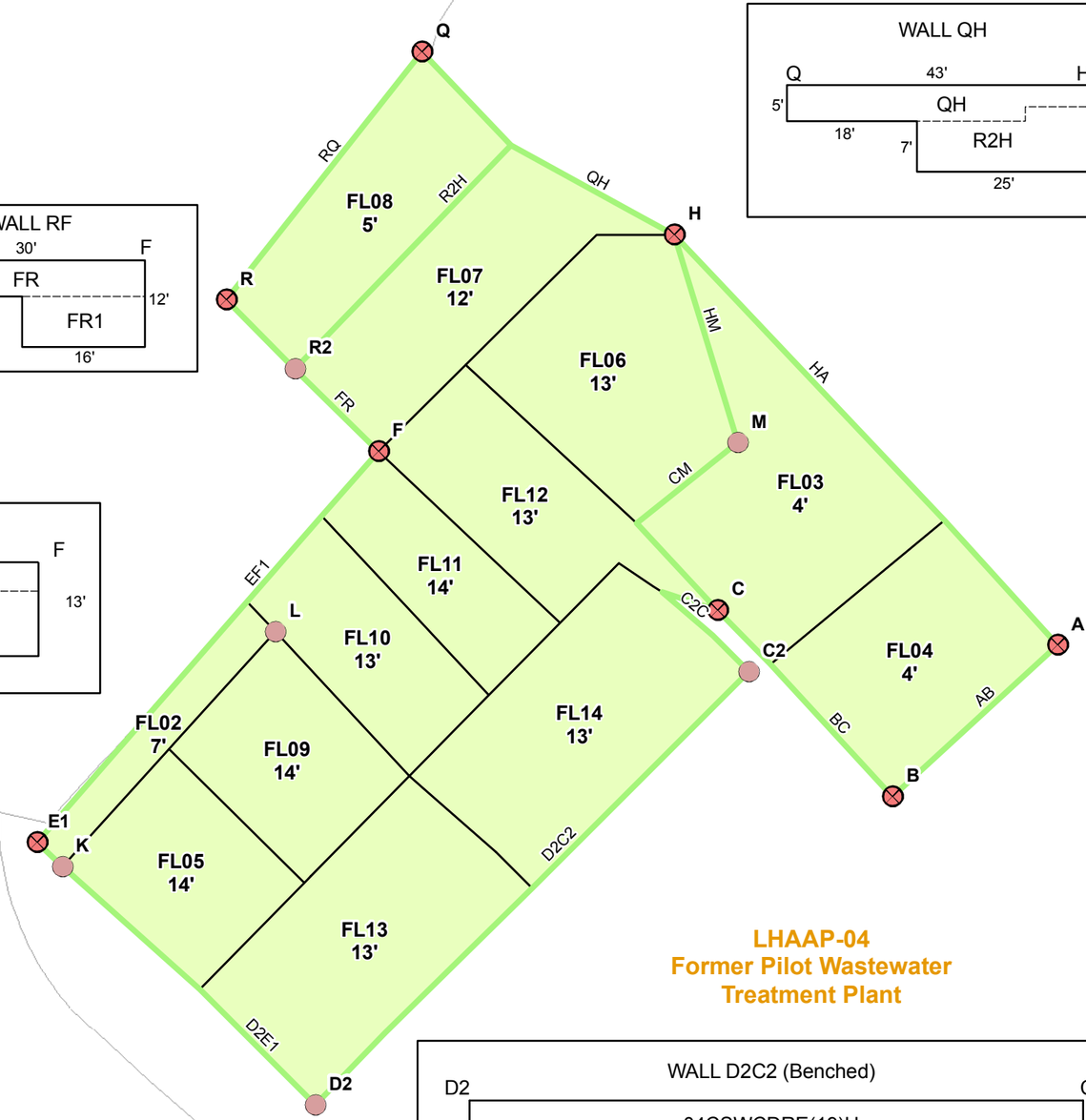
FILE PATH	APPROVED BY	DRAWN BY	CHECKED BY
T:\117591_LHAAP\Doc\Mxd\Site04\CompletionReport\Fig2-08Samples10-1-09.mxd	S. Watson 01/19/10	B. Grod 11/4/09	R. Duffield 12/03/09
		Houston, TX	

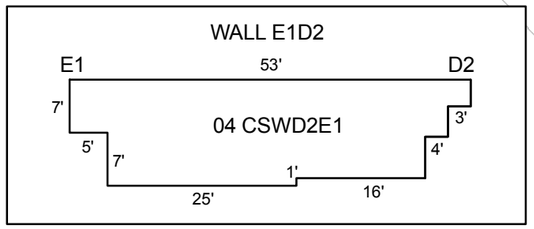
Location	Sample	Date	Result (mg/kg)	Qual
04CSFL02	04CSFL02RE(7)	9/11/09	2.21	
04CSFL03	04CSFL03 (4)	8/14/09	5.92	
04CSFL04	04CSFL04	8/12/09	0.0029	U
04CSFL05RE	04CSFL05RE(14)	9/21/09	0.0441	
04CSFL06	04CSFL06 (10) RE(13)	8/26/09	1.52	
04CSFL07	04CSFL07RE(12)	9/25/09	4.2	
04CSFL08	04CSFL08 (5)	8/18/09	0.341	
04CSFL09	04CSFL09RE(14)-NORTH	10/1/09	0.992	U
04CSFL10	04CSFL10(13)	9/10/09	4.89	
04CSFL11	04CSFL11RE(14)-NORTH	10/1/09	0.000981	U
04CSFL12	04CSFL12RE(13)	9/11/09	3.03	
04CSFL13	04CSFL13RE(13)	9/25/09	2.4	
04CSFL14	04CSFL14RE(13)	9/25/09	2.59	
04CSWAB	04CSWAB	8/12/09	0.0032	U
04CSWBC	04CSWBC	8/14/09	0.0027	U
04CSWC2C	04CSWC2C	9/21/09	0.0147	
04CSWCD	04CSWCDRE(19)U	9/11/09	0.087	
04CSWCM	04CSWCM	9/29/09	2.28	
04CSWD2E1	04CSWD2E1	9/21/09	0.0171	
04CSWEF1	04CSWEF1	8/17/09	0.182	
04CSWEF2	04CSWEF2	8/17/09	0.266	
04CSWEF3	04CSWEF3	9/11/09	1.3	
04CSWFR	04CSWFR	8/18/09	0.372	
04CSWFR1	04CSWFR1	9/11/09	2.66	
04CSWHA	04CSWHA	8/14/09	0.117	
04CSWHM	04CSWHM	9/3/09	0.684	
04CSWLK	04CSWLK(2)	8/27/09	0.67	
04CSWQH	04CSWQH	8/18/09	0.143	
04CSWR2H	04CSWR2H(1)	9/29/09	0.294	
04CSWRQ	04CSWRQ	8/18/09	0.0588	
04WCD	04WCDRE(19)L	9/25/09	6.65	

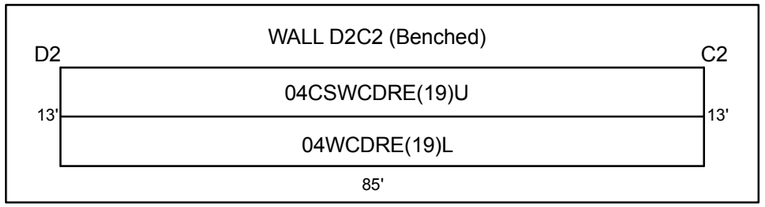












LHAAP-04
Former Pilot Wastewater Treatment Plant

LEGEND

- Extrapolated Point
- Surveyed Point
- Wall Confirmation Sample > Cleanup level
- Wall Confirmation Sample < Cleanup level
- FL04 4' — Sampled Floor Areas with excavation Depth in feet below ground surface
- Floor Sample > Cleanup level
- Floor Sample < Cleanup level
- Road

Abbreviations:
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

Notes:
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
Results in Bold and Italic exceed the cleanup levels.
Cleanup levels -
Perchlorate 7.2 mg/kg

0 10 20 40 Feet

N

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-8

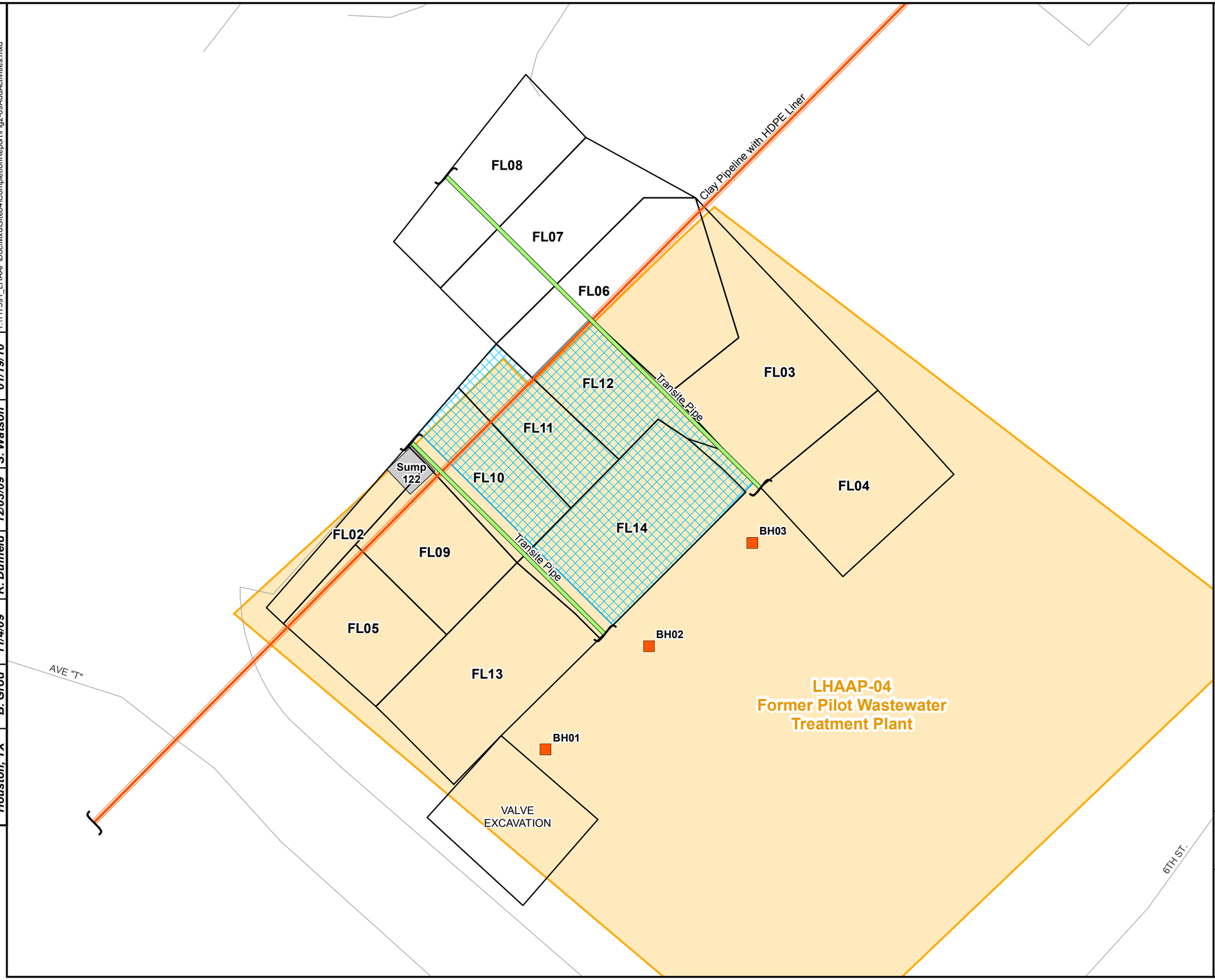
FINAL CONFIRMATION SAMPLES
AS OF OCTOBER 1, 2009
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00108057

FILE PATH	
T:\117591_LHAAP\Doc\Mxd\Site04\CompletionReport\Fig2-09AddActivities.mxd	

CHECKED BY	R. Duffield	12/03/09
APPROVED BY	S. Watson	01/19/10
DRAWN BY	B. Grod	11/4/09
OFFICE	Houston, TX	



LEGEND

- Clay Pipeline with HDPE Liner (approximately 8 feet below ground surface)
- Transite Pipe (approximately 7 feet below ground surface)
- Buried Plastic Liner (3 to 6 feet below ground surface)
- FLXX — Sampled Floor Areas
- Backhoe Soil Samples
- Former Location of Operational Structure
- Road
- Site

0 10 20 40 Feet

N

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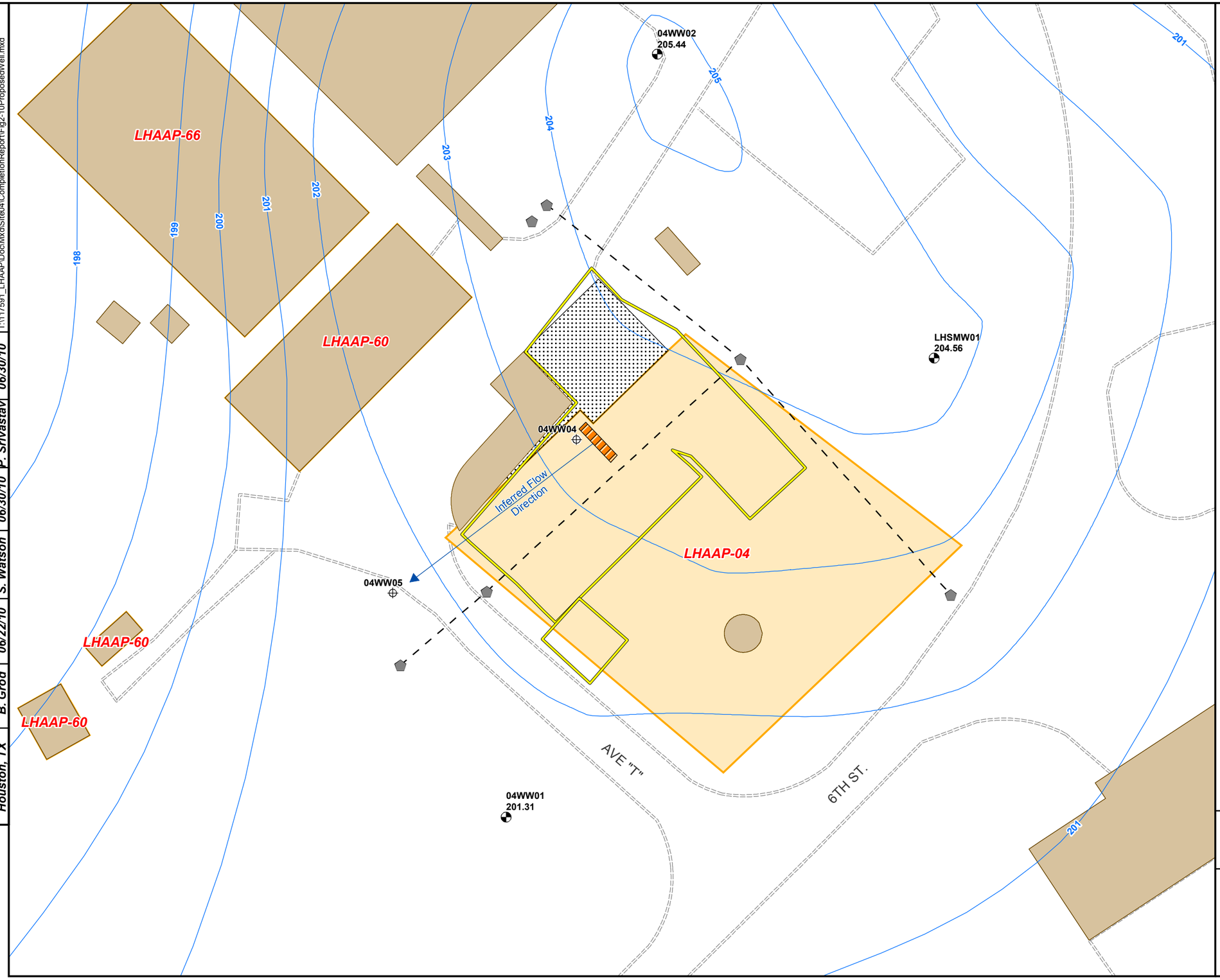
U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-9

ADDITIONAL ACTIVITIES
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

OFFICE	DRAWN BY	CHECKED BY	APPROVED BY	FILE PATH
Houston, TX	B. Grod 06/22/10	S. Watson 06/30/10	P. Srivastav 06/30/10	T:\117591_LHAAP\Doc\Mxd\Site04\CompletionReport\Fig2-10ProposedWell.mxd



LEGEND

- Shallow Monitoring Well
- Proposed Monitoring Wells
- Electrical Line Pole
- Overhead Electrical Lines
- Final Excavation Limits at Surface
- Inferred Groundwater Flow Direction
- 200 Groundwater Elevation Contour
- Road
- Maximum Soil Perchlorate 04CSWL1 - 8/17/09 - 572 mg/kg
- Concrete Removed During Excavation
- Concrete
- Site

NOTES:

1. Groundwater contour elevations reported in feet.

2. Groundwater contour elevations are based on data collected from shallow monitoring wells at LHAAP-04 and LHAAP-35A in November 2007.

3. Exact well placement may vary 5-10 feet due to safety concerns and proximity of live electrical lines and the supporting poles.

N

0 10 20 40 60 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-10

PROPOSED WELL LOCATION
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

3.0 Summary of Additional Field Activities

Additional field activities included disposal of several lengths of transite pipe that were found in the course of excavation, actions related to a clay pipeline discovered within the excavation limits, additional excavation at a valve outfall, additional sampling to determine the magnitude of additional excavation, and installation of a monitoring well in the middle of the completed excavation. **Figure 2-9** shows the locations of additional samples collected during these additional activities, and the general locations of other notable items mentioned here as additional field activities.

3.1 Pipes

During the course of the excavation, several miscellaneous pipes were found. All of the pipes were to inactive systems. Plastic (assumed polyvinyl) pipe was found that connected to the abandoned eye wash, connection to the abandoned sump, and abandoned components of the perchlorate pilot study. A lined clay pipe running northeast-southwest across the site was found as well as transite segments running northwest-southeast. **Figure 2-9** shows the approximate locations where lengths of transite pipe were found and removed.

Several plastic pipes were encountered during the excavation. Some of the pipes were in the area where the perchlorate pilot study was conducted and others ran to the abandoned eye wash or sump. No liquids were found in these lines.

A plastic-lined clay pipe was encountered approximately 8 feet bgs within the excavation area and was presumed to be a part of an old out of service sanitary sewer pipeline. The pipe broke during the excavation activities and water dripped from the break into the excavation. Samples were collected from the dripping water. Manholes upgradient and down-gradient from this location were identified and water samples were collected if sufficient water was available. These samples were analyzed for perchlorate, metals, volatile organic compounds, and semivolatile organic compounds. Constituents detected in the water from the clay pipe included the semivolatile organic compound 1,4-dichlorobenzene, the volatile organic compound acetone, several metals, and perchlorate. Perchlorate concentrations ranged from non-detect to 43,800 µg/L. The only metal detected above its MCL was arsenic at 125 µg/L. The high perchlorate and arsenic results from the water were considered to be a result of high turbidity of the sample and possible contact of the sampling equipment during sampling with the perchlorate-contaminated soil around the pipe. Perchlorate concentration in the water from the manholes ranged from non-detect to 0.849 µg/L. The water was pumped from the excavation and transported to the GWTP for treatment. All detected constituents were at acceptable levels for treatment at the GWTP. The plastic liner and the clay pipe were removed, and the both ends of the pipe were plugged with concrete. See **Figure 2-9** for the locations of the clay pipe, the

manholes, the sections removed, and the samples collected. **Table 3-1** contains the results for these samples. Photographs 10, 14, 16, 17, and 22 (**Appendix A**) show the pipe and the plugging of the lines.

Sections of transite pipe (presumed to be asbestos containing) were encountered at approximately 7 feet bgs in two locations in the excavation running in a northwest-southeast direction (**Figure 2-9**). Every effort was made to leave these pipes in place once encountered. However, due to the depth of the overexcavations, some segments of pipe were removed, wrapped with polyethylene sheeting and segregated. Because these pipe segments were assumed to be nonfriable asbestos containing material, they were disposed of as a separate load and manifested accordingly.

3.2 Plastic Liner

A plastic liner approximately 40 feet wide was encountered across parts of the excavation. It is assumed the liner was part of storm water or wastewater handling operations of the former Pilot Wastewater Treatment Plant. Where encountered, it was removed and disposed of along with the excavated soil. **Figure 2-9** shows the approximate former extent of this liner in the excavation area. Photos 19 and 20 show the liner in the excavation wall. It was determined that previous investigative samples collected in areas where refusal was noted were in the areas where the liner was encountered. The liner depth ranged from near the surface to approximately 6 feet bgs. It is assumed the apparent pit the liner lined was filled with soil during the previous closure activities in 1998. Perchlorate sample results from the soil located above the liner were below the perchlorate cleanup level indicating it was clean.

3.3 Valve Outfall

An additional sample collected at a valve outfall (04VALVE-OUTFALL) contained a perchlorate concentration above the cleanup level, and the area was excavated. Three rounds of excavation were needed before the confirmation samples showed all perchlorate concentrations below the cleanup level. A total of 135 cy of in-place soil was excavated from the valve outfall excavation area. The extent of excavation at the outfall, along with the locations of samples collected, is depicted on **Figure 3-1** and also on **Figure 2-2**. **Table 3-2** contains the results for the initial samples and the floor and wall confirmation samples. **Table 3-3** shows the final confirmation sample results, which are all below the perchlorate cleanup level of 7.2 mg/kg.

3.4 Additional Sampling

In an attempt to predetermine how much farther the step out might be along the wall between original points C and D, samples were collected on September 3, 2009, from three locations (04BH01, 04BH02 and 04BH03) approximately 55 to 60 feet from wall EF at a depth of 6 to 8 feet bgs, and tested for perchlorate. The perchlorate concentrations in these three samples were

all below the cleanup level of 7.2 mg/kg. These three sample locations are shown on **Figure 2-9**, and the sample results are shown in **Table 3-1**.

Table 3-1
Concrete, Clay Pipe, and Backhoe Sample Results

Location	Sample	Description	Date	Matrix	Analyte	Result	Qual	VQ	RC	DF	Units
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Perchlorate	6930				50	µg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Aluminum, Total	4240				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Antimony, Total	0.23	B	J	15	1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Arsenic, Total	2.3				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Barium, Total	270				4	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Beryllium, Total	0.24				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Cadmium, Total	0.54				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Calcium, Total	23500				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Chromium, Total	11.5				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Cobalt, Total	2	B	J	15	1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Copper, Total	34.9				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Iron, Total	7200				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Lead, Total	9.3				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Magnesium, Total	896				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Manganese, Total	148				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Mercury, Total	0.045	B	J	15	1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Nickel, Total	4.6				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Potassium, Total	403	B	J	15	1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Selenium, Total	0.15	U	U		1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Silver, Total	0.21	B	J	15	1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Sodium, Total	81.4	B	J	15	1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Thallium, Total	1.7	U	U		1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Vanadium, Total	13.5				1	mg/kg
04CONC01	04CONC01	Concrete sample	8/5/09	SOLID	Zinc, Total	44.1				1	mg/kg
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Arsenic, TCLP	0.011	U	U		2	mg/L
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Barium, TCLP	2.1				1	mg/L
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Cadmium, TCLP	0.0012	B	J	15	1	mg/L
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Chromium, TCLP	0.019				1	mg/L
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Lead, TCLP	0.004	U	U		2	mg/L
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Mercury, TCLP	0.0015	U	U		1	mg/L
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Selenium, TCLP	0.04	U	U		2	mg/L
04CONC01	04CONC01	Concrete TCLP Leachate	8/5/09	SOLID	Silver, TCLP	0.0014	U	U		1	mg/L
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Perchlorate	83300				250	µg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Aluminum, Total	4330				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Antimony, Total	0.96	U	U		4	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Arsenic, Total	3.3				4	mg/kg

Table 3-1
Concrete, Clay Pipe, and Backhoe Sample Results

Location	Sample	Description	Date	Matrix	Analyte	Result	Qual	VQ	RC	DF	Units
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Barium, Total	58.8				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Beryllium, Total	0.34				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Cadmium, Total	0.14	B	J	15	1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Calcium, Total	68700				4	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Chromium, Total	20.4				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Cobalt, Total	3.7				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Copper, Total	7.4				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Iron, Total	5650				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Lead, Total	4.3	B	J	15	4	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Magnesium, Total	907				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Manganese, Total	350				4	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Mercury, Total	0.011	U	U		1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Nickel, Total	9.1				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Potassium, Total	390	B	J	15	1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Selenium, Total	0.62	U	U		4	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Silver, Total	0.13	B	J	15	1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Sodium, Total	202	B	J	15	1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Thallium, Total	3.4	U	U		1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Vanadium, Total	19.4				1	mg/kg
04CONC02	04CONC02	Concrete sample	8/5/09	SOLID	Zinc, Total	19.3				1	mg/kg
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Arsenic, TCLP	0.011	U	U		2	mg/L
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Barium, TCLP	1				1	mg/L
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Cadmium, TCLP	0.001	U	U		1	mg/L
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Chromium, TCLP	0.056				1	mg/L
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Lead, TCLP	0.004	U	U		2	mg/L
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Mercury, TCLP	0.0015	U	U		1	mg/L
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Selenium, TCLP	0.04	U	U		2	mg/L
04CONC02	04CONC02	Concrete TCLP Leachate	8/5/09	SOLID	Silver, TCLP	0.0014	U	U		1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	1,4-Dichlorobenzene	0.184	J	J-TB	15, 06D	1	µg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Acetone	8.32	J	J-TB	15, 06D	1	µg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Other 64 VOCs not detected	0.125 - 2.5	U	U		1	µg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	SVOCs not detected	2.5 - 12.5	U	U		1	µg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Aluminum, Total	15.2				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Antimony, Total	0.00463				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Arsenic, Total	0.125				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Barium, Total	0.168				1	mg/L

Table 3-1
Concrete, Clay Pipe, and Backhoe Sample Results

Location	Sample	Description	Date	Matrix	Analyte	Result	Qual	VQ	RC	DF	Units
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Beryllium, Total	0.000528	J	J	15	1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Cadmium, Total	0.000283	J	J	15	1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Calcium, Total	52.9				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Chromium, Total	0.0169				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Cobalt, Total	0.0186				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Copper, Total	0.01				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Iron, Total	13.3				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Lead, Total	0.0128				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Magnesium, Total	11.7				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Manganese, Total	2.28				50	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Mercury	0.0001	U	U		1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Nickel, Total	0.0287				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Potassium, Total	6.74				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Selenium, Total	0.00419				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Silver, Total	0.00025	U	U		1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Sodium, Total	118				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Thallium, Total	0.000307				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Vanadium, Total	0.0216				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	WATER	Zinc, Total	0.0405				1	mg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/18/09	LIQUID	Perchlorate	43800				500	µg/L
04CLAYPIPE	04CLAYPIPE-081809	Water from Clay Pipe	8/20/09	LIQUID	Perchlorate	1100				25	µg/L
04CLAYPIPE	04CLAYPIPE-082509 SPLIT	Water from Clay Pipe	8/26/09	WATER	Perchlorate	0.81				1	µg/L
04CLAYPIPE	04CLAYPIPE-082609	Water from Clay Pipe	8/26/09	LIQUID	Perchlorate	4	U	U		1	µg/L
04MH01	04MH01-W01	Clay Pipe Manhole 1	8/27/09	WATER	Perchlorate	0.1	U	U		1	µg/L
04MH02	04MH02-SD01	Clay Pipe Manhole 2	8/27/09	SOIL	Perchlorate	8.6				5	µg/kg
04MH03	04MH03-W01	Clay Pipe Manhole 3	8/27/09	WATER	Perchlorate	0.1	U	U		1	µg/L
04MH04	04MH04-W01	Clay Pipe Manhole 4	8/27/09	WATER	Perchlorate	0.849				1	µg/L
04MH05	04MH05-W01	Clay Pipe Manhole 5	8/27/09	WATER	Perchlorate	0.1	U	U		1	µg/L
04MH06	04MH06-W01	Clay Pipe Manhole 6	8/27/09	WATER	Perchlorate	0.1	U	U		1	µg/L
04BH01	04BH01 (6-8)	Backhoe Sample 6 to 8 ft	9/3/09	SOIL	Perchlorate	1440				50	µg/kg
04BH02	04BH02 (6-8)	Backhoe Sample 6 to 8 ft	9/3/09	SOIL	Perchlorate	238				10	µg/kg
04BH03	04BH03 (6-8)	Backhoe Sample 6 to 8 ft	9/3/09	SOIL	Perchlorate	4120				1000	µg/kg

Table 3-1
Concrete, Clay Pipe, and Backhoe Sample Results

Location	Sample	Description	Date	Matrix	Analyte	Result	Qual	VQ	RC	DF	Units

Notes:
µg/kg - micrograms per kilogram
µg/L - micrograms per liter
DF - dilution factor
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
Qual - laboratory data qualifier
RC - reason code for qualifiers
SVOCs - semivolatile organic compounds
VOCs - volatile organic compounds
VQ - data validation qualifier

Qualifiers and Reason Codes:
B - The analyte was detected in an associated blank.
J - The analyte was positively identified; the reported value is the estimated concentration.
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
6 - Result qualified as a result of the 5X/10X blank correction
15 - Quantitation

Table 3-2
Valve Outfall Soil Sample Results

Location	Sample	Date	Purpose	Analyte	Result (mg/kg)	Qual	VQ	RC	DF
Valve Outfall Initial Samples - Figure 3-1									
04VLVOF	04VALVE-OUTFALL	9/3/09	REG	Perchlorate	*36.3*				1000
04VLVOF-S	04VLVOF-S	9/8/09	REG	Perchlorate	0.00382				1
04VLVOF-W	04VLVOF-W (100)	9/8/09	REG	Perchlorate	0.00124	J	J	15	1
04VLVOF-W	04VLVOF-W	9/8/09	REG	Perchlorate	4.81				1000
Valve Outfall First Excavation - Figure 3-1									
04VLV0FFL	04VLV0FFL(5)	9/12/09	REG	Perchlorate	*35.1*				1000
04VLV0FW-E	04VLV0FW-E	9/12/09	REG	Perchlorate	5.43				1000
04VLV0FW-E	04VLV0FW-E-QC	9/12/09	FD	Perchlorate	5.07				1000
04VLV0FW-N	04VLV0FW-N	9/12/09	REG	Perchlorate	*37.6*				1000
04VLV0FW-S	04VLV0FW-S	9/12/09	REG	Perchlorate	*9.25*				1000
04VLV0FW-W	04VLV0FW-W	9/12/09	REG	Perchlorate	*15.4*				1000
Valve Outfall Second Excavation - Figure 3-1									
04VLVOFFL	04VLVOFFL(6)	9/21/09	REG	Perchlorate	1.77				100
04VLVOFW-N	04VLVOFW-N(1)	9/21/09	REG	Perchlorate	*22.8*				1000
04VLVOFW-S	04VLVOFW-S(1)	9/21/09	REG	Perchlorate	0.0305				10
04VLVOFW-W	04VLVOFW-W(1)	9/21/09	REG	Perchlorate	*25.8*				1000
Valve Outfall Final Excavation - Figure 3-1									
04VLVOFW-3	04VLVOFW-3(2)	9/23/09	REG	Perchlorate	0.847				100
04VLVOFW-W	04VLVOFW-W(2)N	9/23/09	REG	Perchlorate	0.00861				1
04VLVOFW-W	04VLVOFW-W(2)-CMP	9/23/09	REG	Perchlorate	0.0235				10
04VLVOFW-W	04VLVOFW-W(2)S	9/23/09	REG	Perchlorate	0.0298				1

Notes:

DF - dilution factor
mg/kg - milligrams per kilogram
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
Qual - laboratory data qualifier
RC - reason code for qualifiers
VQ - data validation qualifier

Qualifiers:

J - The analyte was positively identified; the reported value is the estimated concentration.
15 - Quantitation

Table 3-3
Final Valve Outfall Excavation Soil Confirmation Sample Results

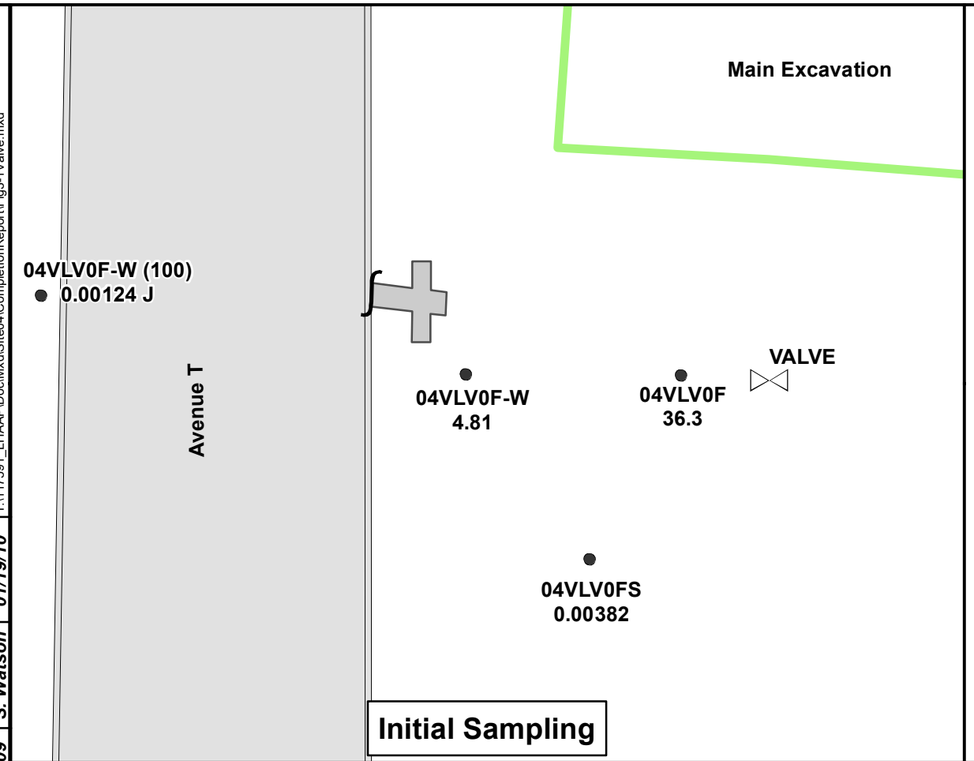
Location	Sample	Description	Date	Purpose	Result (mg/kg)	Qual	VQ	RC	DF
Perchlorate Valve Outfall Final Excavation - Figure 3-1									
04VLVOFFL	04VLVOFFL(6)	Floor	9/21/09	REG	1.77				100
04VLV0FW-E	04VLV0FW-E	East Wall	9/12/09	REG	5.43				1000
04VLVOFW-S	04VLVOFW-S(1)	South Wall	9/21/09	REG	0.0305				10
04VLVOFW-3	04VLVOFW-3(2)	South half, West Wall	9/23/09	REG	0.847				100
04VLVOFW-W	04VLVOFW-W(2)N	North Wall	9/23/09	REG	0.00861				1
04VLVOFW-W	04VLVOFW-W(2)S	North half, West Wall	9/23/09	REG	0.0298				1

Notes:
DF - dilution factor
mg/kg - milligrams per kilogram
Perchlorate samples were analyzed at Accutest, Columbia, or Microbac Laboratory.
Qual - laboratory data qualifier
RC - reason code for qualifiers
VQ - data validation qualifier

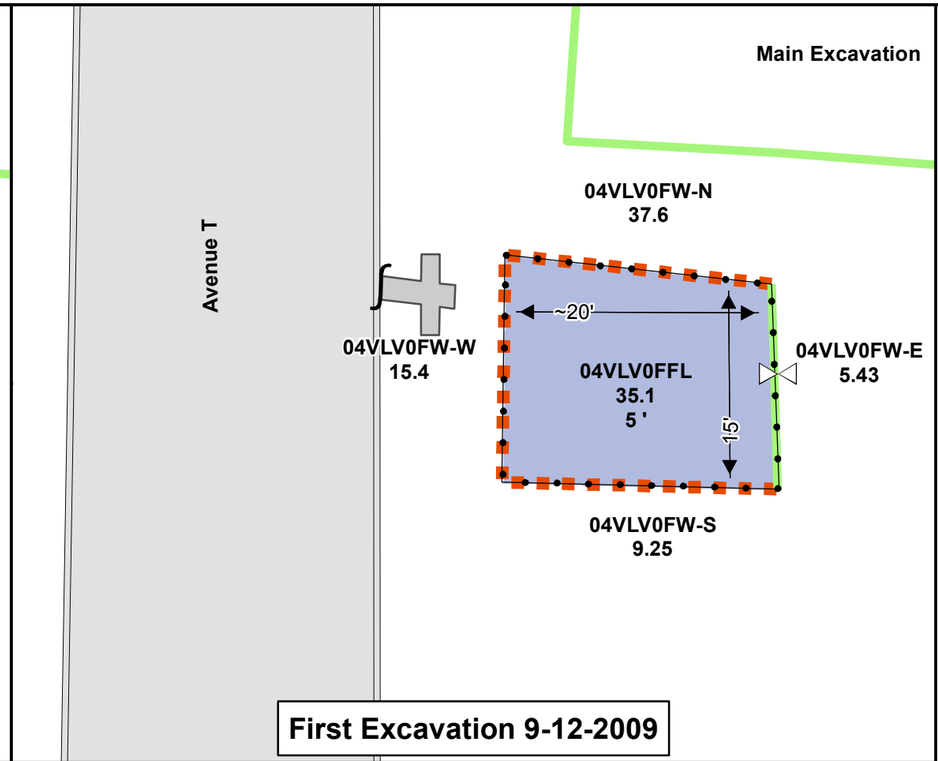
00108068

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APPROVED BY	S. Watson 01/19/10
CHECKED BY	R. Duffield 12/03/09
DRAWN BY	B. Grod 11/4/09
OFFICE	Houston, TX

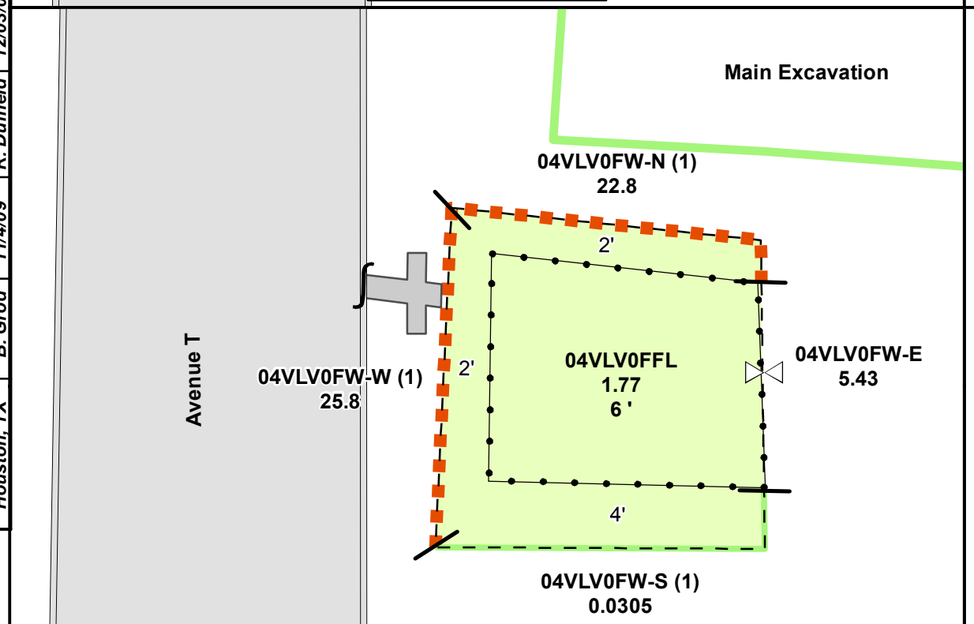
Initial Sampling



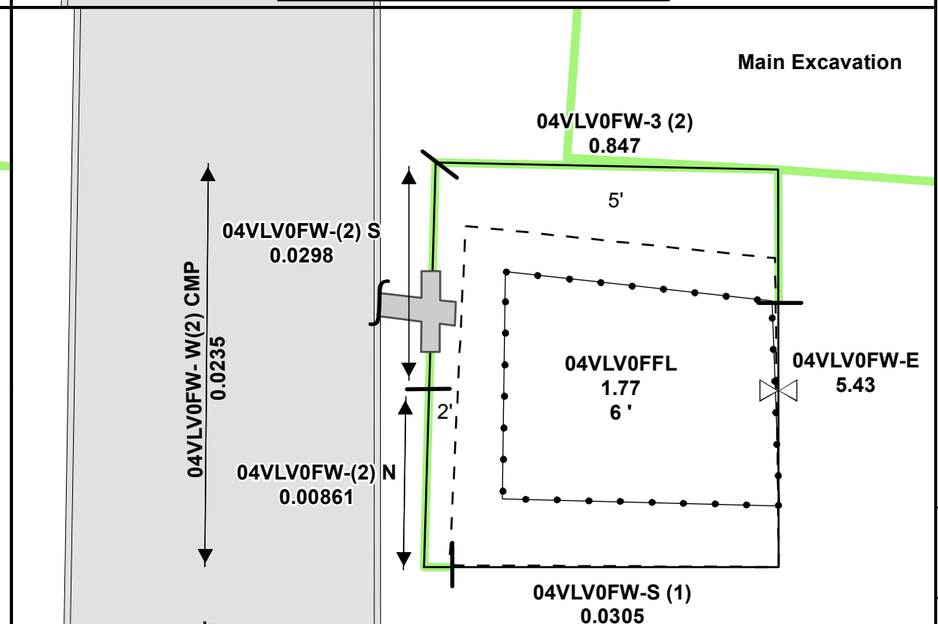
First Excavation 9-12-2009



Second Excavation 9-21-2009



Third Excavation 9-23-2009



LEGEND

- Former Valve
- Main Excavation
- First Valve Excavation
- Second Valve Excavation
- Final Valve Excavation
- Wall Confirmation Sample > Cleanup level
- Wall Confirmation Sample < Cleanup level
- Floor Sample > Cleanup level
- Floor Sample < Cleanup level
- Drainage Culvert
- Roads

Notes:
Perchlorate results shown in mg/kg
Perchlorate cleanup level is 7.2 mg/kg
mg/kg = milligrams per kilogram
Valve Excavation was sampled in three stages
47 cy at first excavation
54 cy more at second excavation
34 cy more at third excavation
Total of 135 cy

0 5 10 20 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 3-1

VALVE OUTFALL EXCAVATION
LHAAP-04 COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

4.0 References

Anderson Columbia Environmental (ACE), 1997, *Closure Report, Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas, EPA Identification No. TX6213820583, Solid Waste Registration No. 30990*, September.

Shaw Environmental, Inc. (Shaw), 2009a, *Final Engineering Evaluation/Cost Analysis, LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Texas*, March.

Shaw, 2009b, *Final Action Memorandum for Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant, Karnack, Harrison County, Texas*, July.

Shaw, 2009c, *Final Removal Action Work Plan, Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant, Karnack, Harrison County, Texas*, August.

Shaw, 2010, *Final Completion Report Non-Time-Critical Removal Action at the Former Pistol Range, Longhorn Army Ammunition Plant, Texas*, February.

Texas Commission on Environmental Quality (TCEQ), 2006, Updated Examples of Standard No. 2, Appendix II Medium-Specific Concentration, March 31, 2006.

TCEQ, 2009, email from Fay Duke , TCEQ, to Praveen Srivastav, Shaw, August 25, 2009, 4:15 PM, *Subject: Perchlorate Method EPA 6850*.

Appendix A

Photographs

Photographic Log

Photo No.	Date	Task and Description	View Direction
1	12/9/08	View across LHAAP-04 towards Fire Station	Southeast
2	3/24/09	View along concrete slab at LHAAP-04	Southwest
3	3/24/09	Valve area by culvert under road at LHAAP-04	South
4	7/16/09	View across LHAAP-04 towards transformers	North
5	8/12/09	Initial Excavation in progress, FL04	South
6	8/13/09	Breaking up the concrete slab at FL07 and FL08	East
7	8/14/09	Initial excavation in progress, FL02 is 48 inches deep	Northwest
8	8/14/09	Concrete sump removed	North
9	8/14/09	Excavated Soil Stockpile	Southwest
10	8/18/09	Clay pipe exposed in FL06, view from point C	North
11	8/18/09	Initial excavation view across FL06	South
12	8/18/09	Initial excavation view across FL05, view from point D	North
13	8/18/09	Initial excavation, view from point F, transite pipe found	South
14	8/26/09	Clay pipeline with HDPE liner being removed	South
15	8/26/09	Backfilling at FL04, liner showing	East
16	8/26/09	Clay pipeline found in excavation area FL06	Southeast
17	8/26/09	Closer view of clay pipeline in excavation area FL06	Southeast
18	8/26/09	HDPE liner from clay pipeline	Northeast
19	8/26/09	Plastic liner buried in soil at LHAAP-04	South
20	8/27/09	Plastic liner attached to concrete slab	North
21	8/27/09	Loading soil directly into truck	South
22	8/28/09	Plugged clay pipe end at excavation wall	-
23	8/29/09	Lengths of transite pipe wrapped for disposal	-
24	9/10/09	Valve Sample Location 04VLV0F-W, culvert visible	Southwest
25	9/14/09	View from point E (rainwater in excavation)	Northeast
26	9/14/09	Windsock in operation	Northeast
27	9/28/09	Excavation ready to backfill	North
28	9/28/09	Valve Excavation, culvert visible, ready to backfill	Southwest
29	9/28/09	Prior to backfill, view from point C, point E1 visible	West
30	9/28/09	Excavation ready to backfill	Southwest
31	9/28/09	Bulldozer used to place backfill	-
32	9/28/09	Excavator used to remove soil	West
33	9/30/09	Backfilling in progress	Southwest
34	10/1/09	Backfilling in progress, nearing completion, culvert visible	South



PHOTO 1 View across LHAAP-04 towards Fire Station
DATE: 12/9/08 VIEW: Southeast



PHOTO 2 View along concrete slab at LHAAP-04
DATE: 3/24/09 VIEW: Southwest



PHOTO 3 Valve area by culvert under road at LHAAP-04
DATE: 3/24/09 VIEW: South



PHOTO 4 View across LHAAP-04 towards transformers
DATE: 7/16/09 VIEW: North



PHOTO 5 Initial Excavation in progress, FL04
DATE: 8/12/09 VIEW: South



PHOTO 6 Breaking up the concrete slab at FL07 and FL08
DATE: 8/13/09 VIEW: East

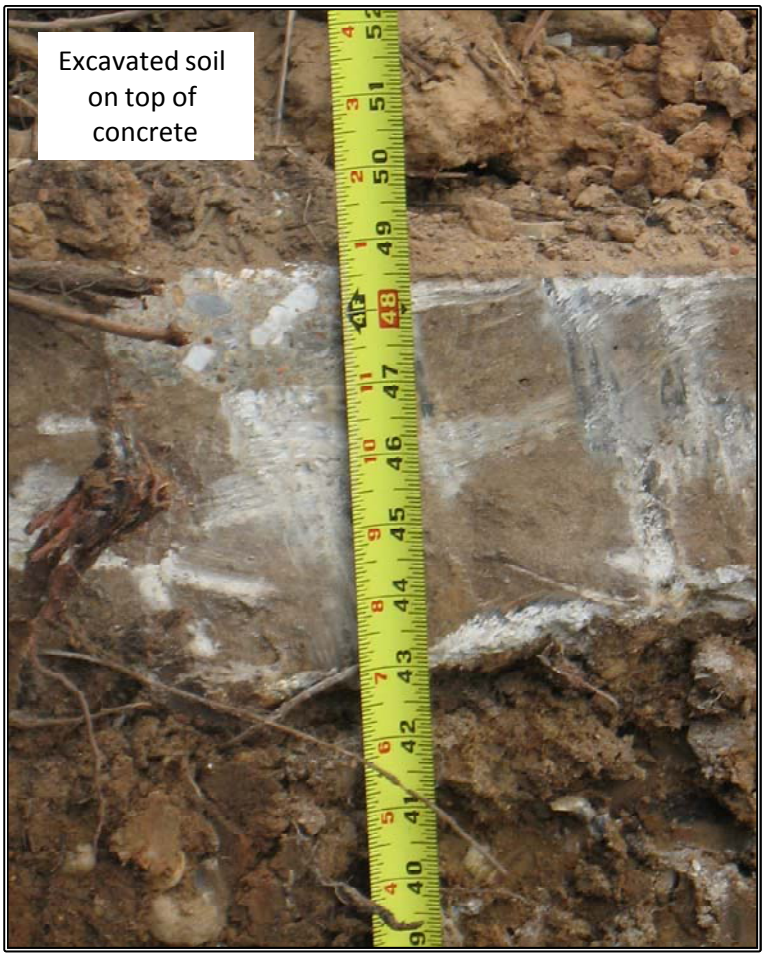


PHOTO 7 Initial excavation in progress, FL02 is 48 inches deep
DATE: 8/14/09 VIEW: Northwest



PHOTO 8 Concrete sump removed
DATE: 8/14/09 VIEW: North



PHOTO 9 Excavated Soil Stockpile
DATE: 8/14/09 VIEW: Southwest



PHOTO 10 Clay pipe exposed in FL06, view from point C
DATE: 8/18/09 VIEW: North



PHOTO 11 Initial excavation view across FL06
DATE: 8/18/09 VIEW: South



PHOTO 12 Initial excavation view across FL05, view from point D
DATE: 8/18/09 VIEW: North



PHOTO 13 Initial excavation, view from point F, transite pipe found
DATE: 8/18/09 VIEW: South



PHOTO 14 Clay pipeline with HDPE liner being removed
DATE: 8/26/09 VIEW: South



PHOTO 15 Backfilling at FL04, liner showing
DATE: 8/26/09 VIEW: East



PHOTO 16 Clay pipeline found in excavation area FL06
DATE: 8/26/09 VIEW: Southeast



PHOTO 17 Closer view of clay pipeline in excavation area FL06
DATE: 8/26/09 VIEW: Southeast



PHOTO 18 HDPE liner from clay pipeline
DATE: 8/26/09 VIEW: Northeast



PHOTO 19 Plastic liner buried in soil at LHAAP-04
DATE: 8/26/09 VIEW: South



PHOTO 20 Plastic liner attached to concrete slab
DATE: 8/27/09 VIEW: North



PHOTO 21 Loading soil directly into truck
DATE: 8/27/09 VIEW: South



PHOTO 22 Plugged clay pipe end at excavation wall
DATE: 8/28/09 VIEW: -



PHOTO 23 Lengths of transite pipe wrapped for disposal
DATE: 8/29/09 VIEW: -



PHOTO 24 Valve Sample Location 04VLV0F-W, culvert visible
DATE: 9/10/09 VIEW: Southwest



PHOTO 25 View from point E (rainwater in excavation)
DATE: 9/14/09 VIEW: Northeast



PHOTO 26 Windsock in operation
DATE: 9/14/09 VIEW: Northeast



PHOTO 27 Excavation ready to backfill
DATE: 9/28/09 VIEW: North



PHOTO 28 Valve Excavation, culvert visible, ready to backfill
DATE: 9/28/09 VIEW: Southwest



PHOTO 29 Prior to backfill, view from point C, point E1 visible
DATE: 9/28/09 VIEW: West



PHOTO 30 Excavation ready to backfill
DATE: 9/28/09 VIEW: Southwest



PHOTO 31 Bulldozer used to place backfill
DATE: 9/28/09 VIEW: -



PHOTO 32 Excavator used to remove soil
DATE: 9/28/09 VIEW: West



PHOTO 33 Backfilling in progress
DATE: 9/30/09 VIEW: Southwest



PHOTO 34 Backfilling in progress, nearing completion, culvert visible
DATE: 10/1/09 VIEW: South

Appendix B

Analytical Data Summary and Reports

(Copies of Laboratory Reports are included on the attached CD.)

Appendix B
Laboratory Reports Listing

File Name	Laboratory	Description	Table
Bucky soils (0809) L09080192.pdf	Microbac	Backfill samples	2-4
LH-04 (0818) L09080400.pdf	Microbac	Clay pipe water sample	3-1
LH-04 CLO4 (0805) F67138.PDF	Accutest	Concrete samples and Soil disposal samples	2-3, 3-1
LH-04 CLO4 (0812) F67278.PDF	Accutest	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0814) F67366.PDF	Accutest	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0814) F67382.PDF	Accutest	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0818) F67413.PDF	Accutest	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0818) F67414.PDF	Accutest	Clay pipe water sample	3-1
LH-04 CLO4 (0820) F67470.PDF	Accutest	Clay pipe water sample	3-1
LH-04 CLO4 (0824) F67524.PDF	Accutest	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0824) R0904872.PDF	Columbia	Split samples, soil confirmation, clay pipe water	2-1, 3-1
LH-04 CLO4 (0826) F67580.PDF	Accutest	Soil confirmation sample, clay pipe water sample	2-1, 2-2, 3-1
LH-04 CLO4 (0827) L09080653.pdf	Microbac	Water from manholes	3-1
LH-04 CLO4 (0827) R0904885.PDF	Columbia	Sediment from manhole, soil confirmation samples	2-1, 2-2, 3-1
LH-04 CLO4 (0831) R0904936.PDF	Columbia	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0901) L09090027.pdf	Microbac	Soil confirmation samples	2-1
LH-04 CLO4 (0903) L09090099.pdf	Microbac	Soil confirmation, backhoe, valve outfall samples	2-1, 3-1, 3-2
LH-04 CLO4 (0908) L09090170.pdf	Microbac	Soil confirmation, valve outfall samples	2-1, 2-2, 3-2
LH-04 CLO4 (0910) L09090223.pdf	Microbac	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0911) L09090257.pdf	Microbac	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0912) L09090276.pdf	Microbac	Valve excavation confirmation samples	3-2, 3-3
LH-04 CLO4 (0921) L09090427.pdf	Microbac	Soil and valve excavation confirmation samples	2-1, 2-2, 3-2, 3-3
LH-04 CLO4 (0923) L09090494.pdf	Microbac	Valve excavation confirmation samples	3-2, 3-3
LH-04 CLO4 (0925) L09090567.pdf	Microbac	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0929) L09090606.pdf	Microbac	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (0929) L09090607.pdf	Microbac	Soil confirmation samples	2-1, 2-2
LH-04 CLO4 (1001) L09100059.pdf	Microbac	Soil confirmation samples	2-1, 2-2
LH-04 Hg only (0817) L09080361.pdf	Microbac	Mercury soil confirmation samples	2-1, 2-2
LH-04 Hg only (0818) L09080399.pdf	Microbac	Mercury soil confirmation samples	2-1, 2-2
LH-04 Metals (0805) F67138R.PDF	Accutest	Broken up concrete samples	3-1
LH-04 TCLP (0805) L09080107.pdf	Microbac	Soil disposal samples	2-3

Notes:

Accutest, Southeast • 4405 Vineland Road • Suite C-15 • Orlando, FL 32811 • tel: 407-425-6700 • fax: 407-425-0707 • http://www.accutest.com

Columbia Analytical Services, Inc., 1 Mustard Street, Suite 250, Rochester, NY 14609 585-288-5380

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

Table B-1
Summary of Perchlorate Sample Results

Location	Sample	Date	Purpose	Matrix	Perchlorate Result	Units	Qual	VQ	RC	DF
04CONC01	04CONC01	8/5/09	REG	SOLID	6930	µg/kg				50
04CONC02	04CONC02	8/5/09	REG	SOLID	83300	µg/kg				250
04DS01	04DS01 (0-2)	8/5/09	REG	SOIL	82.8	µg/kg	B	B	6	5
04DS02	04DS02 (0-2)	8/5/09	REG	SOIL	126000	µg/kg				250
04DS03	04DS03 (0-3)	8/5/09	REG	SOIL	55.6	µg/kg	B	B	6	5
04DS04	04DS04 (0-2)	8/5/09	REG	SOIL	12400	µg/kg				25
04DS05	04DS05 (0-4)	8/5/09	REG	SOIL	13900	µg/kg				50
04CSFL04	04CSFL04	8/12/09	REG	SOIL	0.0029	mg/kg	U	U		1
04CSWAB	04CSWAB	8/12/09	REG	SOIL	0.0032	mg/kg	U	U		1
04CSFL01	04CSFL01 (4) QC	8/14/09	FD	SOIL	46.2	mg/kg				100
04CSFL01	04CSFL01 (4)	8/14/09	REG	SOIL	36.4	mg/kg				50
04CSFL03	04CSFL03 (4)	8/14/09	REG	SOIL	5.92	mg/kg				10
04CSWBC	04CSWBC	8/14/09	REG	SOIL	0.0027	mg/kg	U	U		1
04CSWCJ	04CSWCJ	8/14/09	REG	SOIL	7.39	mg/kg				15
04CSWHA	04CSWHA	8/14/09	REG	SOIL	0.117	mg/kg				1
04CSWJK	04CSWJK	8/14/09	REG	SOIL	0.0029	mg/kg	U	U		1
04CSFL02	04CSFL02 (4)	8/17/09	REG	SOIL	71.6	mg/kg				100
04CSFL05	04CSFL05 (7)	8/17/09	REG	SOIL	229	mg/kg				500
04CSWEF1	04CSWEF1	8/17/09	REG	SOIL	0.182	mg/kg				1
04CSWEF2	04CSWEF2	8/17/09	REG	SOIL	0.266	mg/kg				1
04CSWJI	04CSWJI-QC	8/17/09	FD	SOIL	118	mg/kg				100
04CSWJI	04CSWJI	8/17/09	REG	SOIL	81.1	mg/kg				100
04CSWLI	04CSWLI	8/17/09	REG	SOIL	572	mg/kg				500
04CSWLK	04CSWLK	8/17/09	REG	SOIL	7.7	mg/kg				10
04CLAYPIPE	04CLAYPIPE-081809	8/18/09	REG	LIQUID	43800	µg/L				500
04CSFL06	04CSFL06 (10)	8/18/09	REG	SOIL	7.64	mg/kg				100
04CSFL07	04CSFL07 (5)-QC	8/18/09	FD	SOIL	15.8	mg/kg				100
04CSFL07	04CSFL07 (5)	8/18/09	REG	SOIL	10.1	mg/kg				100
04CSFL08	04CSFL08 (5)	8/18/09	REG	SOIL	0.341	mg/kg				1
04CSWFR	04CSWFR	8/18/09	REG	SOIL	0.372	mg/kg				1

Table B-1
Summary of Perchlorate Sample Results

Location	Sample	Date	Purpose	Matrix	Perchlorate Result	Units	Qual	VQ	RC	DF
04CSWMN	04CSWMN	8/18/09	REG	SOIL	47.2	mg/kg				100
04CSWON	04CSWON	8/18/09	REG	SOIL	323	mg/kg				500
04CSWOP	04CSWOP-QC	8/18/09	FD	SOIL	302	mg/kg				500
04CSWOP	04CSWOP	8/18/09	REG	SOIL	212	mg/kg				500
04CSWPM	04CSWPM	8/18/09	REG	SOIL	42.1	mg/kg				100
04CSWQH	04CSWQH	8/18/09	REG	SOIL	0.143	mg/kg				1
04CSWRQ	04CSWRQ	8/18/09	REG	SOIL	0.0588	mg/kg				1
04CLAYPIPE	04CLAYPIPE-081809	8/20/09	REG	LIQUID	1100	µg/L				25
04CSFL01	04CSFL01 (4) RE (W)	8/24/09	REG	SOIL	33.6	mg/kg				100
04CSFL01	04CSFL01(4)RE(W) SPLIT	8/24/09	SPLIT	SOIL	98	mg/kg				2000
04CSWCD	04CSWCDRE (2)	8/24/09	REG	SOIL	45.7	mg/kg				100
04CSWCD	04CSWCDRE(2)-SPLIT	8/24/09	SPLIT	SOIL	78	mg/kg				2000
04CLAYPIPE	04CLAYPIPE-082609	8/26/09	REG	LIQUID	4	µg/L	U	U		1
04CLAYPIPE	04CLAYPIPE-082509 SPLIT	8/26/09	SPLIT	WATER	0.81	µg/L				1
04CSFL06	04CSFL06 (10) RE(13)	8/26/09	REG	SOIL	1.52	mg/kg				5
04CSFL06	04CSFL06(10)RE(13) SPLIT	8/26/09	SPLIT	SOIL	4.8	mg/kg				100
04CSFL02	04CSFL02(4)RE(6)	8/27/09	REG	SOIL	11	mg/kg				500
04CSFL05	04CSFL05(7)RE(8)	8/27/09	REG	SOIL	31	mg/kg				2000
04CSFL07	04CSFL08(5)RE(7) *	8/27/09	REG	SOIL	36	mg/kg				2000
04CSFL11	04CSFL11(8)	8/27/09	REG	SOIL	28	mg/kg				2000
04CSFL12	04CSFL12(8)	8/27/09	REG	SOIL	77	mg/kg				2000
04CSWHM	04CSWHM	8/27/09	REG	SOIL	7.6	mg/kg				200
04CSWIM	04CSWIM	8/27/09	REG	SOIL	45	mg/kg				2000
04CSWJI	04CSWJI(4)	8/27/09	REG	SOIL	440	mg/kg				20000
04CSWLH	04CSWLH	8/27/09	REG	SOIL	82	mg/kg				2000
04CSWLK	04CSWLKQC(1)	8/27/09	FD	SOIL	1	mg/kg				50
04CSWLK	04CSWLK(2)	8/27/09	REG	SOIL	0.67	mg/kg				50
04MH01	04MH01-W01	8/27/09	REG	WATER	0.1	µg/L	U	U		1
04MH02	04MH02-SD01	8/27/09	REG	SOIL	8.6	µg/kg				5
04MH03	04MH03-W01	8/27/09	REG	WATER	0.1	µg/L	U	U		1

Table B-1
Summary of Perchlorate Sample Results

Location	Sample	Date	Purpose	Matrix	Perchlorate Result	Units	Qual	VQ	RC	DF
04MH04	04MH04-W01	8/27/09	REG	WATER	0.849	µg/L				1
04MH05	04MH05-W01	8/27/09	REG	WATER	0.1	µg/L	U	U		1
04MH06	04MH06-W01	8/27/09	REG	WATER	0.1	µg/L	U	U		1
04CSFL05	04CSW5A	8/31/09	REG	SOIL	210	mg/kg				20000
04CSFL05	04CSW5B	8/31/09	REG	SOIL	42	mg/kg				2000
04CSFL11	04CSWI11	8/31/09	REG	SOIL	0.017	mg/kg				1
04CSFL11	04CSWC11	8/31/09	REG	SOIL	0.031	mg/kg				1
04CSFL12	04CSWC12	8/31/09	REG	SOIL	50	mg/kg				2000
04CSFL07	04CSFL08(6) **	9/1/09	REG	SOIL	28.2	mg/kg				10
04CSFL11	04CSFL11(11)	9/1/09	REG	SOIL	50.1	mg/kg				100
04CSFL12	04CSFL12(11)	9/1/09	REG	SOIL	32.3	mg/kg				10
04CSWFH	04CSWFH(2)	9/1/09	REG	SOIL	58.8	mg/kg				100
04CSWHM	04CSWHM	9/1/09	REG	SOIL	232	mg/kg				5000
04BH01	04BH01 (6-8)	9/3/09	REG	SOIL	1440	µg/kg				50
04BH02	04BH02 (6-8)	9/3/09	REG	SOIL	238	µg/kg				10
04BH03	04BH03 (6-8)	9/3/09	REG	SOIL	4120	µg/kg				1000
04CSFL05	04CSFL05(7)RE(9)	9/3/09	REG	SOIL	123	mg/kg				2000
04VLVOF	04VALVE-OUTFALL	9/3/09	REG	SOIL	36.3	mg/kg				1000
04CSWHM	04CSWHMQC	9/8/09	FD	SOIL	0.502	mg/kg				10
04CSWHM	04CSWHM	9/8/09	REG	SOIL	0.684	mg/kg				10
04VLVOF-S	04VLVOF-S	9/8/09	REG	SOIL	0.00382	mg/kg				1
04VLVOF-W	04VLVOF-W (100)	9/8/09	REG	SOIL	0.00124	mg/kg	J	J	15	1
04VLVOF-W	04VLVOF-W	9/8/09	REG	SOIL	4.81	mg/kg				1000
04CSFL10	04CSFL10(13)	9/10/09	REG	SOIL	4.89	mg/kg				1000
04CSFL11	04CSFL11RE(13)	9/10/09	REG	SOIL	11.9	mg/kg				1000
04CSFL14	04CSFL14(8)	9/10/09	REG	SOIL	218	mg/kg				10000
04CSWC1C	04CSWC1C	9/10/09	REG	SOIL	262	mg/kg				10000
04CSFL02	04CSFL02RE(7)	9/11/09	REG	SOIL	2.21	mg/kg				1000
04CSFL05	04CSFL05RE(13)	9/11/09	REG	SOIL	7.99	mg/kg				1000
04CSFL07	04CSFL07RE(11)	9/11/09	REG	SOIL	8.7	mg/kg				1000

Table B-1
Summary of Perchlorate Sample Results

Location	Sample	Date	Purpose	Matrix	Perchlorate Result	Units	Qual	VQ	RC	DF
04CSFL09	04CSFL09RE(13)	9/11/09	REG	SOIL	17.4	mg/kg				1000
04CSFL12	04CSFL12RE(13)	9/11/09	REG	SOIL	3.03	mg/kg				1000
04CSFL13	04CSFL13(8)	9/11/09	REG	SOIL	24.9	mg/kg				1000
04CSWCD	04CSWCDRE(19)U	9/11/09	REG	SOIL	0.087	mg/kg				10
04CSWCD	04CSWCDRE(4)L	9/11/09	REG	SOIL	52.7	mg/kg				1000
04CSWD1E	04CSWD1EQC	9/11/09	FD	SOIL	29.1	mg/kg				1000
04CSWD1E	04CSWD1E	9/11/09	REG	SOIL	30.3	mg/kg				1000
04CSWEF3	04CSWEF3	9/11/09	REG	SOIL	1.3	mg/kg				100
04CSWFR1	04CSWFR1	9/11/09	REG	SOIL	2.66	mg/kg				1000
04CSWR1H	04CSWR1H	9/11/09	REG	SOIL	15.4	mg/kg				1000
04VLV0FFL	04VLV0FFL(5)	9/12/09	REG	SOIL	35.1	mg/kg				1000
04VLV0FW-E	04VLV0FW-E-QC	9/12/09	FD	SOIL	5.07	mg/kg				1000
04VLV0FW-E	04VLV0FW-E	9/12/09	REG	SOIL	5.43	mg/kg				1000
04VLV0FW-N	04VLV0FW-N	9/12/09	REG	SOIL	37.6	mg/kg				1000
04VLV0FW-S	04VLV0FW-S	9/12/09	REG	SOIL	9.25	mg/kg				1000
04VLV0FW-W	04VLV0FW-W	9/12/09	REG	SOIL	15.4	mg/kg				1000
04CSFL05RE	04CSFL05RE(14)	9/21/09	REG	SOIL	0.0441	mg/kg				10
04CSWC2C	04CSWC2C	9/21/09	REG	SOIL	0.0147	mg/kg				1
04CSWD2E1	04CSWD2E1	9/21/09	REG	SOIL	0.0171	mg/kg				1
04VLVOFFL	04VLVOFFL(6)	9/21/09	REG	SOIL	1.77	mg/kg				100
04VLVOFW-N	04VLVOFW-N(1)	9/21/09	REG	SOIL	22.8	mg/kg				1000
04VLVOFW-S	04VLVOFW-S(1)	9/21/09	REG	SOIL	0.0305	mg/kg				10
04VLVOFW-W	04VLVOFW-W(1)	9/21/09	REG	SOIL	25.8	mg/kg				1000
04VLVOFW-3	04VLVOFW-3(2)	9/23/09	REG	SOIL	0.847	mg/kg				100
04VLVOFW-W	04VLVOFW-W(2)N	9/23/09	REG	SOIL	0.00861	mg/kg				1
04VLVOFW-W	04VLVOFW-W(2)-CMP	9/23/09	REG	SOIL	0.0235	mg/kg				10
04VLVOFW-W	04VLVOFW-W(2)S	9/23/09	REG	SOIL	0.0298	mg/kg				1
04CSFL07	04CSFL07RE(12)	9/25/09	REG	SOIL	4.2	mg/kg				1000
04CSFL13	04CSFL13RE(13)	9/25/09	REG	SOIL	2.4	mg/kg				100
04CSFL14	04CSFL14RE(13)QC	9/25/09	FD	SOIL	3.02	mg/kg				1000

Table B-1
Summary of Perchlorate Sample Results

Location	Sample	Date	Purpose	Matrix	Perchlorate Result	Units	Qual	VQ	RC	DF
04CSFL14	04CSFL14RE(13)	9/25/09	REG	SOIL	2.59	mg/kg				1000
04CSWR2H	04CSWR2H	9/25/09	REG	SOIL	9.6	mg/kg				1000
04WCD	04WCDRE(19)L	9/25/09	REG	SOIL	6.65	mg/kg				1000
04CSFL09	04CSFL09RE(14)	9/29/09	REG	SOIL	44.3	mg/kg				1000
04CSFL11	04CSFL11RE(14)	9/29/09	REG	SOIL	68.1	mg/kg				1000
04CSWCM	04CSWCM	9/29/09	REG	SOIL	2.28	mg/kg				1000
04CSWR2H	04CSWR2H(1)QC	9/29/09	FD	SOIL	1.08	mg/kg		JI	17	100
04CSWR2H	04CSWR2H(1)	9/29/09	REG	SOIL	0.294	mg/kg		JI	17	10
04CSFL09	04CSFL09RE(14)-NORTH	10/1/09	REG	SOIL	0.000992	mg/kg	U	U		1
04CSFL11	04CSFL11RE(14)-NORTH	10/1/09	REG	SOIL	0.000981	mg/kg	U	U		1

Notes:

µg/kg - micrograms per kilogram
µg/L - micrograms per liter
DF - dilution factor
FD - field duplicate
mg/kg - milligrams per kilogram
Qual - laboratory data qualifier
RC - reason code for qualifiers
VQ - data validation qualifier

Qualifiers and Reason Codes:

B - The analyte was detected in an associated blank.
J - The analyte was positively identified; the reported value is the estimated concentration.
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
6 - Result qualified as a result of the 5X/10X blank correction
15 - Quantitation
17 - Field duplicate RPD criteria is exceeded

Table B-2
Summary of Metals and RCI Sample Results

	Location	SITE 1-TP					SITE 1-TP					04DS01					04DS02					04DS03				
	Sample	SITE 1-TP-BF					SITE 1-TP-TS					04DS01 (0-2)					04DS02 (0-2)					04DS03 (0-3)				
	Date	8/9/09					8/9/09					8/5/09					8/5/09					8/5/09				
	Purpose	Reg					Reg					Reg					Reg					Reg				
	Matrix	Soil					Soil					Soil					Soil					Soil				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TAL Metals																										
Aluminum, Total	mg/kg	2890				1	685				1															
Antimony, Total	mg/kg	0.472 U		U		1	0.454 U		U		1															
Arsenic, Total	mg/kg	2.08 J		J	15	1	0.454 U		U		1															
Barium, Total	mg/kg	7.15				1	14.7				1															
Beryllium, Total	mg/kg	0.0467 J		J	15	1	0.0558 J		J	15	1															
Cadmium, Total	mg/kg	0.0472 U		U		1	0.0454 U		U		1															
Calcium, Total	mg/kg	6.69 J		J	15	1	97.7				1															
Chromium, Total	mg/kg	14.5				1	1.57				1															
Cobalt, Total	mg/kg	0.311 J		J	15	1	0.592 J		J	15	1															
Copper, Total	mg/kg	2.56				1	1.33				1															
Iron, Total	mg/kg	10600 B		B	6	1	1370 B		B	6	1															
Lead, Total	mg/kg	6.17				1	2.21 J		J	15	1															
Magnesium, Total	mg/kg	49.3				1	35.9				1															
Manganese, Total	mg/kg	18.3				1	128				1															
Mercury, Total	mg/kg	0.0127 U		U		1	0.0122 U		U		1															
Nickel, Total	mg/kg	0.933 J		J	15	1	0.827 J		J	15	1															
Potassium, Total	mg/kg	108				1	56.8				1															
Selenium, Total	mg/kg	0.472 U		U		1	0.582 J		J	15	1															
Silver, Total	mg/kg	0.259 J		J	15	1	0.227 U		U		1															
Sodium, Total	mg/kg	4.72 U		U		1	4.63 J		J	15	1															
Thallium, Total	mg/kg	0.378 U		U		1	0.363 U		U		1															
Vanadium, Total	mg/kg	19.8				1	2.49				1															
Zinc, Total	mg/kg	3.03				1	3.45				1															
TCLP RCRA Metals																										
Arsenic, TCLP	mg/L											0.1 U		U		1	0.1 U		U		1	0.1 U		U		1
Barium, TCLP	mg/L											1.24				1	3.23				1	1.01				1
Cadmium, TCLP	mg/L											0.025 U		U		1	0.025 U		U		1	0.025 U		U		1
Chromium, TCLP	mg/L											0.025 U		U		1	0.025 U		U		1	0.025 U		U		1
Lead, TCLP	mg/L											0.1 U		U		1	0.1 U		U		1	0.1 U		U		1
Selenium, TCLP	mg/L											0.4 U		U		1	0.4 U		U		1	0.4 U		U		1
Silver, TCLP	mg/L											0.05 U		U		1	0.05 U		U		1	0.05 U		U		1
Mercury, TCLP	mg/L											0.001 U		U		1	0.001 U		U		1	0.001 U		U		1
RCI																										
Corrosivity pH	Std Units											7.78				1	9.22				1	6.45				1
Ignitability	Deg C											70 >				1	70 >				1	72 >				1
Reactivity, Cyanide	mg/kg											4.99 U		U		1	4.97 U		U		1	4.98 U		U		1
Reactivity, Sulfide	mg/kg											50 U		U		1	50 U		U		1	50 U		U		1

Table B-2
Summary of Metals and RCI Sample Results

	Location	04DS04					04DS05					04CSWEF					04CSWEF					04CSWFR				
	Sample	04DS04 (0-2)					04DS05 (0-4)					04CSEF1					04CSEF2					04CSWFR				
	Date	8/5/09					8/5/09					8/17/09					8/17/09					8/18/09				
	Purpose	Reg					Reg					Reg					Reg					Reg				
	Matrix	Soil					Soil					Soil					Soil					Soil				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TAL Metals																										
Aluminum, Total	mg/kg																									
Antimony, Total	mg/kg																									
Arsenic, Total	mg/kg																									
Barium, Total	mg/kg																									
Beryllium, Total	mg/kg																									
Cadmium, Total	mg/kg																									
Calcium, Total	mg/kg																									
Chromium, Total	mg/kg																									
Cobalt, Total	mg/kg																									
Copper, Total	mg/kg																									
Iron, Total	mg/kg																									
Lead, Total	mg/kg																									
Magnesium, Total	mg/kg																									
Manganese, Total	mg/kg																									
Mercury, Total	mg/kg											0.0204	J		J	15 1	0.128				1	0.012	J		J	15 1
Nickel, Total	mg/kg																									
Potassium, Total	mg/kg																									
Selenium, Total	mg/kg																									
Silver, Total	mg/kg																									
Sodium, Total	mg/kg																									
Thallium, Total	mg/kg																									
Vanadium, Total	mg/kg																									
Zinc, Total	mg/kg																									
TCLP RCRA Metals																										
Arsenic, TCLP	mg/L	0.1	U		U	1	0.1	U		U	1															
Barium, TCLP	mg/L	0.605				1	0.677				1															
Cadmium, TCLP	mg/L	0.025	U		U	1	0.025	U		U	1															
Chromium, TCLP	mg/L	0.025	U		U	1	0.025	U		U	1															
Lead, TCLP	mg/L	0.1	U		U	1	0.1	U		U	1															
Selenium, TCLP	mg/L	0.4	U		U	1	0.4	U		U	1															
Silver, TCLP	mg/L	0.05	U		U	1	0.05	U		U	1															
Mercury, TCLP	mg/L	0.001	U		U	1	0.001	U		U	1															
RCI																										
Corrosivity pH	Std Units	8.51				1	5.84				1															
Ignitability	Deg C	68	>			1	74	>			1															
Reactivity, Cyanide	mg/kg	4.99	U		U	1	4.97	U		U	1															
Reactivity, Sulfide	mg/kg	50	U		U	1	50	U		U	1															

Table B-2
Summary of Metals and RCI Sample Results

	Location	04CSWQH					04CSWOP					04CSWOP					04CSWRQ					04CONC01				
	Sample	04CSWQH					04CSWOP					04CSWOP-QC					04CSWRQ					04CONC01				
	Date	8/18/09					8/18/09					8/18/09					8/18/09					8/5/09				
	Purpose	Reg					Reg					Reg					Reg					Reg				
	Matrix	Soil					Soil					Soil					Soil					Solid				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TAL Metals																										
Aluminum, Total	mg/kg																					4240				1
Antimony, Total	mg/kg																					0.23	B	J	15	1
Arsenic, Total	mg/kg																					2.3				1
Barium, Total	mg/kg																					270				4
Beryllium, Total	mg/kg																					0.24				1
Cadmium, Total	mg/kg																					0.54				1
Calcium, Total	mg/kg																					23500				1
Chromium, Total	mg/kg																					11.5				1
Cobalt, Total	mg/kg																					2	B	J	15	1
Copper, Total	mg/kg																					34.9				1
Iron, Total	mg/kg																					7200				1
Lead, Total	mg/kg																					9.3				1
Magnesium, Total	mg/kg																					896				1
Manganese, Total	mg/kg																					148				1
Mercury, Total	mg/kg	0.0231	J	J	15	1	0.0526	J	J	15	1	0.124				1	0.0129	J	J	15	1	0.045	B	J	15	1
Nickel, Total	mg/kg																					4.6				1
Potassium, Total	mg/kg																					403	B	J	15	1
Selenium, Total	mg/kg																					0.15	U	U		1
Silver, Total	mg/kg																					0.21	B	J	15	1
Sodium, Total	mg/kg																					81.4	B	J	15	1
Thallium, Total	mg/kg																					1.7	U	U		1
Vanadium, Total	mg/kg																					13.5				1
Zinc, Total	mg/kg																					44.1				1
TCLP RCRA Metals																										
Arsenic, TCLP	mg/L																					0.011	U	U		2
Barium, TCLP	mg/L																					2.1				1
Cadmium, TCLP	mg/L																					0.0012	B	J	15	1
Chromium, TCLP	mg/L																					0.019				1
Lead, TCLP	mg/L																					0.004	U	U		2
Selenium, TCLP	mg/L																					0.04	U	U		2
Silver, TCLP	mg/L																					0.0014	U	U		1
Mercury, TCLP	mg/L																					0.0015	U	U		1
RCI																										
Corrosivity pH	Std Units																									
Ignitability	Deg C																									
Reactivity, Cyanide	mg/kg																									
Reactivity, Sulfide	mg/kg																									

Table B-2
Summary of Metals and RCI Sample Results

	Location	04CONC02					04Claypipe					
	Sample	04CONC02					04CLAYPIPE-081809					
	Date	8/5/09					8/18/09					
	Purpose	Reg					Reg					
	Matrix	Solid					Water					
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Units
TAL Metals												
Aluminum, Total	mg/kg	4330				1	15.2				1	mg/L
Antimony, Total	mg/kg	0.96	U	U		4	0.00463				1	mg/L
Arsenic, Total	mg/kg	3.3				4	0.125				1	mg/L
Barium, Total	mg/kg	58.8				1	0.168				1	mg/L
Beryllium, Total	mg/kg	0.34				1	0.000528	J	J	15	1	mg/L
Cadmium, Total	mg/kg	0.14	B	J	15	1	0.000283	J	J	15	1	mg/L
Calcium, Total	mg/kg	68700				4	52.9				1	mg/L
Chromium, Total	mg/kg	20.4				1	0.0169				1	mg/L
Cobalt, Total	mg/kg	3.7				1	0.0186				1	mg/L
Copper, Total	mg/kg	7.4				1	0.01				1	mg/L
Iron, Total	mg/kg	5650				1	13.3				1	mg/L
Lead, Total	mg/kg	4.3	B	J	15	4	0.0128				1	mg/L
Magnesium, Total	mg/kg	907				1	11.7				1	mg/L
Manganese, Total	mg/kg	350				4	2.28				50	mg/L
Mercury, Total	mg/kg	0.011	U	U		1	0.0001	U	U		1	mg/L
Nickel, Total	mg/kg	9.1				1	0.0287				1	mg/L
Potassium, Total	mg/kg	390	B	J	15	1	6.74				1	mg/L
Selenium, Total	mg/kg	0.62	U	U		4	0.00419				1	mg/L
Silver, Total	mg/kg	0.13	B	J	15	1	0.00025	U	U		1	mg/L
Sodium, Total	mg/kg	202	B	J	15	1	118				1	mg/L
Thallium, Total	mg/kg	3.4	U	U		1	0.000307				1	mg/L
Vanadium, Total	mg/kg	19.4				1	0.0216				1	mg/L
Zinc, Total	mg/kg	19.3				1	0.0405				1	mg/L
TCLP RCRA Metals												
Arsenic, TCLP	mg/L	0.011	U	U		2						
Barium, TCLP	mg/L	1				1						
Cadmium, TCLP	mg/L	0.001	U	U		1						
Chromium, TCLP	mg/L	0.056				1						
Lead, TCLP	mg/L	0.004	U	U		2						
Selenium, TCLP	mg/L	0.04	U	U		2						
Silver, TCLP	mg/L	0.0014	U	U		1						
Mercury, TCLP	mg/L	0.0015	U	U		1						
RCI												
Corrosivity pH	Std Units											
Ignitability	Deg C											
Reactivity, Cyanide	mg/kg											
Reactivity, Sulfide	mg/kg											

Notes:
µg/kg - micrograms per kilogram
BF - general backfill soil
Deg C - degrees Celsius
DF - dilution factor
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
Qual - laboratory data qualifier
RC - reason code for qualifiers
Std Units - standard units of pH measurement
TALs - Target Analyte List
TP - Tony Pezaihowski backfill source
TS - topsoil
VQ - data validation qualifier

Qualifiers and Reason Codes:
B - The analyte was detected in an associated blank.
J - The analyte was positively identified; the reported value is the estimated concentration.
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
> - greater than
6 - Result qualified as a result of the 5X/10X blank correction
15 - Quantitation

Table B-3
Summary of VOCs and SVOCs Sample Results

	Location	SITE 1-TP					SITE 1-TP					04CLAYPIPE					
	Sample	SITE 1-TP-BF					SITE 1-TP-TS					04CLAYPIPE-081809					
	Date	8/9/09					8/9/09					8/18/09					
	Purpose	Reg					Reg					Reg					
	Matrix	Soil					Soil					Water					
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Units
VOCs - 8260B																	
1,1,1,2-Tetrachloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,1,1-Trichloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,1,2,2-Tetrachloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
1,1,2-Trichloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,1-Dichloroethane	µg/kg	1.28	U	U		1	1.25	U	U		1	0.125	U	U		1	µg/L
1,1-Dichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.5	U	U		1	µg/L
1,1-Dichloropropene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,2,3-Trichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.15	U	U		1	µg/L
1,2,3-Trichloropropane	µg/kg	1.28	U	U		1	1.25	U	U		1	0.5	U	U		1	µg/L
1,2,4-Trichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.2	U	U		1	µg/L
1,2,4-Trimethylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,2-Dibromo-3-Chloropropane	µg/kg	2.57	U	U		1	2.5	U	U		1	1.0	U	U		1	µg/L
1,2-Dibromoethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,2-Dichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
1,2-Dichloroethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,2-Dichloropropane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.2	U	U		1	µg/L
1,3,5-Trimethylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,3-Dichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
1,3-Dichloropropane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.2	U	U		1	µg/L
1,4-Dichlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.184	J	J-TB	15, 06D	1	µg/L
2,2-Dichloropropane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
2-Butanone	µg/kg	3.21	U	U		1	3.12	U	U		1	2.5	U	U		1	µg/L
2-Chloroethyl Vinyl Ether	µg/kg	2.57	U	U		1	2.5	U	U		1	2.0	U	U		1	µg/L
2-Chlorotoluene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
2-Hexanone	µg/kg	3.21	U	U		1	3.12	U	U		1	2.5	U	U		1	µg/L
4-Chlorotoluene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
4-Methyl-2-Pentanone	µg/kg	3.21	U	U		1	3.12	U	U		1	2.5	U	U		1	µg/L
Acetone	µg/kg	6.42	U	U		1	6.24	U	U		1	8.32	J	J-TB	15, 06D	1	µg/L
Benzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
Bromobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
Bromochloromethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.2	U	U		1	µg/L
Bromodichloromethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Bromoform	µg/kg	0.642	U	U		1	0.624	U	U		1	0.5	U	U		1	µg/L
Bromomethane	µg/kg	1.28	U	U		1	1.25	U	U		1	0.5	U	U		1	µg/L
Carbon Disulfide	µg/kg	0.642	U	U		1	0.624	U	U		1	0.5	U	U		1	µg/L
Carbon Tetrachloride	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Chlorobenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
Chlorodibromomethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Chloroethane	µg/kg	1.28	U	U		1	1.25	U	U		1	0.5	U	U		1	µg/L
Chloroform	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
Chloromethane	µg/kg	2.57	U	U		1	2.5	U	U		1	0.3	U	U		1	µg/L
Cis-1,2-Dichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Cis-1,3-Dichloropropene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Dibromomethane	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Dichlorodifluoromethane	µg/kg	1.28	U	U		1	1.25	U	U		1	0.25	U	U		1	µg/L
Ethylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Hexachlorobutadiene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Isopropylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
M-,P-Xylene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.5	U	U		1	µg/L
Methylene Chloride	µg/kg	1.28	U	U		1	1.25	U	U		1	0.25	U	U		1	µg/L
Naphthalene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.2	U	U		1	µg/L
N-Butylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
N-Propylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
O-Xylene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L

Table B-3
Summary of VOCs and SVOCs Sample Results

	Location	SITE 1-TP					SITE 1-TP					04CLAYPIPE					
	Sample	SITE 1-TP-BF					SITE 1-TP-TS					04CLAYPIPE-081809					
	Date	8/9/09					8/9/09					8/18/09					
	Purpose	Reg					Reg					Reg					
	Matrix	Soil					Soil					Water					
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Units
P-Isopropyltoluene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Sec-Butylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Styrene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.125	U	U		1	µg/L
Tert-Butylbenzene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Tetrachloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Toluene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Trans-1,2-Dichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Trans-1,3-Dichloropropene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.5	U	U		1	µg/L
Trichloroethene	µg/kg	0.642	U	U		1	0.624	U	U		1	0.25	U	U		1	µg/L
Trichlorofluoromethane	µg/kg	1.28	U	U		1	1.25	U	U		1	0.25	U	U		1	µg/L
Vinyl Acetate	µg/kg	1.28	U	U		1	1.25	U	U		1	2.5	U	U		1	µg/L
Vinyl Chloride	µg/kg	1.28	U	U		1	1.25	U	U		1	0.25	U	U		1	µg/L
SVOCs - 8270C																	
1,2,4-Trichlorobenzene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
1,2-Dichlorobenzene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
1,3-Dichlorobenzene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
1,4-Dichlorobenzene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2,4,5-Trichlorophenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2,4,6-Trichlorophenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2,4-Dichlorophenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2,4-Dimethylphenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2,4-Dinitrophenol	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
2,4-Dinitrotoluene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2,6-Dinitrotoluene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2-Chloronaphthalene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2-Chlorophenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2-Methylnaphthalene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2-Methylphenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
2-Nitroaniline	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
2-Nitrophenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
3,3'-Dichlorobenzidine	µg/kg	248	U	U		1	239	U	U		1	2.5	U	U		1	µg/L
3-,4-Methylphenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
3-Nitroaniline	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
4,6-Dinitro-2-Methylphenol	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
4-Bromophenyl-Phenylether	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
4-Chloro-3-Methylphenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
4-Chloroaniline	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
4-Chlorophenyl-Phenyl Ether	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
4-Nitroaniline	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
4-Nitrophenol	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
Acenaphthene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Acenaphthylene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Anthracene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Benzo(A)Anthracene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Benzo(A)Pyrene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Benzo(B)Fluoranthene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Benzo(G,H,I)Perylene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Benzo(K)Fluoranthene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Benzoic Acid	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
Benzyl Alcohol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Bis(2-Chloroethoxy)Methane	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Bis(2-Chloroethyl)Ether	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Bis(2-Chloroisopropyl)Ether	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Bis(2-Ethylhexyl)Phthalate	µg/kg	124	U	U		1	120	U	U		1	3	U	U		1	µg/L
Butylbenzylphthalate	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L

Table B-3
Summary of VOCs and SVOCs Sample Results

	Location	SITE 1-TP					SITE 1-TP					04CLAYPIPE					
	Sample	SITE 1-TP-BF					SITE 1-TP-TS					04CLAYPIPE-081809					
	Date	8/9/09					8/9/09					8/18/09					
	Purpose	Reg					Reg					Reg					
	Matrix	Soil					Soil					Water					
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Units
Chrysene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Dibenzo(A,H)Anthracene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Dibenzofuran	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Diethylphthalate	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Dimethylphthalate	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Di-N-Butylphthalate	µg/kg	124	U	U		1	128	J	J		1	2.5	U	U		1	µg/L
Di-N-Octylphthalate	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Fluoranthene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Fluorene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Hexachlorobenzene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Hexachlorobutadiene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Hexachlorocyclopentadiene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Hexachloroethane	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Indeno(1,2,3-Cd)Pyrene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Isophorone	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Naphthalene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Nitrobenzene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
N-Nitrosodiphenylamine	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
N-Nitrosodipropylamine	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Pentachlorophenol	µg/kg	496	U	U		1	478	U	U		1	12.5	U	U		1	µg/L
Phenanthrene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Phenol	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L
Pyrene	µg/kg	124	U	U		1	120	U	U		1	2.5	U	U		1	µg/L

Notes:
µg/kg - micrograms per kilogram
µg/L - micrograms per liter
BF - general backfill soil
DF - dilution factor
Qual - laboratory data qualifier
RC - reason code for qualifiers
SVOCs - semivolatile organic compounds
TP - Tony Pezaihowski backfill source
TS - topsoil
VOCs - volatile organic compounds
VQ - data validation qualifier

Qualifiers and Reason Codes:
J - The analyte was positively identified; the reported value is the estimated concentration.
TB - Trip blank
U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.
15 - Quantitation
06D - Trip blank

Microbac®

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Laboratory Report Number: L09080192

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

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

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Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on August 13, 2009.

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 13, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 217 pages.

Look closer. Go further. Do more.

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Ohio Valley Division
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Microbac REPORT L09080192
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080192

CHAIN OF CUSTODY: The chain of custody number was 080909-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 6 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: 12-AUG-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00108108

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 laboratoy 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 Beery	Metals Supervisor	August 12, 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:	L09080192
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309445
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 12, 2009

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

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

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080192
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309445
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 12, 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

00108113

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 laboratoy 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	Deanna Hesson	Conventional Lab Supervisor	August 12, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

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Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080192
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309447
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 12, 2009

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

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

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080192
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309447
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 12, 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

00108118

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 laboratoy 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.

MICHAEL D. COCHRAN		Semivolatiles Lab Supervisor	August 13, 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:	L09080192
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309434
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 13, 2009

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

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		

00108120

Checklist ID: **40861**

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080192
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309434
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 13, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?			✓		
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?		✓			2
Was the ICAL curve verified for each analyte?	✓				3
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				

Checklist ID: **40861**

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080192
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309434
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 13, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080192
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309434
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 13, 2009

EXCEPTIONS REPORT
ER# - Description
1. The LCS/LCS DUP yielded recoveries above the upper acceptance limit for benzoic acid.
2. The CCV yielded a %D beyond the acceptance limit for 2,4-dinitrophenol.
3. 2. The ICV yielded a %D beyond the acceptance limit for pentachlorophenol.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00108124

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 laboratoy 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 true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	August 12, 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:	L09080192
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	309410
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	August 12, 2009

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

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

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

EXCEPTIONS REPORT

ER# - Description

#1: Dichlorodifluoromethane exceeded the upper advisory limit in the LCS/LCSD analyzed 08/11/09 on HPMS-9.

#2: Dichlorodifluoromethane exceeded the upper control limit and vinyl acetate was below the lower control limit in the alternate source analyzed 07/21/09 on HPMS-9.

Footnotes:

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

Laboratory Data Package Cover Page

00108128

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 laboratoy 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 Beery	Metals Supervisor	August 13, 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:	L09080192
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309438
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 13, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?		✓			ER1
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				ER2
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080192
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309438
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 13, 2009

EXCEPTIONS REPORT
ER#1 -The method blank associated with this analytical batch yielded a result for iron which exceeded the reporting detection limit. However, the reported sample results exceeded that of the method blank by greater than a factor of ten. The iron results were reported with a 'B' qualifier to indicate the association with a noncompliant method blank.
ER#2 - Client sample 04 yielded a result for cadmium that was noncompliant on the negative side upon initial analysis. The sample was reanalyzed at a dilution for cadmium.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

L09080192

00108136

08/13/09 14:09

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
SITE 1-TP-BF	L09080192-01	8260B	1	11-AUG-09
SITE 1-TP-TS	L09080192-02	8260B	1	11-AUG-09
SITE 2-BLM-TS	L09080192-03	8260B	1	11-AUG-09
SITE 2-BLM-BF	L09080192-04	8260B	1	11-AUG-09
SITE 3-ML-BF/TS	L09080192-05	8260B	1	11-AUG-09

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108137

Sample Number: **L09080192-01**
Client ID: **SITE 1-TP-BF**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 10:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:17**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 15:07**
File ID: **9M71369**
Percent Solid: **77.4**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	12.8	6.42
Benzene	71-43-2		U	6.42	0.642
Bromobenzene	108-86-1		U	6.42	0.642
Bromochloromethane	74-97-5		U	6.42	0.642
Bromodichloromethane	75-27-4		U	6.42	0.642
Bromoform	75-25-2		U	6.42	0.642
Bromomethane	74-83-9		U	12.8	1.28
2-Butanone	78-93-3		U	12.8	3.21
n-Butylbenzene	104-51-8		U	6.42	0.642
sec-Butylbenzene	135-98-8		U	6.42	0.642
tert-Butylbenzene	98-06-6		U	6.42	0.642
Carbon disulfide	75-15-0		U	6.42	0.642
Carbon tetrachloride	56-23-5		U	6.42	0.642
Chlorobenzene	108-90-7		U	6.42	0.642
Chlorodibromomethane	124-48-1		U	6.42	0.642
Chloroethane	75-00-3		U	12.8	1.28
2-Chloroethyl vinyl ether	110-75-8		U	12.8	2.57
Chloroform	67-66-3		U	6.42	0.642
Chloromethane	74-87-3		U	12.8	2.57
2-Chlorotoluene	95-49-8		U	6.42	0.642
4-Chlorotoluene	106-43-4		U	6.42	0.642
1,2-Dibromo-3-chloropropane	96-12-8		U	6.42	2.57
1,2-Dibromoethane	106-93-4		U	6.42	0.642
Dibromomethane	74-95-3		U	6.42	0.642
1,2-Dichlorobenzene	95-50-1		U	6.42	0.642
1,3-Dichlorobenzene	541-73-1		U	6.42	0.642
1,4-Dichlorobenzene	106-46-7		U	6.42	0.642
Dichlorodifluoromethane	75-71-8		U	12.8	1.28
1,1-Dichloroethane	75-34-3		U	6.42	1.28
1,2-Dichloroethane	107-06-2		U	6.42	0.642
1,1-Dichloroethene	75-35-4		U	6.42	0.642
cis-1,2-Dichloroethene	156-59-2		U	6.42	0.642
trans-1,2-Dichloroethene	156-60-5		U	6.42	0.642
1,2-Dichloropropane	78-87-5		U	6.42	0.642
1,3-Dichloropropane	142-28-9		U	6.42	0.642
2,2-Dichloropropane	594-20-7		U	6.42	0.642
cis-1,3-Dichloropropene	10061-01-5		U	6.42	0.642
trans-1,3-Dichloropropene	10061-02-6		U	6.42	0.642
1,1-Dichloropropene	563-58-6		U	6.42	0.642
Ethylbenzene	100-41-4		U	6.42	0.642
2-Hexanone	591-78-6		U	12.8	3.21
Hexachlorobutadiene	87-68-3		U	6.42	0.642
Isopropylbenzene	98-82-8		U	6.42	0.642
p-Isopropyltoluene	99-87-6		U	6.42	0.642
4-Methyl-2-pentanone	108-10-1		U	12.8	3.21
Methylene chloride	75-09-2		U	6.42	1.28
Naphthalene	91-20-3		U	12.8	0.642
n-Propylbenzene	103-65-1		U	6.42	0.642
Styrene	100-42-5		U	6.42	0.642
1,1,1,2-Tetrachloroethane	630-20-6		U	6.42	0.642
1,1,2,2-Tetrachloroethane	79-34-5		U	6.42	0.642
Tetrachloroethene	127-18-4		U	6.42	0.642
Toluene	108-88-3		U	6.42	0.642
1,2,3-Trichlorobenzene	87-61-6		U	6.42	0.642
1,2,4-Trichlorobenzene	120-82-1		U	6.42	0.642
1,1,1-Trichloroethane	71-55-6		U	6.42	0.642
1,1,2-Trichloroethane	79-00-5		U	6.42	0.642
Trichloroethene	79-01-6		U	6.42	0.642
Trichlorofluoromethane	75-69-4		U	12.8	1.28

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108138

Sample Number: **L09080192-01**
Client ID: **SITE 1-TP-BF**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 10:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:17**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 15:07**
File ID: **9M71369**
Percent Solid: **77.4**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	6.42	1.28
1,2,4-Trimethylbenzene	95-63-6		U	6.42	0.642
1,3,5-Trimethylbenzene	108-67-8		U	6.42	0.642
Vinyl acetate	108-05-4		U	12.8	1.28
Vinyl chloride	75-01-4		U	12.8	1.28
o-Xylene	95-47-6		U	6.42	0.642
m-,p-Xylene	136777-61-2		U	6.42	0.642

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	105	80	120	
1,2-Dichloroethane-d4	102	80	120	
Toluene-d8	103	81	117	
4-Bromofluorobenzene	100	74	121	

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108139

Sample Number: **L09080192-02**
Client ID: **SITE 1-TP-TS**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:19**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 15:37**
File ID: **9M71370**
Percent Solid: **79.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	12.5	6.24
Benzene	71-43-2		U	6.24	0.624
Bromobenzene	108-86-1		U	6.24	0.624
Bromochloromethane	74-97-5		U	6.24	0.624
Bromodichloromethane	75-27-4		U	6.24	0.624
Bromoform	75-25-2		U	6.24	0.624
Bromomethane	74-83-9		U	12.5	1.25
2-Butanone	78-93-3		U	12.5	3.12
n-Butylbenzene	104-51-8		U	6.24	0.624
sec-Butylbenzene	135-98-8		U	6.24	0.624
tert-Butylbenzene	98-06-6		U	6.24	0.624
Carbon disulfide	75-15-0		U	6.24	0.624
Carbon tetrachloride	56-23-5		U	6.24	0.624
Chlorobenzene	108-90-7		U	6.24	0.624
Chlorodibromomethane	124-48-1		U	6.24	0.624
Chloroethane	75-00-3		U	12.5	1.25
2-Chloroethyl vinyl ether	110-75-8		U	12.5	2.50
Chloroform	67-66-3		U	6.24	0.624
Chloromethane	74-87-3		U	12.5	2.50
2-Chlorotoluene	95-49-8		U	6.24	0.624
4-Chlorotoluene	106-43-4		U	6.24	0.624
1,2-Dibromo-3-chloropropane	96-12-8		U	6.24	2.50
1,2-Dibromoethane	106-93-4		U	6.24	0.624
Dibromomethane	74-95-3		U	6.24	0.624
1,2-Dichlorobenzene	95-50-1		U	6.24	0.624
1,3-Dichlorobenzene	541-73-1		U	6.24	0.624
1,4-Dichlorobenzene	106-46-7		U	6.24	0.624
Dichlorodifluoromethane	75-71-8		U	12.5	1.25
1,1-Dichloroethane	75-34-3		U	6.24	1.25
1,2-Dichloroethane	107-06-2		U	6.24	0.624
1,1-Dichloroethene	75-35-4		U	6.24	0.624
cis-1,2-Dichloroethene	156-59-2		U	6.24	0.624
trans-1,2-Dichloroethene	156-60-5		U	6.24	0.624
1,2-Dichloropropane	78-87-5		U	6.24	0.624
1,3-Dichloropropane	142-28-9		U	6.24	0.624
2,2-Dichloropropane	594-20-7		U	6.24	0.624
cis-1,3-Dichloropropene	10061-01-5		U	6.24	0.624
trans-1,3-Dichloropropene	10061-02-6		U	6.24	0.624
1,1-Dichloropropene	563-58-6		U	6.24	0.624
Ethylbenzene	100-41-4		U	6.24	0.624
2-Hexanone	591-78-6		U	12.5	3.12
Hexachlorobutadiene	87-68-3		U	6.24	0.624
Isopropylbenzene	98-82-8		U	6.24	0.624
p-Isopropyltoluene	99-87-6		U	6.24	0.624
4-Methyl-2-pentanone	108-10-1		U	12.5	3.12
Methylene chloride	75-09-2		U	6.24	1.25
Naphthalene	91-20-3		U	12.5	0.624
n-Propylbenzene	103-65-1		U	6.24	0.624
Styrene	100-42-5		U	6.24	0.624
1,1,1,2-Tetrachloroethane	630-20-6		U	6.24	0.624
1,1,2,2-Tetrachloroethane	79-34-5		U	6.24	0.624
Tetrachloroethene	127-18-4		U	6.24	0.624
Toluene	108-88-3		U	6.24	0.624
1,2,3-Trichlorobenzene	87-61-6		U	6.24	0.624
1,2,4-Trichlorobenzene	120-82-1		U	6.24	0.624
1,1,1-Trichloroethane	71-55-6		U	6.24	0.624
1,1,2-Trichloroethane	79-00-5		U	6.24	0.624
Trichloroethene	79-01-6		U	6.24	0.624
Trichlorofluoromethane	75-69-4		U	12.5	1.25

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108140

Sample Number: **L09080192-02**
Client ID: **SITE 1-TP-TS**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:19**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 15:37**
File ID: **9M71370**
Percent Solid: **79.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	6.24	1.25
1,2,4-Trimethylbenzene	95-63-6		U	6.24	0.624
1,3,5-Trimethylbenzene	108-67-8		U	6.24	0.624
Vinyl acetate	108-05-4		U	12.5	1.25
Vinyl chloride	75-01-4		U	12.5	1.25
o-Xylene	95-47-6		U	6.24	0.624
m-,p-Xylene	136777-61-2		U	6.24	0.624

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	80	120	
1,2-Dichloroethane-d4	107	80	120	
Toluene-d8	106	81	117	
4-Bromofluorobenzene	109	74	121	

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108141

Sample Number: **L09080192-03**
Client ID: **SITE 2-BLM-TS**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 11:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:21**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 16:07**
File ID: **9M71371**
Percent Solid: **78.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	12.3	6.13
Benzene	71-43-2		U	6.13	0.613
Bromobenzene	108-86-1		U	6.13	0.613
Bromochloromethane	74-97-5		U	6.13	0.613
Bromodichloromethane	75-27-4		U	6.13	0.613
Bromoform	75-25-2		U	6.13	0.613
Bromomethane	74-83-9		U	12.3	1.23
2-Butanone	78-93-3		U	12.3	3.06
n-Butylbenzene	104-51-8		U	6.13	0.613
sec-Butylbenzene	135-98-8		U	6.13	0.613
tert-Butylbenzene	98-06-6		U	6.13	0.613
Carbon disulfide	75-15-0		U	6.13	0.613
Carbon tetrachloride	56-23-5		U	6.13	0.613
Chlorobenzene	108-90-7		U	6.13	0.613
Chlorodibromomethane	124-48-1		U	6.13	0.613
Chloroethane	75-00-3		U	12.3	1.23
2-Chloroethyl vinyl ether	110-75-8		U	12.3	2.45
Chloroform	67-66-3		U	6.13	0.613
Chloromethane	74-87-3		U	12.3	2.45
2-Chlorotoluene	95-49-8		U	6.13	0.613
4-Chlorotoluene	106-43-4		U	6.13	0.613
1,2-Dibromo-3-chloropropane	96-12-8		U	6.13	2.45
1,2-Dibromoethane	106-93-4		U	6.13	0.613
Dibromomethane	74-95-3		U	6.13	0.613
1,2-Dichlorobenzene	95-50-1		U	6.13	0.613
1,3-Dichlorobenzene	541-73-1		U	6.13	0.613
1,4-Dichlorobenzene	106-46-7		U	6.13	0.613
Dichlorodifluoromethane	75-71-8		U	12.3	1.23
1,1-Dichloroethane	75-34-3		U	6.13	1.23
1,2-Dichloroethane	107-06-2		U	6.13	0.613
1,1-Dichloroethene	75-35-4		U	6.13	0.613
cis-1,2-Dichloroethene	156-59-2		U	6.13	0.613
trans-1,2-Dichloroethene	156-60-5		U	6.13	0.613
1,2-Dichloropropane	78-87-5		U	6.13	0.613
1,3-Dichloropropane	142-28-9		U	6.13	0.613
2,2-Dichloropropane	594-20-7		U	6.13	0.613
cis-1,3-Dichloropropene	10061-01-5		U	6.13	0.613
trans-1,3-Dichloropropene	10061-02-6		U	6.13	0.613
1,1-Dichloropropene	563-58-6		U	6.13	0.613
Ethylbenzene	100-41-4		U	6.13	0.613
2-Hexanone	591-78-6		U	12.3	3.06
Hexachlorobutadiene	87-68-3		U	6.13	0.613
Isopropylbenzene	98-82-8		U	6.13	0.613
p-Isopropyltoluene	99-87-6		U	6.13	0.613
4-Methyl-2-pentanone	108-10-1		U	12.3	3.06
Methylene chloride	75-09-2		U	6.13	1.23
Naphthalene	91-20-3		U	12.3	0.613
n-Propylbenzene	103-65-1		U	6.13	0.613
Styrene	100-42-5		U	6.13	0.613
1,1,1,2-Tetrachloroethane	630-20-6		U	6.13	0.613
1,1,2,2-Tetrachloroethane	79-34-5		U	6.13	0.613
Tetrachloroethene	127-18-4		U	6.13	0.613
Toluene	108-88-3		U	6.13	0.613
1,2,3-Trichlorobenzene	87-61-6		U	6.13	0.613
1,2,4-Trichlorobenzene	120-82-1		U	6.13	0.613
1,1,1-Trichloroethane	71-55-6		U	6.13	0.613
1,1,2-Trichloroethane	79-00-5		U	6.13	0.613
Trichloroethene	79-01-6		U	6.13	0.613
Trichlorofluoromethane	75-69-4		U	12.3	1.23

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108142

Sample Number: **L09080192-03**
Client ID: **SITE 2-BLM-TS**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 11:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:21**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 16:07**
File ID: **9M71371**
Percent Solid: **78.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	6.13	1.23
1,2,4-Trimethylbenzene	95-63-6		U	6.13	0.613
1,3,5-Trimethylbenzene	108-67-8		U	6.13	0.613
Vinyl acetate	108-05-4		U	12.3	1.23
Vinyl chloride	75-01-4		U	12.3	1.23
o-Xylene	95-47-6		U	6.13	0.613
m-,p-Xylene	136777-61-2		U	6.13	0.613

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	107	80	120	
1,2-Dichloroethane-d4	105	80	120	
Toluene-d8	107	81	117	
4-Bromofluorobenzene	112	74	121	

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108143

Sample Number: **L09080192-04**
Client ID: **SITE 2-BLM-BF**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 11:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:24**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 16:37**
File ID: **9M71372**
Percent Solid: **78.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	12.7	6.35
Benzene	71-43-2		U	6.35	0.635
Bromobenzene	108-86-1		U	6.35	0.635
Bromochloromethane	74-97-5		U	6.35	0.635
Bromodichloromethane	75-27-4		U	6.35	0.635
Bromoform	75-25-2		U	6.35	0.635
Bromomethane	74-83-9		U	12.7	1.27
2-Butanone	78-93-3		U	12.7	3.17
n-Butylbenzene	104-51-8		U	6.35	0.635
sec-Butylbenzene	135-98-8		U	6.35	0.635
tert-Butylbenzene	98-06-6		U	6.35	0.635
Carbon disulfide	75-15-0		U	6.35	0.635
Carbon tetrachloride	56-23-5		U	6.35	0.635
Chlorobenzene	108-90-7		U	6.35	0.635
Chlorodibromomethane	124-48-1		U	6.35	0.635
Chloroethane	75-00-3		U	12.7	1.27
2-Chloroethyl vinyl ether	110-75-8		U	12.7	2.54
Chloroform	67-66-3		U	6.35	0.635
Chloromethane	74-87-3		U	12.7	2.54
2-Chlorotoluene	95-49-8		U	6.35	0.635
4-Chlorotoluene	106-43-4		U	6.35	0.635
1,2-Dibromo-3-chloropropane	96-12-8		U	6.35	2.54
1,2-Dibromoethane	106-93-4		U	6.35	0.635
Dibromomethane	74-95-3		U	6.35	0.635
1,2-Dichlorobenzene	95-50-1		U	6.35	0.635
1,3-Dichlorobenzene	541-73-1		U	6.35	0.635
1,4-Dichlorobenzene	106-46-7		U	6.35	0.635
Dichlorodifluoromethane	75-71-8		U	12.7	1.27
1,1-Dichloroethane	75-34-3		U	6.35	1.27
1,2-Dichloroethane	107-06-2		U	6.35	0.635
1,1-Dichloroethene	75-35-4		U	6.35	0.635
cis-1,2-Dichloroethene	156-59-2		U	6.35	0.635
trans-1,2-Dichloroethene	156-60-5		U	6.35	0.635
1,2-Dichloropropane	78-87-5		U	6.35	0.635
1,3-Dichloropropane	142-28-9		U	6.35	0.635
2,2-Dichloropropane	594-20-7		U	6.35	0.635
cis-1,3-Dichloropropene	10061-01-5		U	6.35	0.635
trans-1,3-Dichloropropene	10061-02-6		U	6.35	0.635
1,1-Dichloropropene	563-58-6		U	6.35	0.635
Ethylbenzene	100-41-4		U	6.35	0.635
2-Hexanone	591-78-6		U	12.7	3.17
Hexachlorobutadiene	87-68-3		U	6.35	0.635
Isopropylbenzene	98-82-8		U	6.35	0.635
p-Isopropyltoluene	99-87-6		U	6.35	0.635
4-Methyl-2-pentanone	108-10-1		U	12.7	3.17
Methylene chloride	75-09-2		U	6.35	1.27
Naphthalene	91-20-3		U	12.7	0.635
n-Propylbenzene	103-65-1		U	6.35	0.635
Styrene	100-42-5		U	6.35	0.635
1,1,1,2-Tetrachloroethane	630-20-6		U	6.35	0.635
1,1,2,2-Tetrachloroethane	79-34-5		U	6.35	0.635
Tetrachloroethene	127-18-4		U	6.35	0.635
Toluene	108-88-3		U	6.35	0.635
1,2,3-Trichlorobenzene	87-61-6		U	6.35	0.635
1,2,4-Trichlorobenzene	120-82-1		U	6.35	0.635
1,1,1-Trichloroethane	71-55-6		U	6.35	0.635
1,1,2-Trichloroethane	79-00-5		U	6.35	0.635
Trichloroethene	79-01-6		U	6.35	0.635
Trichlorofluoromethane	75-69-4		U	12.7	1.27

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108144

Sample Number: **L09080192-04**
Client ID: **SITE 2-BLM-BF**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 11:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:24**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 16:37**
File ID: **9M71372**
Percent Solid: **78.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	6.35	1.27
1,2,4-Trimethylbenzene	95-63-6		U	6.35	0.635
1,3,5-Trimethylbenzene	108-67-8		U	6.35	0.635
Vinyl acetate	108-05-4		U	12.7	1.27
Vinyl chloride	75-01-4		U	12.7	1.27
o-Xylene	95-47-6		U	6.35	0.635
m-,p-Xylene	136777-61-2		U	6.35	0.635

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	100	80	120	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	101	81	117	
4-Bromofluorobenzene	106	74	121	

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108145

Sample Number: **L09080192-05**
Client ID: **SITE 3-ML-BF/TS**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 12:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:26**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 17:08**
File ID: **9M71373**
Percent Solid: **88.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	11.1	5.55
Benzene	71-43-2		U	5.55	0.555
Bromobenzene	108-86-1		U	5.55	0.555
Bromochloromethane	74-97-5		U	5.55	0.555
Bromodichloromethane	75-27-4		U	5.55	0.555
Bromoform	75-25-2		U	5.55	0.555
Bromomethane	74-83-9		U	11.1	1.11
2-Butanone	78-93-3		U	11.1	2.77
n-Butylbenzene	104-51-8		U	5.55	0.555
sec-Butylbenzene	135-98-8		U	5.55	0.555
tert-Butylbenzene	98-06-6		U	5.55	0.555
Carbon disulfide	75-15-0		U	5.55	0.555
Carbon tetrachloride	56-23-5		U	5.55	0.555
Chlorobenzene	108-90-7		U	5.55	0.555
Chlorodibromomethane	124-48-1		U	5.55	0.555
Chloroethane	75-00-3		U	11.1	1.11
2-Chloroethyl vinyl ether	110-75-8		U	11.1	2.22
Chloroform	67-66-3		U	5.55	0.555
Chloromethane	74-87-3		U	11.1	2.22
2-Chlorotoluene	95-49-8		U	5.55	0.555
4-Chlorotoluene	106-43-4		U	5.55	0.555
1,2-Dibromo-3-chloropropane	96-12-8		U	5.55	2.22
1,2-Dibromoethane	106-93-4		U	5.55	0.555
Dibromomethane	74-95-3		U	5.55	0.555
1,2-Dichlorobenzene	95-50-1		U	5.55	0.555
1,3-Dichlorobenzene	541-73-1		U	5.55	0.555
1,4-Dichlorobenzene	106-46-7		U	5.55	0.555
Dichlorodifluoromethane	75-71-8		U	11.1	1.11
1,1-Dichloroethane	75-34-3		U	5.55	1.11
1,2-Dichloroethane	107-06-2		U	5.55	0.555
1,1-Dichloroethene	75-35-4		U	5.55	0.555
cis-1,2-Dichloroethene	156-59-2		U	5.55	0.555
trans-1,2-Dichloroethene	156-60-5		U	5.55	0.555
1,2-Dichloropropane	78-87-5		U	5.55	0.555
1,3-Dichloropropane	142-28-9		U	5.55	0.555
2,2-Dichloropropane	594-20-7		U	5.55	0.555
cis-1,3-Dichloropropene	10061-01-5		U	5.55	0.555
trans-1,3-Dichloropropene	10061-02-6		U	5.55	0.555
1,1-Dichloropropene	563-58-6		U	5.55	0.555
Ethylbenzene	100-41-4		U	5.55	0.555
2-Hexanone	591-78-6		U	11.1	2.77
Hexachlorobutadiene	87-68-3		U	5.55	0.555
Isopropylbenzene	98-82-8		U	5.55	0.555
p-Isopropyltoluene	99-87-6		U	5.55	0.555
4-Methyl-2-pentanone	108-10-1		U	11.1	2.77
Methylene chloride	75-09-2		U	5.55	1.11
Naphthalene	91-20-3		U	11.1	0.555
n-Propylbenzene	103-65-1		U	5.55	0.555
Styrene	100-42-5		U	5.55	0.555
1,1,1,2-Tetrachloroethane	630-20-6		U	5.55	0.555
1,1,2,2-Tetrachloroethane	79-34-5		U	5.55	0.555
Tetrachloroethene	127-18-4		U	5.55	0.555
Toluene	108-88-3		U	5.55	0.555
1,2,3-Trichlorobenzene	87-61-6		U	5.55	0.555
1,2,4-Trichlorobenzene	120-82-1		U	5.55	0.555
1,1,1-Trichloroethane	71-55-6		U	5.55	0.555
1,1,2-Trichloroethane	79-00-5		U	5.55	0.555
Trichloroethene	79-01-6		U	5.55	0.555
Trichlorofluoromethane	75-69-4		U	11.1	1.11

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108146

Sample Number: **L09080192-05**
Client ID: **SITE 3-ML-BF/TS**
Matrix: **Soil**
Workgroup Number: **WG309410**
Collect Date: **08/09/2009 12:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/11/2009 11:26**
Cal Date: **07/21/2009 17:04**
Run Date: **08/11/2009 17:08**
File ID: **9M71373**
Percent Solid: **88.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	5.55	1.11
1,2,4-Trimethylbenzene	95-63-6		U	5.55	0.555
1,3,5-Trimethylbenzene	108-67-8		U	5.55	0.555
Vinyl acetate	108-05-4		U	11.1	1.11
Vinyl chloride	75-01-4		U	11.1	1.11
o-Xylene	95-47-6		U	5.55	0.555
m-,p-Xylene	136777-61-2		U	5.55	0.555

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	108	80	120	
1,2-Dichloroethane-d4	110	80	120	
Toluene-d8	106	81	117	
4-Bromofluorobenzene	107	74	121	

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

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

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

where:

	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* 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 = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**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

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

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.
VOA Preparation/Preservation/Extraction Log

Batch #: WG309439
Method: 5030C/5035A

Analyst: FJB
Run Date: 08/11/2009 12:06
Purge and trap methanol COA14043
Sand Lot #: COA14045

SAMPLE #	Fraction	Collected	Preserved	PCT-S	Tare Wt	Total Wt	Sample Wt	Water	MeOH	Vt	Comments
L09080132-01	A	08/05/09 15:00	08/11/09 12:06	100			1.01		10	10	
L09080192-01	A	08/09/09 10:45	08/11/09 11:17				5.03	5		5	
L09080192-02	A	08/09/09 10:50	08/11/09 11:19				5.04	5		5	
L09080192-03	A	08/09/09 11:20	08/11/09 11:21				5.22	5		5	
L09080192-04	A	08/09/09 11:25	08/11/09 11:24				5.03	5		5	
L09080192-05	A	08/09/09 12:00	08/11/09 11:26				5.11	5		5	

Comments:
1 = improperly sealed cap
2 = preserved out of hold
3 = effervesced
4 = preserved with NaHSO4
5 = preserved by freezing
6 = preserved in field

Analyst: 

VOA_EXT - Modified 05/22/2008
PDF ID: 1463087
Report generated: 08/11/2009 15:57

00108151

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 072109
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29518

Internal Standard: STD34089 Surrogate Standard: STD33925
CCV: STD33088 LCS: STD33082 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG307576

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	9M70932	RINSE	NA	7	1		07/21/09 08:46
2	9M70933	RINSE	NA	7	1		07/21/09 09:17
3	9M70934	WG307576-01 50ng BFB STD 8260	NA	7	1	STD33918	07/21/09 09:43
4	9M70935	WG307576-01 50ng BFB STD 8260	NA	7	1	STD33918	07/21/09 09:58
5	9M70936	WG307576-02 0.5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 10:24
6	9M70937	WG307576-03 1ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 10:55
7	9M70938	WG307576-04 2ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 11:25
8	9M70939	WG307576-05 5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 11:56
9	9M70940	WG307576-06 20ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 12:27
10	9M70941	WG307576-07 50ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 12:58
11	9M70942	WG307576-08 100ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 13:29
12	9M70943	WG307576-09 200ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 14:00
13	9M70944	WG307576-10 300ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 14:31
14	9M70945	RINSE	NA	7	1	STD34088	07/21/09 15:01
15	9M70946	WG307576-04 2ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 15:32
16	9M70947	WG307576-05 5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 16:03
17	9M70948	WG307576-04 2ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 16:33
18	9M70949	WG307576-05 5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 17:04
19	9M70950	RINSE	NA	7	1		07/21/09 17:35
20	9M70951	RINSE	NA	7	1		07/21/09 18:06
21	9M70952	WG307576-11 20ug/Kg LCS STD 8260	NA	7	1	STD34082	07/21/09 18:37
22	9M70953	RINSE	NA	7	1		07/21/09 19:07

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 9M70934				
			Tune failed. DNR.	
7	X			
File ID: 9M70938				
			Replaced the trap and this point had low responces. DNR.	
8	X			
File ID: 9M70939				
			Replaced the trap and this point had low responces. DNR.	

Approved: July 22, 2009

Page: 1

00108152

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 072109

Analyst1: TMB Analyst2: NA

Method: 8260B SOP: MSV01 Rev: 13

Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29518

Internal Standard: STD34089 Surrogate Standard: STD33925

CCV: STD33088 LCS: STD33082 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG307576

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
15	X			
File ID: 9M70946				
			Archon added the ss. DNR.	
16	X			
File ID: 9M70947				
			Archon added the ss. DNR.	

Approved: July 22, 2009

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00108153

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 081109
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29756

Internal Standard: STD34089 Surrogate Standard: STD34431
CCV: STD34357 LCS: STD34517 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG309410; WG309425

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	9M71357	RINSE	NA	10	1		08/11/09 09:11
2	9M71358	WG309407-01 50ng BFB STD 8260	NA	7	1	STD34563	08/11/09 09:39
3	9M71359	WG309407-02 50ug/Kg CCV STD 8260	NA	7	1	STD34357	08/11/09 10:04
4	9M71360	WG309425-01 EXT BLK 100X 8260 5g/10m	NA	10	50		08/11/09 10:35
5	9M71361	WG309410-01 VBLK0810 BLANK 8260	NA	7	1		08/11/09 11:06
6	9M71362	WG309410-02 20ug/Kg LCS 8260	NA	7	1	STD34517	08/11/09 11:36
7	9M71363	WG309410-03 20ug/Kg LCSDUP 8260	NA	7	1	STD34517	08/11/09 12:06
8	9M71364	WG309425-02 EXT LCS 100X 8260 5g/10m	NA	10	50		08/11/09 12:37
9	9M71365	WG309425-03 EXT LCSDUP 100X 8260 5g/	NA	10	50		08/11/09 13:07
10	9M71366	L09080091-21 B 250X M1 8260 154g	NA	10	250		08/11/09 13:37
11	9M71367	L09080091-24 B 500X M1 8260 168.54g	NA	10	500		08/11/09 14:07
12	9M71368	L09080089-01 B 1000X M1 8260 151.45g	NA	10	1000		08/11/09 14:37
13	9M71369	L09080192-01 8260 5.03g	NA	7	1		08/11/09 15:07
14	9M71370	L09080192-02 8260 5.04g	NA	7	1		08/11/09 15:37
15	9M71371	L09080192-03 8260 5.22g	NA	7	1		08/11/09 16:07
16	9M71372	L09080192-04 8260 5.03g	NA	7	1		08/11/09 16:37
17	9M71373	L09080192-05 8260 5.11g	NA	7	1		08/11/09 17:08
18	9M71374	L09080091-48 A 50X 8260 143.01g	NA	10	50		08/11/09 17:38
19	9M71375	L09080089-09 A 50X 8260 151.33g	NA	10	50		08/11/09 18:08
20	9M71376	L09080089-10 A 50X 8260 153.87g	NA	10	50		08/11/09 18:39
21	9M71377	L09080089-11 A 50X 8260 171.52g	NA	10	50		08/11/09 19:10
22	9M71378	L09080089-12 A 50X 8260 144.99g	NA	10	50		08/11/09 19:41
23	9M71379	L09080089-13 A 50X 8260 173.05g	NA	10	50		08/11/09 20:11
24	9M71380	L09080089-14 A 50X 8260 174.61g	NA	10	50		08/11/09 20:42
25	9M71381	L09080089-15 A 50X 8260 154.82g	NA	10	50		08/11/09 21:12
26	9M71382	L09080132-01 10000X 8260 154.82g	NA	11	5000		08/11/09 21:43
27	9M71383	RINSE	NA	7	1		08/11/09 22:13
28	9M71384	RINSE	NA	7	1		08/11/09 22:43
29	9M71385	RINSE	NA	7	1		08/11/09 23:14
30	9M71386	RINSE	NA	7	1		08/11/09 23:44
31	9M71387	RINSE	NA	7	1		08/12/09 00:15
32	9M71388	RINSE	NA	7	1		08/12/09 00:46

Approved: August 12, 2009

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00108154

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 081109
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29756

Internal Standard: STD34089 Surrogate Standard: STD34431
CCV: STD34357 LCS: STD34517 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG309410; WG309425

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
19	X	2000	Over Calibration Range	TCE
File ID: 9M71375				
20	X	500	Over Calibration Range	CIS12DCE, TCE
File ID: 9M71376				
21	X	100	Carry-over contamination	
File ID: 9M71377				
DNR.				
22	X	1000	Over Calibration Range	CIS12DCE, TCE
File ID: 9M71378				
23	X	1000	Over Calibration Range	CIS12DCE, TCE
File ID: 9M71379				
24	X	1000	Over Calibration Range	CIS12DCE, TCE
File ID: 9M71380				
26	X	1000	Missed Tune	
File ID: 9M71382				
DNR.				

Approved: August 12, 2009

Page: 2

00108155

Microbac Laboratories Inc.

Data Checklist

Date: 21-JUL-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS9
Curve Workgroup: NA
Runlog ID: 29206
Analytical Workgroups: WG307576

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
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
Check the reasonableness of the results	X

Primary Reviewer:
22-JUL-2009
Tiffany Bailey

Secondary Reviewer:
22-JUL-2009

CHECKLIST1 - Modified 03/05/2008
Generated: JUL-22-2009 15:45:28

00108156

Microbac Laboratories Inc.

Data Checklist

Date: 11-AUG-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS9
Curve Workgroup: NA
Runlog ID: 29578
Analytical Workgroups: WG309410; WG309425

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
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
Check the reasonableness of the results	X

Primary Reviewer:
12-AUG-2009
Tiffany Bailey

Secondary Reviewer:
12-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 09:59:19

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108157

Analytical Method: 8260B AAB#: WG309410

Login Number: L09080192

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
SITE 1-TP-BF	01	08/09/09							14		08/11/09	2.2	14	
SITE 1-TP-TS	02	08/09/09							14		08/11/09	2.2	14	
SITE 2-BLM-TS	03	08/09/09							14		08/11/09	2.2	14	
SITE 2-BLM-BF	04	08/09/09							14		08/11/09	2.2	14	
SITE 3-ML-BF/TS	05	08/09/09							14		08/11/09	2.2	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1463982
Report generated 08/12/2009 11:06

Login Number: L09080192
Instrument Id: HPMS9
Workgroup (AAB#): WG309410

Method: 8260
CAL ID: HPMS9-21-JUL-09
Matrix: Soil

Sample Number	Dilution	Tag	1	2	3	4
L09080192-01	1.00	01	102	105	100	103
L09080192-02	1.00	01	107	108	109	106
L09080192-03	1.00	01	105	107	112	107
L09080192-04	1.00	01	101	100	106	101
L09080192-05	1.00	01	110	108	107	106
WG309410-01	1.00	01	101	99.8	97.8	97.0
WG309410-02	1.00	01	110	109	104	107
WG309410-03	1.00	01	107	106	104	106

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	80	-	120
3 - 4-Bromofluorobenzene	74	-	121
4 - Toluene-d8	81	-	117

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1463990
Report generated: 08/12/2009 11:07

00108159

METHOD BLANK SUMMARY

Login Number: L09080192
Work Group: WG309410
Blank File ID: 9M71361
Blank Sample ID: WG309410-01
Prep Date: 08/11/09 11:06
Instrument ID: HPMS9
Analyzed Date: 08/11/09 11:06
Method: 8260B
Analyst: TMB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309410-02	9M71362	08/11/09 11:36	01
LCS2	WG309410-03	9M71363	08/11/09 12:06	01
SITE 1-TP-BF	L09080192-01	9M71369	08/11/09 15:07	01
SITE 1-TP-TS	L09080192-02	9M71370	08/11/09 15:37	01
SITE 2-BLM-TS	L09080192-03	9M71371	08/11/09 16:07	01
SITE 2-BLM-BF	L09080192-04	9M71372	08/11/09 16:37	01
SITE 3-ML-BF/TS	L09080192-05	9M71373	08/11/09 17:08	01

Report Name: BLANK_SUMMARY
PDF File ID: 1463983
Report generated 08/12/2009 11:06

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108160

Login Number:L09080192 Prep Date:08/11/09 11:06 Sample ID:WG309410-01
Instrument ID:HPMS9 Run Date:08/11/09 11:06 Prep Method:5030C/5035A
File ID:9M71361 Analyst:TMB Method:8260B
Workgroup (AAB#):WG309410 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS9-21-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	5.00	10.0	5.00	1	U
Benzene	0.500	5.00	0.500	1	U
Bromobenzene	0.500	5.00	0.500	1	U
Bromochloromethane	0.500	5.00	0.500	1	U
Bromodichloromethane	0.500	5.00	0.500	1	U
Bromoform	0.500	5.00	0.500	1	U
Bromomethane	1.00	10.0	1.00	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.500	5.00	0.500	1	U
sec-Butylbenzene	0.500	5.00	0.500	1	U
tert-Butylbenzene	0.500	5.00	0.500	1	U
Carbon disulfide	0.500	5.00	0.500	1	U
Carbon tetrachloride	0.500	5.00	0.500	1	U
Chlorobenzene	0.500	5.00	0.500	1	U
Chlorodibromomethane	0.500	5.00	0.500	1	U
Chloroethane	1.00	10.0	1.00	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.500	5.00	0.500	1	U
Chloromethane	2.00	10.0	2.00	1	U
2-Chlorotoluene	0.500	5.00	0.500	1	U
4-Chlorotoluene	0.500	5.00	0.500	1	U
1,2-Dibromo-3-chloropropane	2.00	5.00	2.00	1	U
1,2-Dibromoethane	0.500	5.00	0.500	1	U
Dibromomethane	0.500	5.00	0.500	1	U
1,2-Dichlorobenzene	0.500	5.00	0.500	1	U
1,3-Dichlorobenzene	0.500	5.00	0.500	1	U
1,4-Dichlorobenzene	0.500	5.00	0.500	1	U
Dichlorodifluoromethane	1.00	10.0	1.00	1	U
1,1-Dichloroethane	1.00	5.00	1.00	1	U
1,2-Dichloroethane	0.500	5.00	0.500	1	U
1,1-Dichloroethene	0.500	5.00	0.500	1	U
cis-1,2-Dichloroethene	0.500	5.00	0.500	1	U
trans-1,2-Dichloroethene	0.500	5.00	0.500	1	U
1,2-Dichloropropane	0.500	5.00	0.500	1	U
1,3-Dichloropropane	0.500	5.00	0.500	1	U
2,2-Dichloropropane	0.500	5.00	0.500	1	U
cis-1,3-Dichloropropene	0.500	5.00	0.500	1	U
trans-1,3-Dichloropropene	0.500	5.00	0.500	1	U
1,1-Dichloropropene	0.500	5.00	0.500	1	U
Ethylbenzene	0.500	5.00	0.500	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.500	5.00	0.500	1	U

Report Name:BLANK
PDF ID: 1463984
12-AUG-2009 11:06

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108161

Login Number:L09080192 Prep Date:08/11/09 11:06 Sample ID:WG309410-01
Instrument ID:HPMS9 Run Date:08/11/09 11:06 Prep Method:5030C/5035A
File ID:9M71361 Analyst:TMB Method:8260B
Workgroup (AAB#):WG309410 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS9-21-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.500	5.00	0.500	1	U
p-Isopropyltoluene	0.500	5.00	0.500	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	1.00	5.00	1.00	1	U
Naphthalene	0.500	10.0	0.500	1	U
n-Propylbenzene	0.500	5.00	0.500	1	U
Styrene	0.500	5.00	0.500	1	U
1,1,1,2-Tetrachloroethane	0.500	5.00	0.500	1	U
1,1,2,2-Tetrachloroethane	0.500	5.00	0.500	1	U
Tetrachloroethene	0.500	5.00	0.500	1	U
Toluene	0.500	5.00	0.500	1	U
1,2,3-Trichlorobenzene	0.500	5.00	0.500	1	U
1,2,4-Trichlorobenzene	0.500	5.00	0.500	1	U
1,1,1-Trichloroethane	0.500	5.00	0.500	1	U
1,1,2-Trichloroethane	0.500	5.00	0.500	1	U
Trichloroethene	0.500	5.00	0.500	1	U
Trichlorofluoromethane	1.00	10.0	1.00	1	U
1,2,3-Trichloropropane	1.00	5.00	1.00	1	U
1,2,4-Trimethylbenzene	0.500	5.00	0.500	1	U
1,3,5-Trimethylbenzene	0.500	5.00	0.500	1	U
Vinyl acetate	1.00	10.0	1.00	1	U
Vinyl chloride	1.00	10.0	1.00	1	U
o-Xylene	0.500	5.00	0.500	1	U
m-,p-Xylene	0.500	5.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	99.8	80 - 120	PASS
1,2-Dichloroethane-d4	101	80 - 120	PASS
Toluene-d8	97.0	81 - 117	PASS
4-Bromofluorobenzene	97.8	74 - 121	PASS

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: 1463984
12-AUG-2009 11:06

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L09080192 Analyst: TMB Prep Method: 5030C/5035A
Instrument ID: HPMS9 Matrix: Soil Method: 8260B
Workgroup (AAB#): WG309410 Units: ug/kg
QC Key: STD Lot #:

Sample ID: WG309410-02 LCS File ID: 9M71362 Run Date: 08/11/2009 11:36
Sample ID: WG309410-03 LCS2 File ID: 9M71363 Run Date: 08/11/2009 12:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	21.7	109	20.0	20.1	101	7.76	20 - 160	30	
Benzene	20.0	22.1	110	20.0	21.3	106	3.69	70 - 130	30	
Bromobenzene	20.0	20.8	104	20.0	20.7	103	0.711	72 - 131	30	
Bromochloromethane	20.0	20.2	101	20.0	20.5	103	1.62	70 - 130	30	
Bromodichloromethane	20.0	22.2	111	20.0	21.3	107	3.93	72 - 137	30	
Bromoform	20.0	19.8	98.9	20.0	18.8	93.9	5.17	49 - 136	30	
Bromomethane	20.0	24.1	121	20.0	22.9	114	5.31	37 - 143	30	
2-Butanone	20.0	19.2	96.0	20.0	18.6	93.2	2.96	37 - 180	30	
n-Butylbenzene	20.0	19.4	97.0	20.0	18.8	94.0	3.13	70 - 136	30	
sec-Butylbenzene	20.0	21.5	107	20.0	20.8	104	3.22	71 - 132	30	
tert-Butylbenzene	20.0	21.6	108	20.0	20.5	102	5.03	72 - 130	30	
Carbon disulfide	20.0	18.4	92.2	20.0	18.4	92.1	0.0707	39 - 139	30	
Carbon tetrachloride	20.0	24.1	121	20.0	22.7	113	6.27	59 - 136	30	
Chlorobenzene	20.0	20.1	100	20.0	19.5	97.6	2.84	70 - 130	30	
Chlorodibromomethane	20.0	21.3	106	20.0	19.9	99.7	6.54	59 - 136	30	
Chloroethane	20.0	24.0	120	20.0	23.6	118	1.65	52 - 135	30	
2-Chloroethyl vinyl ether	20.0	17.0	85.0	20.0	17.2	85.9	1.01	35 - 154	30	
Chloroform	20.0	22.1	111	20.0	21.7	109	1.93	74 - 129	30	
Chloromethane	20.0	24.3	121	20.0	23.8	119	2.17	30 - 131	30	
2-Chlorotoluene	20.0	21.5	107	20.0	20.6	103	4.16	63 - 147	30	
4-Chlorotoluene	20.0	20.3	102	20.0	20.2	101	0.531	70 - 138	30	
1,2-Dibromo-3-chloropropane	20.0	17.9	89.3	20.0	15.7	78.4	13.1	40 - 135	30	
1,2-Dibromoethane	20.0	18.4	92.2	20.0	18.2	91.0	1.28	69 - 130	30	
Dibromomethane	20.0	21.4	107	20.0	20.9	105	1.94	69 - 130	30	
1,2-Dichlorobenzene	20.0	19.4	97.0	20.0	19.2	95.9	1.15	70 - 130	30	
1,3-Dichlorobenzene	20.0	19.8	98.9	20.0	19.3	96.6	2.45	70 - 130	30	
1,4-Dichlorobenzene	20.0	19.1	95.6	20.0	18.7	93.7	2.03	70 - 130	30	
Dichlorodifluoromethane	20.0	36.4	182	20.0	34.9	175	4.24	25 - 130	30	*
1,1-Dichloroethane	20.0	21.5	108	20.0	21.1	105	2.03	75 - 125	30	
1,2-Dichloroethane	20.0	21.9	109	20.0	20.6	103	5.84	63 - 133	30	
1,1-Dichloroethene	20.0	20.9	105	20.0	20.5	103	1.98	65 - 135	30	
cis-1,2-Dichloroethene	20.0	20.9	105	20.0	20.7	104	0.956	70 - 130	30	
trans-1,2-Dichloroethene	20.0	22.2	111	20.0	21.9	110	1.35	72 - 127	30	
1,2-Dichloropropane	20.0	20.9	104	20.0	20.6	103	1.03	72 - 130	30	
1,3-Dichloropropane	20.0	19.7	98.6	20.0	19.0	94.8	3.92	65 - 128	30	
2,2-Dichloropropane	20.0	22.3	111	20.0	21.7	108	2.87	66 - 135	30	
cis-1,3-Dichloropropene	20.0	20.8	104	20.0	20.1	100	3.74	70 - 142	30	
trans-1,3-Dichloropropene	20.0	17.9	89.4	20.0	17.6	88.0	1.57	65 - 139	30	
1,1-Dichloropropene	20.0	21.4	107	20.0	20.8	104	3.09	57 - 138	30	
Ethylbenzene	20.0	20.0	100	20.0	19.3	96.5	3.75	70 - 130	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1463903
Report generated: 08/12/2009 11:06

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108163

Login Number: L09080192 Analyst: TMB Prep Method: 5030C/5035A
Instrument ID: HPMS9 Matrix: Soil Method: 8260B
Workgroup (AAB#): WG309410 Units: ug/kg
QC Key: STD Lot #:

Sample ID: WG309410-02 LCS File ID: 9M71362 Run Date: 08/11/2009 11:36
Sample ID: WG309410-03 LCS2 File ID: 9M71363 Run Date: 08/11/2009 12:06

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	17.0	85.2	20.0	17.3	86.7	1.78	45 - 145	30	
Hexachlorobutadiene	20.0	18.2	90.9	20.0	18.8	93.9	3.22	65 - 135	30	
Isopropylbenzene	20.0	17.1	85.6	20.0	16.9	84.6	1.15	68 - 129	30	
p-Isopropyltoluene	20.0	18.5	92.3	20.0	18.2	90.9	1.43	72 - 128	30	
4-Methyl-2-pentanone	20.0	17.8	89.0	20.0	17.6	88.2	0.921	47 - 146	30	
Methylene chloride	20.0	20.4	102	20.0	20.5	103	0.809	74 - 128	30	
Naphthalene	20.0	15.0	74.9	20.0	16.4	82.1	9.15	50 - 146	30	
n-Propylbenzene	20.0	21.5	107	20.0	21.0	105	2.22	72 - 136	30	
Styrene	20.0	18.3	91.7	20.0	18.0	90.1	1.73	74 - 130	30	
1,1,1,2-Tetrachloroethane	20.0	21.1	105	20.0	20.6	103	2.30	71 - 137	30	
1,1,2,2-Tetrachloroethane	20.0	19.3	96.5	20.0	18.7	93.4	3.23	55 - 130	30	
Tetrachloroethene	20.0	20.3	102	20.0	20.1	101	0.913	72 - 130	30	
Toluene	20.0	22.0	110	20.0	21.2	106	3.69	77 - 126	30	
1,2,3-Trichlorobenzene	20.0	16.8	83.8	20.0	17.3	86.6	3.24	60 - 135	30	
1,2,4-Trichlorobenzene	20.0	15.8	79.2	20.0	16.5	82.4	3.95	65 - 130	30	
1,1,1-Trichloroethane	20.0	23.3	116	20.0	22.3	111	4.34	70 - 135	30	
1,1,2-Trichloroethane	20.0	19.8	98.9	20.0	19.7	98.4	0.533	60 - 125	30	
Trichloroethene	20.0	21.4	107	20.0	20.4	102	4.69	72 - 126	30	
Trichlorofluoromethane	20.0	23.4	117	20.0	22.2	111	5.51	48 - 154	30	
1,2,3-Trichloropropane	20.0	19.9	99.3	20.0	19.9	99.3	0.0733	65 - 130	30	
1,2,4-Trimethylbenzene	20.0	21.1	106	20.0	20.9	104	1.00	75 - 132	30	
1,3,5-Trimethylbenzene	20.0	19.7	98.4	20.0	19.4	96.8	1.64	74 - 133	30	
Vinyl acetate	20.0	13.6	68.1	20.0	13.6	68.1	0.0459	10 - 150	30	
Vinyl chloride	20.0	24.7	124	20.0	23.9	120	3.15	45 - 140	30	
o-Xylene	20.0	18.5	92.7	20.0	18.5	92.7	0.0611	70 - 130	30	
m-,p-Xylene	40.0	39.0	97.4	40.0	38.3	95.7	1.78	70 - 130	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	110	107	80 - 120	PASS
Dibromofluoromethane	109	106	80 - 120	PASS
4-Bromofluorobenzene	104	104	74 - 121	PASS
Toluene-d8	107	106	81 - 117	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1463903
Report generated: 08/12/2009 11:06

BFB

Login Number: L09080192
Instrument: HPMS9
Analyst: TMB
Workgroup: WG307576

Tune ID: WG307576-01
Run Date: 07/21/2009
Run Time: 09:58
File ID: 9M70935
Cal ID: HPMS9-21-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	20.2	2676	PASS
75.0	95.0	30.0	60.0	51.1	6786	PASS
95.0	95.0	100	100	100	13268	PASS
96.0	95.0	5.00	9.00	8.28	1099	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	78.4	10396	PASS
175	174	5.00	9.00	7.48	778	PASS
176	174	95.0	101	98.0	10193	PASS
177	176	5.00	9.00	6.00	612	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG307576-02	STD-S	01	07/21/2009 10:24	
WG307576-03	STD-S	01	07/21/2009 10:55	
WG307576-06	STD-S	01	07/21/2009 12:27	
WG307576-07	STD-CCV-S	01	07/21/2009 12:58	
WG307576-08	STD-S	01	07/21/2009 13:29	
WG307576-09	STD-S	01	07/21/2009 14:00	
WG307576-10	STD-S	01	07/21/2009 14:31	
WG307576-04	STD-S	01	07/21/2009 16:33	
WG307576-05	STD-S	01	07/21/2009 17:04	
WG307576-11	SSCV-S	01	07/21/2009 18:37	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1463987
Report generated 08/12/2009 11:07

BFB

Login Number: L09080192
Instrument: HPMS9
Analyst: TMB
Workgroup: WG309407

Tune ID: WG309407-01
Run Date: 08/11/2009
Run Time: 09:39
File ID: 9M71358
Cal ID: HPMS9-21-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	21.0	5259	PASS
75.0	95.0	30.0	60.0	49.4	12387	PASS
95.0	95.0	100	100	100	25077	PASS
96.0	95.0	5.00	9.00	7.32	1836	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	79.8	20000	PASS
175	174	5.00	9.00	8.13	1625	PASS
176	174	95.0	101	99.0	19795	PASS
177	176	5.00	9.00	6.70	1326	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG309407-02	CCV-S	01	08/11/2009 10:04	
WG309410-01	BLANK	01	08/11/2009 11:06	
WG309410-02	LCS	01	08/11/2009 11:36	
WG309410-03	LCS2	01	08/11/2009 12:06	
L09080192-01	SITE 1-TP-BF	01	08/11/2009 15:07	
L09080192-02	SITE 1-TP-TS	01	08/11/2009 15:37	
L09080192-03	SITE 2-BLM-TS	01	08/11/2009 16:07	
L09080192-04	SITE 2-BLM-BF	01	08/11/2009 16:37	
L09080192-05	SITE 3-ML-BF/TS	01	08/11/2009 17:08	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1463987
Report generated 08/12/2009 11:07

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00108166

Login Number: L09080192
Analytical Method: 8260B
ICAL Workgroup: WG307576

Instrument ID: HPMS9
Initial Calibration Date: 21-JUL-09 17:04
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4879	6.65		
1,2-Dichloropropane	CCC	0.2381	4.54		
Chloroform	CCC	0.5271	4.64		
Ethylbenzene	CCC	0.5329	18.4	1.00000	
Toluene	CCC	1.463	12.0		
Vinyl Chloride	CCC	0.1506	12.1		
1,1,2,2-Tetrachloroethane	SPCC	0.5939	6.47		
1,1-Dichloroethane	SPCC	0.5328	3.09		
Bromoform	SPCC	0.1856	9.99		
Chlorobenzene	SPCC	1.075	3.25		
Chloromethane	SPCC	0.2650	4.29		
1,1,1,2-Tetrachloroethane		0.3640	6.04		
1,1,1-Trichloroethane		0.5090	8.15		
1,1,2-Trichloroethane		0.2546	2.66		
1,1-Dichloropropene		0.4085	11.5		
1,2,3-Trichlorobenzene		0.7563	7.06		
1,2,3-Trichloropropane		0.1992	5.99		
1,2,4-Trichlorobenzene		0.8623	10.4		
1,2,4-Trimethylbenzene		2.972	9.46		
1,2-Dibromo-3-Chloropropane		0.1028	13.4		
1,2-Dibromoethane		0.2606	5.27		
1,2-Dichlorobenzene		1.460	2.55		
1,2-Dichloroethane		0.3707	5.81		
1,3,5-Trimethylbenzene		2.860	15.2		1.00000
1,3-Dichlorobenzene		1.720	3.20		
1,3-Dichloropropane		0.4272	4.55		
1,4-Dichlorobenzene		1.741	5.31		
2,2-Dichloropropane		0.4657	9.73		
2-Butanone		0.07815	5.91		
2-Chloroethyl Vinyl Ether		0.08868	20.4		0.99900
2-Chlorotoluene		2.944	6.23		
2-Hexanone		0.1344	8.51		
4-Chlorotoluene		2.388	5.19		
4-Methyl-2-Pentanone		0.05630	12.1		
Acetone		0.06087	18.7		0.99900
Benzene		1.090	8.37		
Bromobenzene		0.9133	2.45		
Bromochloromethane		0.1336	6.20		
Bromodichloromethane		0.3449	6.62		
Bromomethane		0.1381	11.6		
Carbon Disulfide		0.9563	4.57		
Carbon Tetrachloride		0.4695	8.98		
Chloroethane		0.1404	7.06		
Dibromochloromethane		0.3199	10.3		
Dibromomethane		0.1452	4.19		

INT_CAL - Modified 03/06/2008
PDF File ID: 1463985
Report generated 08/12/2009 11:07

Login Number: L09080192 **Instrument ID:** HPMS9
Analytical Method: 8260B **Initial Calibration Date:** 21-JUL-09 17:04
ICAL Workgroup: WG307576 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Dichlorodifluoromethane		0.3425	7.56		
Hexachlorobutadiene		0.5219	3.50		
Isopropylbenzene		1.708	15.7		1.00000
Methylene Chloride		0.2936	19.2		1.00000
Naphthalene		1.421	20.1	0.99900	
Styrene		1.019	16.2		1.00000
Tetrachloroethene		0.3612	5.70		
Trichloroethene		0.3216	6.93		
Trichlorofluoromethane		0.6042	6.39		
Vinyl Acetate		0.3953	13.4		
cis-1,2-Dichloroethene		0.3030	5.50		
cis-1,3-Dichloropropene		0.3547	13.3		
m-,p-Xylene		0.6476	16.7		1.00000
n-Butylbenzene		2.645	16.2	1.00000	
n-Propylbenzene		4.054	12.6		
o-Xylene		0.5456	28.0	1.00000	
p-Isopropyltoluene		3.165	16.1	0.99900	
sec-Butylbenzene		3.878	13.3		
tert-Butylbenzene		0.6553	12.0		
trans-1,2-Dichloroethene		0.2977	5.31		
trans-1,3-Dichloropropene		0.4668	11.2		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 1463985
Report generated 08/12/2009 11:07

Login Number: L09080192 **Instrument ID:** HPMS9
Analytical Method: 8260B **Initial Calibration Date:** 21-JUL-09 17:04
Column ID: F

Analyte	WG307576-02			WG307576-03			WG307576-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	2.00	15930.0000	0.4534
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	2.00	7835.00000	0.2230
Chloroform	NA	NA	NA	NA	NA	NA	2.00	17953.0000	0.5110
Ethylbenzene	0.500	2122.00000	0.3629	1.00	5470.00000	0.4580	2.00	13072.0000	0.5007
Toluene	0.500	7051.00000	1.206	1.00	14562.0000	1.219	2.00	36863.0000	1.412
Vinyl Chloride	NA	NA	NA	NA	NA	NA	2.00	5676.00000	0.1616
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	2.00	7511.00000	0.6340
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	2.00	18400.0000	0.5237
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA	NA	2.00	28857.0000	1.105
Chloromethane	NA	NA	NA	NA	NA	NA	2.00	9428.00000	0.2684
1,1,1,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	2.00	8807.00000	0.3373
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	2.00	16403.0000	0.4669
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	2.00	6622.00000	0.2536
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	2.00	11725.0000	0.3337
1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	8182.00000	0.6906
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	2.00	2435.00000	0.2055
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	9218.00000	0.7781
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	2.00	29471.0000	2.488
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	2.00	6638.00000	0.2542
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	17402.0000	1.469
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	2.00	13284.0000	0.3781
1,3,5-Trimethylbenzene	NA	NA	NA	NA	NA	NA	2.00	25033.0000	2.113
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	20915.0000	1.765
1,3-Dichloropropane	NA	NA	NA	NA	NA	NA	2.00	10704.0000	0.4100
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	22284.0000	1.881
2,2-Dichloropropane	NA	NA	NA	NA	NA	NA	2.00	14646.0000	0.4169
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	NA	NA	NA	2.00	31213.0000	2.635
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	NA	NA	NA	2.00	26458.0000	2.233
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.500	7079.00000	0.8804	1.00	17539.0000	1.073	2.00	39872.0000	1.135
Bromobenzene	NA	NA	NA	NA	NA	NA	2.00	10665.0000	0.9002
Bromochloromethane	NA	NA	NA	NA	NA	NA	2.00	4163.00000	0.1185
Bromodichloromethane	NA	NA	NA	NA	NA	NA	2.00	10963.0000	0.3120
Bromomethane	NA	NA	NA	NA	NA	NA	2.00	4106.00000	0.1169
Carbon Disulfide	NA	NA	NA	NA	NA	NA	2.00	33013.0000	0.9397
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	2.00	14481.0000	0.4122

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Login Number: L09080192 **Instrument ID:** HPMS9
Analytical Method: 8260B **Initial Calibration Date:** 21-JUL-09 17:04
Column ID: F

Analyte	WG307576-05			WG307576-06			WG307576-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	5.00	38920.0000	0.4406	20.0	169232.000	0.5078	50.0	447858.000	0.5153
1,2-Dichloropropane	5.00	20014.0000	0.2266	20.0	80191.0000	0.2406	50.0	217010.000	0.2497
Chloroform	5.00	43670.0000	0.4944	20.0	185407.000	0.5564	50.0	479416.000	0.5516
Ethylbenzene	5.00	36464.0000	0.5567	20.0	150705.000	0.6095	50.0	408583.000	0.6281
Toluene	5.00	94304.0000	1.440	20.0	399876.000	1.617	50.0	1061783.00	1.632
Vinyl Chloride	5.00	14359.0000	0.1625	20.0	55531.0000	0.1666	50.0	133665.000	0.1538
1,1,2,2-Tetrachloroethane	5.00	18194.0000	0.6001	20.0	71161.0000	0.6172	50.0	189616.000	0.6094
1,1-Dichloroethane	5.00	45390.0000	0.5138	20.0	184821.000	0.5546	50.0	476449.000	0.5481
Bromoform	5.00	10251.0000	0.1565	20.0	46790.0000	0.1892	50.0	131538.000	0.2022
Chlorobenzene	5.00	69816.0000	1.066	20.0	273020.000	1.104	50.0	713457.000	1.097
Chloromethane	5.00	22776.0000	0.2578	20.0	93066.0000	0.2793	50.0	238382.000	0.2743
1,1,1,2-Tetrachloroethane	5.00	22133.0000	0.3379	20.0	94060.0000	0.3804	50.0	250618.000	0.3853
1,1,1-Trichloroethane	5.00	39948.0000	0.4522	20.0	185095.000	0.5554	50.0	471603.000	0.5426
1,1,2-Trichloroethane	5.00	16244.0000	0.2480	20.0	63749.0000	0.2578	50.0	170705.000	0.2624
1,1-Dichloropropene	5.00	32352.0000	0.3662	20.0	146247.000	0.4389	50.0	385229.000	0.4432
1,2,3-Trichlorobenzene	5.00	21826.0000	0.7198	20.0	82933.0000	0.7193	50.0	243089.000	0.7813
1,2,3-Trichloropropane	5.00	5929.00000	0.1955	20.0	23951.0000	0.2077	50.0	65793.0000	0.2115
1,2,4-Trichlorobenzene	5.00	23573.0000	0.7775	20.0	91641.0000	0.7948	50.0	280780.000	0.9024
1,2,4-Trimethylbenzene	5.00	84474.0000	2.786	20.0	368534.000	3.196	50.0	970527.000	3.119
1,2-Dibromo-3-Chloropropane	5.00	2427.00000	0.08000	20.0	11464.0000	0.09940	50.0	34895.0000	0.1122
1,2-Dibromoethane	5.00	15496.0000	0.2366	20.0	65176.0000	0.2636	50.0	176177.000	0.2708
1,2-Dichlorobenzene	5.00	43283.0000	1.428	20.0	172285.000	1.494	50.0	465972.000	1.498
1,2-Dichloroethane	5.00	31856.0000	0.3606	20.0	131989.000	0.3961	50.0	336384.000	0.3870
1,3,5-Trimethylbenzene	5.00	77368.0000	2.552	20.0	363140.000	3.150	50.0	967267.000	3.109
1,3-Dichlorobenzene	5.00	50630.0000	1.670	20.0	205514.000	1.783	50.0	539110.000	1.733
1,3-Dichloropropane	5.00	26119.0000	0.3987	20.0	107642.000	0.4354	50.0	290501.000	0.4466
1,4-Dichlorobenzene	5.00	53906.0000	1.778	20.0	204392.000	1.773	50.0	534139.000	1.717
2,2-Dichloropropane	5.00	35260.0000	0.3992	20.0	161920.000	0.4859	50.0	433752.000	0.4990
2-Butanone	5.00	7433.00000	0.08410	20.0	25573.0000	0.07670	50.0	69214.0000	0.07960
2-Chloroethyl Vinyl Ether	5.00	5474.00000	0.06200	20.0	23372.0000	0.07010	50.0	81830.0000	0.09410
2-Chlorotoluene	5.00	88943.0000	2.933	20.0	365071.000	3.166	50.0	950121.000	3.054
2-Hexanone	5.00	7733.00000	0.1181	20.0	31418.0000	0.1271	50.0	94012.0000	0.1445
4-Chlorotoluene	5.00	68136.0000	2.247	20.0	288492.000	2.502	50.0	769573.000	2.473
4-Methyl-2-Pentanone	5.00	4087.00000	0.04630	20.0	16914.0000	0.05080	50.0	53653.0000	0.06170
Acetone	5.00	7275.00000	0.08240	20.0	20885.0000	0.06270	50.0	51518.0000	0.05930
Benzene	5.00	97337.0000	1.102	20.0	386358.000	1.159	50.0	1012312.00	1.165
Bromobenzene	5.00	27462.0000	0.9057	20.0	108866.000	0.9442	50.0	288930.000	0.9286
Bromochloromethane	5.00	11905.0000	0.1348	20.0	45814.0000	0.1375	50.0	123404.000	0.1420
Bromodichloromethane	5.00	28387.0000	0.3213	20.0	119263.000	0.3579	50.0	319558.000	0.3676
Bromomethane	5.00	10438.0000	0.1182	20.0	49140.0000	0.1475	50.0	131250.000	0.1510
Carbon Disulfide	5.00	77880.0000	0.8816	20.0	324189.000	0.9728	50.0	873544.000	1.005
Carbon Tetrachloride	5.00	37322.0000	0.4225	20.0	171634.000	0.5150	50.0	430955.000	0.4958

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Analytical Method: 8260B **Initial Calibration Date:** 21-JUL-09 17:04
Column ID: F

Analyte	WG307576-08			WG307576-09			WG307576-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	100	955181.000	0.5122	200	1850439.00	0.4980	NA	NA	NA
1,2-Dichloropropane	100	459400.000	0.2463	200	899718.000	0.2421	NA	NA	NA
Chloroform	100	996532.000	0.5343	200	1912711.00	0.5147	NA	NA	NA
Ethylbenzene	100	846142.000	0.6147	NA	NA	NA	NA	NA	NA
Toluene	100	2218478.00	1.612	200	4172496.00	1.568	NA	NA	NA
Vinyl Chloride	100	261522.000	0.1402	200	441433.000	0.1188	NA	NA	NA
1,1,2,2-Tetrachloroethane	100	370514.000	0.5769	200	642306.000	0.5257	NA	NA	NA
1,1-Dichloroethane	100	1001882.00	0.5372	200	1929767.00	0.5193	NA	NA	NA
Bromoform	100	275245.000	0.1999	200	478863.000	0.1800	NA	NA	NA
Chlorobenzene	100	1465433.00	1.065	200	2699613.00	1.015	NA	NA	NA
Chloromethane	100	488375.000	0.2619	200	922112.000	0.2481	NA	NA	NA
1,1,1,2-Tetrachloroethane	100	524772.000	0.3812	200	963399.000	0.3621	NA	NA	NA
1,1,1-Trichloroethane	100	982209.000	0.5267	200	1895064.00	0.5100	NA	NA	NA
1,1,2-Trichloroethane	100	357878.000	0.2600	200	653207.000	0.2455	NA	NA	NA
1,1-Dichloropropene	100	823651.000	0.4416	200	1587542.00	0.4272	NA	NA	NA
1,2,3-Trichlorobenzene	100	526743.000	0.8202	200	985635.000	0.8067	NA	NA	NA
1,2,3-Trichloropropane	100	126026.000	0.1962	200	218181.000	0.1786	NA	NA	NA
1,2,4-Trichlorobenzene	100	622270.000	0.9689	200	1163338.00	0.9521	NA	NA	NA
1,2,4-Trimethylbenzene	100	2049348.00	3.191	200	3726555.00	3.050	NA	NA	NA
1,2-Dibromo-3-Chloropropane	100	72256.0000	0.1125	200	134153.000	0.1098	NA	NA	NA
1,2-Dibromoethane	100	378213.000	0.2747	200	701933.000	0.2638	NA	NA	NA
1,2-Dichlorobenzene	100	942598.000	1.468	200	1715654.00	1.404	NA	NA	NA
1,2-Dichloroethane	100	684462.000	0.3670	200	1246662.00	0.3355	NA	NA	NA
1,3,5-Trimethylbenzene	100	2044778.00	3.184	200	3727444.00	3.051	NA	NA	NA
1,3-Dichlorobenzene	100	1108982.00	1.727	200	2003690.00	1.640	NA	NA	NA
1,3-Dichloropropane	100	613243.000	0.4455	200	1135426.00	0.4267	NA	NA	NA
1,4-Dichlorobenzene	100	1087098.00	1.693	200	1964192.00	1.608	NA	NA	NA
2,2-Dichloropropane	100	933391.000	0.5005	200	1830694.00	0.4926	NA	NA	NA
2-Butanone	100	150156.000	0.08050	200	261410.000	0.07030	300	446185.000	0.07770
2-Chloroethyl Vinyl Ether	100	192125.000	0.1030	200	368791.000	0.09920	300	595325.000	0.1037
2-Chlorotoluene	100	1933005.00	3.010	200	3498145.00	2.863	NA	NA	NA
2-Hexanone	100	201886.000	0.1467	200	342674.000	0.1288	300	571366.000	0.1414
4-Chlorotoluene	100	1605775.00	2.500	200	2899090.00	2.373	NA	NA	NA
4-Methyl-2-Pentanone	100	118248.000	0.06340	200	204690.000	0.05510	300	347278.000	0.06050
Acetone	100	106412.000	0.05710	200	192507.000	0.05180	300	298130.000	0.05190
Benzene	100	2100507.00	1.126	200	4007096.00	1.078	NA	NA	NA
Bromobenzene	100	590759.000	0.9199	200	1076506.00	0.8811	NA	NA	NA
Bromochloromethane	100	257501.000	0.1381	200	486108.000	0.1308	NA	NA	NA
Bromodichloromethane	100	673497.000	0.3611	200	1298225.00	0.3494	NA	NA	NA
Bromomethane	100	274854.000	0.1474	200	547644.000	0.1474	NA	NA	NA
Carbon Disulfide	100	1842308.00	0.9878	200	3532407.00	0.9506	NA	NA	NA
Carbon Tetrachloride	100	919312.000	0.4929	200	1777829.00	0.4784	NA	NA	NA

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Analytical Method: 8260B **Initial Calibration Date:** 21-JUL-09 17:04
Column ID: F

Analyte	WG307576-02			WG307576-03			WG307576-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	2.00	4358.00000	0.1240
Dibromochloromethane	NA	NA	NA	NA	NA	NA	2.00	7139.00000	0.2734
Dibromomethane	NA	NA	NA	NA	NA	NA	2.00	4958.00000	0.1411
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	2.00	10983.0000	0.3126
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	2.00	5851.00000	0.4939
Isopropylbenzene	NA	NA	NA	NA	NA	NA	2.00	33115.0000	1.268
Methylene Chloride	NA	NA	NA	NA	NA	NA	2.00	14122.0000	0.4020
Naphthalene	NA	NA	NA	NA	NA	NA	2.00	12530.0000	1.058
Styrene	NA	NA	NA	NA	NA	NA	2.00	19582.0000	0.7500
Tetrachloroethene	NA	NA	NA	NA	NA	NA	2.00	8637.00000	0.3308
Trichloroethene	NA	NA	NA	NA	NA	NA	2.00	10449.0000	0.2974
Trichlorofluoromethane	NA	NA	NA	NA	NA	NA	2.00	19507.0000	0.5552
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	2.00	9749.00000	0.2775
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	2.00	10490.0000	0.2986
m-,p-Xylene	1.00	5418.00000	0.4633	2.00	12231.0000	0.5121	4.00	32716.0000	0.6265
n-Butylbenzene	NA	NA	NA	NA	NA	NA	2.00	22913.0000	1.934
n-Propylbenzene	NA	NA	NA	NA	NA	NA	2.00	38174.0000	3.222
o-Xylene	0.500	1845.00000	0.3155	1.00	4228.00000	0.3540	2.00	12450.0000	0.4769
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	2.00	26994.0000	2.279
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	2.00	35430.0000	2.991
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	2.00	5973.00000	0.5042
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	2.00	9892.00000	0.2816
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	2.00	10503.0000	0.4023

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Column ID: F

Analyte	WG307576-05			WG307576-06			WG307576-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	5.00	12107.0000	0.1371	20.0	50895.0000	0.1527	50.0	126863.000	0.1460
Dibromochloromethane	5.00	18665.0000	0.2849	20.0	80382.0000	0.3251	50.0	226237.000	0.3478
Dibromomethane	5.00	12116.0000	0.1372	20.0	49586.0000	0.1488	50.0	132352.000	0.1523
Dichlorodifluoromethane	5.00	29381.0000	0.3326	20.0	127729.000	0.3833	50.0	312373.000	0.3594
Hexachlorobutadiene	5.00	15388.0000	0.5075	20.0	61599.0000	0.5343	50.0	161679.000	0.5196
Isopropylbenzene	5.00	97336.0000	1.486	20.0	461108.000	1.865	50.0	1244723.00	1.914
Methylene Chloride	5.00	26968.0000	0.3053	20.0	91449.0000	0.2744	50.0	233480.000	0.2686
Naphthalene	5.00	35114.0000	1.158	20.0	151435.000	1.313	50.0	488641.000	1.571
Styrene	5.00	57954.0000	0.8847	20.0	266787.000	1.079	50.0	756692.000	1.163
Tetrachloroethene	5.00	22330.0000	0.3409	20.0	94544.0000	0.3824	50.0	243392.000	0.3742
Trichloroethene	5.00	25592.0000	0.2897	20.0	110188.000	0.3307	50.0	295172.000	0.3396
Trichlorofluoromethane	5.00	50733.0000	0.5743	20.0	218390.000	0.6553	50.0	554391.000	0.6378
Vinyl Acetate	5.00	27158.0000	0.3074	20.0	124810.000	0.3745	50.0	327706.000	0.3770
cis-1,2-Dichloroethene	5.00	25352.0000	0.2870	20.0	104249.000	0.3128	50.0	276671.000	0.3183
cis-1,3-Dichloropropene	5.00	26143.0000	0.2959	20.0	118172.000	0.3546	50.0	341774.000	0.3932
m-,p-Xylene	10.0	86981.0000	0.6639	40.0	371724.000	0.7517	100	970003.000	0.7456
n-Butylbenzene	5.00	69748.0000	2.300	20.0	332937.000	2.888	50.0	885031.000	2.845
n-Propylbenzene	5.00	110056.000	3.630	20.0	512926.000	4.449	50.0	1351830.00	4.345
o-Xylene	5.00	33969.0000	0.5186	20.0	162441.000	0.6570	50.0	448923.000	0.6902
p-Isopropyltoluene	5.00	85411.0000	2.817	20.0	398275.000	3.454	50.0	1068157.00	3.433
sec-Butylbenzene	5.00	106570.000	3.515	20.0	485067.000	4.207	50.0	1287932.00	4.140
tert-Butylbenzene	5.00	19247.0000	0.6348	20.0	81394.0000	0.7060	50.0	213475.000	0.6861
trans-1,2-Dichloroethene	5.00	24236.0000	0.2744	20.0	103983.000	0.3120	50.0	268148.000	0.3085
trans-1,3-Dichloropropene	5.00	26147.0000	0.3992	20.0	119902.000	0.4849	50.0	332547.000	0.5112

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Instrument ID: HPMS9
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Column ID: F

Analyte	WG307576-08			WG307576-09			WG307576-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	100	270495.000	0.1450	200	511416.000	0.1376	NA	NA	NA
Dibromochloromethane	100	484131.000	0.3517	200	895138.000	0.3364	NA	NA	NA
Dibromomethane	100	280202.000	0.1502	200	525159.000	0.1413	NA	NA	NA
Dichlorodifluoromethane	100	643368.000	0.3450	200	1197457.00	0.3222	NA	NA	NA
Hexachlorobutadiene	100	344851.000	0.5370	200	658682.000	0.5391	NA	NA	NA
Isopropylbenzene	100	2628226.00	1.909	200	4797485.00	1.803	NA	NA	NA
Methylene Chloride	100	489285.000	0.2624	200	925816.000	0.2491	NA	NA	NA
Naphthalene	100	1112667.00	1.733	200	2068953.00	1.693	NA	NA	NA
Styrene	100	1580531.00	1.148	200	2897317.00	1.089	NA	NA	NA
Tetrachloroethene	100	513859.000	0.3733	200	973182.000	0.3657	NA	NA	NA
Trichloroethene	100	636273.000	0.3412	200	1230402.00	0.3311	NA	NA	NA
Trichlorofluoromethane	100	1147459.00	0.6153	200	2181829.00	0.5871	NA	NA	NA
Vinyl Acetate	100	835870.000	0.4482	200	1601978.00	0.4311	300	2490804.00	0.4338
cis-1,2-Dichloroethene	100	585764.000	0.3141	200	1145372.00	0.3082	NA	NA	NA
cis-1,3-Dichloropropene	100	747374.000	0.4007	200	1432021.00	0.3854	NA	NA	NA
m-,p-Xylene	200	2008317.00	0.7294	400	3661090.00	0.6880	NA	NA	NA
n-Butylbenzene	100	1926311.00	2.999	200	3548169.00	2.904	NA	NA	NA
n-Propylbenzene	100	2854393.00	4.445	200	5174234.00	4.235	NA	NA	NA
o-Xylene	100	945832.000	0.6871	200	1771225.00	0.6657	NA	NA	NA
p-Isopropyltoluene	100	2296688.00	3.576	200	4190800.00	3.430	NA	NA	NA
sec-Butylbenzene	100	2757358.00	4.294	200	5038873.00	4.124	NA	NA	NA
tert-Butylbenzene	100	455203.000	0.7088	200	845184.000	0.6917	NA	NA	NA
trans-1,2-Dichloroethene	100	574009.000	0.3078	200	1122656.00	0.3021	NA	NA	NA
trans-1,3-Dichloropropene	100	706514.000	0.5132	200	1303268.00	0.4898	NA	NA	NA

INT_CAL - Modified 03/06/2008
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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108174

Login Number: L09080192 Run Date: 07/21/2009 Sample ID: WG307576-11
Instrument ID: HPMS9 Run Time: 18:37 Method: 8260B
File ID: 9M70952 Analyst: TMB QC Key: STD
ICal Workgroup: WG307576 Cal ID: HPMS9 - 21-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.8	ug/kg	0.547	3.80	30	
1,1-Dichloroethene	CCC	20.0	18.8	ug/kg	0.458	6.00	30	
1,2-Dichloropropane	CCC	20.0	20.2	ug/kg	0.241	1.20	30	
Ethylbenzene	CCC	20.0	20.8	ug/kg	0.636	4.00	30	
Toluene	CCC	20.0	22.0	ug/kg	1.61	10.1	30	
Vinyl Chloride	CCC	20.0	20.2	ug/kg	0.152	1.20	30	
Bromoform	SPCC	20.0	19.6	ug/kg	0.182	2.20	30	
Chlorobenzene	SPCC	20.0	20.5	ug/kg	1.10	2.70	30	
Chloromethane	SPCC	20.0	19.4	ug/kg	0.257	3.10	30	
1,1-Dichloroethane	SPCC	20.0	19.8	ug/kg	0.527	1.20	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	19.8	ug/kg	0.588	1.10	30	
Acetone		20.0	21.5	ug/kg	0.0689	7.70	30	
Benzene		20.0	20.7	ug/kg	1.13	3.70	30	
Bromobenzene		20.0	21.4	ug/kg	0.979	7.20	30	
Bromochloromethane		20.0	19.5	ug/kg	0.131	2.30	30	
Bromodichloromethane		20.0	21.0	ug/kg	0.362	4.80	30	
Bromomethane		20.0	20.1	ug/kg	0.138	0.300	30	
2-Butanone		20.0	20.2	ug/kg	0.0788	0.800	30	
n-Butylbenzene		20.0	20.1	ug/kg	2.88	0.600	30	
sec-Butylbenzene		20.0	22.3	ug/kg	4.32	11.4	30	
tert-Butylbenzene		20.0	22.1	ug/kg	0.725	10.7	30	
Carbon Disulfide		20.0	18.3	ug/kg	0.874	8.60	30	
Carbon Tetrachloride		20.0	20.0	ug/kg	0.470	0.100	30	
Dibromochloromethane		20.0	20.3	ug/kg	0.324	1.40	30	
Chloroethane		20.0	19.9	ug/kg	0.140	0.600	30	
2-Chloroethyl Vinyl Ether		20.0	18.4	ug/kg	0.0772	7.90	30	
2-Chlorotoluene		20.0	22.0	ug/kg	3.24	10.0	30	
4-Chlorotoluene		20.0	21.3	ug/kg	2.54	6.40	30	
1,2-Dibromo-3-Chloropropane		20.0	18.7	ug/kg	0.0963	6.30	30	
1,2-Dibromoethane		20.0	19.6	ug/kg	0.256	1.90	30	
Dibromomethane		20.0	20.8	ug/kg	0.151	4.00	30	
1,2-Dichlorobenzene		20.0	20.9	ug/kg	1.53	4.50	30	
1,3-Dichlorobenzene		20.0	20.7	ug/kg	1.78	3.50	30	
1,4-Dichlorobenzene		20.0	20.0	ug/kg	1.74	0.100	30	
Dichlorodifluoromethane		20.0	27.3	ug/kg	0.467	36.3	30	*
1,2-Dichloroethane		20.0	19.9	ug/kg	0.368	0.600	30	
cis-1,2-Dichloroethene		20.0	19.9	ug/kg	0.302	0.500	30	
trans-1,2-Dichloroethene		20.0	22.2	ug/kg	0.330	10.9	30	
1,3-Dichloropropane		20.0	20.2	ug/kg	0.432	1.10	30	
2,2-Dichloropropane		20.0	18.5	ug/kg	0.432	7.30	30	
cis-1,3-Dichloropropene		20.0	20.2	ug/kg	0.358	0.900	30	
trans-1,3-Dichloropropene		20.0	17.8	ug/kg	0.416	11.0	30	

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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108175

Login Number: L09080192 Run Date: 07/21/2009 Sample ID: WG307576-11
Instrument ID: HPMS9 Run Time: 18:37 Method: 8260B
File ID: 9M70952 Analyst: TMB QC Key: STD
ICal Workgroup: WG307576 Cal ID: HPMS9 - 21-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	19.9	ug/kg	0.406	0.500	30	
2-Hexanone		20.0	19.0	ug/kg	0.128	4.80	30	
Hexachlorobutadiene		20.0	20.2	ug/kg	0.528	1.10	30	
Isopropylbenzene		20.0	18.1	ug/kg	1.70	9.70	30	
p-Isopropyltoluene		20.0	19.7	ug/kg	3.39	1.70	30	
4-Methyl-2-Pentanone		20.0	17.9	ug/kg	0.0503	10.6	30	
Methylene Chloride		20.0	18.8	ug/kg	0.262	6.10	30	
Naphthalene		20.0	17.8	ug/kg	1.33	10.9	30	
n-Propylbenzene		20.0	22.0	ug/kg	4.47	10.2	30	
Styrene		20.0	19.6	ug/kg	1.11	2.00	30	
1,1,1,2-Tetrachloroethane		20.0	21.1	ug/kg	0.384	5.60	30	
Tetrachloroethene		20.0	20.5	ug/kg	0.369	2.30	30	
1,2,3-Trichlorobenzene		20.0	19.4	ug/kg	0.734	2.90	30	
1,2,4-Trichlorobenzene		20.0	18.3	ug/kg	0.790	8.40	30	
1,1,1-Trichloroethane		20.0	20.3	ug/kg	0.517	1.50	30	
1,1,2-Trichloroethane		20.0	20.4	ug/kg	0.260	2.00	30	
Trichloroethene		20.0	20.5	ug/kg	0.330	2.50	30	
Trichlorofluoromethane		20.0	19.5	ug/kg	0.589	2.60	30	
1,2,3-Trichloropropane		20.0	20.3	ug/kg	0.202	1.40	30	
1,2,4-Trimethylbenzene		20.0	22.0	ug/kg	3.27	10.1	30	
1,3,5-Trimethylbenzene		20.0	20.5	ug/kg	3.20	2.70	30	
Vinyl Acetate		20.0	7.20	ug/kg	0.142	64.0	40	*
o-Xylene		20.0	20.0	ug/kg	0.668	0	30	
m-,p-Xylene		40.0	40.2	ug/kg	0.754	0.400	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108176

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309407-02
Instrument ID: HPMS9 Run Time: 10:04 Method: 8260B
File ID: 9M71359 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG309410 Cal ID: HPMS9 - 21-JUL-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	49.5	ug/kg	0.522	0.977	20	
1,1-Dichloroethene	CCC	50.0	48.6	ug/kg	0.475	2.74	20	
1,2-Dichloropropane	CCC	50.0	48.0	ug/kg	0.229	3.98	20	
Ethylbenzene	CCC	50.0	46.4	ug/kg	0.571	7.29	20	
Toluene	CCC	50.0	50.1	ug/kg	1.47	0.198	20	
Vinyl Chloride	CCC	50.0	47.9	ug/kg	0.144	4.16	20	
Bromoform	SPCC	50.0	50.8	ug/kg	0.189	1.65	40	
Chlorobenzene	SPCC	50.0	45.9	ug/kg	0.988	8.15	40	
Chloromethane	SPCC	50.0	46.5	ug/kg	0.246	7.01	40	
1,1-Dichloroethane	SPCC	50.0	48.1	ug/kg	0.513	3.78	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	47.6	ug/kg	0.565	4.85	40	
Acetone		50.0	46.7	ug/kg	0.0543	6.56	40	
Benzene		50.0	49.4	ug/kg	1.08	1.16	40	
Bromobenzene		50.0	47.7	ug/kg	0.871	4.65	40	
Bromochloromethane		50.0	48.0	ug/kg	0.128	4.02	40	
Bromodichloromethane		50.0	51.1	ug/kg	0.353	2.21	40	
Bromomethane		50.0	50.9	ug/kg	0.141	1.82	40	
2-Butanone		50.0	46.9	ug/kg	0.0733	6.28	40	
n-Butylbenzene		50.0	46.8	ug/kg	2.72	6.31	40	
sec-Butylbenzene		50.0	50.6	ug/kg	3.92	1.14	40	
tert-Butylbenzene		50.0	49.4	ug/kg	0.647	1.28	40	
Carbon Disulfide		50.0	47.8	ug/kg	0.914	4.44	40	
Carbon Tetrachloride		50.0	54.6	ug/kg	0.513	9.28	40	
Dibromochloromethane		50.0	50.0	ug/kg	0.320	0.00220	40	
Chloroethane		50.0	50.4	ug/kg	0.142	0.856	40	
2-Chloroethyl Vinyl Ether		50.0	46.4	ug/kg	0.0871	7.27	40	
2-Chlorotoluene		50.0	46.1	ug/kg	2.71	7.84	40	
4-Chlorotoluene		50.0	51.8	ug/kg	2.47	3.55	40	
1,2-Dibromo-3-Chloropropane		50.0	47.7	ug/kg	0.0980	4.65	40	
1,2-Dibromoethane		50.0	45.6	ug/kg	0.238	8.70	40	
Dibromomethane		50.0	49.4	ug/kg	0.144	1.11	40	
1,2-Dichlorobenzene		50.0	46.9	ug/kg	1.37	6.11	40	
1,3-Dichlorobenzene		50.0	46.5	ug/kg	1.60	7.04	40	
1,4-Dichlorobenzene		50.0	45.4	ug/kg	1.58	9.20	40	
Dichlorodifluoromethane		50.0	48.6	ug/kg	0.333	2.74	40	
1,2-Dichloroethane		50.0	50.2	ug/kg	0.372	0.310	40	
cis-1,2-Dichloroethene		50.0	48.4	ug/kg	0.293	3.21	40	
trans-1,2-Dichloroethene		50.0	47.6	ug/kg	0.283	4.87	40	
1,3-Dichloropropane		50.0	46.9	ug/kg	0.401	6.17	40	
2,2-Dichloropropane		50.0	53.0	ug/kg	0.494	6.00	40	
cis-1,3-Dichloropropene		50.0	51.7	ug/kg	0.367	3.31	40	
trans-1,3-Dichloropropene		50.0	51.3	ug/kg	0.479	2.58	40	

CCV - Modified 03/05/2008
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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108177

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309407-02
Instrument ID: HPMS9 Run Time: 10:04 Method: 8260B
File ID: 9M71359 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG309410 Cal ID: HPMS9 - 21-JUL-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	50.7	ug/kg	0.414	1.44	40	
2-Hexanone		50.0	49.8	ug/kg	0.134	0.457	40	
Hexachlorobutadiene		50.0	45.8	ug/kg	0.478	8.47	40	
Isopropylbenzene		50.0	45.5	ug/kg	1.76	9.06	40	
p-Isopropyltoluene		50.0	46.7	ug/kg	3.23	6.54	40	
4-Methyl-2-Pentanone		50.0	52.1	ug/kg	0.0587	4.28	40	
Methylene Chloride		50.0	44.4	ug/kg	0.240	11.2	40	
Naphthalene		50.0	41.1	ug/kg	1.34	17.8	40	
n-Propylbenzene		50.0	50.6	ug/kg	4.10	1.20	40	
Styrene		50.0	44.4	ug/kg	1.03	11.2	40	
1,1,1,2-Tetrachloroethane		50.0	49.8	ug/kg	0.363	0.364	40	
Tetrachloroethene		50.0	48.4	ug/kg	0.350	3.18	40	
1,2,3-Trichlorobenzene		50.0	43.7	ug/kg	0.661	12.6	40	
1,2,4-Trichlorobenzene		50.0	44.8	ug/kg	0.772	10.4	40	
1,1,1-Trichloroethane		50.0	52.9	ug/kg	0.538	5.74	40	
1,1,2-Trichloroethane		50.0	46.2	ug/kg	0.235	7.60	40	
Trichloroethene		50.0	49.7	ug/kg	0.320	0.595	40	
Trichlorofluoromethane		50.0	51.2	ug/kg	0.619	2.45	40	
1,2,3-Trichloropropane		50.0	48.2	ug/kg	0.192	3.64	40	
1,2,4-Trimethylbenzene		50.0	49.6	ug/kg	2.95	0.853	40	
1,3,5-Trimethylbenzene		50.0	46.4	ug/kg	2.95	7.24	40	
Vinyl Acetate		50.0	41.5	ug/kg	0.328	17.1	40	
o-Xylene		50.0	46.1	ug/kg	0.618	7.74	40	
m-,p-Xylene		100	89.9	ug/kg	0.673	10.1	40	
1,2-Dichloroethene		100	96.0	ug/kg	0.288	4.04	40	
Xylenes		150	136	ug/kg	0.645	9.30	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1463988
Report generated 08/12/2009 11:07

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

Login Number: L09080192
Instrument ID: HPMS9
Workgroup (AAB#): WG309410

CCV Number: WG309407-02
CAL ID: HPMS9-21-JUL-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309407-02	NA	NA	302371	652045	846379
Upper Limit	NA	NA	604742	1304090	1692758
Lower Limit	NA	NA	151186	326023	423190
L09080192-01	1.00	01	225718	514110	671931
L09080192-02	1.00	01	191793	485386	649839
L09080192-03	1.00	01	166380	460945	632507
L09080192-04	1.00	01	166780	475914	665304
L09080192-05	1.00	01	181700	449168	601349
WG309410-01	1.00	01	262572	599255	783781
WG309410-02	1.00	01	261137	574660	747452
WG309410-03	1.00	01	267718	590892	766659

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1463989
Report generated 08/12/2009 11:07

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L09080192
Instrument ID: HPMS9
Workgroup (AAB#): WG309410

CCV Number: WG309407-02
CAL ID: HPMS9-21-JUL-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309407-02	NA	NA	15.08	12.12	8.27
Upper Limit	NA	NA	15.58	12.62	8.77
Lower Limit	NA	NA	14.58	11.62	7.77
L09080192-01	1.00	01	15.08	12.11	8.28
L09080192-02	1.00	01	15.08	12.11	8.28
L09080192-03	1.00	01	15.08	12.12	8.27
L09080192-04	1.00	01	15.08	12.12	8.27
L09080192-05	1.00	01	15.08	12.12	8.28
WG309410-01	1.00	01	15.08	12.12	8.27
WG309410-02	1.00	01	15.08	12.12	8.27
WG309410-03	1.00	01	15.08	12.11	8.28

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1463991
Report generated 08/12/2009 11:07

2.2 Semivolatiles Data

2.2.1 Semivolatiles GC/MS Data (8270)

2.2.1.1 Summary Data

LABORATORY REPORT

L09080192

00108183

08/13/09 14:09

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
SITE 1-TP-BF	L09080192-01	8270C	1	11-AUG-09
SITE 1-TP-TS	L09080192-02	8270C	1	11-AUG-09
SITE 2-BLM-TS	L09080192-03	8270C	1	11-AUG-09
SITE 2-BLM-BF	L09080192-04	8270C	1	11-AUG-09
SITE 3-ML-BF/TS	L09080192-05	8270C	1	11-AUG-09

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108184

Sample Number: **L09080192-01**
Client ID: **SITE 1-TP-BF**
Matrix: **Soil**
Workgroup Number: **WG309468**
Collect Date: **08/09/2009 10:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS4**
Prep Date: **08/11/2009 10:59**
Cal Date: **05/26/2009 18:05**
Run Date: **08/11/2009 19:13**
File ID: **4M47713**
Percent Solid: **77.4**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,4-Trichlorobenzene	120-82-1		U	248	124
1,2-Dichlorobenzene	95-50-1		U	248	124
1,3-Dichlorobenzene	541-73-1		U	248	124
1,4-Dichlorobenzene	106-46-7		U	248	124
2,4,5-Trichlorophenol	95-95-4		U	248	124
2,4,6-Trichlorophenol	88-06-2		U	248	124
2,4-Dichlorophenol	120-83-2		U	248	124
2,4-Dimethylphenol	105-67-9		U	248	124
2,4-Dinitrophenol	51-28-5		U	1240	496
2,4-Dinitrotoluene	121-14-2		U	248	124
2,6-Dinitrotoluene	606-20-2		U	248	124
2-Chloronaphthalene	91-58-7		U	248	124
2-Chlorophenol	95-57-8		U	248	124
2-Methylnaphthalene	91-57-6		U	248	124
2-Methylphenol	95-48-7		U	248	124
2-Nitroaniline	88-74-4		U	1240	496
2-Nitrophenol	88-75-5		U	248	124
3,3'-Dichlorobenzidine	91-94-1		U	496	248
3-,4-Methylphenol	106-44-5		U	248	124
3-Nitroaniline	99-09-2		U	1240	496
4,6-Dinitro-2-methylphenol	534-52-1		U	1240	496
4-Bromophenyl-phenylether	101-55-3		U	248	124
4-Chloro-3-methylphenol	59-50-7		U	248	124
4-Chloroaniline	106-47-8		U	248	124
4-Chlorophenyl-phenyl ether	7005-72-3		U	248	124
4-Nitroaniline	100-01-6		U	1240	496
4-Nitrophenol	100-02-7		U	1240	496
Acenaphthene	83-32-9		U	248	124
Acenaphthylene	208-96-8		U	248	124
Anthracene	120-12-7		U	248	124
Benzo(a)anthracene	56-55-3		U	248	124
Benzo(a)pyrene	50-32-8		U	248	124
Benzo(b)fluoranthene	205-99-2		U	248	124
Benzo(g,h,i)Perylene	191-24-2		U	248	124
Benzo(k)fluoranthene	207-08-9		U	248	124
Benzoic acid	65-85-0		U	7520	496
Benzyl alcohol	100-51-6		U	248	124
Bis(2-Chloroethoxy)Methane	111-91-1		U	248	124
Bis(2-Chloroethyl)ether	111-44-4		U	248	124
bis(2-Chloroisopropyl)ether	108-60-1		U	248	124
bis(2-Ethylhexyl)phthalate	117-81-7		U	248	124
Butylbenzylphthalate	85-68-7		U	248	124
Chrysene	218-01-9		U	248	124
Di-N-Butylphthalate	84-74-2		U	248	124
Di-n-octylphthalate	117-84-0		U	248	124
Dibenzo(a,h)Anthracene	53-70-3		U	248	124
Dibenzofuran	132-64-9		U	248	124
Diethylphthalate	84-66-2		U	248	124
Dimethylphthalate	131-11-3		U	248	124
Fluoranthene	206-44-0		U	248	124
Fluorene	86-73-7		U	248	124
Hexachlorobenzene	118-74-1		U	248	124
Hexachlorobutadiene	87-68-3		U	248	124
Hexachlorocyclopentadiene	77-47-4		U	248	124
Hexachloroethane	67-72-1		U	248	124
Indeno(1,2,3-cd)pyrene	193-39-5		U	248	124
Isophorone	78-59-1		U	248	124
N-Nitrosodiphenylamine	86-30-6		U	248	124
N-Nitrosodipropylamine	621-64-7		U	248	124

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108185

Sample Number:	L09080192-01	PrePrep Method:	NONE	Instrument:	HPMS4
Client ID:	SITE 1-TP-BF	Prep Method:	3545	Prep Date:	08/11/2009 10:59
Matrix:	Soil	Analytical Method:	8270C	Cal Date:	05/26/2009 18:05
Workgroup Number:	WG309468	Analyst:	CAA	Run Date:	08/11/2009 19:13
Collect Date:	08/09/2009 10:45	Dilution:	1	File ID:	4M47713
Sample Tag:	01	Units:	ug/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	PQL	SDL
Naphthalene	91-20-3		U	248	124
Nitrobenzene	98-95-3		U	248	124
Pentachlorophenol	87-86-5		U	1240	496
Phenanthrene	85-01-8		U	248	124
Phenol	108-95-2		U	248	124
Pyrene	129-00-0		U	248	124

Surrogate	% Recovery	Lower	Upper	Qual
2,4,6-Tribromophenol	68.2	19	122	
2-Fluorobiphenyl	61.5	30	115	
2-Fluorophenol	57.5	25	121	
Nitrobenzene-d5	63.9	23	120	
p-Terphenyl-d14	67.7	18	137	
Phenol-d5	58.5	24	113	

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108186

Sample Number: **L09080192-02**
Client ID: **SITE 1-TP-TS**
Matrix: **Soil**
Workgroup Number: **WG309468**
Collect Date: **08/09/2009 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS4**
Prep Date: **08/11/2009 10:59**
Cal Date: **05/26/2009 18:05**
Run Date: **08/11/2009 19:48**
File ID: **4M47714**
Percent Solid: **79.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,4-Trichlorobenzene	120-82-1		U	239	120
1,2-Dichlorobenzene	95-50-1		U	239	120
1,3-Dichlorobenzene	541-73-1		U	239	120
1,4-Dichlorobenzene	106-46-7		U	239	120
2,4,5-Trichlorophenol	95-95-4		U	239	120
2,4,6-Trichlorophenol	88-06-2		U	239	120
2,4-Dichlorophenol	120-83-2		U	239	120
2,4-Dimethylphenol	105-67-9		U	239	120
2,4-Dinitrophenol	51-28-5		U	1200	478
2,4-Dinitrotoluene	121-14-2		U	239	120
2,6-Dinitrotoluene	606-20-2		U	239	120
2-Chloronaphthalene	91-58-7		U	239	120
2-Chlorophenol	95-57-8		U	239	120
2-Methylnaphthalene	91-57-6		U	239	120
2-Methylphenol	95-48-7		U	239	120
2-Nitroaniline	88-74-4		U	1200	478
2-Nitrophenol	88-75-5		U	239	120
3,3'-Dichlorobenzidine	91-94-1		U	478	239
3-,4-Methylphenol	106-44-5		U	239	120
3-Nitroaniline	99-09-2		U	1200	478
4,6-Dinitro-2-methylphenol	534-52-1		U	1200	478
4-Bromophenyl-phenylether	101-55-3		U	239	120
4-Chloro-3-methylphenol	59-50-7		U	239	120
4-Chloroaniline	106-47-8		U	239	120
4-Chlorophenyl-phenyl ether	7005-72-3		U	239	120
4-Nitroaniline	100-01-6		U	1200	478
4-Nitrophenol	100-02-7		U	1200	478
Acenaphthene	83-32-9		U	239	120
Acenaphthylene	208-96-8		U	239	120
Anthracene	120-12-7		U	239	120
Benzo(a)anthracene	56-55-3		U	239	120
Benzo(a)pyrene	50-32-8		U	239	120
Benzo(b)fluoranthene	205-99-2		U	239	120
Benzo(g,h,i)Perylene	191-24-2		U	239	120
Benzo(k)fluoranthene	207-08-9		U	239	120
Benzoic acid	65-85-0		U	7250	478
Benzyl alcohol	100-51-6		U	239	120
Bis(2-Chloroethoxy)Methane	111-91-1		U	239	120
Bis(2-Chloroethyl)ether	111-44-4		U	239	120
bis(2-Chloroisopropyl)ether	108-60-1		U	239	120
bis(2-Ethylhexyl)phthalate	117-81-7		U	239	120
Butylbenzylphthalate	85-68-7		U	239	120
Chrysene	218-01-9		U	239	120
Di-N-Butylphthalate	84-74-2	128	J	239	120
Di-n-octylphthalate	117-84-0		U	239	120
Dibenzo(a,h)Anthracene	53-70-3		U	239	120
Dibenzofuran	132-64-9		U	239	120
Diethylphthalate	84-66-2		U	239	120
Dimethylphthalate	131-11-3		U	239	120
Fluoranthene	206-44-0		U	239	120
Fluorene	86-73-7		U	239	120
Hexachlorobenzene	118-74-1		U	239	120
Hexachlorobutadiene	87-68-3		U	239	120
Hexachlorocyclopentadiene	77-47-4		U	239	120
Hexachloroethane	67-72-1		U	239	120
Indeno(1,2,3-cd)pyrene	193-39-5		U	239	120
Isophorone	78-59-1		U	239	120
N-Nitrosodiphenylamine	86-30-6		U	239	120
N-Nitrosodipropylamine	621-64-7		U	239	120

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108187

Sample Number: **L09080192-02**
Client ID: **SITE 1-TP-TS**
Matrix: **Soil**
Workgroup Number: **WG309468**
Collect Date: **08/09/2009 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS4**
Prep Date: **08/11/2009 10:59**
Cal Date: **05/26/2009 18:05**
Run Date: **08/11/2009 19:48**
File ID: **4M47714**
Percent Solid: **79.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Naphthalene	91-20-3		U	239	120
Nitrobenzene	98-95-3		U	239	120
Pentachlorophenol	87-86-5		U	1200	478
Phenanthrene	85-01-8		U	239	120
Phenol	108-95-2		U	239	120
Pyrene	129-00-0		U	239	120

Surrogate	% Recovery	Lower	Upper	Qual
2,4,6-Tribromophenol	102	19	122	
2-Fluorobiphenyl	59.6	30	115	
2-Fluorophenol	58.2	25	121	
Nitrobenzene-d5	69.8	23	120	
p-Terphenyl-d14	70.0	18	137	
Phenol-d5	59.8	24	113	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108188

Sample Number: **L09080192-03**
Client ID: **SITE 2-BLM-TS**
Matrix: **Soil**
Workgroup Number: **WG309468**
Collect Date: **08/09/2009 11:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS4**
Prep Date: **08/11/2009 10:59**
Cal Date: **05/26/2009 18:05**
Run Date: **08/11/2009 20:23**
File ID: **4M47715**
Percent Solid: **78.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,4-Trichlorobenzene	120-82-1		U	223	112
1,2-Dichlorobenzene	95-50-1		U	223	112
1,3-Dichlorobenzene	541-73-1		U	223	112
1,4-Dichlorobenzene	106-46-7		U	223	112
2,4,5-Trichlorophenol	95-95-4		U	223	112
2,4,6-Trichlorophenol	88-06-2		U	223	112
2,4-Dichlorophenol	120-83-2		U	223	112
2,4-Dimethylphenol	105-67-9		U	223	112
2,4-Dinitrophenol	51-28-5		U	1120	447
2,4-Dinitrotoluene	121-14-2		U	223	112
2,6-Dinitrotoluene	606-20-2		U	223	112
2-Chloronaphthalene	91-58-7		U	223	112
2-Chlorophenol	95-57-8		U	223	112
2-Methylnaphthalene	91-57-6		U	223	112
2-Methylphenol	95-48-7		U	223	112
2-Nitroaniline	88-74-4		U	1120	447
2-Nitrophenol	88-75-5		U	223	112
3,3'-Dichlorobenzidine	91-94-1		U	447	223
3-,4-Methylphenol	106-44-5		U	223	112
3-Nitroaniline	99-09-2		U	1120	447
4,6-Dinitro-2-methylphenol	534-52-1		U	1120	447
4-Bromophenyl-phenylether	101-55-3		U	223	112
4-Chloro-3-methylphenol	59-50-7		U	223	112
4-Chloroaniline	106-47-8		U	223	112
4-Chlorophenyl-phenyl ether	7005-72-3		U	223	112
4-Nitroaniline	100-01-6		U	1120	447
4-Nitrophenol	100-02-7		U	1120	447
Acenaphthene	83-32-9		U	223	112
Acenaphthylene	208-96-8		U	223	112
Anthracene	120-12-7		U	223	112
Benzo(a)anthracene	56-55-3		U	223	112
Benzo(a)pyrene	50-32-8		U	223	112
Benzo(b)fluoranthene	205-99-2		U	223	112
Benzo(g,h,i)Perylene	191-24-2		U	223	112
Benzo(k)fluoranthene	207-08-9		U	223	112
Benzoic acid	65-85-0		U	6770	447
Benzyl alcohol	100-51-6		U	223	112
Bis(2-Chloroethoxy)Methane	111-91-1		U	223	112
Bis(2-Chloroethyl)ether	111-44-4		U	223	112
bis(2-Chloroisopropyl)ether	108-60-1		U	223	112
bis(2-Ethylhexyl)phthalate	117-81-7		U	223	112
Butylbenzylphthalate	85-68-7		U	223	112
Chrysene	218-01-9		U	223	112
Di-N-Butylphthalate	84-74-2		U	223	112
Di-n-octylphthalate	117-84-0		U	223	112
Dibenzo(a,h)Anthracene	53-70-3		U	223	112
Dibenzofuran	132-64-9		U	223	112
Diethylphthalate	84-66-2		U	223	112
Dimethylphthalate	131-11-3		U	223	112
Fluoranthene	206-44-0		U	223	112
Fluorene	86-73-7		U	223	112
Hexachlorobenzene	118-74-1		U	223	112
Hexachlorobutadiene	87-68-3		U	223	112
Hexachlorocyclopentadiene	77-47-4		U	223	112
Hexachloroethane	67-72-1		U	223	112
Indeno(1,2,3-cd)pyrene	193-39-5		U	223	112
Isophorone	78-59-1		U	223	112
N-Nitrosodiphenylamine	86-30-6		U	223	112
N-Nitrosodipropylamine	621-64-7		U	223	112

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108189

Sample Number:	L09080192-03	PrePrep Method:	NONE	Instrument:	HPMS4
Client ID:	SITE 2-BLM-TS	Prep Method:	3545	Prep Date:	08/11/2009 10:59
Matrix:	Soil	Analytical Method:	8270C	Cal Date:	05/26/2009 18:05
Workgroup Number:	WG309468	Analyst:	CAA	Run Date:	08/11/2009 20:23
Collect Date:	08/09/2009 11:20	Dilution:	1	File ID:	4M47715
Sample Tag:	01	Units:	ug/kg	Percent Solid:	78.2

Analyte	CAS. Number	Result	Qual	PQL	SDL
Naphthalene	91-20-3		U	223	112
Nitrobenzene	98-95-3		U	223	112
Pentachlorophenol	87-86-5		U	1120	447
Phenanthrene	85-01-8		U	223	112
Phenol	108-95-2		U	223	112
Pyrene	129-00-0		U	223	112

Surrogate	% Recovery	Lower	Upper	Qual
2,4,6-Tribromophenol	65.5	19	122	
2-Fluorobiphenyl	46.6	30	115	
2-Fluorophenol	48.8	25	121	
Nitrobenzene-d5	58.4	23	120	
p-Terphenyl-d14	63.6	18	137	
Phenol-d5	51.4	24	113	

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108190

Sample Number: **L09080192-04**
Client ID: **SITE 2-BLM-BF**
Matrix: **Soil**
Workgroup Number: **WG309468**
Collect Date: **08/09/2009 11:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS4**
Prep Date: **08/11/2009 10:59**
Cal Date: **05/26/2009 18:05**
Run Date: **08/11/2009 20:58**
File ID: **4M47716**
Percent Solid: **78.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,4-Trichlorobenzene	120-82-1		U	236	118
1,2-Dichlorobenzene	95-50-1		U	236	118
1,3-Dichlorobenzene	541-73-1		U	236	118
1,4-Dichlorobenzene	106-46-7		U	236	118
2,4,5-Trichlorophenol	95-95-4		U	236	118
2,4,6-Trichlorophenol	88-06-2		U	236	118
2,4-Dichlorophenol	120-83-2		U	236	118
2,4-Dimethylphenol	105-67-9		U	236	118
2,4-Dinitrophenol	51-28-5		U	1180	471
2,4-Dinitrotoluene	121-14-2		U	236	118
2,6-Dinitrotoluene	606-20-2		U	236	118
2-Chloronaphthalene	91-58-7		U	236	118
2-Chlorophenol	95-57-8		U	236	118
2-Methylnaphthalene	91-57-6		U	236	118
2-Methylphenol	95-48-7		U	236	118
2-Nitroaniline	88-74-4		U	1180	471
2-Nitrophenol	88-75-5		U	236	118
3,3'-Dichlorobenzidine	91-94-1		U	471	236
3-,4-Methylphenol	106-44-5		U	236	118
3-Nitroaniline	99-09-2		U	1180	471
4,6-Dinitro-2-methylphenol	534-52-1		U	1180	471
4-Bromophenyl-phenylether	101-55-3		U	236	118
4-Chloro-3-methylphenol	59-50-7		U	236	118
4-Chloroaniline	106-47-8		U	236	118
4-Chlorophenyl-phenyl ether	7005-72-3		U	236	118
4-Nitroaniline	100-01-6		U	1180	471
4-Nitrophenol	100-02-7		U	1180	471
Acenaphthene	83-32-9		U	236	118
Acenaphthylene	208-96-8		U	236	118
Anthracene	120-12-7		U	236	118
Benzo(a)anthracene	56-55-3		U	236	118
Benzo(a)pyrene	50-32-8		U	236	118
Benzo(b)fluoranthene	205-99-2		U	236	118
Benzo(g,h,i)Perylene	191-24-2		U	236	118
Benzo(k)fluoranthene	207-08-9		U	236	118
Benzoic acid	65-85-0	1400	J	7140	471
Benzyl alcohol	100-51-6		U	236	118
Bis(2-Chloroethoxy)Methane	111-91-1		U	236	118
Bis(2-Chloroethyl)ether	111-44-4		U	236	118
bis(2-Chloroisopropyl)ether	108-60-1		U	236	118
bis(2-Ethylhexyl)phthalate	117-81-7		U	236	118
Butylbenzylphthalate	85-68-7		U	236	118
Chrysene	218-01-9		U	236	118
Di-N-Butylphthalate	84-74-2		U	236	118
Di-n-octylphthalate	117-84-0		U	236	118
Dibenzo(a,h)Anthracene	53-70-3		U	236	118
Dibenzofuran	132-64-9		U	236	118
Diethylphthalate	84-66-2		U	236	118
Dimethylphthalate	131-11-3		U	236	118
Fluoranthene	206-44-0		U	236	118
Fluorene	86-73-7		U	236	118
Hexachlorobenzene	118-74-1		U	236	118
Hexachlorobutadiene	87-68-3		U	236	118
Hexachlorocyclopentadiene	77-47-4		U	236	118
Hexachloroethane	67-72-1		U	236	118
Indeno(1,2,3-cd)pyrene	193-39-5		U	236	118
Isophorone	78-59-1		U	236	118
N-Nitrosodiphenylamine	86-30-6		U	236	118
N-Nitrosodipropylamine	621-64-7		U	236	118

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108191

Sample Number: **L09080192-04**
Client ID: **SITE 2-BLM-BF**
Matrix: **Soil**
Workgroup Number: **WG309468**
Collect Date: **08/09/2009 11:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS4**
Prep Date: **08/11/2009 10:59**
Cal Date: **05/26/2009 18:05**
Run Date: **08/11/2009 20:58**
File ID: **4M47716**
Percent Solid: **78.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Naphthalene	91-20-3		U	236	118
Nitrobenzene	98-95-3		U	236	118
Pentachlorophenol	87-86-5		U	1180	471
Phenanthrene	85-01-8		U	236	118
Phenol	108-95-2		U	236	118
Pyrene	129-00-0		U	236	118

Surrogate	% Recovery	Lower	Upper	Qual
2,4,6-Tribromophenol	76.9	19	122	
2-Fluorobiphenyl	57.1	30	115	
2-Fluorophenol	41.3	25	121	
Nitrobenzene-d5	53.3	23	120	
p-Terphenyl-d14	66.5	18	137	
Phenol-d5	49.0	24	113	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108192

Sample Number: **L09080192-05**
Client ID: **SITE 3-ML-BF/TS**
Matrix: **Soil**
Workgroup Number: **WG309468**
Collect Date: **08/09/2009 12:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS4**
Prep Date: **08/11/2009 10:59**
Cal Date: **05/26/2009 18:05**
Run Date: **08/11/2009 21:32**
File ID: **4M47717**
Percent Solid: **88.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,4-Trichlorobenzene	120-82-1		U	213	107
1,2-Dichlorobenzene	95-50-1		U	213	107
1,3-Dichlorobenzene	541-73-1		U	213	107
1,4-Dichlorobenzene	106-46-7		U	213	107
2,4,5-Trichlorophenol	95-95-4		U	213	107
2,4,6-Trichlorophenol	88-06-2		U	213	107
2,4-Dichlorophenol	120-83-2		U	213	107
2,4-Dimethylphenol	105-67-9		U	213	107
2,4-Dinitrophenol	51-28-5		U	1070	427
2,4-Dinitrotoluene	121-14-2		U	213	107
2,6-Dinitrotoluene	606-20-2		U	213	107
2-Chloronaphthalene	91-58-7		U	213	107
2-Chlorophenol	95-57-8		U	213	107
2-Methylnaphthalene	91-57-6		U	213	107
2-Methylphenol	95-48-7		U	213	107
2-Nitroaniline	88-74-4		U	1070	427
2-Nitrophenol	88-75-5		U	213	107
3,3'-Dichlorobenzidine	91-94-1		U	427	213
3-,4-Methylphenol	106-44-5		U	213	107
3-Nitroaniline	99-09-2		U	1070	427
4,6-Dinitro-2-methylphenol	534-52-1		U	1070	427
4-Bromophenyl-phenylether	101-55-3		U	213	107
4-Chloro-3-methylphenol	59-50-7		U	213	107
4-Chloroaniline	106-47-8		U	213	107
4-Chlorophenyl-phenyl ether	7005-72-3		U	213	107
4-Nitroaniline	100-01-6		U	1070	427
4-Nitrophenol	100-02-7		U	1070	427
Acenaphthene	83-32-9		U	213	107
Acenaphthylene	208-96-8		U	213	107
Anthracene	120-12-7		U	213	107
Benzo(a)anthracene	56-55-3		U	213	107
Benzo(a)pyrene	50-32-8		U	213	107
Benzo(b)fluoranthene	205-99-2		U	213	107
Benzo(g,h,i)Perylene	191-24-2		U	213	107
Benzo(k)fluoranthene	207-08-9		U	213	107
Benzoic acid	65-85-0		U	6470	427
Benzyl alcohol	100-51-6		U	213	107
Bis(2-Chloroethoxy)Methane	111-91-1		U	213	107
Bis(2-Chloroethyl)ether	111-44-4		U	213	107
bis(2-Chloroisopropyl)ether	108-60-1		U	213	107
bis(2-Ethylhexyl)phthalate	117-81-7		U	213	107
Butylbenzylphthalate	85-68-7		U	213	107
Chrysene	218-01-9		U	213	107
Di-N-Butylphthalate	84-74-2		U	213	107
Di-n-octylphthalate	117-84-0		U	213	107
Dibenzo(a,h)Anthracene	53-70-3		U	213	107
Dibenzofuran	132-64-9		U	213	107
Diethylphthalate	84-66-2		U	213	107
Dimethylphthalate	131-11-3		U	213	107
Fluoranthene	206-44-0		U	213	107
Fluorene	86-73-7		U	213	107
Hexachlorobenzene	118-74-1		U	213	107
Hexachlorobutadiene	87-68-3		U	213	107
Hexachlorocyclopentadiene	77-47-4		U	213	107
Hexachloroethane	67-72-1		U	213	107
Indeno(1,2,3-cd)pyrene	193-39-5		U	213	107
Isophorone	78-59-1		U	213	107
N-Nitrosodiphenylamine	86-30-6		U	213	107
N-Nitrosodipropylamine	621-64-7		U	213	107

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108193

Sample Number:	L09080192-05	PrePrep Method:	NONE	Instrument:	HPMS4
Client ID:	SITE 3-ML-BF/TS	Prep Method:	3545	Prep Date:	08/11/2009 10:59
Matrix:	Soil	Analytical Method:	8270C	Cal Date:	05/26/2009 18:05
Workgroup Number:	WG309468	Analyst:	CAA	Run Date:	08/11/2009 21:32
Collect Date:	08/09/2009 12:00	Dilution:	1	File ID:	4M47717
Sample Tag:	01	Units:	ug/kg	Percent Solid:	88.2

Analyte	CAS. Number	Result	Qual	PQL	SDL
Naphthalene	91-20-3		U	213	107
Nitrobenzene	98-95-3		U	213	107
Pentachlorophenol	87-86-5		U	1070	427
Phenanthrene	85-01-8		U	213	107
Phenol	108-95-2		U	213	107
Pyrene	129-00-0		U	213	107

Surrogate	% Recovery	Lower	Upper	Qual
2,4,6-Tribromophenol	104	19	122	
2-Fluorobiphenyl	59.7	30	115	
2-Fluorophenol	55.6	25	121	
Nitrobenzene-d5	63.4	23	120	
p-Terphenyl-d14	89.7	18	137	
Phenol-d5	56.9	24	113	

U Not detected at or above adjusted sample detection limit

2.2.1.2 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:	Example
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)]

where:	Example
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)]

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

Dry weight correction:

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

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

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

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

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

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

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

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 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

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (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

Workgroup: WG309434
Analyst: CAF
Spike Analyst: CAF
Method: 3545
Run Date: 08/11/2009 10:59
SOP: ASE01 Revison 7
Spike Witness: CPD
Surr Solution: STD33058

Methylene Chloride Lot #: COA14020
Purified Lab Sand Lot #: COA13873
Diatomaceous Earth Lot #: COA13977
Sodium Sulfate,Anhydrous,Granular (Lot #: COA13907
1% Acetic Acid Lot #: RGT13669

	SAMPLE #	Type	Reference	Prod	Init Amnt	Surr Amnt	Spike Amnt	Spike Sol	Final Vol	Color
1	L09080192-01	SAMP		8270	17.18 g	.5 mL			1 mL	Transparent
2	L09080192-02	SAMP		8270	17.36 g	.5 mL			1 mL	Colored
3	L09080192-03	SAMP		8270	18.9 g	.5 mL			1 mL	Colored
4	L09080192-04	SAMP		8270	17.88 g	.5 mL			1 mL	Colored
5	L09080192-05	SAMP		8270	17.54 g	.5 mL			1 mL	Colored
6	L09080205-01	SAMP		8270	18.21 g	.5 mL			1 mL	Colored
7	L09080205-04	SAMP		8270	20.64 g	.5 mL			1 mL	Colored
8	L09080205-06	SAMP		8270	17.54 g	.5 mL			1 mL	Opaque
9	L09080205-08	SAMP		8270	19.24 g	.5 mL			1 mL	Colored
10	WG309434-01	BLANK		8270	20 g	.5 mL			1 mL	Transparent
11	WG309434-02	LCS		8270	20 g	.5 mL	.5 mL	STD33345	1 mL	Colored
12	WG309434-03	LCS2		8270	20 g	.5 mL	.5 mL	STD33345	1 mL	Colored

L09080192-01	WET
L09080192-02	WET
L09080192-03	WET
L09080192-04	WET
L09080192-05	SAND

Analyst: Cheryl A. Flowers

Reviewer:

EXTRACT - Modified 10/22/2008
PDF ID: 1463690
Report generated: 08/11/2009 16:07

Microbac Laboratories Inc.

00108198

Instrument Run Log

Instrument: HPMS4 Dataset: 052609

Analyst1: MDC Analyst2: NA

Method: 8270C SOP: MSS01 Rev: 14

Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 28854

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups:

Internal STD: STD20900 Surrogate STD: NA Calibration STD

Comments: ICAL 4M46921-4M26929 not used: instrument responses improved for a few compounds during the course of the calibration.
ICAL fails for #49, 64, 78 (Appendix IX compounds)

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	4M46920	WG301596-01 50ppm DFTPP	1	1	STD31842	05/26/09 07:43
2	4M46921	WG301596-02 50ppm MEGAMIX STD	1	1	STD31920	05/26/09 08:02
3	4M46922	WG301596-03 3ppm MEGAMIX STD	1	1	STD31920	05/26/09 08:45
4	4M46923	WG301596-04 10ppm MEGAMIX STD	1	1	STD31920	05/26/09 09:21
5	4M46924	WG301596-05 15ppm MEGAMIX STD	1	1	STD31920	05/26/09 09:57
6	4M46925	WG301596-06 25ppm MEGAMIX STD	1	1	STD31920	05/26/09 10:32
7	4M46926	WG301596-07 80ppm MEGAMIX STD	1	1	STD31920	05/26/09 11:07
8	4M46927	WG301596-08 100ppm MEGAMIX STD	1	1	STD31920	05/26/09 11:43
9	4M46928	WG301596-09 120ppm MEGAMIX STD	1	1	STD31920	05/26/09 12:18
10	4M46929	WG301596-02 50ppm MEGAMIX STD	1	1	STD31920	05/26/09 12:54
11	4M46930	WG301596-01 50ppm DFTPP	1	1	STD31842	05/26/09 13:39
12	4M46931	WG301596-02 50ppm MEGAMIX STD	1	1	STD31920	05/26/09 13:58
13	4M46932	WG301596-03 3ppm MEGAMIX STD	1	1	STD31920	05/26/09 14:34
14	4M46933	WG301596-04 10ppm MEGAMIX STD	1	1	STD31920	05/26/09 15:09
15	4M46934	WG301596-05 15ppm MEGAMIX STD	1	1	STD31920	05/26/09 15:44
16	4M46935	WG301596-06 25ppm MEGAMIX STD	1	1	STD31920	05/26/09 16:19
17	4M46936	WG301596-07 80ppm MEGAMIX STD	1	1	STD31920	05/26/09 16:54
18	4M46937	WG301596-08 100ppm MEGAMIX STD	1	1	STD31920	05/26/09 17:30
19	4M46938	WG301596-09 120ppm MEGAMIX STD	1	1	STD31920	05/26/09 18:05
20	4M46939	WG301596-10 50ppm Alt source STD	1	1	STD31858	05/26/09 18:41
21	4M46940	WG301596-11 50ppm A9 Alt source STD	1	1	STD30677	05/26/09 19:16
22	4M46941	WG301596-12 50ppm dioxane source STD	1	1	STD30264	05/26/09 19:51
23	4M46942	WG303199-01 50ppm TCL std	1	1	STD30935	05/26/09 20:27
24	4M46943	WG303199-02 3ppm TCL std	1	1	STD30935	05/26/09 21:03
25	4M46944	WG303199-03 10ppm TCL std	1	1	STD30935	05/26/09 21:38
26	4M46945	WG303199-04 25ppm TCL std	1	1	STD30935	05/26/09 22:14
27	4M46946	WG303199-05 80ppm TCL std	1	1	STD30935	05/26/09 22:49
28	4M46947	WG303199-06 100ppm TCL std	1	1	STD30935	05/26/09 23:24
29	4M46948	WG303199-07 50ppm TCL alt source std	1	1	STD30966	05/27/09 00:00
30	4M46949	WG302712-01 BLK 5/20	10	1	SOIL	05/27/09 00:36
31	4M46950	L09050419-03 10X	10	10	SOIL	05/27/09 01:12
32	4M46951	L09050419-05 10X	10	10	SOIL	05/27/09 01:48

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 27-MAY-09



Microbac

Microbac Laboratories Inc.

Instrument Run Log

00108199

Instrument: HPMS4 Dataset: 052609

Analyst1: MDC Analyst2: NA

Method: 8270C SOP: MSS01 Rev: 14

Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 28854

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups:

Internal STD: STD20900 Surrogate STD: NA

Comments

Seq.	Rerun	Dil.	Reason	Analytes
20				
	Pentachlorophenol >30%D.			
21				
	#39, 78, 114 >30%D.			
31				
	Four surrogates low: SMI (matrix is gloves).			
32	X		Missed Tune	

Page: 2 Approved: 27-MAY-09

Microbac Laboratories Inc.

Instrument Run Log

00108200

Instrument: HPMS4 Dataset: 081109

Analyst1: CAA Analyst2: NA

Method: 8270C SOP: MSS01 Rev: 14

Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 29755

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG309094, WG309444, WG309440, WG309468

Internal STD: COA13928 Surrogate STD: NA Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	4M47699	WG309400-01 50ppm DFTPP	1	1	STD31842	08/11/09 09:02
2	4M47700	WG309400-02 50ppm MEGAMIX STD	1	1	STD34003	08/11/09 09:20
3	4M47701	L09080061-19 200X	1	200		08/11/09 09:55
4	4M47702	WG309450-01 50ppm DFTPP	1	1	STD31842	08/11/09 13:08
5	4M47703	WG309450-02 50ppm MEGAMIX STD	1	1	STD34003	08/11/09 13:26
6	4M47704	WG309385-01 BLK 8/11	10	1	SOIL	08/11/09 14:01
7	4M47705	WG309385-02 LCS 8/11	10	1	SOIL	08/11/09 14:36
8	4M47706	WG309385-03 LCS DUP 8/11	10	1	SOIL	08/11/09 15:11
9	4M47707	WG309386-01 BLK 8/11	11	1		08/11/09 15:45
10	4M47708	WG309386-02 LCS 8/11	11	1		08/11/09 16:20
11	4M47709	WG309386-03 LCS DUP 8/11	11	1		08/11/09 16:55
12	4M47710	WG309434-01 BLK 8/11	7	1	SOIL	08/11/09 17:29
13	4M47711	WG309434-02 LCS 8/11	7	1	SOIL	08/11/09 18:04
14	4M47712	WG309434-03 LCS DUP 8/11	7	1	SOIL	08/11/09 18:39
15	4M47713	L09080192-01	7	1	SOIL	08/11/09 19:13
16	4M47714	L09080192-02	7	1	SOIL	08/11/09 19:48
17	4M47715	L09080192-03	7	1	SOIL	08/11/09 20:23
18	4M47716	L09080192-04	7	1	SOIL	08/11/09 20:58
19	4M47717	L09080192-05	7	1	SOIL	08/11/09 21:32
20	4M47718	L09080205-01	7	1	SOIL	08/11/09 22:07
21	4M47719	L09080205-04	7	1	SOIL	08/11/09 22:42
22	4M47720	L09080205-08	7	1	SOIL	08/11/09 23:16
23	4M47721	L09080205-06 20X	7	20	SOIL	08/11/09 23:51
24	4M47722	L09080149-05 20X	10	20	SOIL	08/12/09 00:25
25	4M47723	L09080149-03 20X	10	20	SOIL	08/12/09 01:00
26	4M47724	L09080132-01 20X	11	20		08/12/09 01:34

Comments

Seq.	Rerun	Dil.	Reason	Analytes
23				
	L09080205-06 20X - Analyzed at a dilution due to extract's dark apperance and viscosity.			
24				
	L09080149-05 20X - Analyzed at a dilution due to extract's viscosity and elevated final volume.			
25				
	L09080149-03 20X - Analyzed at a dilution due to extract's viscosity and elevated final volume.			

Page: 1 Approved: 12-AUG-09

Microbac Laboratories Inc.

Instrument Run Log

00108201

Instrument: HPMS4 Dataset: 081109

Analyst1: CAA Analyst2: NA

Method: 8270C SOP: MSS01 Rev: 14

Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 29755

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG309094, WG309444, WG309440, WG309468

Internal STD: COA13928 Surrogate STD: NA

Comments

Seq.	Rerun	Dil.	Reason	Analytes
26	X	20	Missed Tune	
	L09080132-01 20X - Analyzed at a dilution due to extract's apperance and viscosity.			

Page: 2 Approved: 12-AUG-09

Microbac Laboratories Inc.

00108202

Data Checklist

Date: 26-MAY-2009
Analyst: MDC
Analyst: NA
Method: 8270
Instrument: HPMS4
Curve Workgroup: NA
Runlog ID: 28254
Analytical Workgroups: ICAL, L09050419

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	NA
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	NA
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	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	MDC
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:
27-MAY-2009



Secondary Reviewer:
27-MAY-2009



CHECKLIST1 - Modified 03/05/2008
Generated: MAY-27-2009 13:00:03

Microbac Laboratories Inc.

00108203

Data Checklist

Date: 11-AUG-2009
Analyst: CAA
Analyst: NA
Method: 8270
Instrument: HPMS4
Curve Workgroup: NA
Runlog ID: 29577
Analytical Workgroups: L09080061, L09080192, L09080205, L09080149

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
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 (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	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	CAA
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:
12-AUG-2009

Secondary Reviewer:
12-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 11:12:36

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108204

Analytical Method: 8270C AAB#: WG309468

Login Number: L09080192

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
SITE 1-TP-BF	01	08/09/09					08/11/09	2	14		08/11/09	.3	14	
SITE 1-TP-BF	01	08/09/09					08/11/09	2	14		08/11/09	.3	40	
SITE 1-TP-TS	02	08/09/09					08/11/09	2	14		08/11/09	.4	40	
SITE 1-TP-TS	02	08/09/09					08/11/09	2	14		08/11/09	.4	14	
SITE 2-BLM-TS	03	08/09/09					08/11/09	2	14		08/11/09	.4	40	
SITE 2-BLM-TS	03	08/09/09					08/11/09	2	14		08/11/09	.4	14	
SITE 2-BLM-BF	04	08/09/09					08/11/09	2	14		08/11/09	.4	14	
SITE 2-BLM-BF	04	08/09/09					08/11/09	2	14		08/11/09	.4	40	
SITE 3-ML-BF/TS	05	08/09/09					08/11/09	2	14		08/11/09	.4	14	
SITE 3-ML-BF/TS	05	08/09/09					08/11/09	2	14		08/11/09	.4	40	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1464092
Report generated 08/12/2009 13:05

Login Number: L09080192
Instrument Id: HPMS4
Workgroup (AAB#): WG309468

Method: 8270
CAL ID: HPMS4-26-MAY-09
Matrix: Soil

Sample Number	Dilution	Tag	1	2	3	4	5	6
L09080192-01	1.00	01	68.2	61.5	57.5	63.9	67.7	58.5
L09080192-02	1.00	01	102	59.6	58.2	69.8	70.0	59.8
L09080192-03	1.00	01	65.5	46.6	48.8	58.4	63.6	51.4
L09080192-04	1.00	01	76.9	57.1	41.3	53.3	66.5	49.0
L09080192-05	1.00	01	104	59.7	55.6	63.4	89.7	56.9
WG309434-01	1.00	01	72.1	59.4	55.4	65.0	86.9	56.3
WG309434-02	1.00	01	89.4	56.7	57.0	66.0	83.0	57.8
WG309434-03	1.00	01	103	68.3	65.6	74.0	92.1	68.1

Surrogates	Surrogate Limits		
1 - 2,4,6-Tribromophenol	19	-	122
2 - 2-Fluorobiphenyl	30	-	115
3 - 2-Fluorophenol	25	-	121
4 - Nitrobenzene-d5	23	-	120
5 - p-Terphenyl-d14	18	-	137
6 - Phenol-d5	24	-	113

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1463827
Report generated: 08/12/2009 13:07

00108206

METHOD BLANK SUMMARY

Login Number:	L09080192	Work Group:	WG309468
Blank File ID:	4M47710	Blank Sample ID:	WG309434-01
Prep Date:	08/11/09 10:59	Instrument ID:	HPMS4
Analyzed Date:	08/11/09 17:29	Method:	8270C
Analyst:	CAA		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309434-02	4M47711	08/11/09 18:04	01
LCS2	WG309434-03	4M47712	08/11/09 18:39	01
SITE 1-TP-BF	L09080192-01	4M47713	08/11/09 19:13	01
SITE 1-TP-TS	L09080192-02	4M47714	08/11/09 19:48	01
SITE 2-BLM-TS	L09080192-03	4M47715	08/11/09 20:23	01
SITE 2-BLM-BF	L09080192-04	4M47716	08/11/09 20:58	01
SITE 3-ML-BF/TS	L09080192-05	4M47717	08/11/09 21:32	01

Report Name: BLANK_SUMMARY
PDF File ID: 1464093
Report generated 08/12/2009 13:05

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108207

Login Number:L09080192 Prep Date:08/11/09 10:59 Sample ID:WG309434-01
Instrument ID:HPMS4 Run Date:08/11/09 17:29 Prep Method:3545
File ID:4M47710 Analyst:CAA Method:8270C
Workgroup (AAB#):WG309468 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS4-26-MAY-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
1,2,4-Trichlorobenzene	82.5	165	82.5	1	U
1,2-Dichlorobenzene	82.5	165	82.5	1	U
1,3-Dichlorobenzene	82.5	165	82.5	1	U
1,4-Dichlorobenzene	82.5	165	82.5	1	U
2,4,5-Trichlorophenol	82.5	165	82.5	1	U
2,4,6-Trichlorophenol	82.5	165	82.5	1	U
2,4-Dichlorophenol	82.5	165	82.5	1	U
2,4-Dimethylphenol	82.5	165	82.5	1	U
2,4-Dinitrophenol	330	825	330	1	U
2,4-Dinitrotoluene	82.5	165	82.5	1	U
2,6-Dinitrotoluene	82.5	165	82.5	1	U
2-Chloronaphthalene	82.5	165	82.5	1	U
2-Chlorophenol	82.5	165	82.5	1	U
2-Methylnaphthalene	82.5	165	82.5	1	U
2-Methylphenol	82.5	165	82.5	1	U
2-Nitroaniline	330	825	330	1	U
2-Nitrophenol	82.5	165	82.5	1	U
3,3'-Dichlorobenzidine	165	330	165	1	U
3-,4-Methylphenol	82.5	165	82.5	1	U
3-Nitroaniline	330	825	330	1	U
4,6-Dinitro-2-methylphenol	330	825	330	1	U
4-Bromophenyl-phenylether	82.5	165	82.5	1	U
4-Chloro-3-methylphenol	82.5	165	82.5	1	U
4-Chloroaniline	82.5	165	82.5	1	U
4-Chlorophenyl-phenyl ether	82.5	165	82.5	1	U
4-Nitroaniline	330	825	330	1	U
4-Nitrophenol	330	825	330	1	U
Acenaphthene	82.5	165	82.5	1	U
Acenaphthylene	82.5	165	82.5	1	U
Anthracene	82.5	165	82.5	1	U
Benzo(a)anthracene	82.5	165	82.5	1	U
Benzo(a)pyrene	82.5	165	82.5	1	U
Benzo(b)fluoranthene	82.5	165	82.5	1	U
Benzo(g,h,i)Perylene	82.5	165	82.5	1	U
Benzo(k)fluoranthene	82.5	165	82.5	1	U
Benzoic acid	330	5000	330	1	U
Benzyl alcohol	82.5	165	82.5	1	U
Bis(2-Chloroethoxy)Methane	82.5	165	82.5	1	U
Bis(2-Chloroethyl)ether	82.5	165	82.5	1	U
bis(2-Chloroisopropyl)ether	82.5	165	82.5	1	U
bis(2-Ethylhexyl)phthalate	82.5	165	82.5	1	U
Butylbenzylphthalate	82.5	165	82.5	1	U

Report Name:BLANK
PDF ID: 1463825
12-AUG-2009 13:05

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108208

Login Number:L09080192 Prep Date:08/11/09 10:59 Sample ID:WG309434-01
Instrument ID:HPMS4 Run Date:08/11/09 17:29 Prep Method:3545
File ID:4M47710 Analyst:CAA Method:8270C
Workgroup (AAB#):WG309468 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS4-26-MAY-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Chrysene	82.5	165	82.5	1	U
Di-N-Butylphthalate	82.5	165	82.5	1	U
Di-n-octylphthalate	82.5	165	82.5	1	U
Dibenzo(a,h)Anthracene	82.5	165	82.5	1	U
Dibenzofuran	82.5	165	82.5	1	U
Diethylphthalate	82.5	165	82.5	1	U
Dimethylphthalate	82.5	165	82.5	1	U
Fluoranthene	82.5	165	82.5	1	U
Fluorene	82.5	165	82.5	1	U
Hexachlorobenzene	82.5	165	82.5	1	U
Hexachlorobutadiene	82.5	165	82.5	1	U
Hexachlorocyclopentadiene	82.5	165	82.5	1	U
Hexachloroethane	82.5	165	82.5	1	U
Indeno(1,2,3-cd)pyrene	82.5	165	82.5	1	U
Isophorone	82.5	165	82.5	1	U
N-Nitrosodiphenylamine	82.5	165	82.5	1	U
N-Nitrosodipropylamine	82.5	165	82.5	1	U
Naphthalene	82.5	165	82.5	1	U
Nitrobenzene	82.5	165	82.5	1	U
Pentachlorophenol	330	825	330	1	U
Phenanthrene	82.5	165	82.5	1	U
Phenol	82.5	165	82.5	1	U
Pyrene	82.5	165	82.5	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
2,4,6-Tribromophenol	72.1	19	-	122	PASS
2-Fluorobiphenyl	59.4	30	-	115	PASS
2-Fluorophenol	55.4	25	-	121	PASS
Nitrobenzene-d5	65.0	23	-	120	PASS
p-Terphenyl-d14	86.9	18	-	137	PASS
Phenol-d5	56.3	24	-	113	PASS

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: 1463825
12-AUG-2009 13:05

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108209

Login Number: L09080192 Analyst: CAA Prep Method: 3545
Instrument ID: HPMS4 Matrix: Soil Method: 8270C
Workgroup (AAB#): WG309468 Units: ug/kg
QC Key: STD Lot #: STD33345

Sample ID: WG309434-02 LCS File ID: 4M47711 Run Date: 08/11/2009 18:04
Sample ID: WG309434-03 LCS2 File ID: 4M47712 Run Date: 08/11/2009 18:39

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,2,4-Trichlorobenzene	2500	1380	55.2	2500	1580	63.4	13.8	35 - 100	40	
1,2-Dichlorobenzene	2500	1330	53.1	2500	1580	63.4	17.7	35 - 95	40	
1,3-Dichlorobenzene	2500	1310	52.5	2500	1540	61.8	16.4	35 - 100	40	
1,4-Dichlorobenzene	2500	1290	51.6	2500	1570	62.6	19.3	35 - 105	40	
2,4,5-Trichlorophenol	2500	1640	65.4	2500	1940	77.5	16.9	40 - 110	40	
2,4,6-Trichlorophenol	2500	1460	58.2	2500	1760	70.5	19.1	40 - 110	40	
2,4-Dichlorophenol	2500	1550	62.0	2500	1750	70.1	12.3	35 - 110	40	
2,4-Dimethylphenol	2500	1420	57.0	2500	1640	65.7	14.3	30 - 105	40	
2,4-Dinitrophenol	2500	2610	104	2500	2830	113	8.06	40 - 130	40	
2,4-Dinitrotoluene	2500	2110	84.5	2500	2500	99.9	16.7	50 - 130	40	
2,6-Dinitrotoluene	2500	1590	63.7	2500	2010	80.6	23.4	50 - 125	40	
2-Chloronaphthalene	2500	1220	49.0	2500	1490	59.5	19.4	40 - 105	40	
2-Chlorophenol	2500	1350	53.9	2500	1620	64.9	18.5	35 - 105	40	
2-Methylnaphthalene	2500	1560	62.3	2500	1760	70.5	12.4	35 - 115	40	
2-Methylphenol	2500	1350	54.0	2500	1610	64.3	17.3	35 - 100	40	
2-Nitroaniline	2500	1760	70.3	2500	2170	86.7	20.9	45 - 120	40	
2-Nitrophenol	2500	1540	61.5	2500	1720	68.8	11.2	35 - 100	40	
3,3'-Dichlorobenzidine	2500	2160	86.3	2500	2350	94.1	8.61	40 - 140	40	
3-,4-Methylphenol	2500	1630	65.1	2500	1890	75.6	15.0	35 - 105	40	
3-Nitroaniline	2500	1880	75.2	2500	2380	95.1	23.4	50 - 130	40	
4,6-Dinitro-2-methylphenol	2500	2710	108	2500	2920	117	7.46	45 - 130	40	
4-Bromophenyl-phenylether	2500	1740	69.6	2500	2090	83.8	18.4	40 - 115	40	
4-Chloro-3-methylphenol	2500	1680	67.4	2500	1940	77.6	14.1	40 - 100	40	
4-Chloroaniline	2500	1280	51.0	2500	1560	62.5	20.2	35 - 100	40	
4-Chlorophenyl-phenyl ether	2500	1520	60.8	2500	1890	75.7	21.8	40 - 110	40	
4-Nitroaniline	2500	2270	90.6	2500	2580	103	13.0	35 - 140	40	
4-Nitrophenol	2500	2680	107	2500	2900	116	8.03	45 - 140	40	
Acenaphthene	2500	1500	60.0	2500	1800	72.1	18.3	40 - 110	40	
Acenaphthylene	2500	1550	61.9	2500	1930	77.2	22.0	40 - 110	40	
Anthracene	2500	1990	79.4	2500	2280	91.1	13.7	55 - 130	40	
Benzo(a)anthracene	2500	2000	80.1	2500	2170	86.7	7.88	50 - 130	40	
Benzo(a)pyrene	2500	2270	90.6	2500	2480	99.1	8.91	50 - 130	40	
Benzo(b)fluoranthene	2500	2190	87.5	2500	2440	97.7	11.0	45 - 125	40	
Benzo(g,h,i)Perylene	2500	2290	91.6	2500	2450	98.1	6.78	40 - 140	40	
Benzo(k)fluoranthene	2500	2300	92.0	2500	2490	99.7	7.96	45 - 135	40	
Benzoic acid	2500	4130	165	2500	4450	178	7.45	20 - 110	40	*
Benzyl alcohol	2500	1320	52.8	2500	1540	61.7	15.6	30 - 100	40	
Bis(2-Chloroethoxy)Methane	2500	1250	50.0	2500	1470	58.7	16.0	30 - 100	40	
Bis(2-Chloroethyl)ether	2500	1380	55.2	2500	1660	66.2	18.3	30 - 100	40	
bis(2-Chloroisopropyl)ether	2500	1290	51.7	2500	1530	61.0	16.5	20 - 115	40	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1463826
Report generated: 08/12/2009 13:05

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108210

Login Number: L09080192 Analyst: CAA Prep Method: 3545
Instrument ID: HPMS4 Matrix: Soil Method: 8270C
Workgroup (AAB#): WG309468 Units: ug/kg
QC Key: STD Lot #: STD33345

Sample ID: WG309434-02 LCS File ID: 4M47711 Run Date: 08/11/2009 18:04
Sample ID: WG309434-03 LCS2 File ID: 4M47712 Run Date: 08/11/2009 18:39

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
bis(2-Ethylhexyl)phthalate	2500	2460	98.2	2500	2730	109	10.5	50 - 150	40	
Butylbenzylphthalate	2500	2570	103	2500	2880	115	11.7	50 - 150	40	
Chrysene	2500	2100	84.1	2500	2320	92.8	9.80	55 - 140	40	
Di-N-Butylphthalate	2500	2570	103	2500	2770	111	7.21	55 - 140	40	
Di-n-octylphthalate	2500	2860	114	2500	3270	131	13.2	40 - 145	40	
Dibenzo(a,h)Anthracene	2500	2300	92.1	2500	2430	97.0	5.23	40 - 140	40	
Dibenzofuran	2500	1610	64.6	2500	2030	81.1	22.7	35 - 110	40	
Diethylphthalate	2500	2100	84.1	2500	2590	103	20.6	50 - 130	40	
Dimethylphthalate	2500	1710	68.4	2500	2150	86.2	23.0	45 - 115	40	
Fluoranthene	2500	2290	91.5	2500	2490	99.5	8.45	55 - 140	40	
Fluorene	2500	1510	60.3	2500	1850	74.1	20.6	45 - 115	40	
Hexachlorobenzene	2500	1870	74.7	2500	2180	87.2	15.5	45 - 120	40	
Hexachlorobutadiene	2500	1600	63.9	2500	1830	73.4	13.9	30 - 100	40	
Hexachlorocyclopentadiene	2500	851	34.1	2500	814	32.6	4.46	30 - 110	40	
Hexachloroethane	2500	1440	57.4	2500	1690	67.4	16.0	30 - 100	40	
Indeno(1,2,3-cd)pyrene	2500	2270	90.9	2500	2410	96.3	5.71	50 - 135	40	
Isophorone	2500	1470	58.8	2500	1670	66.8	12.8	35 - 100	40	
N-Nitrosodiphenylamine	2500	1690	67.6	2500	1960	78.5	15.0	50 - 130	40	
N-Nitrosodipropylamine	2500	1620	65.0	2500	1920	76.6	16.5	35 - 110	40	
Naphthalene	2500	1380	55.4	2500	1630	65.1	16.2	35 - 100	40	
Nitrobenzene	2500	1540	61.6	2500	1740	69.5	12.0	35 - 100	40	
Pentachlorophenol	2500	2830	113	2500	3030	121	6.95	50 - 150	40	
Phenanthrene	2500	1940	77.5	2500	2220	88.7	13.4	50 - 130	40	
Phenol	2500	1380	55.3	2500	1630	65.2	16.5	35 - 100	40	
Pyrene	2500	2010	80.2	2500	2280	91.0	12.6	35 - 140	40	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
2,4,6-Tribromophenol	89.4	103	19 - 122	PASS
2-Fluorobiphenyl	56.7	68.3	30 - 115	PASS
2-Fluorophenol	57.0	65.6	25 - 121	PASS
Nitrobenzene-d5	66.0	74.0	23 - 120	PASS
p-Terphenyl-d14	83.0	92.1	18 - 137	PASS
Phenol-d5	57.8	68.1	24 - 113	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1463826
Report generated: 08/12/2009 13:05

DFTPP

Login Number: L09080192
Instrument: HPMS4
Analyst: MDC
Workgroup: WG301596

Tune ID: WG301596-01
Run Date: 05/26/2009
Run Time: 13:39
File ID: 4M46930
Cal ID: HPMS4-26-MAY-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	44.8	261827	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	46.9	274102	PASS
70.0	69.0	0	2.00	0.440	1207	PASS
127	198	40.0	60.0	52.7	307669	PASS
197	198	0	1.00	0.205	1195	PASS
198	198	100	100	100	583936	PASS
199	198	5.00	9.00	7.49	43738	PASS
275	198	10.0	30.0	22.5	131240	PASS
365	198	1.00	100	2.72	15891	PASS
441	443	0.0100	100	83.3	73706	PASS
442	198	40.0	100	74.7	436416	PASS
443	442	17.0	23.0	20.3	88440	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG301596-02	STD-CCV	01	05/26/2009 13:58	
WG301596-03	STD	01	05/26/2009 14:34	
WG301596-04	STD	01	05/26/2009 15:09	
WG301596-05	STD	01	05/26/2009 15:44	
WG301596-06	STD	01	05/26/2009 16:19	
WG301596-07	STD	01	05/26/2009 16:54	
WG301596-08	STD	01	05/26/2009 17:30	
WG301596-09	STD	01	05/26/2009 18:05	
WG301596-10	SSCV	01	05/26/2009 18:41	
WG301596-11	SSCV	01	05/26/2009 19:16	
WG301596-12	SSCV	01	05/26/2009 19:51	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1464096
Report generated 08/12/2009 13:06

DFTPP

Login Number: L09080192
Instrument: HPMS4
Analyst: CAA
Workgroup: WG309450

Tune ID: WG309450-01
Run Date: 08/11/2009
Run Time: 13:08
File ID: 4M47702
Cal ID: HPMS4-26-MAY-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	54.3	101978	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	50.2	94242	PASS
70.0	69.0	0	2.00	0.316	298	PASS
127	198	40.0	60.0	58.3	109498	PASS
197	198	0	1.00	0.608	1142	PASS
198	198	100	100	100	187733	PASS
199	198	5.00	9.00	6.92	12989	PASS
275	198	10.0	30.0	24.0	45056	PASS
365	198	1.00	100	4.01	7520	PASS
441	443	0.0100	100	98.3	23760	PASS
442	198	40.0	100	69.0	129541	PASS
443	442	17.0	23.0	18.7	24167	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG309450-02	CCV	01	08/11/2009 13:26	
WG309434-01	BLANK	01	08/11/2009 17:29	
WG309434-02	LCS	01	08/11/2009 18:04	
WG309434-03	LCS2	01	08/11/2009 18:39	
L09080192-01	SITE 1-TP-BF	01	08/11/2009 19:13	
L09080192-02	SITE 1-TP-TS	01	08/11/2009 19:48	
L09080192-03	SITE 2-BLM-TS	01	08/11/2009 20:23	
L09080192-04	SITE 2-BLM-BF	01	08/11/2009 20:58	
L09080192-05	SITE 3-ML-BF/TS	01	08/11/2009 21:32	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1464096
Report generated 08/12/2009 13:06

Login Number: L09080192 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
ICAL Workgroup: WG301596 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,4-Dichlorobenzene	CCC	1.658	7.44		
2,4,6-Trichlorophenol	CCC	0.3977	4.51		
2,4-Dichlorophenol	CCC	0.2909	5.32		
2-Nitrophenol	CCC	0.2097	5.23		
4-Chloro-3-Methylphenol	CCC	0.3150	4.99		
Acenaphthene	CCC	1.301	13.1		
Benzo[a]pyrene	CCC	1.268	6.63		
Di-n-Octyl Phthalate	CCC	1.513	10.9		
Fluoranthene	CCC	1.311	10.2		
Hexachlorobutadiene	CCC	0.1766	6.93		
Pentachlorophenol	CCC	0.09363	24.4	0.99500	
Phenol	CCC	1.897	5.56		
2,4-Dinitrophenol	SPCC	0.1082	39.3	0.99500	
4-Nitrophenol	SPCC	0.2531	10.7		
Hexachlorocyclopentadiene	SPCC	0.1496	30.8	0.99500	
n-Nitrosodipropylamine	SPCC	0.9646	11.4		
1,2,4-Trichlorobenzene		0.3486	9.43		
1,2-Dichlorobenzene		1.484	8.26		
1,3-Dichlorobenzene		1.643	6.56		
2,4,5-Trichlorophenol		0.3870	4.84		
2,4-Dimethylphenol		0.3767	6.50		
2,4-Dinitrotoluene		0.4314	6.57		
2,6-Dinitrotoluene		0.3471	6.36		
2-Chloronaphthalene		1.419	12.7		
2-Chlorophenol		1.497	4.17		
2-Methylnaphthalene		0.7144	10.3		
2-Methylphenol		1.107	6.59		
2-Nitroaniline		0.4072	4.67		
3,3'-Dichlorobenzidine		0.4000	7.65		
3-Nitroaniline		0.3538	10.1		
4,6-Dinitro-2-Methylphenol		0.1133	15.5	0.99800	
4-Bromophenyl Phenyl Ether		0.2414	8.14		
4-Chloroaniline		0.4443	4.84		
4-Chlorophenyl Phenyl Ether		0.7223	12.2		
4-Nitroaniline		0.3642	3.27		
Acenaphthylene		2.024	15.7	0.99600	
Anthracene		1.327	13.1		
Benzo[a]anthracene		1.288	8.55		
Benzo[b]fluoranthene		1.333	4.09		
Benzo[ghi]perylene		1.109	3.58		
Benzo[k]fluoranthene		1.209	9.85		
Benzoic Acid		0.05453	68.6		0.99100
Benzyl Alcohol		1.004	3.03		
Butyl Benzyl Phthalate		0.6429	10.2		
Chrysene		1.197	9.40		

INT_CAL - Modified 03/06/2008
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Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00108214

Login Number: L09080192
Analytical Method: 8270C
ICAL Workgroup: WG301596

Instrument ID: HPMS4
Initial Calibration Date: 26-MAY-09 18:05
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Di-n-Butyl Phthalate		1.410	12.6		
Dibenz[ah]anthracene		1.100	3.66		
Dibenzofuran		1.705	16.0	0.99600	
Diethylphthalate		1.406	12.0		
Dimethylphthalate		1.396	11.2		
Fluorene		1.466	14.7		
Hexachlorobenzene		0.2425	8.14		
Hexachloroethane		0.5955	4.20		
Indeno[1,2,3-cd]pyrene		1.301	3.83		
Isophorone		0.7895	9.61		
Naphthalene		1.159	14.0		
Nitrobenzene		0.4106	7.83		
Phenanthrene		1.314	13.2		
Pyrene		1.456	11.4		
bis(2-Chloroethoxy)methane		0.5767	15.3	0.99500	
bis(2-Chloroethyl)ether		1.139	5.70		
bis(2-Chloroisopropyl)ether		2.145	8.04		
bis(2-Ethylhexyl)phthalate		0.8907	9.48		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
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Login Number: L09080192
Analytical Method: 8270C
Instrument ID: HPMS4
Initial Calibration Date: 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-02			WG301596-03			WG301596-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	50.0	632614.000	1.556	3.00	35548.0000	1.923	10.0	115714.000	1.659
2,4,6-Trichlorophenol	50.0	317357.000	0.3874	3.00	15358.0000	0.4349	10.0	54107.0000	0.3959
2,4-Dichlorophenol	50.0	431298.000	0.2803	3.00	22018.0000	0.3209	10.0	76179.0000	0.2911
2-Nitrophenol	50.0	312344.000	0.2030	3.00	14628.0000	0.2132	10.0	55698.0000	0.2128
4-Chloro-3-Methylphenol	50.0	478290.000	0.3108	3.00	23629.0000	0.3444	10.0	82944.0000	0.3169
Acenaphthene	50.0	996420.000	1.216	3.00	56774.0000	1.608	10.0	189612.000	1.387
Benzo[a]pyrene	50.0	1630404.00	1.230	3.00	80589.0000	1.450	10.0	277757.000	1.255
Di-n-Octyl Phthalate	50.0	1899758.00	1.433	3.00	100707.000	1.812	10.0	350205.000	1.582
Fluoranthene	50.0	1744586.00	1.218	3.00	96435.0000	1.552	10.0	328905.000	1.357
Hexachlorobutadiene	50.0	261362.000	0.1699	3.00	13745.0000	0.2003	10.0	47369.0000	0.1810
Pentachlorophenol	50.0	145192.000	0.1014	NA	NA	NA	NA	NA	NA
Phenol	50.0	735377.000	1.809	3.00	39105.0000	2.115	10.0	134721.000	1.931
2,4-Dinitrophenol	50.0	93541.0000	0.1142	NA	NA	NA	NA	NA	NA
4-Nitrophenol	50.0	210873.000	0.2574	NA	NA	NA	10.0	30924.0000	0.2263
Hexachlorocyclopentadiene	50.0	156761.000	0.1913	3.00	1977.00000	0.05600	10.0	15753.0000	0.1153
n-Nitrosodipropylamine	50.0	368528.000	0.9064	3.00	21147.0000	1.144	10.0	72700.0000	1.042
1,2,4-Trichlorobenzene	50.0	514553.000	0.3344	3.00	28276.0000	0.4122	10.0	94553.0000	0.3613
1,2-Dichlorobenzene	50.0	559610.000	1.376	3.00	31881.0000	1.725	10.0	107141.000	1.536
1,3-Dichlorobenzene	50.0	626977.000	1.542	3.00	34696.0000	1.877	10.0	116021.000	1.663
2,4,5-Trichlorophenol	50.0	305220.000	0.3726	3.00	14600.0000	0.4134	10.0	53513.0000	0.3915
2,4-Dimethylphenol	50.0	561966.000	0.3652	3.00	28776.0000	0.4194	10.0	100468.000	0.3839
2,4-Dinitrotoluene	50.0	344473.000	0.4205	3.00	16862.0000	0.4774	10.0	61050.0000	0.4467
2,6-Dinitrotoluene	50.0	273334.000	0.3336	3.00	13838.0000	0.3918	10.0	48444.0000	0.3545
2-Chloronaphthalene	50.0	1095479.00	1.337	3.00	62361.0000	1.766	10.0	205049.000	1.500
2-Chlorophenol	50.0	583660.000	1.436	3.00	29741.0000	1.609	10.0	103685.000	1.486
2-Methylnaphthalene	50.0	1045252.00	0.6793	3.00	57360.0000	0.8361	10.0	198609.000	0.7589
2-Methylphenol	50.0	425558.000	1.047	3.00	23061.0000	1.248	10.0	79222.0000	1.136
2-Nitroaniline	50.0	324297.000	0.3958	3.00	15787.0000	0.4470	10.0	54613.0000	0.3996
3,3'-Dichlorobenzidine	50.0	528925.000	0.3905	3.00	27450.0000	0.4717	10.0	89232.0000	0.3875
3-Nitroaniline	50.0	301445.000	0.3680	3.00	13873.0000	0.3928	10.0	44205.0000	0.3234
4,6-Dinitro-2-Methylphenol	50.0	163183.000	0.1140	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	50.0	324160.000	0.2264	3.00	17216.0000	0.2770	10.0	59220.0000	0.2444
4-Chloroaniline	50.0	697953.000	0.4536	3.00	33811.0000	0.4928	10.0	114384.000	0.4370
4-Chlorophenyl Phenyl Ether	50.0	549741.000	0.6710	3.00	30927.0000	0.8757	10.0	104712.000	0.7662
4-Nitroaniline	50.0	293782.000	0.3586	NA	NA	NA	10.0	50564.0000	0.3700
Acenaphthylene	50.0	1537324.00	1.877	3.00	90207.0000	2.554	10.0	303220.000	2.219
Anthracene	50.0	1763050.00	1.231	3.00	101208.000	1.629	10.0	343838.000	1.419
Benzo[a]anthracene	50.0	1664442.00	1.229	3.00	88186.0000	1.515	10.0	300857.000	1.307
Benzo[b]fluoranthene	50.0	1681192.00	1.268	3.00	77798.0000	1.400	10.0	294241.000	1.329
Benzo[ghi]perylene	50.0	1447020.00	1.091	3.00	66302.0000	1.193	10.0	241654.000	1.092
Benzo[k]fluoranthene	50.0	1486685.00	1.121	3.00	77798.0000	1.400	10.0	267715.000	1.209
Benzoic Acid	50.0	92682.0000	0.06020	NA	NA	NA	10.0	3630.00000	0.01390

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Login Number: L09080192 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-02			WG301596-03			WG301596-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	50.0	400734.000	0.9857	3.00	18757.0000	1.015	10.0	67945.0000	0.9740
Butyl Benzyl Phthalate	50.0	831238.000	0.6137	3.00	43793.0000	0.7525	10.0	155272.000	0.6743
Chrysene	50.0	1544722.00	1.141	3.00	83463.0000	1.434	10.0	276993.000	1.203
Di-n-Butyl Phthalate	50.0	1892486.00	1.322	3.00	105966.000	1.705	10.0	364980.000	1.506
Dibenz[ah]anthracene	50.0	1433825.00	1.081	3.00	65390.0000	1.177	10.0	235992.000	1.066
Dibenzofuran	50.0	1289853.00	1.574	3.00	76662.0000	2.171	10.0	255969.000	1.873
Diethylphthalate	50.0	1086320.00	1.326	3.00	60278.0000	1.707	10.0	206640.000	1.512
Dimethylphthalate	50.0	1075206.00	1.312	3.00	59711.0000	1.691	10.0	201560.000	1.475
Fluorene	50.0	1104761.00	1.349	3.00	65523.0000	1.855	10.0	215943.000	1.580
Hexachlorobenzene	50.0	326614.000	0.2281	3.00	17692.0000	0.2847	10.0	59421.0000	0.2452
Hexachloroethane	50.0	233834.000	0.5751	3.00	11930.0000	0.6454	10.0	40961.0000	0.5872
Indeno[1,2,3-cd]pyrene	50.0	1688044.00	1.273	3.00	77825.0000	1.400	10.0	283981.000	1.283
Isophorone	50.0	1164295.00	0.7567	3.00	63250.0000	0.9219	10.0	214901.000	0.8211
Naphthalene	50.0	1673752.00	1.088	3.00	98939.0000	1.442	10.0	328255.000	1.254
Nitrobenzene	50.0	607149.000	0.3946	3.00	32636.0000	0.4757	10.0	108922.000	0.4162
Phenanthrene	50.0	1753306.00	1.224	3.00	101242.000	1.629	10.0	336041.000	1.387
Pyrene	50.0	1855478.00	1.370	3.00	101716.000	1.748	10.0	352726.000	1.532
bis(2-Chloroethoxy)methane	50.0	828680.000	0.5386	3.00	49425.0000	0.7204	10.0	165103.000	0.6308
bis(2-Chloroethyl)ether	50.0	443906.000	1.092	3.00	23296.0000	1.260	10.0	82099.0000	1.177
bis(2-Chloroisopropyl)ether	50.0	808870.000	1.990	3.00	46034.0000	2.490	10.0	153938.000	2.207
bis(2-Ethylhexyl)phthalate	50.0	1151114.00	0.8499	3.00	60586.0000	1.041	10.0	212394.000	0.9223

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INITIAL CALIBRATION DATA

00108217

Login Number: L09080192
Analytical Method: 8270C

Instrument ID: HPMS4
Initial Calibration Date: 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-05			WG301596-06			WG301596-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	15.0	144534.000	1.741	25.0	237644.000	1.609	80.0	711919.000	1.545
2,4,6-Trichlorophenol	15.0	66588.0000	0.4069	25.0	115596.000	0.4003	80.0	353039.000	0.3743
2,4-Dichlorophenol	15.0	94389.0000	0.3053	25.0	156211.000	0.2833	80.0	486532.000	0.2717
2-Nitrophenol	15.0	72272.0000	0.2337	25.0	114269.000	0.2073	80.0	354537.000	0.1980
4-Chloro-3-Methylphenol	15.0	101897.000	0.3295	25.0	173445.000	0.3146	80.0	530596.000	0.2963
Acenaphthene	15.0	234307.000	1.432	25.0	386056.000	1.337	80.0	1106929.00	1.174
Benzo[a]pyrene	15.0	346706.000	1.330	25.0	586561.000	1.255	80.0	1822627.00	1.193
Di-n-Octyl Phthalate	15.0	426424.000	1.635	25.0	727176.000	1.556	80.0	2146857.00	1.405
Fluoranthene	15.0	409664.000	1.437	25.0	682714.000	1.341	80.0	1979179.00	1.203
Hexachlorobutadiene	15.0	57812.0000	0.1870	25.0	96024.0000	0.1742	80.0	294696.000	0.1645
Pentachlorophenol	15.0	16339.0000	0.05730	25.0	38217.0000	0.07510	80.0	163393.000	0.09930
Phenol	15.0	162695.000	1.960	25.0	273128.000	1.849	80.0	823141.000	1.786
2,4-Dinitrophenol	15.0	6949.00000	0.04250	25.0	20746.0000	0.07180	80.0	118971.000	0.1261
4-Nitrophenol	15.0	39960.0000	0.2442	25.0	62562.0000	0.2166	80.0	239932.000	0.2544
Hexachlorocyclopentadiene	15.0	21853.0000	0.1335	25.0	47263.0000	0.1637	80.0	178067.000	0.1888
n-Nitrosodipropylamine	15.0	87721.0000	1.057	25.0	146206.000	0.9897	80.0	408000.000	0.8853
1,2,4-Trichlorobenzene	15.0	114998.000	0.3719	25.0	193410.000	0.3508	80.0	576988.000	0.3222
1,2-Dichlorobenzene	15.0	130694.000	1.574	25.0	217135.000	1.470	80.0	626862.000	1.360
1,3-Dichlorobenzene	15.0	141006.000	1.698	25.0	239379.000	1.621	80.0	715243.000	1.552
2,4,5-Trichlorophenol	15.0	67767.0000	0.4141	25.0	112311.000	0.3889	80.0	348465.000	0.3694
2,4-Dimethylphenol	15.0	122455.000	0.3960	25.0	214184.000	0.3885	80.0	627068.000	0.3501
2,4-Dinitrotoluene	15.0	74506.0000	0.4553	25.0	127252.000	0.4406	80.0	384871.000	0.4080
2,6-Dinitrotoluene	15.0	59385.0000	0.3629	25.0	99124.0000	0.3432	80.0	307769.000	0.3263
2-Chloronaphthalene	15.0	250888.000	1.533	25.0	417558.000	1.446	80.0	1204350.00	1.277
2-Chlorophenol	15.0	128883.000	1.552	25.0	215414.000	1.458	80.0	653951.000	1.419
2-Methylnaphthalene	15.0	241745.000	0.7818	25.0	400252.000	0.7260	80.0	1170990.00	0.6538
2-Methylphenol	15.0	96870.0000	1.167	25.0	159105.000	1.077	80.0	470862.000	1.022
2-Nitroaniline	15.0	69269.0000	0.4233	25.0	116349.000	0.4029	80.0	365631.000	0.3876
3,3'-Dichlorobenzidine	15.0	105754.000	0.3888	25.0	181375.000	0.3758	80.0	594993.000	0.3791
3-Nitroaniline	15.0	50536.0000	0.3088	25.0	88348.0000	0.3059	80.0	340858.000	0.3614
4,6-Dinitro-2-Methylphenol	15.0	24429.0000	0.08570	25.0	51039.0000	0.1002	80.0	197808.000	0.1202
4-Bromophenyl Phenyl Ether	15.0	74503.0000	0.2614	25.0	124659.000	0.2449	80.0	361970.000	0.2199
4-Chloroaniline	15.0	138230.000	0.4470	25.0	237603.000	0.4310	80.0	765028.000	0.4272
4-Chlorophenyl Phenyl Ether	15.0	130652.000	0.7984	25.0	213998.000	0.7410	80.0	619698.000	0.6570
4-Nitroaniline	15.0	62367.0000	0.3811	25.0	107512.000	0.3723	80.0	324667.000	0.3442
Acenaphthylene	15.0	372577.000	2.277	25.0	610595.000	2.114	80.0	1686168.00	1.788
Anthracene	15.0	418664.000	1.469	25.0	698594.000	1.372	80.0	1981646.00	1.204
Benzo[a]anthracene	15.0	370215.000	1.361	25.0	624746.000	1.295	80.0	1865789.00	1.189
Benzo[b]fluoranthene	15.0	371439.000	1.425	25.0	616382.000	1.319	80.0	2022286.00	1.324
Benzo[ghi]perylene	15.0	295446.000	1.133	25.0	510088.000	1.091	80.0	1619968.00	1.060
Benzo[k]fluoranthene	15.0	345583.000	1.325	25.0	553704.000	1.185	80.0	1680956.00	1.100
Benzoic Acid	15.0	5039.00000	0.01630	25.0	13573.0000	0.02460	80.0	117811.000	0.06580

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Login Number: L09080192 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-08			WG301596-09		
	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	100	1080973.00	1.619	120	1222100.00	1.611
2,4,6-Trichlorophenol	100	548565.000	0.3952	120	621778.000	0.3869
2,4-Dichlorophenol	100	756300.000	0.2876	120	865776.000	0.2867
2-Nitrophenol	100	543051.000	0.2065	120	613704.000	0.2032
4-Chloro-3-Methylphenol	100	808149.000	0.3073	120	906618.000	0.3002
Acenaphthene	100	1595648.00	1.149	120	1776666.00	1.106
Benzo[a]pyrene	100	2799052.00	1.224	120	3214081.00	1.212
Di-n-Octyl Phthalate	100	3117731.00	1.363	120	3500570.00	1.320
Fluoranthene	100	2875266.00	1.200	120	3214386.00	1.183
Hexachlorobutadiene	100	448751.000	0.1706	120	499524.000	0.1654
Pentachlorophenol	100	270852.000	0.1130	120	314422.000	0.1157
Phenol	100	1248012.00	1.869	120	1406398.00	1.853
2,4-Dinitrophenol	100	204820.000	0.1475	120	235949.000	0.1468
4-Nitrophenol	100	394064.000	0.2839	120	464310.000	0.2889
Hexachlorocyclopentadiene	100	244738.000	0.1763	120	276085.000	0.1718
n-Nitrosodipropylamine	100	572322.000	0.8573	120	634050.000	0.8356
1,2,4-Trichlorobenzene	100	846718.000	0.3219	120	947865.000	0.3139
1,2-Dichlorobenzene	100	947340.000	1.419	120	1071394.00	1.412
1,3-Dichlorobenzene	100	1070566.00	1.604	120	1207348.00	1.591
2,4,5-Trichlorophenol	100	528020.000	0.3804	120	588172.000	0.3660
2,4-Dimethylphenol	100	944747.000	0.3592	120	1059617.00	0.3509
2,4-Dinitrotoluene	100	568274.000	0.4093	120	631997.000	0.3933
2,6-Dinitrotoluene	100	467404.000	0.3367	120	526878.000	0.3279
2-Chloronaphthalene	100	1758946.00	1.267	120	1972845.00	1.228
2-Chlorophenol	100	1002747.00	1.502	120	1147344.00	1.512
2-Methylnaphthalene	100	1702031.00	0.6472	120	1908361.00	0.6319
2-Methylphenol	100	717610.000	1.075	120	825753.000	1.088
2-Nitroaniline	100	559076.000	0.4027	120	640602.000	0.3986
3,3'-Dichlorobenzidine	100	939925.000	0.4050	120	1076366.00	0.4018
3-Nitroaniline	100	537937.000	0.3875	120	615165.000	0.3828
4,6-Dinitro-2-Methylphenol	100	313637.000	0.1309	120	350573.000	0.1290
4-Bromophenyl Phenyl Ether	100	544939.000	0.2274	120	624504.000	0.2297
4-Chloroaniline	100	1142326.00	0.4343	120	1302928.00	0.4314
4-Chlorophenyl Phenyl Ether	100	897975.000	0.6468	120	1000062.00	0.6223
4-Nitroaniline	100	506955.000	0.3652	120	575714.000	0.3583
Acenaphthylene	100	2390972.00	1.722	120	2633395.00	1.639
Anthracene	100	2780400.00	1.160	120	3083025.00	1.134
Benzo[a]anthracene	100	2824273.00	1.217	120	3194654.00	1.192
Benzo[b]fluoranthene	100	3022785.00	1.322	120	3383903.00	1.276
Benzo[ghi]perylene	100	2540286.00	1.111	120	2918841.00	1.101
Benzo[k]fluoranthene	100	2406050.00	1.052	120	3384114.00	1.276
Benzoic Acid	100	256609.000	0.09760	120	312091.000	0.1033

INT_CAL - Modified 03/06/2008
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Login Number: L09080192 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-05			WG301596-06			WG301596-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	15.0	84544.0000	1.018	25.0	143076.000	0.9685	80.0	453610.000	0.9843
Butyl Benzyl Phthalate	15.0	191123.000	0.7027	25.0	319517.000	0.6621	80.0	928369.000	0.5915
Chrysene	15.0	345878.000	1.272	25.0	577202.000	1.196	80.0	1742997.00	1.111
Di-n-Butyl Phthalate	15.0	446312.000	1.566	25.0	747010.000	1.467	80.0	2093109.00	1.272
Dibenz[ah]anthracene	15.0	295505.000	1.133	25.0	509105.000	1.089	80.0	1601066.00	1.048
Dibenzofuran	15.0	311555.000	1.904	25.0	513551.000	1.778	80.0	1429816.00	1.516
Diethylphthalate	15.0	249909.000	1.527	25.0	412959.000	1.430	80.0	1209780.00	1.283
Dimethylphthalate	15.0	245373.000	1.500	25.0	410852.000	1.423	80.0	1194445.00	1.266
Fluorene	15.0	266429.000	1.628	25.0	436765.000	1.512	80.0	1222616.00	1.296
Hexachlorobenzene	15.0	72616.0000	0.2547	25.0	121940.000	0.2395	80.0	368348.000	0.2238
Hexachloroethane	15.0	50625.0000	0.6097	25.0	85134.0000	0.5763	80.0	261745.000	0.5680
Indeno[1,2,3-cd]pyrene	15.0	350452.000	1.344	25.0	601207.000	1.286	80.0	1889098.00	1.236
Isophorone	15.0	266604.000	0.8622	25.0	440532.000	0.7990	80.0	1291564.00	0.7212
Naphthalene	15.0	394945.000	1.277	25.0	659049.000	1.195	80.0	1863610.00	1.041
Nitrobenzene	15.0	134519.000	0.4350	25.0	226437.000	0.4107	80.0	682116.000	0.3809
Phenanthrene	15.0	414744.000	1.455	25.0	684799.000	1.345	80.0	1943923.00	1.181
Pyrene	15.0	433945.000	1.596	25.0	721641.000	1.495	80.0	2071272.00	1.320
bis(2-Chloroethoxy)methane	15.0	201460.000	0.6515	25.0	329414.000	0.5975	80.0	924290.000	0.5161
bis(2-Chloroethyl)ether	15.0	98800.0000	1.190	25.0	167652.000	1.135	80.0	493935.000	1.072
bis(2-Chloroisopropyl)ether	15.0	188495.000	2.270	25.0	314933.000	2.132	80.0	923402.000	2.004
bis(2-Ethylhexyl)phthalate	15.0	262965.000	0.9669	25.0	437670.000	0.9069	80.0	1290967.00	0.8225

INT_CAL - Modified 03/06/2008
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INITIAL CALIBRATION DATA

Login Number: L09080192 **Instrument ID:** HPMS4

Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05

Column ID: F

Analyte	WG301596-08			WG301596-09		
	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	100	697693.000	1.045	120	792431.000	1.044
Butyl Benzyl Phthalate	100	1353477.00	0.5832	120	1509786.00	0.5635
Chrysene	100	2613581.00	1.126	120	2926413.00	1.092
Di-n-Butyl Phthalate	100	2968117.00	1.239	120	3274729.00	1.205
Dibenz[ah]anthracene	100	2525722.00	1.104	120	2916227.00	1.100
Dibenzofuran	100	2012770.00	1.450	120	2206282.00	1.373
Diethylphthalate	100	1742710.00	1.255	120	1942614.00	1.209
Dimethylphthalate	100	1759330.00	1.267	120	1987513.00	1.237
Fluorene	100	1779390.00	1.282	120	1973838.00	1.228
Hexachlorobenzene	100	554904.000	0.2316	120	631356.000	0.2323
Hexachloroethane	100	402762.000	0.6033	120	454576.000	0.5990
Indeno[1,2,3-cd]pyrene	100	2971637.00	1.299	120	3420588.00	1.290
Isophorone	100	1906397.00	0.7249	120	2141103.00	0.7090
Naphthalene	100	2619032.00	0.9958	120	2944002.00	0.9748
Nitrobenzene	100	1022694.00	0.3889	120	1156670.00	0.3830
Phenanthrene	100	2770515.00	1.156	120	3074214.00	1.131
Pyrene	100	3042850.00	1.311	120	3413455.00	1.274
bis(2-Chloroethoxy)methane	100	1298134.00	0.4936	120	1403261.00	0.4647
bis(2-Chloroethyl)ether	100	735828.000	1.102	120	824820.000	1.087
bis(2-Chloroisopropyl)ether	100	1367288.00	2.048	120	1532312.00	2.019
bis(2-Ethylhexyl)phthalate	100	1903060.00	0.8200	120	2133024.00	0.7962

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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108221

Login Number: L09080192 Run Date: 05/26/2009 Sample ID: WG301596-10
Instrument ID: HPMS4 Run Time: 18:41 Method: 8270C
File ID: 4M46939 Analyst: MDC QC Key: STD
ICal Workgroup: WG301596 Cal ID: HPMS4 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,4-Dichlorobenzene	CCC	50000	47900	ug/L	1.59	4.20	30	
2,4,6-Trichlorophenol	CCC	50000	50200	ug/L	0.399	0.400	30	
2,4-Dichlorophenol	CCC	50000	50900	ug/L	0.296	1.70	30	
2-Nitrophenol	CCC	50000	53400	ug/L	0.224	6.70	30	
4-Chloro-3-Methylphenol	CCC	50000	51500	ug/L	0.325	3.00	30	
Acenaphthene	CCC	50000	46400	ug/L	1.21	7.20	30	
Benzo[a]pyrene	CCC	50000	50000	ug/L	1.27	0.100	30	
Di-n-Octyl Phthalate	CCC	50000	46500	ug/L	1.41	7.10	30	
Fluoranthene	CCC	50000	50200	ug/L	1.32	0.300	30	
Hexachlorobutadiene	CCC	50000	53800	ug/L	0.190	7.70	30	
n-Nitrosodiphenylamine	CCC	50000	45900	ug/L	0.663	8.30	30	
Pentachlorophenol	CCC	50000	67300	ug/L	0.142	34.6	30	*
Phenol	CCC	50000	50900	ug/L	1.93	1.70	30	
2,4-Dinitrophenol	SPCC	50000	59400	ug/L	0.150	18.9	30	
4-Nitrophenol	SPCC	50000	50800	ug/L	0.257	1.50	30	
Hexachlorocyclopentadiene	SPCC	50000	64000	ug/L	0.225	28.0	30	
n-Nitrosodipropylamine	SPCC	50000	53500	ug/L	1.03	7.10	30	
1,2,4-Trichlorobenzene		50000	49700	ug/L	0.347	0.600	30	
1,2-Dichlorobenzene		50000	48600	ug/L	1.44	2.80	30	
1,3-Dichlorobenzene		50000	49400	ug/L	1.62	1.30	30	
2,4,5-Trichlorophenol		50000	55500	ug/L	0.430	11.0	30	
2,4-Dimethylphenol		50000	49300	ug/L	0.372	1.30	30	
2,4-Dinitrotoluene		50000	50300	ug/L	0.434	0.500	30	
2,6-Dinitrotoluene		50000	50400	ug/L	0.350	0.800	30	
2-Chloronaphthalene		50000	41600	ug/L	1.18	16.7	30	
2-Chlorophenol		50000	49800	ug/L	1.49	0.400	30	
2-Methylnaphthalene		50000	52000	ug/L	0.743	4.00	30	
2-Methylphenol		50000	48100	ug/L	1.07	3.80	30	
2-Nitroaniline		50000	54700	ug/L	0.445	9.30	30	
3-,4-Methylphenol		50000	49700	ug/L	1.47	0.600	30	
3-Nitroaniline		50000	48000	ug/L	0.339	4.10	30	
4,6-Dinitro-2-Methylphenol		50000	56100	ug/L	0.135	12.3	30	
4-Bromophenyl Phenyl Ether		50000	42400	ug/L	0.205	15.2	30	
4-Chloroaniline		50000	52500	ug/L	0.467	5.00	30	
4-Chlorophenyl Phenyl Ether		50000	45100	ug/L	0.651	9.80	30	
4-Nitroaniline		50000	40700	ug/L	0.297	18.6	30	
Acenaphthylene		50000	52100	ug/L	1.86	4.10	30	
Anthracene		50000	48000	ug/L	1.27	3.90	30	
Benzo[a]anthracene		50000	49500	ug/L	1.27	1.10	30	
Benzo[b]fluoranthene		50000	48600	ug/L	1.29	2.90	30	
Benzo[ghi]perylene		50000	51800	ug/L	1.15	3.60	30	
Benzo[k]fluoranthene		50000	47900	ug/L	1.16	4.20	30	

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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108222

Login Number: L09080192 Run Date: 05/26/2009 Sample ID: WG301596-10
Instrument ID: HPMS4 Run Time: 18:41 Method: 8270C
File ID: 4M46939 Analyst: MDC QC Key: STD
ICal Workgroup: WG301596 Cal ID: HPMS4 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Benzyl Alcohol		50000	53200	ug/L	1.07	6.30	30	
bis(2-Chloroethoxy)methane		50000	43800	ug/L	0.455	12.5	30	
bis(2-Chloroethyl)ether		50000	49400	ug/L	1.13	1.10	30	
bis(2-Chloroisopropyl)ether		50000	47400	ug/L	2.04	5.10	30	
bis(2-Ethylhexyl)phthalate		50000	47000	ug/L	0.838	5.90	30	
Butyl Benzyl Phthalate		50000	50500	ug/L	0.649	1.00	30	
Chrysene		50000	49900	ug/L	1.20	0.100	30	
Di-n-Butyl Phthalate		50000	43500	ug/L	1.23	12.9	30	
Dibenz[ah]anthracene		50000	51000	ug/L	1.12	2.00	30	
Dibenzofuran		50000	52500	ug/L	1.58	5.00	30	
Diethylphthalate		50000	44100	ug/L	1.24	11.8	30	
Dimethylphthalate		50000	45400	ug/L	1.27	9.10	30	
Fluorene		50000	48400	ug/L	1.42	3.20	30	
Hexachlorobenzene		50000	51300	ug/L	0.249	2.60	30	
Hexachloroethane		50000	49400	ug/L	0.589	1.10	30	
Indeno[1,2,3-cd]pyrene		50000	49800	ug/L	1.30	0.500	30	
Isophorone		50000	48000	ug/L	0.758	4.00	30	
Naphthalene		50000	47600	ug/L	1.10	4.90	30	
Nitrobenzene		50000	50900	ug/L	0.418	1.70	30	
Phenanthrene		50000	47200	ug/L	1.24	5.60	30	
Pyrene		50000	47900	ug/L	1.40	4.10	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

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Report generated 08/12/2009 13:06

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108223

Login Number: L09080192 Run Date: 05/26/2009 Sample ID: WG301596-11
Instrument ID: HPMS4 Run Time: 19:16 Method: 8270C
File ID: 4M46940 Analyst: MDC QC Key: STD
ICal Workgroup: WG301596 Cal ID: HPMS4 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
3,3'-Dichlorobenzidine		50000	53600	ug/L	0.429	7.20	30	
Benzoic Acid		50000	90900	ug/L	0.152	81.9	30	*

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

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Version 1.5 PDF File ID: 1464095
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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108224

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309450-02
Instrument ID: HPMS4 Run Time: 13:26 Method: 8270C
File ID: 4M47703 Analyst: CAA QC Key: STD
Workgroup (AAB#): WG309468 Cal ID: HPMS4 - 26-MAY-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,4-Dichlorobenzene	CCC	50000	48900	ug/L	1.62	2.28	20	
2,4,6-Trichlorophenol	CCC	50000	49800	ug/L	0.397	0.302	20	
2,4-Dichlorophenol	CCC	50000	49800	ug/L	0.290	0.345	20	
2-Nitrophenol	CCC	50000	49300	ug/L	0.207	1.44	40	
4-Chloro-3-Methylphenol	CCC	50000	54400	ug/L	0.343	8.74	20	
Acenaphthene	CCC	50000	51600	ug/L	1.34	3.21	20	
Benzo[a]pyrene	CCC	50000	48700	ug/L	1.24	2.60	20	
Di-n-Octyl Phthalate	CCC	50000	55600	ug/L	1.68	11.1	20	
Fluoranthene	CCC	50000	47600	ug/L	1.25	4.72	20	
Hexachlorobutadiene	CCC	50000	57400	ug/L	0.203	14.8	20	
n-Nitrosodiphenylamine	CCC	50000	48600	ug/L	0.702	2.88	20	
Pentachlorophenol	CCC	50000	50400	ug/L	0.100	0.736	20	
Phenol	CCC	50000	47500	ug/L	1.80	5.05	20	
2,4-Dinitrophenol	SPCC	50000	60800	ug/L	0.155	21.6	20	*
4-Nitrophenol	SPCC	50000	61100	ug/L	0.309	22.3	40	
Hexachlorocyclopentadiene	SPCC	50000	38700	ug/L	0.134	22.6	40	
n-Nitrosodipropylamine	SPCC	50000	56300	ug/L	1.09	12.6	40	
1,2,4-Trichlorobenzene		50000	49400	ug/L	0.345	1.11	40	
1,2-Dichlorobenzene		50000	48400	ug/L	1.44	3.19	40	
1,3-Dichlorobenzene		50000	48100	ug/L	1.58	3.76	40	
2,4,5-Trichlorophenol		50000	51500	ug/L	0.398	2.93	40	
2,4-Dimethylphenol		50000	47000	ug/L	0.354	6.01	40	
2,4-Dinitrotoluene		50000	52900	ug/L	0.457	5.90	40	
2,6-Dinitrotoluene		50000	49500	ug/L	0.344	0.953	40	
2-Chloronaphthalene		50000	48300	ug/L	1.37	3.46	40	
2-Chlorophenol		50000	48700	ug/L	1.46	2.69	40	
2-Methylnaphthalene		50000	49000	ug/L	0.699	2.10	40	
2-Methylphenol		50000	49300	ug/L	1.09	1.43	40	
2-Nitroaniline		50000	55400	ug/L	0.451	10.8	40	
3,3'-Dichlorobenzidine		50000	45000	ug/L	0.360	10.1	40	
3-,4-Methylphenol		50000	46700	ug/L	1.39	6.62	40	
3-Nitroaniline		50000	52000	ug/L	0.368	4.05	40	
4,6-Dinitro-2-Methylphenol		50000	55700	ug/L	0.134	11.4	40	
4-Bromophenyl Phenyl Ether		50000	50200	ug/L	0.242	0.352	40	
4-Chloroaniline		50000	48900	ug/L	0.434	2.30	40	
4-Chlorophenyl Phenyl Ether		50000	51800	ug/L	0.749	3.62	40	
4-Nitroaniline		50000	54000	ug/L	0.394	8.10	40	
Acenaphthylene		50000	55900	ug/L	1.99	11.9	40	
Anthracene		50000	48000	ug/L	1.28	3.93	40	
Benzo[a]anthracene		50000	42500	ug/L	1.10	15.0	40	
Benzo[b]fluoranthene		50000	52200	ug/L	1.39	4.39	40	
Benzo[ghi]perylene		50000	48100	ug/L	1.07	3.86	40	

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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108225

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309450-02
Instrument ID: HPMS4 Run Time: 13:26 Method: 8270C
File ID: 4M47703 Analyst: CAA QC Key: STD
Workgroup (AAB#): WG309468 Cal ID: HPMS4 - 26-MAY-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Benzo[k]fluoranthene		50000	47900	ug/L	1.16	4.16	40	
Benzoic Acid		50000	63800	ug/L	0.0806	27.6	40	
Benzyl Alcohol		50000	47700	ug/L	0.959	4.51	40	
bis(2-Chloroethoxy)methane		50000	59300	ug/L	0.599	18.6	40	
bis(2-Chloroethyl)ether		50000	48100	ug/L	1.10	3.83	40	
bis(2-Chloroisopropyl)ether		50000	43800	ug/L	1.88	12.4	40	
bis(2-Ethylhexyl)phthalate		50000	46800	ug/L	0.833	6.43	40	
Butyl Benzyl Phthalate		50000	48600	ug/L	0.625	2.83	40	
Chrysene		50000	43300	ug/L	1.04	13.5	40	
Di-n-Butyl Phthalate		50000	50400	ug/L	1.42	0.839	40	
Dibenz[ah]anthracene		50000	49300	ug/L	1.08	1.42	40	
Dibenzofuran		50000	57600	ug/L	1.72	15.1	40	
Diethylphthalate		50000	54600	ug/L	1.54	9.29	40	
Dimethylphthalate		50000	50000	ug/L	1.40	0.0902	40	
Fluorene		50000	51100	ug/L	1.50	2.19	40	
Hexachlorobenzene		50000	50800	ug/L	0.246	1.53	40	
Hexachloroethane		50000	54400	ug/L	0.648	8.76	40	
Indeno[1,2,3-cd]pyrene		50000	48900	ug/L	1.27	2.25	40	
Isophorone		50000	50300	ug/L	0.794	0.612	40	
Naphthalene		50000	47700	ug/L	1.10	4.69	40	
Nitrobenzene		50000	53400	ug/L	0.438	6.77	40	
Phenanthrene		50000	48700	ug/L	1.28	2.57	40	
Pyrene		50000	43300	ug/L	1.26	13.3	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1464097
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Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108226

Login Number: L09080192
Instrument ID: HPMS4
Workgroup (AAB#): WG309468

CCV Number: WG309450-02
CAL ID: HPMS4-26-MAY-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG309450-02	NA	NA	254022	519290	987709	958809	828621	955320
Upper Limit	NA	NA	508044	1038580	1975418	1917618	1657242	1910640
Lower Limit	NA	NA	127011	259645	493855	479405	414311	477660
L09080192-01	1.00	01	170321	331493	609845	645733	502674	595154
L09080192-02	1.00	01	230092	444242	836450	854935	718425	799313
L09080192-03	1.00	01	229408	441704	828416	864031	704686	793136
L09080192-04	1.00	01	231170	429357	823633	860540	706505	788713
L09080192-05	1.00	01	168962	323884	590344	630027	505568	578136
WG309434-01	1.00	01	243610	464963	863154	900752	725500	835377
WG309434-02	1.00	01	229452	474189	892869	850837	761497	828780
WG309434-03	1.00	01	164999	334062	615434	632022	516598	601537

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1464098
Report generated 08/12/2009 13:07

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L09080192
Instrument ID: HPMS4
Workgroup (AAB#): WG309468

CCV Number: WG309450-02
CAL ID: HPMS4-26-MAY-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG309450-02	NA	NA	7.63	10.73	16.86	8.92	19.94	12.37
Upper Limit	NA	NA	8.13	11.23	17.36	9.42	20.44	12.87
Lower Limit	NA	NA	7.13	10.23	16.36	8.42	19.44	11.87
L09080192-01	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36
L09080192-02	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36
L09080192-03	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36
L09080192-04	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36
L09080192-05	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36
WG309434-01	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36
WG309434-02	1.00	01	7.63	10.73	16.87	8.92	19.94	12.36
WG309434-03	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1464099
Report generated 08/12/2009 13:07

2.3 Metals Data

2.3.1 Metals I C P Data

2.3.1.1 Summary Data

LABORATORY REPORT

L09080192

00108231

08/13/09 14:09

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
SITE 1-TP-BF	L09080192-01	6010B	1	11-AUG-09
SITE 1-TP-TS	L09080192-02	6010B	1	11-AUG-09
SITE 2-BLM-TS	L09080192-03	6010B	1	11-AUG-09
SITE 2-BLM-BF	L09080192-04	6010B	2	11-AUG-09
SITE 2-BLM-BF	L09080192-04	6010B	1	11-AUG-09
SITE 3-ML-BF/TS	L09080192-05	6010B	1	11-AUG-09

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108232

Sample Number: **L09080192-01**
Client ID: **SITE 1-TP-BF**
Matrix: **Soil**
Workgroup Number: **WG309454**
Collect Date: **08/09/2009 10:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6010B**
Analyst: **EDA**
Dilution: **1**
Units: **mg/kg**

Instrument: **ICP-THERMO2**
Prep Date: **08/11/2009 11:17**
Cal Date: **08/11/2009 11:15**
Run Date: **08/11/2009 14:40**
File ID: **T2.081109.144052**
Percent Solid: **77.4**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Aluminum, Total	7429-90-5	2890		18.9	9.44
Antimony, Total	7440-36-0		U	9.44	0.472
Arsenic, Total	7440-38-2	2.08	J	4.72	0.472
Barium, Total	7440-39-3	7.15		0.472	0.0944
Beryllium, Total	7440-41-7	0.0467	J	0.472	0.0113
Cadmium, Total	7440-43-9		U	0.472	0.0472
Calcium, Total	7440-70-2	6.69	J	9.44	4.72
Chromium, Total	7440-47-3	14.5		0.944	0.113
Cobalt, Total	7440-48-4	0.311	J	0.944	0.113
Copper, Total	7440-50-8	2.56		0.944	0.472
Iron, Total	7439-89-6	10600	B	2.83	0.944
Lead, Total	7439-92-1	6.17		4.72	0.472
Magnesium, Total	7439-95-4	49.3		23.6	11.3
Manganese, Total	7439-96-5	18.3		0.472	0.0944
Nickel, Total	7440-02-0	0.933	J	1.89	0.472
Potassium, Total	7440-09-7	108		47.2	23.6
Selenium, Total	7782-49-2		U	4.72	0.472
Silver, Total	7440-22-4	0.259	J	1.89	0.236
Sodium, Total	7440-23-5		U	23.6	4.72
Thallium, Total	7440-28-0		U	23.6	0.378
Vanadium, Total	7440-62-2	19.8		0.472	0.236
Zinc, Total	7440-66-6	3.03		0.944	0.472

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit
B Analyte present in method blank

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108233

Sample Number: **L09080192-02**
Client ID: **SITE 1-TP-TS**
Matrix: **Soil**
Workgroup Number: **WG309454**
Collect Date: **08/09/2009 10:50**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6010B**
Analyst: **EDA**
Dilution: **1**
Units: **mg/kg**

Instrument: **ICP-THERMO2**
Prep Date: **08/11/2009 11:17**
Cal Date: **08/11/2009 11:15**
Run Date: **08/11/2009 15:06**
File ID: **T2.081109.150624**
Percent Solid: **79.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Aluminum, Total	7429-90-5	685		18.2	9.08
Antimony, Total	7440-36-0		U	9.08	0.454
Arsenic, Total	7440-38-2		U	4.54	0.454
Barium, Total	7440-39-3	14.7		0.454	0.0908
Beryllium, Total	7440-41-7	0.0558	J	0.454	0.0109
Cadmium, Total	7440-43-9		U	0.454	0.0454
Calcium, Total	7440-70-2	97.7		9.08	4.54
Chromium, Total	7440-47-3	1.57		0.908	0.109
Cobalt, Total	7440-48-4	0.592	J	0.908	0.109
Copper, Total	7440-50-8	1.33		0.908	0.454
Iron, Total	7439-89-6	1370	B	2.72	0.908
Lead, Total	7439-92-1	2.21	J	4.54	0.454
Magnesium, Total	7439-95-4	35.9		22.7	10.9
Manganese, Total	7439-96-5	128		0.454	0.0908
Nickel, Total	7440-02-0	0.827	J	1.82	0.454
Potassium, Total	7440-09-7	56.8		45.4	22.7
Selenium, Total	7782-49-2	0.582	J	4.54	0.454
Silver, Total	7440-22-4		U	1.82	0.227
Sodium, Total	7440-23-5	4.63	J	22.7	4.54
Thallium, Total	7440-28-0		U	22.7	0.363
Vanadium, Total	7440-62-2	2.49		0.454	0.227
Zinc, Total	7440-66-6	3.45		0.908	0.454

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
B Analyte present in method blank

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108234

Sample Number: **L09080192-03**
Client ID: **SITE 2-BLM-TS**
Matrix: **Soil**
Workgroup Number: **WG309454**
Collect Date: **08/09/2009 11:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6010B**
Analyst: **EDA**
Dilution: **1**
Units: **mg/kg**

Instrument: **ICP-THERMO2**
Prep Date: **08/11/2009 11:17**
Cal Date: **08/11/2009 11:15**
Run Date: **08/11/2009 15:12**
File ID: **T2.081109.151247**
Percent Solid: **78.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Aluminum, Total	7429-90-5	5880		18.3	9.14
Antimony, Total	7440-36-0		U	9.14	0.457
Arsenic, Total	7440-38-2	5.03		4.57	0.457
Barium, Total	7440-39-3	90.2		0.457	0.0914
Beryllium, Total	7440-41-7	0.595		0.457	0.0110
Cadmium, Total	7440-43-9		U	0.457	0.0457
Calcium, Total	7440-70-2	337		9.14	4.57
Chromium, Total	7440-47-3	24.8		0.914	0.110
Cobalt, Total	7440-48-4	20.8		0.914	0.110
Copper, Total	7440-50-8	4.80		0.914	0.457
Iron, Total	7439-89-6	16900	B	2.74	0.914
Lead, Total	7439-92-1	15.2		4.57	0.457
Magnesium, Total	7439-95-4	389		22.9	11.0
Manganese, Total	7439-96-5	794		0.457	0.0914
Nickel, Total	7440-02-0	6.16		1.83	0.457
Potassium, Total	7440-09-7	329		45.7	22.9
Selenium, Total	7782-49-2	0.891	J	4.57	0.457
Silver, Total	7440-22-4		U	1.83	0.229
Sodium, Total	7440-23-5	22.7	J	22.9	4.57
Thallium, Total	7440-28-0	0.628	J	22.9	0.366
Vanadium, Total	7440-62-2	31.2		0.457	0.229
Zinc, Total	7440-66-6	16.3		0.914	0.457

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
B Analyte present in method blank

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108235

Sample Number:	**L09080192-04**	PrePrep Method:	**NONE**	Instrument:	**ICP-THERMO2**
Client ID:	**SITE 2-BLM-BF**	Prep Method:	**3051**	Prep Date:	**08/11/2009 11:17**
Matrix:	**Soil**	Analytical Method:	**6010B**	Cal Date:	**08/11/2009 11:15**
Workgroup Number:	**WG309454**	Analyst:	**EDA**	Run Date:	**08/11/2009 15:57**
Collect Date:	**08/09/2009 11:25**	Dilution:	**2**	File ID:	**T2.081109.155722**
Sample Tag:	**DL01**	Units:	**mg/kg**	Percent Solid:	**78.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Cadmium, Total	**7440-43-9**		**U**	**0.859**	**0.0859**

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108236

Sample Number: **L09080192-04**
Client ID: **SITE 2-BLM-BF**
Matrix: **Soil**
Workgroup Number: **WG309454**
Collect Date: **08/09/2009 11:25**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6010B**
Analyst: **EDA**
Dilution: **1**
Units: **mg/kg**

Instrument: **ICP-THERMO2**
Prep Date: **08/11/2009 11:17**
Cal Date: **08/11/2009 11:15**
Run Date: **08/11/2009 15:19**
File ID: **T2.081109.151905**
Percent Solid: **78.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Aluminum, Total	7429-90-5	11100		17.2	8.59
Antimony, Total	7440-36-0		U	8.59	0.429
Arsenic, Total	7440-38-2	7.33		4.29	0.429
Barium, Total	7440-39-3	68.8		0.429	0.0859
Beryllium, Total	7440-41-7	0.789		0.429	0.0103
Calcium, Total	7440-70-2	238		8.59	4.29
Chromium, Total	7440-47-3	25.4		0.859	0.103
Cobalt, Total	7440-48-4	24.4		0.859	0.103
Copper, Total	7440-50-8	6.31		0.859	0.429
Iron, Total	7439-89-6	26000	B	2.58	0.859
Lead, Total	7439-92-1	15.5		4.29	0.429
Magnesium, Total	7439-95-4	453		21.5	10.3
Manganese, Total	7439-96-5	396		0.429	0.0859
Nickel, Total	7440-02-0	8.72		1.72	0.429
Potassium, Total	7440-09-7	446		42.9	21.5
Selenium, Total	7782-49-2	1.25	J	4.29	0.429
Silver, Total	7440-22-4	0.218	J	1.72	0.215
Sodium, Total	7440-23-5	17.5	J	21.5	4.29
Thallium, Total	7440-28-0	1.09	J	21.5	0.343
Vanadium, Total	7440-62-2	47.7		0.429	0.215
Zinc, Total	7440-66-6	15.4		0.859	0.429

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit
B Analyte present in method blank

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108237

Sample Number: **L09080192-05**
Client ID: **SITE 3-ML-BF/TS**
Matrix: **Soil**
Workgroup Number: **WG309454**
Collect Date: **08/09/2009 12:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6010B**
Analyst: **EDA**
Dilution: **1**
Units: **mg/kg**

Instrument: **ICP-THERMO2**
Prep Date: **08/11/2009 11:17**
Cal Date: **08/11/2009 11:15**
Run Date: **08/11/2009 15:38**
File ID: **T2.081109.153819**
Percent Solid: **88.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Aluminum, Total	7429-90-5	6340		16.8	8.39
Antimony, Total	7440-36-0		U	8.39	0.419
Arsenic, Total	7440-38-2	3.52	J	4.19	0.419
Barium, Total	7440-39-3	51.7		0.419	0.0839
Beryllium, Total	7440-41-7	0.442		0.419	0.0101
Cadmium, Total	7440-43-9		U	0.419	0.0419
Calcium, Total	7440-70-2	144		8.39	4.19
Chromium, Total	7440-47-3	13.6		0.839	0.101
Cobalt, Total	7440-48-4	7.72		0.839	0.101
Copper, Total	7440-50-8	18.5		0.839	0.419
Iron, Total	7439-89-6	22800	B	2.52	0.839
Lead, Total	7439-92-1	10.7		4.19	0.419
Magnesium, Total	7439-95-4	2080		21.0	10.1
Manganese, Total	7439-96-5	138		0.419	0.0839
Nickel, Total	7440-02-0	16.2		1.68	0.419
Potassium, Total	7440-09-7	377		41.9	21.0
Selenium, Total	7782-49-2	0.910	J	4.19	0.419
Silver, Total	7440-22-4		U	1.68	0.210
Sodium, Total	7440-23-5	49.4		21.0	4.19
Thallium, Total	7440-28-0		U	21.0	0.336
Vanadium, Total	7440-62-2	24.3		0.419	0.210
Zinc, Total	7440-66-6	50.4		0.839	0.419

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL
B Analyte present in method blank

2.3.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Example 6010 Calculations
Thermo Scientific iCAP 6500

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Microbac Laboratories Inc.
Microwave Digestion Log

00108242

Workgroup: WG309438
Analyst: ERP
Spike Analyst: ERP
Run Date: 08/11/2009 11:17
Method: 3051

SOP: ME406 Revison 11
Spike Solution: STD34341
Spike Witness: VC
HNO3 Lot #: COA13945
HCL Lot #: COA14028
Digest tubes Lot #: COA14013

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309438-02	BLANK	7	1 g	50 mL	181.067 g	180.986 g		
2	WG309438-03	LCS	7	1 g	50 mL	183.169 g	183.129 g	5 mL	
3	L09080192-01	SAMP	7	1.368 g	50 mL	176.396 g	176.268 g		08/12/09
4	L09080192-02	SAMP	7	1.386 g	50 mL	176.318 g	175.869 g		08/12/09
5	L09080192-03	SAMP	7	1.399 g	50 mL	180.173 g	178.924 g		08/12/09
6	L09080192-04	SAMP	7	1.487 g	50 mL	179.876 g	179.546 g		08/12/09
7	WG309438-01	REF	7	1.352 g	50 mL	175.126 g	175.046 g		
8	L09080192-05	SAMP	7	1.352 g	50 mL	175.126 g	175.046 g		08/12/09
9	WG309438-04	MS	7	1.351 g	50 mL	183.682 g	183.641 g	5 mL	
10	WG309438-05	MSD	7	1.351 g	50 mL	172.531 g	172.52 g	5 mL	

Analyst: Erin Potter

Reviewer: Brenda Gregory

MW_DIG - Modified 07/02/2008
PDF ID: 1463120
Report generated: 08/11/2009 12:46

Microbac

00108243

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO2 Dataset: 081109T2.1

Analyst1: EDA Analyst2: N/A

Method: 6010B SOP: ME600G Rev: 0

Maintenance Log ID: 29749

Calibration Std: STD34537 ICV/CCV Std: STD34590 Post Spike: STD27612

ICSA: STD34482 ICSAB: STD34386 Int. Std: STD34589

Workgroups: 309437, 309454, 309458, 309459

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T2.081109.104955	WG309455-01	Calibration Point		1		08/11/09 10:49
2	T2.081109.105620	WG309455-02	Calibration Point		1		08/11/09 10:56
3	T2.081109.110249	WG309455-03	Calibration Point		1		08/11/09 11:02
4	T2.081109.110917	WG309455-04	Calibration Point		1		08/11/09 11:09
5	T2.081109.111532	WG309455-05	Calibration Point		1		08/11/09 11:15
6	T2.081109.112145	WG309455-06	Initial Calibration Verification		1		08/11/09 11:21
7	T2.081109.112803	WG309455-07	Initial Calib Blank		1		08/11/09 11:28
8	T2.081109.113431	WG309455-08	Interference Check		1		08/11/09 11:34
9	T2.081109.114104	WG309455-09	Interference Check		1		08/11/09 11:41
10	T2.081109.114733	WG309455-10	CCV		1		08/11/09 11:47
11	T2.081109.115349	WG309455-11	CCB		1		08/11/09 11:53
12	T2.081109.120017	WG309401-02	Method/Prep Blank	1/50	1		08/11/09 12:00
13	T2.081109.120644	WG309401-03	Laboratory Control S	1/50	1		08/11/09 12:06
14	T2.081109.121312	L09080186-01	12603-C0003	1.352/50	5		08/11/09 12:13
15	T2.081109.121931	WG309437-01	Post Digestion Spike		5	L09080186-01	08/11/09 12:19
16	T2.081109.122544	WG309437-02	Serial Dilution		25	L09080186-01	08/11/09 12:25
17	T2.081109.123208	WG309437-02	Serial Dilution		125	L09080186-01	08/11/09 12:32
18	T2.081109.123834	L09080186-02	12603-C0004	1.371/50	5		08/11/09 12:38
19	T2.081109.124455	L09080186-03	12603-C0005	1.339/50	5		08/11/09 12:44
20	T2.081109.125116	L09080186-04	12603-C0006	1.316/50	5		08/11/09 12:51
21	T2.081109.125737	L09080186-05	12603-C0007	1.345/50	5		08/11/09 12:57
22	T2.081109.130358	WG309455-12	CCV		1		08/11/09 13:03
23	T2.081109.131015	WG309455-13	CCB		1		08/11/09 13:10
24	T2.081109.131643	L09080186-06	12603-C0008	1.327/50	5		08/11/09 13:16
25	T2.081109.132300	L09080186-07	12627-C0005	1.325/50	5		08/11/09 13:23
26	T2.081109.132918	L09080186-08	13333-C0013	1.454/50	5		08/11/09 13:29
27	T2.081109.133536	WG309401-01	Reference Sample		5	L09080186-09	08/11/09 13:35
28	T2.081109.134155	WG309401-04	Matrix Spike	1.311/50	5	L09080186-09	08/11/09 13:41
29	T2.081109.134817	WG309401-05	Matrix Spike Duplica	1.311/50	5	L09080186-09	08/11/09 13:48
30	T2.081109.135436	WG309455-14	CCV		1		08/11/09 13:54
31	T2.081109.140052	WG309455-15	CCB		1		08/11/09 14:00
32	T2.081109.141523	WG309455-16	CCV		1		08/11/09 14:15
33	T2.081109.142136	WG309455-17	CCB		1		08/11/09 14:21
34	T2.081109.142806	WG309438-02	Method/Prep Blank	1/50	1		08/11/09 14:28
35	T2.081109.143433	WG309438-03	Laboratory Control S	1/50	1		08/11/09 14:34
36	T2.081109.144052	L09080192-01	SITE 1-TP-BF	1.368/50	1		08/11/09 14:40
37	T2.081109.144715	WG309454-01	Post Digestion Spike		1	L09080192-01	08/11/09 14:47

Page: 1 Approved: August 12, 2009

Kym H. Rhoden

Microbac

00108244

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO2 Dataset: 081109T2.1

Analyst1: EDA Analyst2: N/A

Method: 6010B SOP: ME600G Rev: 0

Maintenance Log ID: 29749

Calibration Std: STD34537 ICV/CCV Std: STD34590 Post Spike: STD27612

ICSA: STD34482 ICSAB: STD34386 Int. Std: STD34589

Workgroups: 309437, 309454, 309458, 309459

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	T2.081109.145331	WG309454-02	Serial Dilution		5	L09080192-01	08/11/09 14:53
39	T2.081109.145957	WG309454-02	Serial Dilution		25	L09080192-01	08/11/09 14:59
40	T2.081109.150624	L09080192-02	SITE 1-TP-TS	1.386/50	1		08/11/09 15:06
41	T2.081109.151247	L09080192-03	SITE 2-BLM-TS	1.399/50	1		08/11/09 15:12
42	T2.081109.151905	L09080192-04	SITE 2-BLM-BF	1.487/50	1		08/11/09 15:19
43	T2.081109.152533	WG309455-18	CCV		1		08/11/09 15:25
44	T2.081109.153150	WG309455-19	CCB		1		08/11/09 15:31
45	T2.081109.153819	WG309438-01	Reference Sample		1	L09080192-05	08/11/09 15:38
46	T2.081109.154437	WG309438-04	Matrix Spike	1.351/50	1	L09080192-05	08/11/09 15:44
47	T2.081109.155100	WG309438-05	Matrix Spike Duplica	1.351/50	1	L09080192-05	08/11/09 15:51
48	T2.081109.155722	L09080192-04	SITE 2-BLM-BF	1.487/50	2		08/11/09 15:57
49	T2.081109.160345	WG309455-20	CCV		1		08/11/09 16:03
50	T2.081109.161001	WG309455-21	CCB		1		08/11/09 16:10
51	T2.081109.161630	WG309446-02	Method/Prep Blank	1/50	1		08/11/09 16:16
52	T2.081109.162258	WG309446-03	Laboratory Control S	1/50	1		08/11/09 16:22
53	T2.081109.162926	L09080196-01	70060-C0001	1.339/50	2		08/11/09 16:29
54	T2.081109.163555	WG309458-01	Post Digestion Spike		2	L09080196-01	08/11/09 16:35
55	T2.081109.164216	WG309458-02	Serial Dilution		10	L09080196-01	08/11/09 16:42
56	T2.081109.164840	WG309458-02	Serial Dilution		50	L09080196-01	08/11/09 16:48
57	T2.081109.165503	L09080196-02	70060-C0002	1.366/50	2		08/11/09 16:55
58	T2.081109.170126	L09080196-03	70060-C0003	1.493/50	2		08/11/09 17:01
59	T2.081109.170755	L09080196-04	70060-C0004	1.36/50	2		08/11/09 17:07
60	T2.081109.171413	L09080196-05	70060-C0005	1.448/50	2		08/11/09 17:14
61	T2.081109.172054	WG309455-22	CCV		1		08/11/09 17:20
62	T2.081109.172710	WG309455-23	CCB		1		08/11/09 17:27
63	T2.081109.173340	L09080196-06	70060-C0006	1.394/50	2		08/11/09 17:33
64	T2.081109.174008	L09080196-07	70060-C0007	1.355/50	2		08/11/09 17:40
65	T2.081109.174628	L09080196-08	70060-C0008	1.361/50	2		08/11/09 17:46
66	T2.081109.175248	WG309446-01	Reference Sample		2	L09080196-09	08/11/09 17:52
67	T2.081109.175907	WG309446-04	Matrix Spike	1.326/50	2	L09080196-09	08/11/09 17:59
68	T2.081109.180524	WG309446-05	Matrix Spike Duplica	1.326/50	2	L09080196-09	08/11/09 18:05
69	T2.081109.181141	L09080196-12	70060-C0010	1.366/50	2		08/11/09 18:11
70	T2.081109.181800	L09080196-13	70060-C0011	1.333/50	2		08/11/09 18:18
71	T2.081109.182418	L09080196-14	70060-C0012	1.371/50	2		08/11/09 18:24
72	T2.081109.183037	L09080197-01	16225-C0001	1.401/50	2		08/11/09 18:30
73	T2.081109.183700	WG309455-24	CCV		1		08/11/09 18:37
74	T2.081109.184316	WG309455-25	CCB		1		08/11/09 18:43

Page: 2 Approved: August 12, 2009

Kym H. Rhoden

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00108245

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO2 Dataset: 081109T2.1

Analyst1: EDA Analyst2: N/A

Method: 6010B SOP: ME600G Rev: 0

Maintenance Log ID: 29749

Calibration Std: STD34537 ICV/CCV Std: STD34590 Post Spike: STD27612

ICSA: STD34482 ICSAB: STD34386 Int. Std: STD34589

Workgroups: 309437, 309454, 309458, 309459

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	T2.081109.184945	L09080197-02	16225-C0002	1.431/50	2		08/11/09 18:49
76	T2.081109.185605	L09080197-03	16225-C0003	1.35/50	2		08/11/09 18:56
77	T2.081109.190227	L09080197-04	16225-C0004	1.364/50	2		08/11/09 19:02
78	T2.081109.190848	L09080197-05	16225-C0005	1.345/50	2		08/11/09 19:08
79	T2.081109.191510	L09080197-06	16225-C0006	1.33/50	2		08/11/09 19:15
80	T2.081109.192129	L09080197-07	16225-C0007	1.367/50	2		08/11/09 19:21
81	T2.081109.192751	L09080197-08	16225-C0008	1.339/50	2		08/11/09 19:27
82	T2.081109.193412	WG309455-26	CCV		1		08/11/09 19:34
83	T2.081109.194028	WG309455-27	CCB		1		08/11/09 19:40
84	T2.081109.194657	WG309449-02	Method/Prep Blank	1/50	1		08/11/09 19:46
85	T2.081109.195326	WG309449-03	Laboratory Control S	1/50	1		08/11/09 19:53
86	T2.081109.195954	L09080197-09	16225-C0009	1.374/50	2		08/11/09 19:59
87	T2.081109.200614	L09080197-10	16225-C0010	1.378/50	2		08/11/09 20:06
88	T2.081109.201234	L09080197-11	16225-C0011	1.395/50	2		08/11/09 20:12
89	T2.081109.201856	L09080197-12	16225-C0012	1.396/50	2		08/11/09 20:18
90	T2.081109.202517	L09080197-13	16225-C0013	1.355/50	2		08/11/09 20:25
91	T2.081109.203138	L09080197-14	16225-C0014	1.418/50	2		08/11/09 20:31
92	T2.081109.203817	L09080197-15	16225-C0015	1.461/50	2		08/11/09 20:38
93	T2.081109.204439	WG309455-28	CCV		1		08/11/09 20:44
94	T2.081109.205057	WG309455-29	CCB		1		08/11/09 20:50
95	T2.081109.205727	L09080199-01	14511-C0001	1.302/50	2		08/11/09 20:57
96	T2.081109.210351	WG309459-01	Post Digestion Spike		2	L09080199-01	08/11/09 21:03
97	T2.081109.211004	WG309459-02	Serial Dilution		10	L09080199-01	08/11/09 21:10
98	T2.081109.211633	WG309459-02	Serial Dilution		50	L09080199-01	08/11/09 21:16
99	T2.081109.212258	L09080199-02	14511-C0002	1.362/50	2		08/11/09 21:22
100	T2.081109.212917	L09080199-03	14511-C0003	1.322/50	2		08/11/09 21:29
101	T2.081109.213536	L09080199-04	14511-C0004	1.458/50	2		08/11/09 21:35
102	T2.081109.214157	L09080199-05	14511-C0005	1.346/50	2		08/11/09 21:41
103	T2.081109.214816	L09080199-06	14511-C0006	1.341/50	2		08/11/09 21:48
104	T2.081109.215439	L09080199-07	14511-C0007	1.352/50	2		08/11/09 21:54
105	T2.081109.220100	WG309455-30	CCV		1		08/11/09 22:01
106	T2.081109.220717	WG309455-31	CCB		1		08/11/09 22:07
107	T2.081109.221348	L09080199-08	14512-C0001	1.486/50	2		08/11/09 22:13
108	T2.081109.222009	L09080199-09	14512-C0002	1.445/50	2		08/11/09 22:20
109	T2.081109.222630	WG309449-01	Reference Sample		2	L09080199-10	08/11/09 22:26
110	T2.081109.223250	WG309449-04	Matrix Spike	1.332/50	2	L09080199-10	08/11/09 22:32
111	T2.081109.223910	WG309449-05	Matrix Spike Duplica	1.332/50	2	L09080199-10	08/11/09 22:39

Page: 3 Approved: August 12, 2009

Kym H. Rhoden

Microbac

00108246

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO2 Dataset: 081109T2.1

Analyst1: EDA Analyst2: N/A

Method: 6010B SOP: ME600G Rev: 0

Maintenance Log ID: 29749

Calibration Std: STD34537 ICV/CCV Std: STD34590 Post Spike: STD27612

ICSA: STD34482 ICSAB: STD34386 Int. Std: STD34589

Workgroups: 309437, 309454, 309458, 309459

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
112	T2.081109.224528	L09080199-13	14512-C0004	1.328/50	2		08/11/09 22:45
113	T2.081109.225149	L09080199-14	14512-C0005	1.318/50	2		08/11/09 22:51
114	T2.081109.225808	L09080199-15	14512-C0006	1.308/50	2		08/11/09 22:58
115	T2.081109.230428	WG309455-32	CCV		1		08/11/09 23:04
116	T2.081109.231048	WG309455-33	CCB		1		08/11/09 23:10

Page: 4 Approved: August 12, 2009

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Microbac Laboratories Inc.

00108247

Data Checklist

Date: 11-AUG-2009
Analyst: EDA
Analyst: NA
Method: 6010B
Instrument: ICP-THERMO2
Curve Workgroup: 309455
Runlog ID: 29568
Analytical Workgroups: 309437, 309454, 309458, 309459

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
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	
Case Narrative	186, 192, 196, 197, 199
Client Forms	X
Level X	
Level 3	
Level 4	186, 196, 197, 199
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	EDA
Secondary Reviewer	KHR
Comments	

Primary Reviewer:

Secondary Reviewer:
12-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 11:03:18

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108248

Analytical Method: 6010B AAB#: WG309454

Login Number: L09080192

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
SITE 1-TP-BF	01	08/09/09					08/11/09	2	180		08/11/09	2.2	180	
SITE 1-TP-TS	02	08/09/09					08/11/09	2	180		08/11/09	2.2	180	
SITE 2-BLM-TS	03	08/09/09					08/11/09	2	180		08/11/09	2.2	180	
SITE 2-BLM-BF	04	08/09/09					08/11/09	2	180		08/11/09	2.2	180	
SITE 2-BLM-BF	04	08/09/09					08/11/09	2	180		08/11/09	2.2	180	
SITE 3-ML-BF/TS	05	08/09/09					08/11/09	2	180		08/11/09	2.2	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1463766
Report generated 08/13/2009 13:22

00108249

METHOD BLANK SUMMARY

Login Number:	L09080192	Work Group:	WG309454
Blank File ID:	T2.081109.142806	Blank Sample ID:	WG309438-02
Prep Date:	08/11/09 11:17	Instrument ID:	ICP-THERMO2
Analyzed Date:	08/11/09 14:28	Method:	6010B
Analyst:	EDA		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309438-03	T2.081109.143433	08/11/09 14:34	01
SITE 1-TP-BF	L09080192-01	T2.081109.144052	08/11/09 14:40	01
SITE 1-TP-TS	L09080192-02	T2.081109.150624	08/11/09 15:06	01
SITE 2-BLM-TS	L09080192-03	T2.081109.151247	08/11/09 15:12	01
SITE 2-BLM-BF	L09080192-04	T2.081109.151905	08/11/09 15:19	01
SITE 3-ML-BF/TS	L09080192-05	T2.081109.153819	08/11/09 15:38	01
SITE 2-BLM-BF	L09080192-04	T2.081109.155722	08/11/09 15:57	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1463767
Report generated 08/13/2009 13:22

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108250

Login Number:L09080192 Prep Date:08/11/09 11:17 Sample ID:WG309438-02
Instrument ID:ICP-THERMO2 Run Date:08/11/09 14:28 Prep Method:3051
File ID:T2.081109.142806 Analyst:EDA Method:6010B
Workgroup (AAB#):WG309454 Matrix:Soil Units:mg/kg
Contract #:DACA56-94-D-0020 Cal ID:ICP-TH-11-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	10.0	0.500	1	U
Arsenic, Total	0.500	5.00	-0.583	1	U
Barium, Total	0.100	0.500	0.100	1	U
Beryllium, Total	0.0120	0.500	0.0120	1	U
Cadmium, Total	0.0500	0.500	0.0500	1	U
Calcium, Total	5.00	10.0	5.00	1	U
Chromium, Total	0.120	1.00	0.120	1	U
Cobalt, Total	0.120	1.00	0.120	1	U
Copper, Total	0.500	1.00	0.500	1	U
Iron, Total	1.00	3.00	6.02	1	*
Lead, Total	0.500	5.00	0.500	1	U
Magnesium, Total	12.0	25.0	12.0	1	U
Manganese, Total	0.100	0.500	0.100	1	U
Nickel, Total	0.500	2.00	0.500	1	U
Potassium, Total	25.0	50.0	25.0	1	U
Selenium, Total	0.500	5.00	0.524	1	J
Silver, Total	0.250	2.00	0.250	1	U
Sodium, Total	5.00	25.0	5.00	1	U
Thallium, Total	0.400	25.0	0.400	1	U
Vanadium, Total	0.250	0.500	0.250	1	U
Zinc, Total	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1463768
13-AUG-2009 13:22

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309438-03
Instrument ID: ICP-THERMO2 Run Time: 14:34 Prep Method: 3051
File ID: T2.081109.143433 Analyst: EDA Method: 6010B
Workgroup (AAB#): WG309454 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD34341 Cal ID: ICP-TH-11-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	234	93.7	80 - 120	
Antimony, Total	30.0	28.7	95.8	80 - 120	
Arsenic, Total	10.0	9.03	90.3	80 - 120	
Barium, Total	25.0	25.7	103	80 - 120	
Beryllium, Total	1.25	1.14	91.2	80 - 120	
Cadmium, Total	1.25	1.20	95.8	80 - 120	
Calcium, Total	250	254	102	80 - 120	
Chromium, Total	12.5	12.7	102	80 - 120	
Cobalt, Total	5.00	4.99	99.9	80 - 120	
Copper, Total	12.5	12.5	99.6	80 - 120	
Iron, Total	100	103	103	80 - 120	
Lead, Total	12.5	11.8	94.7	80 - 120	
Magnesium, Total	250	235	94.1	80 - 120	
Manganese, Total	12.5	12.2	97.5	80 - 120	
Nickel, Total	12.5	12.3	98.8	80 - 120	
Potassium, Total	1250	1240	99.3	80 - 120	
Selenium, Total	10.0	9.57	95.7	80 - 120	
Silver, Total	10.0	9.58	95.8	80 - 120	
Sodium, Total	1250	1250	100	80 - 120	
Thallium, Total	12.5	12.1	97.0	80 - 120	
Vanadium, Total	25.0	25.5	102	80 - 120	
Zinc, Total	25.0	22.4	89.7	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1463769
Report generated: 08/13/2009 13:22

Loginnum:L09080192 Cal ID: ICP-THERMO- Worknum:WG309454
Instrument ID:ICP-THERMO Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG309438-01 File ID:T2.081109.153819 Dil:1 Matrix:SOLID
Sample ID:WG309438-04 MS File ID:T2.081109.154437 Dil:1 Units:mg/kg
Sample ID:WG309438-05 MSD File ID:T2.081109.155100 Dil:1 Percent Solid:88.2

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	6340	210	10700	2070	210	14300	3800	29.1	80 - 120	20	*#
Antimony, Total	ND	25.2	22.4	89.1	25.2	22.3	88.4	0.787	80 - 120	20	
Arsenic, Total	3.52	8.40	12.1	103	8.40	13.1	114	7.71	80 - 120	20	
Barium, Total	51.7	21.0	87.2	169	21.0	86.1	164	1.33	80 - 120	20	*
Beryllium, Total	0.442	1.05	1.44	95.0	1.05	1.36	87.1	5.98	80 - 120	20	
Cadmium, Total	ND	1.05	0.571	54.4	1.05	0.590	56.2	3.25	80 - 120	20	*
Calcium, Total	144	210	366	106	210	365	105	0.226	80 - 120	20	
Chromium, Total	13.6	10.5	28.1	138	10.5	30.7	163	8.74	80 - 120	20	*
Cobalt, Total	7.72	4.20	12.2	107	4.20	11.9	99.1	2.91	80 - 120	20	
Copper, Total	18.5	10.5	31.9	128	10.5	32.1	130	0.567	80 - 120	20	*
Iron, Total	22800	84.0	26500	4450	84.0	26000	3890	1.77	80 - 120	20	*
Lead, Total	10.7	10.5	21.4	101	10.5	21.7	105	1.83	80 - 120	20	
Magnesium, Total	2080	210	2550	225	210	2840	362	10.7	80 - 120	20	*
Manganese, Total	138	10.5	155	163	10.5	137	-12.6	12.6	80 - 120	20	*
Nickel, Total	16.2	10.5	27.7	109	10.5	28.7	119	3.72	80 - 120	20	
Potassium, Total	377	1050	1570	114	1050	1670	123	5.71	80 - 120	20	*
Selenium, Total	0.910	8.40	8.33	88.4	8.40	8.33	88.4	0.0403	80 - 120	20	
Silver, Total	ND	8.40	7.84	93.4	8.40	9.19	109	15.8	80 - 120	20	
Sodium, Total	49.4	1050	1080	98.0	1050	1070	97.5	0.461	80 - 120	20	
Thallium, Total	ND	10.5	9.72	92.6	10.5	10.7	102	9.21	80 - 120	20	
Vanadium, Total	24.3	21.0	49.2	119	21.0	55.3	148	11.7	80 - 120	20	*
Zinc, Total	50.4	21.0	75.7	121	21.0	81.6	148	7.41	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1463770
Report generated 08/13/2009 13:22

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080192 **Worknum:** WG309454
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG309454-02 **File ID:** T2.081109.145331 **Dil:** 5 **Units:** mg/L
Sample: L09080192-01 **File ID:** T2.081109.144052 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	61.3		66		7.67	
Antimony	ND	U	ND	U		
Arsenic	.044	F	.0575	F	30.70	
Barium	.152		.157		3.29	
Beryllium	.00099	F	ND	U		
Cadmium	ND	U	ND	U		
Calcium	.142	F	ND	U		
Chromium	.306		.3205		4.74	
Cobalt	.00659	F	ND	U		
Copper	.0542	X	.055	F	1.48	
Iron	225		237.5		5.56	
Lead	.131	X	.1505	F	14.90	
Magnesium	1.04	X	ND	U		
Manganese	.388		.4095		5.54	
Nickel	.0198	F	ND	U		
Potassium	2.28	X	ND	U		
Selenium	ND	U	ND	U		
Silver	.00549	F	ND	U		
Sodium	ND	U	ND	U		
Thallium	ND	U	ND	U		
Vanadium	.419		.434		3.58	
Zinc	.0642	X	.0745	F	16.00	

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 50 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 50 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1463764
08/13/2009 13:22

Sample Login ID: L09080192 **Worknum:** WG309454
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG309454-01 **File ID:** T2.081109.144715 **Dil:** 1 **Units:** mg/L
Sample ID: L09080192-01 **File ID:** T2.081109.144052 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	61.2		61.3		5	120.2	75 - 125	
ANTIMONY	0.578		0	U	.6	96.3	75 - 125	
ARSENIC	0.235		0.0440	F	.2	97.6	75 - 125	
BARIUM	0.624		0.152		.5	97.5	75 - 125	
BERYLLIUM	0.0228		0.000990	F	.025	87.6	75 - 125	
CADMIUM	0.0201		0	U	.025	80.4	75 - 125	
CALCIUM	4.87		0.142	F	5	94.9	75 - 125	
CHROMIUM	0.517		0.306		.25	96.5	75 - 125	
COBALT	0.106		0.00659	F	.1	100.5	75 - 125	
COPPER	0.294		0.0542		.25	98.3	75 - 125	
IRON	208		225		2	271.1	75 - 125	N
LEAD	0.348		0.131		.25	92.0	75 - 125	
MAGNESIUM	5.48		1.04		5	90.8	75 - 125	
MANGANESE	0.584		0.388		.25	93.7	75 - 125	
NICKEL	0.262		0.0198	F	.25	97.5	75 - 125	
POTASSIUM	25.5		2.28		25	93.9	75 - 125	
SELENIUM	0.200		0	U	.2	100.2	75 - 125	
SILVER	0.187		0.00549	F	.2	91.2	75 - 125	
SODIUM	23.7		0	U	25	94.8	75 - 125	
THALLIUM	0.245	F	0	U	.25	98.0	75 - 125	
VANADIUM	0.857		0.419		.5	95.9	75 - 125	
ZINC	0.508		0.0642		.5	90.0	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: 1463765
Report generated: 08/13/2009 13:22

Microbac Laboratories Inc.
Initial Calibration Summary

00108255

Login:	**L09080192**	Workgroup (AAB#):	**WG309454**
Analytical Method:	**6010B**	Instrument ID:	**ICP-THERMO2**
ICAL Worknum:	**WG309455**	Initial Calibration Date:	**11-AUG-2009 11:15**

	WG309455-01		WG309455-02		WG309455-03		WG309455-04		WG309455-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.0101	.1	0.0132	.2	0.0163	5	0.322	10	0.641	.999981	
ANTIMONY	0	0.0000400	.012	0.000220	.024	0.000400	.6	0.0183	1.2	0.0366	.999998	
ARSENIC	0	-0.0000400	NA	NA	.008	0.0000400	.2	0.00313	.4	0.00630	.999892	
BARIUM	0	0.00194	.01	0.00926	.02	0.0167	.5	0.703	1	1.40	.999987	
BERYLLIUM	0	-0.000620	.0005	0.000170	.001	0.000990	.025	0.0798	.05	0.160	.999999	
CADMIUM	0	0.0000100	.0005	0.000120	.001	0.000230	.025	0.0120	.05	0.0240	.999961	
CALCIUM	0	-0.000420	.1	0.000620	.2	0.00157	5	0.0973	10	0.194	.999992	
CHROMIUM	0	0.0000400	.005	0.000480	.01	0.000850	.25	0.0408	.5	0.0808	.99998	
COBALT	0	-0.0000500	.002	0.000280	.004	0.000650	.1	0.0330	.2	0.0655	.999974	
COPPER	0	0.000170	-1	0.000420	.01	0.000700	.25	0.0273	.5	0.0530	.999923	
IRON	0	0	.04	0.000220	.08	0.000480	2	0.0231	4	0.0458	.999982	
LEAD	0	-0.0000600	.005	0.0000600	.01	0.000100	.25	0.00751	.5	0.0149	.999563	
MAGNESIUM	0	0.0000400	.1	0.000160	.2	0.000270	5	0.0125	10	0.0251	.999979	
MANGANESE	0	0.000130	.005	0.000460	.01	0.000930	.25	0.0402	.5	0.0800	.999947	
NICKEL	0	-0.000150	.005	0.0000600	.01	0.000280	.25	0.0191	.5	0.0376	.999884	
POTASSIUM	0	0.000610	.5	0.00391	1	0.00773	25	0.355	50	0.716	.999983	
SELENIUM	0	-0.0000100	NA	NA	.008	0.0000700	.2	0.00251	.4	0.00504	.999151	
SILVER	0	-0.000140	20	0.000580	.008	0.00134	.2	0.0743	.4	0.148	.999991	
SODIUM	0	-0.00128	.5	0.0160	1	0.0336	25	1.69	50	3.41	.999994	
THALLIUM	0	-0.0000600	NA	NA	.01	0.0000500	.25	0.00493	.5	0.00963	.999862	
VANADIUM	0	0.000140	.01	0.00203	.02	0.00410	.5	0.191	1	0.378	.999985	
ZINC	0	0.000450	.01	0.00154	.02	0.00253	.5	0.0988	1	0.197	.999971	

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 ID: 1463773
Report generated: 13-AUG-2009 13:23

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-07
Instrument ID: ICP-THERMO2 Run Time: 11:28 Method: 6010B
File ID: T2.081109.112803 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309454 Cal ID: ICP-THERI - 11-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.2	.01	U
ARSENIC	.01	.1	.01	U
BARIUM	.002	.01	.002	U
BERYLLIUM	.00024	.01	.00024	U
CADMIUM	.001	.01	.001	U
CALCIUM	.1	.2	.1	U
CHROMIUM	.0024	.02	.0024	U
COBALT	.0024	.02	.0024	U
COPPER	.01	.02	.01	U
IRON	.02	.06	.02	U
LEAD	.01	.1	.01	U
MAGNESIUM	.24	.5	.24	U
MANGANESE	.002	.01	.002	U
NICKEL	.01	.04	.01	U
POTASSIUM	.5	1	.5	U
SELENIUM	.01	.1	.01	U
SILVER	.005	.04	.005	U
SODIUM	.1	.5	.1	U
THALLIUM	.008	.5	.008	U
VANADIUM	.005	.01	.005	U
ZINC	.01	.02	.01	U

ICB - Modified 07/14/2009
PDF File ID: 1463775
Report generated 08/13/2009 13:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108257

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-11
Instrument ID: ICP-THERMO2 Run Time: 11:53 Method: 6010B
File ID: T2.081109.115349 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.200	0.0100	U
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Cadmium	0.00100	0.0100	0.00100	U
Calcium	0.100	0.200	0.100	U
Chromium	0.00240	0.0200	0.00240	U
Cobalt	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Lead	0.0100	0.100	0.0100	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Nickel	0.0100	0.0400	0.0100	U
Potassium	0.500	1.00	0.500	U
Selenium	0.0100	0.100	0.0100	U
Silver	0.00500	0.0400	0.00500	U
Sodium	0.100	0.500	0.100	U
Thallium	0.00800	0.500	0.00800	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1463778
Report generated 08/13/2009 13:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108258

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-15
Instrument ID: ICP-THERMO2 Run Time: 14:00 Method: 6010B
File ID: T2.081109.140052 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.200	0.0100	U
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Cadmium	0.00100	0.0100	0.00100	U
Calcium	0.100	0.200	0.100	U
Chromium	0.00240	0.0200	0.00240	U
Cobalt	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Lead	0.0100	0.100	0.0100	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Nickel	0.0100	0.0400	0.0100	U
Potassium	0.500	1.00	0.500	U
Selenium	0.0100	0.100	0.0100	U
Silver	0.00500	0.0400	0.00500	U
Sodium	0.100	0.500	0.100	U
Thallium	0.00800	0.500	0.00800	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1463778
Report generated 08/13/2009 13:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108259

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-35
Instrument ID: ICP-THERMO2 Run Time: 15:31 Method: 6010B
File ID: T2.081109.153150 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.200	0.0100	U
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Cadmium	0.00100	0.0100	0.00100	U
Calcium	0.100	0.200	0.100	U
Chromium	0.00240	0.0200	0.00240	U
Cobalt	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Lead	0.0100	0.100	0.0100	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Nickel	0.0100	0.0400	0.0100	U
Potassium	0.500	1.00	0.500	U
Selenium	0.0100	0.100	0.0100	U
Silver	0.00500	0.0400	0.00500	U
Sodium	0.100	0.500	0.100	U
Thallium	0.00800	0.500	0.00800	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1463778
Report generated 08/13/2009 13:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108260

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-37
Instrument ID: ICP-THERMO2 Run Time: 16:10 Method: 6010B
File ID: T2.081109.161001 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.200	0.0100	U
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Cadmium	0.00100	0.0100	0.00100	U
Calcium	0.100	0.200	0.100	U
Chromium	0.00240	0.0200	0.00240	U
Cobalt	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Lead	0.0100	0.100	0.0100	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Nickel	0.0100	0.0400	0.0100	U
Potassium	0.500	1.00	0.500	U
Selenium	0.0100	0.100	0.0100	U
Silver	0.00500	0.0400	0.00500	U
Sodium	0.100	0.500	0.100	U
Thallium	0.00800	0.500	0.00800	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1463778
Report generated 08/13/2009 13:23

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00108261

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-06
Instrument ID: ICP-THERMO2 Run Time: 11:21 Method: 6010B
File ID: T2.081109.112145 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.1	101	90 - 110	
Antimony		1.2	1.21	100	90 - 110	
Arsenic		.4	0.397	99.2	90 - 110	
Barium		1	1.00	100	90 - 110	
Beryllium		.05	0.0512	102	90 - 110	
Cadmium		.05	0.0502	100	90 - 110	
Calcium		10	10.2	102	90 - 110	
Chromium		.5	0.507	101	90 - 110	
Cobalt		.2	0.202	101	90 - 110	
Copper		.5	0.506	101	90 - 110	
Iron		4	4.01	100	90 - 110	
Lead		.5	0.525	105	90 - 110	
Magnesium		10	9.97	99.7	90 - 110	
Manganese		.5	0.520	104	90 - 110	
Nickel		.5	0.523	105	90 - 110	
Potassium		50	50.4	101	90 - 110	
Selenium		.4	0.399	99.7	90 - 110	
Silver		.4	0.404	101	90 - 110	
Sodium		50	49.9	99.8	90 - 110	
Thallium		.5	0.513	103	90 - 110	
Vanadium		1	1.03	103	90 - 110	
Zinc		1	1.02	102	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1463774
Report generated 08/13/2009 13:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108262

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-10
Instrument ID: ICP-THERMO2 Run Time: 11:47 Method: 6010B
File ID: T2.081109.114733 Analyst: EDA QC Key: STD
Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Antimony		1.20	1.21	mg/L	101	90 - 110		
Arsenic		0.400	0.402	mg/L	101	90 - 110		
Barium		1.00	1.01	mg/L	101	90 - 110		
Beryllium		0.0500	0.0502	mg/L	100	90 - 110		
Cadmium		0.0500	0.0503	mg/L	101	90 - 110		
Calcium		10.0	10.3	mg/L	103	90 - 110		
Chromium		0.500	0.504	mg/L	101	90 - 110		
Cobalt		0.200	0.201	mg/L	101	90 - 110		
Copper		0.500	0.510	mg/L	102	90 - 110		
Iron		4.00	4.05	mg/L	101	90 - 110		
Lead		0.500	0.521	mg/L	104	90 - 110		
Magnesium		10.0	9.98	mg/L	99.8	90 - 110		
Manganese		0.500	0.514	mg/L	103	90 - 110		
Nickel		0.500	0.520	mg/L	104	90 - 110		
Potassium		50.0	50.9	mg/L	102	90 - 110		
Selenium		0.400	0.406	mg/L	101	90 - 110		
Silver		0.400	0.406	mg/L	102	90 - 110		
Sodium		50.0	50.5	mg/L	101	90 - 110		
Thallium		0.500	0.516	mg/L	103	90 - 110		
Vanadium		1.00	1.01	mg/L	101	90 - 110		
Zinc		1.00	1.01	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463777
Report generated 08/13/2009 13:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00108263

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-14

Instrument ID: ICP-THERMO2 Run Time: 13:54 Method: 6010B

File ID: T2.081109.135436 Analyst: EDA QC Key: STD

Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.96	mg/L	99.6	90 - 110		
Antimony		1.20	1.21	mg/L	101	90 - 110		
Arsenic		0.400	0.402	mg/L	101	90 - 110		
Barium		1.00	1.02	mg/L	102	90 - 110		
Beryllium		0.0500	0.0487	mg/L	97.3	90 - 110		
Cadmium		0.0500	0.0496	mg/L	99.2	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Chromium		0.500	0.498	mg/L	99.6	90 - 110		
Cobalt		0.200	0.201	mg/L	101	90 - 110		
Copper		0.500	0.523	mg/L	105	90 - 110		
Iron		4.00	4.05	mg/L	101	90 - 110		
Lead		0.500	0.513	mg/L	103	90 - 110		
Magnesium		10.0	9.88	mg/L	98.8	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		
Nickel		0.500	0.513	mg/L	103	90 - 110		
Potassium		50.0	51.6	mg/L	103	90 - 110		
Selenium		0.400	0.409	mg/L	102	90 - 110		
Silver		0.400	0.405	mg/L	101	90 - 110		
Sodium		50.0	51.2	mg/L	102	90 - 110		
Thallium		0.500	0.513	mg/L	103	90 - 110		
Vanadium		1.00	0.983	mg/L	98.3	90 - 110		
Zinc		1.00	0.977	mg/L	97.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1463777

Report generated 08/13/2009 13:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00108264

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-34

Instrument ID: ICP-THERMO2 Run Time: 15:25 Method: 6010B

File ID: T2.081109.152533 Analyst: EDA QC Key: STD

Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.92	mg/L	99.2	90 - 110		
Antimony		1.20	1.21	mg/L	100	90 - 110		
Arsenic		0.400	0.407	mg/L	102	90 - 110		
Barium		1.00	1.02	mg/L	102	90 - 110		
Beryllium		0.0500	0.0483	mg/L	96.7	90 - 110		
Cadmium		0.0500	0.0499	mg/L	99.8	90 - 110		
Calcium		10.0	10.4	mg/L	104	90 - 110		
Chromium		0.500	0.502	mg/L	100	90 - 110		
Cobalt		0.200	0.202	mg/L	101	90 - 110		
Copper		0.500	0.524	mg/L	105	90 - 110		
Iron		4.00	4.13	mg/L	103	90 - 110		
Lead		0.500	0.508	mg/L	102	90 - 110		
Magnesium		10.0	9.96	mg/L	99.6	90 - 110		
Manganese		0.500	0.508	mg/L	102	90 - 110		
Nickel		0.500	0.512	mg/L	102	90 - 110		
Potassium		50.0	51.8	mg/L	104	90 - 110		
Selenium		0.400	0.409	mg/L	102	90 - 110		
Silver		0.400	0.407	mg/L	102	90 - 110		
Sodium		50.0	51.4	mg/L	103	90 - 110		
Thallium		0.500	0.511	mg/L	102	90 - 110		
Vanadium		1.00	0.977	mg/L	97.7	90 - 110		
Zinc		1.00	0.971	mg/L	97.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1463777

Report generated 08/13/2009 13:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108265

Login Number: L09080192 Run Date: 08/11/2009 Sample ID: WG309455-36
Instrument ID: ICP-THERMO2 Run Time: 16:03 Method: 6010B
File ID: T2.081109.160345 Analyst: EDA QC Key: STD
Workgroup (AAB#): WG309454 Cal ID: ICP-TH - 11-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.82	mg/L	98.2	90 - 110		
Antimony		1.20	1.20	mg/L	99.8	90 - 110		
Arsenic		0.400	0.399	mg/L	99.7	90 - 110		
Barium		1.00	1.02	mg/L	102	90 - 110		
Beryllium		0.0500	0.0477	mg/L	95.4	90 - 110		
Cadmium		0.0500	0.0489	mg/L	97.8	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Chromium		0.500	0.495	mg/L	99.0	90 - 110		
Cobalt		0.200	0.201	mg/L	100	90 - 110		
Copper		0.500	0.520	mg/L	104	90 - 110		
Iron		4.00	4.08	mg/L	102	90 - 110		
Lead		0.500	0.503	mg/L	101	90 - 110		
Magnesium		10.0	9.89	mg/L	98.9	90 - 110		
Manganese		0.500	0.501	mg/L	100	90 - 110		
Nickel		0.500	0.509	mg/L	102	90 - 110		
Potassium		50.0	51.9	mg/L	104	90 - 110		
Selenium		0.400	0.412	mg/L	103	90 - 110		
Silver		0.400	0.402	mg/L	100	90 - 110		
Sodium		50.0	51.4	mg/L	103	90 - 110		
Thallium		0.500	0.506	mg/L	101	90 - 110		
Vanadium		1.00	0.964	mg/L	96.4	90 - 110		
Zinc		1.00	0.960	mg/L	96.0	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463777
Report generated 08/13/2009 13:23

Login number: L09080192 **Workgroup (AAB#):** WG309454
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG309455-08 **File ID:** T2.081109.113431 **Units:** mg/L
Sol. AB : WG309455-09 **File ID:** T2.081109.114104 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	256	102	250	257	103	
Antimony	NS	-0.00466	NS	NS	0.507	NS	
Arsenic	NS	-0.000130	NS	NS	0.254	NS	
Barium	NS	0.000340	NS	0.250	0.254	102	
Beryllium	NS	0.0000200	NS	0.250	0.240	96.0	
Cadmium	NS	-0.000150	NS	0.500	0.499	99.8	
Calcium	250	259	104	250	260	104	
Chromium	NS	0.00232	NS	0.250	0.238	95.2	
Cobalt	NS	0.00104	NS	0.250	0.240	96.0	
Copper	NS	0.00250	NS	0.250	0.252	101	
Iron	100	99.4	99.4	100	98.9	98.9	
Lead	NS	0.0106	NS	0.500	0.497	99.4	
Magnesium	250	261	104	250	259	104	
Manganese	NS	-0.000830	NS	0.250	0.243	97.2	
Nickel	NS	-0.000360	NS	0.500	0.475	95.0	
Potassium	NS	-0.0365	NS	NS	5.19	NS	
Selenium	NS	-0.00232	NS	NS	0.249	NS	
Silver	NS	-0.000330	NS	0.500	0.487	97.4	
Sodium	NS	-0.00234	NS	NS	5.13	NS	
Thallium	NS	-0.00428	NS	NS	0.454	NS	
Vanadium	NS	0.00577	NS	0.250	0.245	98.0	
Zinc	NS	-0.00743	NS	0.500	0.456	91.2	

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: 1463776
Report generated 08/13/2009 13:23

Login Number: L09080192 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	AL	AS	B	BA	BE
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0.0000210	0	0	0	0
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0	0	0	0
CADMIUM	228.80	0	0.00250	0	0	0
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0	0	0	0
IRON	261.20	0	0	0	0	0
LEAD	220.30	0.000249	0	0	0	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	-0.0000300	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.00	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0	0	0	0	0
THALLIUM	190.80	-0.0000120	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.30	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0.0000420	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463772
Report generated: 08/13/2009 13:23

Login Number: L09080192 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	CA	CO	CR	CU	FE
ALUMINUM	308.20	0	-0.000820	0	0	0
ANTIMONY	206.80	0	0	0.00950	0	0.0000560
ARSENIC	189.00	0	0	0.000490	0	-0.0000120
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0.00343	0	0	-0.000619
CADMIUM	228.80	0	0	0	0	0.0000220
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000220
COBALT	228.60	0	0	0.000108	0	0
COPPER	224.70	0	0.0000770	0	0	0.000480
IRON	261.20	0	0	0	0	0
LEAD	220.30	0	-0.0000930	-0.000172	0.000809	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	-0.0000920	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0.000100	0	0	0.0000320
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.00	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0.0000140	0	0	0	0
THALLIUM	190.80	0	0.00397	0.000276	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.30	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	-0.0000300
ZINC	206.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463772
Report generated: 08/13/2009 13:23

Login Number: L09080192 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	LI	MG	MN	MO	NA
ALUMINUM	308.20	0	0	0	0.0153	0
ANTIMONY	206.80	0	0	0	0.000670	0
ARSENIC	189.00	0	0	0	0.00109	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0	0	-0.00169	0
CADMIUM	228.80	0	0	0	0.0000220	0
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0.000160	0	0
COBALT	228.60	0	0	0	-0.000983	0
COPPER	224.70	0	0	0	0.00274	0
IRON	261.20	0	0	0	0	0
LEAD	220.30	0	0	0	-0.00183	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	-0.00190	-0.0110	0
MANGANESE	257.60	0	0.0000190	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0	0	0	0.000156	0
SILICON	212.40	0	0	0	0.0187	0
SILVER	328.00	0	0	0	-0.0000440	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.30	0	0	0	-0.000153	0
VANADIUM	292.40	0	0	0	-0.00778	0
ZINC	206.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463772
Report generated: 08/13/2009 13:23

Login Number: L09080192 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	NI	SB	SN	SR	TI
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0	-0.00840	0	-0.000990
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0	0	0	0
CADMIUM	228.80	-0.000128	0	0	0	0
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000550
COBALT	228.60	0.000175	0	0	0	0.00188
COPPER	224.70	-0.0120	0	0	0	0.000269
IRON	261.20	0	0	0	0	0
LEAD	220.30	0.000110	0	0	0	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	-0.00290
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.00	0	0	0	0	-0.00620
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	-0.00170
TIN	189.90	0	0	0	0	-0.00220
TITANIUM	337.30	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0.000824
ZINC	206.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463772
Report generated: 08/13/2009 13:23

Login Number: L09080192 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	V	ZN
ALUMINUM	308.20	0.00300	0
ANTIMONY	206.80	-0.00438	0
ARSENIC	189.00	0.000107	0
BARIUM	455.40	0	0
BERYLLIUM	313.00	0	0
BORON	249.70	0	0
CADMIUM	228.80	0.000102	0
CALCIUM	422.70	0	0
CHROMIUM	267.70	0	0
COBALT	228.60	0.0000200	0
COPPER	224.70	0	0
IRON	261.20	0	0
LEAD	220.30	-0.000126	0
LITHIUM	670.80	0	0
MAGNESIUM	279.10	0	0
MANGANESE	257.60	0	0
MOLYBDENUM	202.03	-0.000110	0
NICKEL	231.60	0	0
POTASSIUM	766.40	0	0
SELENIUM	196.00	0	0
SILICON	212.40	0	0
SILVER	328.00	-0.00617	0
SODIUM	589.50	0	0
STRONTIUM	407.80	0	0
THALLIUM	190.80	-0.0282	0
TIN	189.90	0	0
TITANIUM	337.30	0	0
VANADIUM	292.40	0	0
ZINC	206.20	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463772
Report generated: 08/13/2009 13:23

Login Number: L09080192 **Date:** 06/11/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	900.0
Antimony	10.00	90.0
Arsenic	10.00	90.0
Barium	10.00	90.0
Beryllium	15.00	9.0
Boron	10.00	90.0
Cadmium	10.00	18.0
Calcium	10.00	900.0
Chromium	10.00	90.0
Cobalt	10.00	90.0
Copper	10.00	180.0
Iron	5.00	900.0
Lead	10.00	180.0
Lithium	10.00	90.0
Magnesium	15.00	900.0
Manganese	15.00	180.0
Molybdenum	10.00	18.0
Nickel	10.00	90.0
Potassium	10.00	315.0
Selenium	10.00	81.0
Silicon	10.00	90.0
Silver	5.00	9.0
Sodium	10.00	315.0
Strontium	10.00	4.5
Thallium	10.00	9.0
Tin	10.00	90.0
Titanium	15.00	90.0
Vanadium	10.00	90.0
Zinc	10.00	45.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1463771
Report generated: 08/13/2009 13:23

2.3.2 Metals CVAA Data (Mercury)

2.3.2.1 Summary Data

LABORATORY REPORT

L09080192

00108275

08/13/09 14:10

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
SITE 1-TP-BF	L09080192-01	7471A	1	11-AUG-09
SITE 1-TP-TS	L09080192-02	7471A	1	11-AUG-09
SITE 2-BLM-TS	L09080192-03	7471A	1	11-AUG-09
SITE 2-BLM-BF	L09080192-04	7471A	1	11-AUG-09
SITE 3-ML-BF/TS	L09080192-05	7471A	1	11-AUG-09

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108276

Sample Number:	**L09080192-01**	PrePrep Method:	**NONE**	Instrument:	**HYDRA**
Client ID:	**SITE 1-TP-BF**	Prep Method:	**7471A**	Prep Date:	**08/11/2009 12:18**
Matrix:	**Soil**	Analytical Method:	**7471A**	Cal Date:	
Workgroup Number:	**WG309524**	Analyst:	**PDM**	Run Date:	**08/12/2009 11:43**
Collect Date:	**08/09/2009 10:45**	Dilution:	**1**	File ID:	**HY.081209.114351**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**77.4**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	**7439-97-6**		**U**	**0.318**	**0.0127**

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108277

Sample Number:	**L09080192-02**	PrePrep Method:	**NONE**	Instrument:	**HYDRA**
Client ID:	**SITE 1-TP-TS**	Prep Method:	**7471A**	Prep Date:	**08/11/2009 12:19**
Matrix:	**Soil**	Analytical Method:	**7471A**	Cal Date:	
Workgroup Number:	**WG309524**	Analyst:	**PDM**	Run Date:	**08/12/2009 11:45**
Collect Date:	**08/09/2009 10:50**	Dilution:	**1**	File ID:	**HY.081209.114556**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**79.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	**7439-97-6**		**U**	**0.304**	**0.0122**

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108278

Sample Number:	**L09080192-03**	PrePrep Method:	**NONE**	Instrument:	**HYDRA**
Client ID:	**SITE 2-BLM-TS**	Prep Method:	**7471A**	Prep Date:	**08/11/2009 12:21**
Matrix:	**Soil**	Analytical Method:	**7471A**	Cal Date:	**08/12/2009 11:26**
Workgroup Number:	**WG309524**	Analyst:	**PDM**	Run Date:	**08/12/2009 11:49**
Collect Date:	**08/09/2009 11:20**	Dilution:	**1**	File ID:	**HY.081209.114932**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**78.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	**7439-97-6**		**U**	**0.317**	**0.0127**

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108279

Sample Number:	**L09080192-04**	PrePrep Method:	**NONE**	Instrument:	**HYDRA**
Client ID:	**SITE 2-BLM-BF**	Prep Method:	**7471A**	Prep Date:	**08/11/2009 12:22**
Matrix:	**Soil**	Analytical Method:	**7471A**	Cal Date:	**08/12/2009 11:27**
Workgroup Number:	**WG309524**	Analyst:	**PDM**	Run Date:	**08/12/2009 11:51**
Collect Date:	**08/09/2009 11:25**	Dilution:	**1**	File ID:	**HY.081209.115116**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**78.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	**7439-97-6**		**U**	**0.312**	**0.0125**

U Not detected at or above adjusted sample detection limit

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108280

Sample Number:	**L09080192-05**	PrePrep Method:	**NONE**	Instrument:	**HYDRA**
Client ID:	**SITE 3-ML-BF/TS**	Prep Method:	**7471A**	Prep Date:	**08/11/2009 12:23**
Matrix:	**Soil**	Analytical Method:	**7471A**	Cal Date:	**08/12/2009 11:29**
Workgroup Number:	**WG309524**	Analyst:	**PDM**	Run Date:	**08/12/2009 11:53**
Collect Date:	**08/09/2009 12:00**	Dilution:	**1**	File ID:	**HY.081209.115319**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**88.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	**7439-97-6**	**0.0394**	**J**	**0.278**	**0.0111**

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

2.3.2.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Microbac Laboratories Inc.
Metals Digest Log

00108283

Workgroup: WG309445
Analyst: BRG
Spike Analyst: BRG
Method: 7471A
Run Date: 08/11/2009 12:23
Hotblock Start Temp: 95.2 @ 12:50
Hotblock End Temp: 92.7 @ 13:20

SOP: ME405 Revison 9
Spike Solution: STD34566
Spike Witness: VC
KMnO4 1:1 Lot #: RGT13913
HNO3 Lot #: COA13945
HCL Lot #: COA14028
Digest tubes Lot #: COA14013
HG SOIL STD 10PPM Lot #: STD34573
HG SOILS ICV Lot #: STD34574

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG309445-02	BLANK	7	.6 g	40 mL		
2	WG309445-03	LCS	7	.6 g	40 mL	4 mL	
3	L09080192-01	SAMP	7	.609 g	40 mL		08/12/09
4	L09080192-02	SAMP	7	.62 g	40 mL		08/12/09
5	L09080192-03	SAMP	7	.605 g	40 mL		08/12/09
6	L09080192-04	SAMP	7	.614 g	40 mL		08/12/09
7	WG309445-01	REF	7	.613 g	40 mL		
8	L09080192-05	SAMP	7	.613 g	40 mL		08/12/09
9	WG309445-04	MS	7	.613 g	40 mL	4 mL	
10	WG309445-05	MSD	7	.613 g	40 mL	4 mL	

Analyst: Brenda Gregory

Reviewer: Erin Potter

BLOCK_DIG - Modified 07/22/2008
PDF ID: 1463208
Report generated: 08/11/2009 13:25

Microbac®

00108284

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081209A.PRN

Analyst1: PDM Analyst2: N/A

Method: 7471A SOP: ME405 Rev: 9

Maintenance Log ID: 29766

Calibration Std: STD34573 ICV/CCV Std: STD34574 Post Spike: STD34573

ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309526,309524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.081209.112214	WG309542-01	Calibration Point		1		08/12/09 11:22
2	HY.081209.112408	WG309542-02	Calibration Point		1		08/12/09 11:24
3	HY.081209.112602	WG309542-03	Calibration Point		1		08/12/09 11:26
4	HY.081209.112749	WG309542-04	Calibration Point		1		08/12/09 11:27
5	HY.081209.112938	WG309542-05	Calibration Point		1		08/12/09 11:29
6	HY.081209.113130	WG309542-06	Calibration Point		1		08/12/09 11:31
7	HY.081209.113315	WG309542-07	Initial Calibration Verification		1		08/12/09 11:33
8	HY.081209.113456	WG309542-08	Initial Calib Blank		1		08/12/09 11:34
9	HY.081209.113659	WG309542-09	CCV		1		08/12/09 11:36
10	HY.081209.113844	WG309542-10	CCB		1		08/12/09 11:38
11	HY.081209.114026	WG309445-02	Method/Prep Blank	.6/40	1		08/12/09 11:40
12	HY.081209.114207	WG309445-03	Laboratory Control S	.6/40	1		08/12/09 11:42
13	HY.081209.114351	L09080192-01	SITE 1-TP-BF	.609/40	1		08/12/09 11:43
14	HY.081209.114556	L09080192-02	SITE 1-TP-TS	.62/40	1		08/12/09 11:45
15	HY.081209.114741	WG309524-01	Post Digestion Spike		1	L09080192-02	08/12/09 11:47
16	HY.081209.114932	L09080192-03	SITE 2-BLM-TS	.605/40	1		08/12/09 11:49
17	HY.081209.115116	L09080192-04	SITE 2-BLM-BF	.614/40	1		08/12/09 11:51
18	HY.081209.115319	L09080192-05	SITE 3-ML-BF/TS	.613/40	1	WG309445-01	08/12/09 11:53
19	HY.081209.115513	WG309445-04	Matrix Spike	.613/40	1	L09080192-05	08/12/09 11:55
20	HY.081209.115727	WG309445-05	Matrix Spike Duplica	.613/40	1	L09080192-05	08/12/09 11:57
21	HY.081209.115910	WG309542-11	CCV		1		08/12/09 11:59
22	HY.081209.120055	WG309542-12	CCB		1		08/12/09 12:00
23	HY.081209.120258	WG309424-01	Method/Prep Blank	.25/40	1		08/12/09 12:02
24	HY.081209.120440	WG309424-02	Laboratory Control S	.25/40	1		08/12/09 12:04
25	HY.081209.120703	WG309424-03	Laboratory Control S	.25/40	1		08/12/09 12:07
26	HY.081209.120858	L09080065-01	POLYOL T/T T12 24375	.255/40	1		08/12/09 12:08
27	HY.081209.121051	WG309526-01	Post Digestion Spike		1	L09080065-01	08/12/09 12:10
28	HY.081209.121233	L09080132-01	FRAC TANK 01	.259/40	1		08/12/09 12:12
29	HY.081209.121416	WG309526-02	Post Digestion Spike		1	L09080132-01	08/12/09 12:14
30	HY.081209.121558	WG309542-13	CCV		1		08/12/09 12:15
31	HY.081209.121751	WG309542-14	CCB		1		08/12/09 12:17

Page: 1 Approved: August 12, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

00108285

Data Checklist

Date: 12-AUG-2009
Analyst: PDM
Analyst: NA
Method: 7471A
Instrument: HYDRA
Curve Workgroup: 309542
Runlog ID: 29587
Analytical Workgroups: 309524,309526

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	0192,0065,0132
Client Forms	X
Level X	
Level 3	0192
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	MMB
Comments	

Primary Reviewer:
12-AUG-2009
Pierce Morris

Secondary Reviewer:
12-AUG-2009
Maren Berry

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 15:38:49

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108286

Analytical Method: 7471A AAB#: WG309524

Login Number: L09080192

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
SITE 1-TP-BF	01	08/09/09					08/11/09	2.1	28		08/12/09	3	28	
SITE 1-TP-TS	02	08/09/09					08/11/09	2.1	28		08/12/09	3	28	
SITE 2-BLM-TS	03	08/09/09					08/11/09	2	28		08/12/09	3	28	
SITE 2-BLM-BF	04	08/09/09					08/11/09	2	28		08/12/09	3	28	
SITE 3-ML-BF/TS	05	08/09/09					08/11/09	2	28		08/12/09	3	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1464166
Report generated 08/12/2009 13:48

00108287

METHOD BLANK SUMMARY

Login Number:	L09080192	Work Group:	WG309524
Blank File ID:	HY.081209.114026	Blank Sample ID:	WG309445-02
Prep Date:	08/11/09 12:23	Instrument ID:	HYDRA
Analyzed Date:	08/12/09 11:40	Method:	7471A
Analyst:	PDM		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309445-03	HY.081209.114207	08/12/09 11:42	01
SITE 1-TP-BF	L09080192-01	HY.081209.114351	08/12/09 11:43	01
SITE 1-TP-TS	L09080192-02	HY.081209.114556	08/12/09 11:45	01
SITE 2-BLM-TS	L09080192-03	HY.081209.114932	08/12/09 11:49	01
SITE 2-BLM-BF	L09080192-04	HY.081209.115116	08/12/09 11:51	01
SITE 3-ML-BF/TS	L09080192-05	HY.081209.115319	08/12/09 11:53	01

Report Name: BLANK_SUMMARY
PDF File ID: 1464167
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108288

Login Number: L09080192 Prep Date: 08/11/09 12:23 Sample ID: WG309445-02
Instrument ID: HYDRA Run Date: 08/12/09 11:40 Prep Method: 7471A
File ID: HY.081209.114026 Analyst: PDM Method: 7471A
Workgroup (AAB#): WG309524 Matrix: Soil Units: mg/kg
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-12-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury, Total	0.0100	0.250	0.0100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1464168
12-AUG-2009 13:48

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108289

Login Number: L09080192 Run Date: 08/12/2009 Sample ID: WG309445-03
Instrument ID: HYDRA Run Time: 11:42 Prep Method: 7471A
File ID: HY.081209.114207 Analyst: PDM Method: 7471A
Workgroup (AAB#): WG309524 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD34566 Cal ID: HYDRA-12-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury, Total	0.267	0.283	106	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1464169
Report generated: 08/12/2009 13:48

Loginnum:L09080192 Cal ID:HYDRA- Worknum:WG309524
Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7471A
Parent ID:WG309445-01 File ID:HY.081209.115319 Dil:1 Matrix:SOLID
Sample ID:WG309445-04 MS File ID:HY.081209.115513 Dil:1 Units:mg/kg
Sample ID:WG309445-05 MSD File ID:HY.081209.115727 Dil:1 Percent Solid:88.2

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury, Total	0.0394	0.296	0.298	87.4	0.296	0.303	89.2	1.72	75 - 125	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1464170
Report generated 08/12/2009 13:48

Sample Login ID: L09080192 **Worknum:** WG309524
Instrument ID: HYDRA **Method:** 7471A
Post Spike ID: WG309524-01 **File ID:** HY.081209.114741 **Dil:** 1 **Units:** ug/L
Sample ID: L09080192-02 **File ID:** HY.081209.114556 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	1.06	F	0	U	1	106.0	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

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1464165
Report generated: 08/12/2009 13:48

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00108292

Login Number: L09080192
Analytical Method: 7471A
ICAL Worknum: WG309542

Workgroup (AAB#): WG309524
Instrument ID: HYDRA
Initial Calibration Date: 08/12/2009 11:31

Analyte	WG309542-01		WG309542-02		WG309542-03		WG309542-04		WG309542-05		WG309542-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	646	0.200	1405	1.00	5722	2.00	10805	5.00	26293	10.0	52810

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1464171
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00108293

Login Number: L09080192
Analytical Method: 7471A
ICAL Worknum: WG309542

Workgroup (AAB#): WG309524
Instrument ID: HYDRA
Initial Calibration Date: 08/12/2009 11:31

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1464171
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

00108294

Login Number: L09080192 Run Date: 08/12/2009 Sample ID: WG309542-08
Instrument ID: HYDRA Run Time: 11:34 Method: 7471A
File ID: HY.081209.113456 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309524 Cal ID: HYDRA - 12-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.15	3.75	.15	U

ICB - Modified 07/14/2009
PDF File ID: 1464173
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108295

Login Number: L09080192 Run Date: 08/12/2009 Sample ID: WG309542-10
Instrument ID: HYDRA Run Time: 11:38 Method: 7471A
File ID: HY.081209.113844 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309524 Cal ID: HYDRA - 12-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	3.75	0.150	U

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

CCB - Modified 03/05/2008
PDF File ID: 1464175
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108296

Login Number: L09080192 Run Date: 08/12/2009 Sample ID: WG309542-12
Instrument ID: HYDRA Run Time: 12:00 Method: 7471A
File ID: HY.081209.120055 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309524 Cal ID: HYDRA - 12-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	3.75	0.150	U

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

CCB - Modified 03/05/2008
PDF File ID: 1464175
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00108297

Login Number: L09080192 Run Date: 08/12/2009 Sample ID: WG309542-07
Instrument ID: HYDRA Run Time: 11:33 Method: 7471A
File ID: HY.081209.113315 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309524 Cal ID: HYDRA - 12-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	2.02	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1464172
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108298

Login Number: L09080192 Run Date: 08/12/2009 Sample ID: WG309542-09
Instrument ID: HYDRA Run Time: 11:36 Method: 7471A
File ID: HY.081209.113659 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309524 Cal ID: HYDRA - 12-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00197	mg/L	98.5	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1464174
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108299

Login Number: L09080192 Run Date: 08/12/2009 Sample ID: WG309542-11
Instrument ID: HYDRA Run Time: 11:59 Method: 7471A
File ID: HY.081209.115910 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309524 Cal ID: HYDRA - 12-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00187	mg/L	93.5	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1464174
Report generated 08/12/2009 13:48

2.4 General Chemistry Data

2.4.1 Percent Solids Data

2.4.1.1 Raw Data

LABORATORY REPORT

L09080192

00108303

08/13/09 14:09

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
SITE 1-TP-BF	L09080192-01	D2216-90	1	11-AUG-09
SITE 1-TP-TS	L09080192-02	D2216-90	1	11-AUG-09
SITE 2-BLM-TS	L09080192-03	D2216-90	1	11-AUG-09
SITE 2-BLM-BF	L09080192-04	D2216-90	1	11-AUG-09
SITE 3-ML-BF/TS	L09080192-05	D2216-90	1	11-AUG-09

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108304

Sample Number: **L09080192-01**
Client ID: **SITE 1-TP-BF**
Matrix: **Soil**
Workgroup Number: **WG309447**
Collect Date: **08/09/2009 10:45**
Sample Tag: **01**

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

Instrument: **BAL001**
Prep Date: **08/12/2009 08:52**
Cal Date:
Run Date: **08/12/2009 08:52**
File ID: **B1.309447-0101**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**77.4**		**1.00**	**1.00**

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108305

Sample Number: **L09080192-02**
Client ID: **SITE 1-TP-TS**
Matrix: **Soil**
Workgroup Number: **WG309447**
Collect Date: **08/09/2009 10:50**
Sample Tag: **01**

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

Instrument: **BAL001**
Prep Date: **08/12/2009 08:52**
Cal Date:
Run Date: **08/12/2009 08:52**
File ID: **B1.309447-0102**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**79.5**		**1.00**	**1.00**

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108306

Sample Number:	**L09080192-03**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**SITE 2-BLM-TS**	Prep Method:	**D2216-90**	Prep Date:	**08/12/2009 08:52**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG309447**	Analyst:	**CPD**	Run Date:	**08/12/2009 08:52**
Collect Date:	**08/09/2009 11:20**	Dilution:	**1**	File ID:	**B1.309447-0103**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**78.2**		**1.00**	**1.00**

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108307

Sample Number: **L09080192-04**
Client ID: **SITE 2-BLM-BF**
Matrix: **Soil**
Workgroup Number: **WG309447**
Collect Date: **08/09/2009 11:25**
Sample Tag: **01**

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

Instrument: **BAL001**
Prep Date: **08/12/2009 08:52**
Cal Date:
Run Date: **08/12/2009 08:52**
File ID: **B1.309447-0104**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**78.3**		**1.00**	**1.00**

Report Number: **L09080192**
Report Date : **August 13, 2009**

00108308

Sample Number: **L09080192-05**
Client ID: **SITE 3-ML-BF/TS**
Matrix: **Soil**
Workgroup Number: **WG309447**
Collect Date: **08/09/2009 12:00**
Sample Tag: **01**

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

Instrument: **BAL001**
Prep Date: **08/12/2009 08:52**
Cal Date:
Run Date: **08/12/2009 08:52**
File ID: **B1.309447-0105**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**88.2**		**1.00**	**1.00**

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

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

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

% Moisture = 100 - % Solids from 1.0 calculation

Microbac Laboratories Inc.

PERCENT SOLIDS

00108310

Workgroup (AAB#): WG309447 Analyst: CPD ADT(on): 08/11/2009 12:36

Method: D2216-90 Instrument: BAL001 ADT(off): 08/12/2009 08:52

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
L09080192-01	1.29	42.09	32.88			77.43	
L09080192-02	1.27	34.52	27.69			79.46	
L09080192-03	1.29	30.11	23.82			78.17	
L09080192-04	1.28	20.98	16.71			78.32	
L09080192-05	1.29	22.76	20.22			88.17	
L09080205-01	1.28	24.2	23.63			97.51	
L09080205-04	1.27	33.65	32.75			97.22	
L09080205-06	1.28	25.06	24.79			98.86	
L09080205-08	1.3	34.46	33.86			98.19	
WG309447-01	1.29	22.76	20.22			88.17	11.83
WG309447-02	1.29	24.4	21.88			89.10	10.90

Analyst: Kendrick Davis

PERCENT_SOLIDS - Modified 04/24/2008

PDF ID: 1463139

Report generated: 08/12/2009 08:53

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 13, 2009

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

Qualkey: STD_ND=U

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

COC NO. (DATE-01)

00108314

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 (713.996.4588) **TAT: 24 Hr**
Project Contact: Jennifer Hoang **Phone No: 713-996-4408**
Project Name: Pistol Range/LHAAP-04 **Site: Confirmation Sampling**
Project #: 117591-0009B340/117591-0009B300 **Location: Karnack, TX**

Sampler Print: ALLEN WILLMORE (713) 247-9292

Sampler Sign:

TP = Tony Pczaikowski BE = Bucky Evans
BLM = Bobby Lee Martin
ML = Mr. Lee
BF = Backfill
TS = Topsoil

Sample Number	Grab	Date	Time	Matrix	# of Containers	TAL [redacted] METALS	VOCs 8260	SVOCs 8270							Comments
SITE 1 - TP - BF	X	8/9/09	10:45	Soil	3	X	X	X							24-hr TAT!!
SITE 1 - TP - TS	X	8/9/09	10:50	Soil	3	X	X	X							24-hr TAT!!
SITE 2 - BLM - TS	X	8/9/09	11:20	Soil	3	X	X	X							24-hr TAT!!
SITE 2 - BLM - BF	X	8/9/09	11:25	Soil	3	X	X	X							24-hr TAT!!
SITE 3 - ML - BF/TS	X	8/9/09	12:00	Soil	3	X	X	X							24-hr TAT!!
SITE 4 - BE - BF/TS	X	8/9/09	12:30	Soil	3	X	X	X							HOLD ~~Pending~~
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											

Relinquished By: [signature]
Date/Time 8/9/09 17:30

Received By:
Date/Time

Special Instructions Please see comments

Relinquished By:
Date/Time

Rec
Dat

Microbac OVD
Received: 08/11/2009 09:45
By: ROBIN KLINGER
Robin L. Klinger

221000001007

1000001007

COOLER INSPECTION

00108315

Received: 08/11/2009 09:45
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L09080192 L09080193

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0013996	H	6.0	1Z66V7250192015547	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?

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

Internal Chain of Custody Report

00108316

Login: L09080192
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 12-AUG-2009

Samplenum	Container ID	Products
L09080192-01	604546	G-60-W

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	11-AUG-2009 10:43	JKT	
2	ANALYZ	V1	ORG4	11-AUG-2009 11:09	FJB	JKT

Samplenum	Container ID	Products
L09080192-01	604547	8270

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	EXT	11-AUG-2009 10:54	CEB	JKT
3	STORE	EXT	A1	11-AUG-2009 12:45	JKT	CEB

Samplenum	Container ID	Products
L09080192-01	604548	AG AL BA BE CA CD CO CR CU DIG-ICP FE HG K MG

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	DIG	11-AUG-2009 10:50	BRG	JKT
3	ANALYZ*	DIG	METALS	11-AUG-2009 14:02	EDA	BRG
4	STORE	WET	A1	12-AUG-2009 08:16	JKT	CPD

Sample extract/digestate

Samplenum	Container ID	Products
L09080192-02	604549	G-60-W

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	11-AUG-2009 10:43	JKT	
2	ANALYZ	V1	ORG4	11-AUG-2009 11:09	FJB	JKT

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

00108317

Login: L09080192
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 12-AUG-2009

Samplenum	Container ID	Products
L09080192-02	604550	8270

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	EXT	11-AUG-2009 10:54	CEB	JKT
3	STORE	EXT	A1	11-AUG-2009 12:45	JKT	CEB

Samplenum	Container ID	Products
L09080192-02	604551	AG AL BA BE CA CD CO CR CU DIG-ICP FE HG K MG

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	WET	11-AUG-2009 10:43	JKT	
2	STORE	WET	A1	12-AUG-2009 08:16	JKT	CPD

Samplenum	Container ID	Products
L09080192-03	604552	G-60-W

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	11-AUG-2009 10:43	JKT	
2	ANALYZ	V1	ORG4	11-AUG-2009 11:09	FJB	JKT

Samplenum	Container ID	Products
L09080192-03	604553	8270

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	EXT	11-AUG-2009 10:54	CEB	JKT
3	STORE	EXT	A1	11-AUG-2009 12:45	JKT	CEB

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

Login: L09080192
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 12-AUG-2009

Samplenum	Container ID	Products
L09080192-03	604554	AG AL BA BE CA CD CO CR CU DIG-ICP FE HG K MG

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	DIG	11-AUG-2009 10:50	BRG	JKT
3	ANALYZ*	DIG	METALS	11-AUG-2009 14:02	EDA	BRG
4	STORE	WET	A1	12-AUG-2009 08:16	JKT	CPD

Sample extract/digestate

Samplenum	Container ID	Products
L09080192-04	604555	G-60-W

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	11-AUG-2009 10:43	JKT	
2	ANALYZ	V1	ORG4	11-AUG-2009 11:09	FJB	JKT

Samplenum	Container ID	Products
L09080192-04	604556	8270

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	EXT	11-AUG-2009 10:54	CEB	JKT
3	STORE	EXT	A1	11-AUG-2009 12:45	JKT	CEB

Samplenum	Container ID	Products
L09080192-04	604557	AG AL BA BE CA CD CO CR CU DIG-ICP FE HG K MG

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	DIG	11-AUG-2009 10:50	BRG	JKT
3	ANALYZ*	DIG	METALS	11-AUG-2009 14:02	EDA	BRG
4	STORE	WET	A1	12-AUG-2009 08:16	JKT	CPD

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

Internal Chain of Custody Report

00108319

Login: L09080192
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 12-AUG-2009

Samplenum	Container ID	Products
L09080192-05	604558	G-60-W

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	11-AUG-2009 10:43	JKT	
2	ANALYZ	V1	ORG4	11-AUG-2009 11:09	FJB	JKT

Samplenum	Container ID	Products
L09080192-05	604559	8270

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	EXT	11-AUG-2009 10:54	CEB	JKT
3	STORE	EXT	A1	11-AUG-2009 12:45	JKT	CEB

Samplenum	Container ID	Products
L09080192-05	604560	AG AL BA BE CA CD CO CR CU DIG-ICP FE HG K MG

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 10:43	JKT	
2	PREP	W1	DIG	11-AUG-2009 10:50	BRG	JKT
3	ANALYZ*	DIG	METALS	11-AUG-2009 14:02	EDA	BRG
4	STORE	WET	A1	12-AUG-2009 08:16	JKT	CPD

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

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Laboratory Report Number: L09080400

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

This report was reviewed on August 21, 2009.

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 21, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 213 pages.

Look closer. Go further. Do more.

Microbac

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 L09080400
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080400

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 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: 20-AUG-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00108325

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 laboratoy 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 Beery	Metals Supervisor	August 21, 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:	L09080400
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG310128
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 21, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				ER1
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

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

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080400
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG310128
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 21, 2009

EXCEPTIONS REPORT
ER#1 - Client sample 01 required dilution analysis in order to obtain a result for manganese within the linear range.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00108330

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 laboratoy 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 Beery	Metals Supervisor	August 21, 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:	L09080400
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG310131
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 21, 2009

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

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

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080400
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG310131
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 21, 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

00108335

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 laboratoy 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.

MICHAEL D. COCHRAN		Semivolatiles 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:	L09080400
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG310045
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 20, 2009

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

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		

00108337

Checklist ID: **41069**

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080400
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG310045
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 20, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?			✓		
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				1
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				

Checklist ID: **41069**

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080400
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG310045
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 20, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080400
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG310045
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 20, 2009

EXCEPTIONS REPORT
ER# - Description
1. The ICV yielded a %D beyond the acceptance limit for benzoic acid.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00108341

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 laboratoy 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	Sheri L. Pfalzgraf	Chemist II	August 21, 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:	L09080400
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG310125
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 21, 2009

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

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

00108344

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080400
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG310125
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 21, 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

00108346

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 laboratoy 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 true.

MIKE D. ALBERTSON		Volatiles 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:	L09080400
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	310034
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	August 20, 2009

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

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

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

EXCEPTIONS REPORT

ER# - Description

#1: Bromomethane exceeded the upper control limit.

#2: Dichlorodifluoromethane exceeded the upper control limit.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

L09080400

00108353

08/21/09 16:46

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CLAYPIPE-081809	L09080400-01	8260B	1	19-AUG-09
TB-081809	L09080400-02	8260B	1	19-AUG-09

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108354

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310034**
Collect Date: **08/18/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **08/19/2009 16:21**
Cal Date: **07/30/2009 16:56**
Run Date: **08/19/2009 16:21**
File ID: **8M355882**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	8.32	J	10.0	2.50
Benzene	71-43-2		U	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.184	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108355

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310034**
Collect Date: **08/18/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **08/19/2009 16:21**
Cal Date: **07/30/2009 16:56**
Run Date: **08/19/2009 16:21**
File ID: **8M355882**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	91.4	86	118	
1,2-Dichloroethane-d4	84.8	80	120	
Toluene-d8	100	88	110	
4-Bromofluorobenzene	95.2	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108356

Sample Number: **L09080400-02**
Client ID: **TB-081809**
Matrix: **Water**
Workgroup Number: **WG310034**
Collect Date: **08/18/2009 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **08/19/2009 14:08**
Cal Date: **07/30/2009 16:56**
Run Date: **08/19/2009 14:08**
File ID: **8M355878**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1	5.70	J	10.0	2.50
Benzene	71-43-2	0.234	J	1.00	0.125
Bromobenzene	108-86-1		U	1.00	0.125
Bromochloromethane	74-97-5		U	1.00	0.200
Bromodichloromethane	75-27-4		U	1.00	0.250
Bromoform	75-25-2		U	1.00	0.500
Bromomethane	74-83-9		U	1.00	0.500
2-Butanone	78-93-3		U	10.0	2.50
n-Butylbenzene	104-51-8		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
tert-Butylbenzene	98-06-6		U	1.00	0.250
Carbon disulfide	75-15-0		U	1.00	0.500
Carbon tetrachloride	56-23-5		U	1.00	0.250
Chlorobenzene	108-90-7		U	1.00	0.125
Chlorodibromomethane	124-48-1		U	1.00	0.250
Chloroethane	75-00-3		U	1.00	0.500
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3	0.428	J	1.00	0.250
2-Chlorotoluene	95-49-8		U	1.00	0.125
4-Chlorotoluene	106-43-4		U	1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8		U	5.00	1.00
1,2-Dibromoethane	106-93-4		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,4-Dichlorobenzene	106-46-7	0.600	J	1.00	0.125
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,1-Dichloroethene	75-35-4		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3-Dichloropropane	142-28-9		U	1.00	0.200
2,2-Dichloropropane	594-20-7		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
2-Hexanone	591-78-6		U	10.0	2.50
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Methylene chloride	75-09-2		U	5.00	0.250
Naphthalene	91-20-3		U	1.00	0.200
n-Propylbenzene	103-65-1		U	1.00	0.125
Styrene	100-42-5		U	1.00	0.125
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.125
Tetrachloroethene	127-18-4		U	1.00	0.250
Toluene	108-88-3	0.277	J	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		U	1.00	0.250

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108357

Sample Number: **L09080400-02**
Client ID: **TB-081809**
Matrix: **Water**
Workgroup Number: **WG310034**
Collect Date: **08/18/2009 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **FJB**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **08/19/2009 14:08**
Cal Date: **07/30/2009 16:56**
Run Date: **08/19/2009 14:08**
File ID: **8M355878**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trimethylbenzene	95-63-6		U	1.00	0.250
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
Vinyl acetate	108-05-4		U	10.0	2.50
Vinyl chloride	75-01-4		U	1.00	0.250
o-Xylene	95-47-6		U	1.00	0.250
m-,p-Xylene	136777-61-2		U	1.00	0.500

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	92.6	86	118	
1,2-Dichloroethane-d4	86.5	80	120	
Toluene-d8	99.5	88	110	
4-Bromofluorobenzene	96.5	86	115	

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.1.1.2 QC Summary Data

Example 8260 Calculations

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

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

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* 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 = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**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

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

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

00108361

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 073009
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 624 SOP: MSV10 Rev: 7
Method: 5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 29629

Internal Standard: STD33984 Surrogate Standard: STD34126
CCV: STD34357 LCS: STD34248 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG308451

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M355436	GAS CHECK	NA	1	1		07/30/09 09:26
2	8M355437	RINSE	NA	1	1		07/30/09 09:59
3	8M355438	RINSE	NA	1	1		07/30/09 10:31
4	8M355439	WG308451-01 50NG BFB STD 8260	NA	1	1	STD33918	07/30/09 11:17
5	8M355440	WG308451-01 50NG BFB STD 8260	NA	1	1	STD33918	07/30/09 11:31
6	8M355441	WG308451-02 0.3ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 11:57
7	8M355442	WG308451-03 0.4ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 12:31
8	8M355443	WG308451-04 1ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 13:09
9	8M355444	WG308451-05 2ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 13:41
10	8M355445	WG308451-06 5ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 14:13
11	8M355446	WG308451-07 20ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 14:46
12	8M355447	WG308451-08 50ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 15:18
13	8M355448	WG308451-09 100ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 15:50
14	8M355449	WG308451-10 200ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 16:24
15	8M355450	WG308451-11 300ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 16:56
16	8M355451	RINSE	NA	1	1		07/30/09 17:28
17	8M355452	WG308451-12 20ug/L ALT SOURCE	NA	1	1	STD34248	07/30/09 18:00

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4				
File ID: 8M355439				
	RR, BFB failed.			

Approved: August 03, 2009

Page: 1

00108362

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 081909
Analyst1: FJB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29853

Internal Standard: STD34650 Surrogate Standard: STD34126
CCV: STD34651 LCS: STD34678 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG310034

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M355871	WG310033-01 50NG BFB STD 8260	NA	1	1	STD34563	08/19/09 09:51
2	8M355872	WG310033-02 50ug/L WATER STD 8260	NA	1	1	STD34651	08/19/09 10:53
3	8M355873	RINSE	NA	1	1		08/19/09 11:26
4	8M355874	WG310034-01 VBLK0819 BLANK 8260	NA	1	1		08/19/09 11:58
5	8M355875	WG310034-02 20ug/L LCS STD 8260	NA	1	1	STD34678	08/19/09 12:32
6	8M355876	WG310034-03 20ug/L LCS DUP STD 8260	NA	1	1	STD34678	08/19/09 13:04
7	8M355877	L09080290-06 B 500X 826-SPE	7	1	500		08/19/09 13:36
8	8M355878	L09080400-02 A 826-LOW	<2	1	1		08/19/09 14:08
9	8M355879	L09080391-05 A 826-LOW	<2	1	1		08/19/09 14:44
10	8M355880	L09080402-01 A 826-SPE	<2	1	1		08/19/09 15:16
11	8M355881	L09080394-03 A 826-SPE	<2	1	1		08/19/09 15:49
12	8M355882	L09080400-01 A 826-LOW	<2	1	1		08/19/09 16:21
13	8M355883	L09080391-01 A 826-LOW	<2	1	1		08/19/09 16:54
14	8M355884	L09080391-02 A 826-LOW	<2	1	1		08/19/09 17:26
15	8M355885	L09080391-03 A 826-LOW	<2	1	1		08/19/09 17:58
16	8M355886	L09080391-04 A 826-LOW	<2	1	1		08/19/09 18:30
17	8M355887	L09080394-01 A 826-SPE	7	1	1		08/19/09 19:03
18	8M355888	L09080394-02 A 826-SPE	<2	1	1		08/19/09 19:35
19	8M355889	L09080402-02 A 826-SPE	<2	1	1		08/19/09 20:07
20	8M355890	L09080402-03 A 826-SPE	<2	1	1		08/19/09 20:40
21	8M355891	L09080402-04 A 826-SPE	<2	1	1		08/19/09 21:12
22	8M355892	L09080402-05 A 826-SPE	<2	1	1		08/19/09 21:44
23	8M355893	RINSE	NA	1	1		08/19/09 22:16
24	8M355894	RINSE	NA	1	1		08/19/09 22:48

Comments

Seq.	Rerun	Dil.	Reason	Analytes
7				
File ID: 8M355877				
DNR-not needed.				

Approved: August 20, 2009

Page: 1

Microbac Laboratories Inc.

00108363

Data Checklist

Date: 30-JUL-2009
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 29385
Analytical Workgroups: WG308451

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	X
Case Narrative	NA
Results Reporting/Data Qualifiers	NA
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
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
Check the reasonableness of the results	X

Primary Reviewer:
31-JUL-2009

Secondary Reviewer:
03-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-03-2009 14:06:13

Microbac Laboratories Inc.

00108364

Data Checklist

Date: 19-AUG-2009
Analyst: FJB
Analyst: NA
Method: 8260
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 29714
Analytical Workgroups: WG310034

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
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
Check the reasonableness of the results	X

Primary Reviewer:
20-AUG-2009

Secondary Reviewer:
20-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-20-2009 12:23:38

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108365

Analytical Method: 8260B AAB#: WG310034

Login Number: L09080400

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
04CLAYPIPE-081809	01	08/18/09							14		08/19/09	1	14	
TB-081809	02	08/18/09							14		08/19/09	1.6	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1470145
Report generated 08/20/2009 13:02

Login Number: L09080400
Instrument Id: HPMS8
Workgroup (AAB#): WG310034

Method: 8260
CAL ID: HPMS8-30-JUL-09
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L09080400-01	1.00	01	84.8	91.4	95.2	100
L09080400-02	1.00	01	86.5	92.6	96.5	99.5
WG310034-01	1.00	01	85.7	93.1	96.3	100
WG310034-02	1.00	01	85.9	93.2	94.9	95.0
WG310034-03	1.00	01	84.7	91.8	93.5	96.5

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1470277
Report generated: 08/20/2009 13:02

00108367

METHOD BLANK SUMMARY

Login Number:	L09080400	Work Group:	WG310034
Blank File ID:	8M355874	Blank Sample ID:	WG310034-01
Prep Date:	08/19/09 11:58	Instrument ID:	HPMS8
Analyzed Date:	08/19/09 11:58	Method:	8260B
Analyst:	FJB		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG310034-02	8M355875	08/19/09 12:32	01
LCS2	WG310034-03	8M355876	08/19/09 13:04	01
TB-081809	L09080400-02	8M355878	08/19/09 14:08	01
04CLAYPIPE-081809	L09080400-01	8M355882	08/19/09 16:21	01

Report Name: BLANK_SUMMARY
PDF File ID: 1470270
Report generated 08/20/2009 13:02

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108368

Login Number:L09080400 Prep Date:08/19/09 11:58 Sample ID:WG310034-01
Instrument ID:HPMS8 Run Date:08/19/09 11:58 Prep Method:5030C/5035A
File ID:8M355874 Analyst:FJB Method:8260B
Workgroup (AAB#):WG310034 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS8-30-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	1.00	0.125	1	U
Bromobenzene	0.125	1.00	0.125	1	U
Bromochloromethane	0.200	1.00	0.200	1	U
Bromodichloromethane	0.250	1.00	0.250	1	U
Bromoform	0.500	1.00	0.500	1	U
Bromomethane	0.500	1.00	0.500	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Carbon disulfide	0.500	1.00	0.500	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chlorobenzene	0.125	1.00	0.125	1	U
Chlorodibromomethane	0.250	1.00	0.250	1	U
Chloroethane	0.500	1.00	0.500	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.250	1.00	0.250	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
1,2-Dibromo-3-chloropropane	1.00	5.00	1.00	1	U
1,2-Dibromoethane	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1470271
20-AUG-2009 13:02

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108369

Login Number:L09080400 Prep Date:08/19/09 11:58 Sample ID:WG310034-01
Instrument ID:HPMS8 Run Date:08/19/09 11:58 Prep Method:5030C/5035A
File ID:8M355874 Analyst:FJB Method:8260B
Workgroup (AAB#):WG310034 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS8-30-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	0.250	5.00	0.348	1	J
Naphthalene	0.200	1.00	0.200	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Styrene	0.125	1.00	0.125	1	U
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.125	1.00	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	0.250	1.00	0.250	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
Vinyl acetate	2.50	10.0	2.50	1	U
Vinyl chloride	0.250	1.00	0.250	1	U
o-Xylene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	93.1	86 - 118	PASS
1,2-Dichloroethane-d4	85.7	80 - 120	PASS
Toluene-d8	100	88 - 110	PASS
4-Bromofluorobenzene	96.3	86 - 115	PASS

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: 1470271
20-AUG-2009 13:02

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108370

Login Number: L09080400 Analyst: FJB Prep Method: 5030C/5035A
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG310034 Units: ug/L
QC Key: STD Lot #: STD34678

Sample ID: WG310034-02 LCS File ID: 8M355875 Run Date: 08/19/2009 12:32
Sample ID: WG310034-03 LCS2 File ID: 8M355876 Run Date: 08/19/2009 13:04

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	23.3	117	20.0	23.0	115	1.40	40 - 180	20	
Benzene	20.0	19.3	96.5	20.0	19.2	96.0	0.491	80 - 121	20	
Bromobenzene	20.0	20.7	103	20.0	21.0	105	1.38	80 - 120	20	
Bromochloromethane	20.0	20.7	104	20.0	20.5	103	1.07	65 - 130	20	
Bromodichloromethane	20.0	21.4	107	20.0	21.2	106	0.763	80 - 131	20	
Bromoform	20.0	20.6	103	20.0	20.4	102	0.776	70 - 130	20	
Bromomethane	20.0	18.3	91.6	20.0	19.7	98.5	7.31	30 - 145	20	
2-Butanone	20.0	20.9	104	20.0	21.5	108	3.03	10 - 170	20	
n-Butylbenzene	20.0	17.1	85.5	20.0	17.2	85.8	0.412	80 - 131	20	
sec-Butylbenzene	20.0	18.2	91.1	20.0	18.3	91.4	0.415	80 - 127	20	
tert-Butylbenzene	20.0	19.4	97.2	20.0	19.7	98.5	1.42	80 - 126	20	
Carbon disulfide	20.0	19.3	96.4	20.0	19.1	95.4	1.02	58 - 128	20	
Carbon tetrachloride	20.0	20.2	101	20.0	20.1	100	0.875	65 - 140	20	
Chlorobenzene	20.0	20.1	100	20.0	20.5	103	2.09	80 - 120	20	
Chlorodibromomethane	20.0	21.3	106	20.0	21.2	106	0.160	60 - 135	20	
Chloroethane	20.0	19.9	99.3	20.0	19.8	98.9	0.415	60 - 135	20	
2-Chloroethyl vinyl ether	20.0	18.3	91.4	20.0	18.2	90.8	0.661	45 - 160	20	
Chloroform	20.0	19.9	99.3	20.0	19.6	98.1	1.19	80 - 125	20	
Chloromethane	20.0	16.0	79.9	20.0	16.2	81.2	1.57	40 - 125	20	
2-Chlorotoluene	20.0	20.8	104	20.0	21.0	105	0.833	80 - 127	20	
4-Chlorotoluene	20.0	18.5	92.5	20.0	18.6	93.2	0.762	80 - 126	20	
1,2-Dibromo-3-chloropropane	20.0	19.4	97.0	20.0	19.8	99.0	2.03	50 - 130	20	
1,2-Dibromoethane	20.0	20.2	101	20.0	20.8	104	2.84	80 - 129	20	
Dibromomethane	20.0	20.4	102	20.0	20.6	103	1.14	75 - 125	20	
1,2-Dichlorobenzene	20.0	20.0	99.9	20.0	20.2	101	1.12	80 - 125	20	
1,3-Dichlorobenzene	20.0	19.8	99.1	20.0	19.9	99.4	0.338	80 - 120	20	
1,4-Dichlorobenzene	20.0	19.4	97.1	20.0	19.3	96.7	0.497	80 - 120	20	
Dichlorodifluoromethane	20.0	27.8	139	20.0	27.6	138	0.738	40 - 160	20	
1,1-Dichloroethane	20.0	19.1	95.5	20.0	19.1	95.4	0.172	80 - 125	20	
1,2-Dichloroethane	20.0	19.2	96.1	20.0	19.0	95.0	1.18	80 - 129	20	
1,1-Dichloroethene	20.0	18.9	94.7	20.0	18.9	94.4	0.271	80 - 132	20	
cis-1,2-Dichloroethene	20.0	20.0	100	20.0	19.7	98.3	1.92	70 - 125	20	
trans-1,2-Dichloroethene	20.0	19.6	97.9	20.0	19.4	97.0	1.00	80 - 127	20	
1,2-Dichloropropane	20.0	19.9	99.3	20.0	19.4	97.1	2.31	80 - 120	20	
1,3-Dichloropropane	20.0	19.9	99.3	20.0	20.2	101	1.46	80 - 120	20	
2,2-Dichloropropane	20.0	19.3	96.5	20.0	19.1	95.4	1.23	80 - 133	20	
cis-1,3-Dichloropropene	20.0	20.6	103	20.0	20.2	101	1.63	70 - 130	20	
trans-1,3-Dichloropropene	20.0	17.7	88.5	20.0	17.8	89.0	0.565	80 - 130	20	
1,1-Dichloropropene	20.0	19.1	95.3	20.0	19.1	95.5	0.193	75 - 130	20	
Ethylbenzene	20.0	20.6	103	20.0	21.1	105	2.47	80 - 122	20	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1469957
Report generated: 08/20/2009 13:02

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108371

Login Number: L09080400 Analyst: FJB Prep Method: 5030C/5035A
Instrument ID: HPMS8 Matrix: Water Method: 8260B
Workgroup (AAB#): WG310034 Units: ug/L
QC Key: STD Lot #: STD34678

Sample ID: WG310034-02 LCS File ID: 8M355875 Run Date: 08/19/2009 12:32
Sample ID: WG310034-03 LCS2 File ID: 8M355876 Run Date: 08/19/2009 13:04

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	20.0	100	20.0	20.0	100	0.0661	55 - 130	20	
Hexachlorobutadiene	20.0	16.0	79.8	20.0	16.2	81.0	1.52	72 - 132	20	
Isopropylbenzene	20.0	18.1	90.5	20.0	18.3	91.4	0.937	80 - 122	20	
p-Isopropyltoluene	20.0	17.7	88.6	20.0	17.9	89.7	1.28	80 - 122	20	
4-Methyl-2-pentanone	20.0	19.2	96.1	20.0	18.8	94.2	1.93	64 - 140	20	
Methylene chloride	20.0	18.3	91.6	20.0	18.1	90.6	1.15	80 - 123	20	
Naphthalene	20.0	19.5	97.5	20.0	19.5	97.6	0.0829	59 - 149	20	
n-Propylbenzene	20.0	19.9	99.3	20.0	19.7	98.6	0.677	80 - 129	20	
Styrene	20.0	21.0	105	20.0	21.1	106	0.497	80 - 123	20	
1,1,1,2-Tetrachloroethane	20.0	20.8	104	20.0	21.1	105	1.12	80 - 130	20	
1,1,2,2-Tetrachloroethane	20.0	20.1	100	20.0	20.1	101	0.429	79 - 125	20	
Tetrachloroethene	20.0	19.8	98.8	20.0	20.2	101	2.23	80 - 124	20	
Toluene	20.0	20.0	100	20.0	20.0	100	0.0254	80 - 124	20	
1,2,3-Trichlorobenzene	20.0	17.3	86.4	20.0	18.1	90.6	4.71	55 - 140	20	
1,2,4-Trichlorobenzene	20.0	16.9	84.4	20.0	16.9	84.6	0.221	65 - 135	20	
1,1,1-Trichloroethane	20.0	20.0	100	20.0	20.1	100	0.163	80 - 134	20	
1,1,2-Trichloroethane	20.0	21.0	105	20.0	21.0	105	0.145	80 - 125	20	
Trichloroethene	20.0	20.8	104	20.0	21.0	105	0.936	80 - 122	20	
Trichlorofluoromethane	20.0	19.6	98.1	20.0	19.5	97.3	0.854	62 - 151	20	
1,2,3-Trichloropropane	20.0	20.6	103	20.0	20.8	104	0.773	75 - 125	20	
1,2,4-Trimethylbenzene	20.0	19.8	98.8	20.0	19.8	99.2	0.404	80 - 125	20	
1,3,5-Trimethylbenzene	20.0	19.4	96.9	20.0	19.5	97.6	0.741	80 - 127	20	
Vinyl acetate	20.0	25.7	129	20.0	27.0	135	4.91	10 - 190	20	
Vinyl chloride	20.0	20.2	101	20.0	20.0	99.8	1.33	50 - 170	20	
o-Xylene	20.0	20.6	103	20.0	21.0	105	2.13	80 - 122	20	
m-,p-Xylene	40.0	40.8	102	40.0	41.8	105	2.52	80 - 122	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	85.9	84.7	80 - 120	PASS
Dibromofluoromethane	93.2	91.8	86 - 118	PASS
4-Bromofluorobenzene	94.9	93.5	86 - 115	PASS
Toluene-d8	95.0	96.5	88 - 110	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1469957
Report generated: 08/20/2009 13:02

BFB

Login Number: L09080400
Instrument: HPMS8
Analyst: MES
Workgroup: WG308451

Tune ID: WG308451-01
Run Date: 07/30/2009
Run Time: 11:31
File ID: 8M355440
Cal ID: HPMS8 -

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	29.3	19346	PASS
75.0	95.0	30.0	60.0	50.9	33589	PASS
95.0	95.0	100	100	100	65962	PASS
96.0	95.0	5.00	9.00	6.46	4261	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	73.5	48482	PASS
175	174	5.00	9.00	7.69	3726	PASS
176	174	95.0	101	96.9	46989	PASS
177	176	5.00	9.00	7.15	3362	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG308451-02	STD	01	07/30/2009 11:57	
WG308451-03	STD	01	07/30/2009 12:31	
WG308451-04	STD	01	07/30/2009 13:09	
WG308451-05	STD	01	07/30/2009 13:41	
WG308451-06	STD	01	07/30/2009 14:13	
WG308451-07	STD	01	07/30/2009 14:46	
WG308451-08	STD-CCV	01	07/30/2009 15:18	
WG308451-09	STD	01	07/30/2009 15:50	
WG308451-10	STD	01	07/30/2009 16:24	
WG308451-11	STD	01	07/30/2009 16:56	
WG308451-12	SSCV	01	07/30/2009 18:00	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1470274
Report generated 08/20/2009 13:02

BFB

Login Number: L09080400
Instrument: HPMS8
Analyst: FJB
Workgroup: WG310033

Tune ID: WG310033-01
Run Date: 08/19/2009
Run Time: 09:51
File ID: 8M355871
Cal ID: HPMS8-30-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	27.1	26682	PASS
75.0	95.0	30.0	60.0	50.7	49896	PASS
95.0	95.0	100	100	100	98461	PASS
96.0	95.0	5.00	9.00	6.46	6365	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	76.9	75746	PASS
175	174	5.00	9.00	7.52	5695	PASS
176	174	95.0	101	97.2	73618	PASS
177	176	5.00	9.00	5.72	4211	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG310033-02	CCV	01	08/19/2009 10:53	
WG310034-01	BLANK	01	08/19/2009 11:58	
WG310034-02	LCS	01	08/19/2009 12:32	
WG310034-03	LCS2	01	08/19/2009 13:04	
L09080400-02	TB-081809	01	08/19/2009 14:08	
L09080400-01	04CLAYPIPE-081809	01	08/19/2009 16:21	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1470274
Report generated 08/20/2009 13:02

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00108374

Login Number: L09080400
Analytical Method: 8260B
ICAL Workgroup: WG308451

Instrument ID: HPMS8
Initial Calibration Date: 30-JUL-09 16:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4907	5.30		
1,2-Dichloropropane	CCC	0.3232	5.09		
Chloroform	CCC	0.4887	6.11		
Ethylbenzene	CCC	0.4744	6.72		
Toluene	CCC	1.326	9.43		
Vinyl Chloride	CCC	0.3364	8.80		
1,1,2,2-Tetrachloroethane	SPCC	0.5066	12.1		
1,1-Dichloroethane	SPCC	0.5784	5.17		
Bromoform	SPCC	0.1824	7.30		
Chlorobenzene	SPCC	0.8929	7.75		
Chloromethane	SPCC	0.5509	14.9		
1,1,1,2-Tetrachloroethane		0.3148	9.72		
1,1,1-Trichloroethane		0.4119	6.43		
1,1,2-Trichloroethane		0.2182	11.3		
1,1-Dichloropropene		0.3842	5.37		
1,2,3-Trichlorobenzene		0.7391	10.3		
1,2,3-Trichloropropane		0.1358	11.2		
1,2,4-Trichlorobenzene		0.9017	7.60		
1,2,4-Trimethylbenzene		2.382	6.40		
1,2-Dibromo-3-Chloropropane		0.1017	19.2	0.99900	
1,2-Dibromoethane		0.2362	6.00		
1,2-Dichlorobenzene		1.220	8.63		
1,2-Dichloroethane		0.3925	6.67		
1,3,5-Trimethylbenzene		2.283	6.00		
1,3-Dichlorobenzene		1.325	7.63		
1,3-Dichloropropane		0.4309	9.20		
1,4-Dichlorobenzene		1.365	8.25		
2,2-Dichloropropane		0.4493	4.80		
2-Butanone		0.1152	4.95		
2-Chloroethyl Vinyl Ether		0.1632	10.5		
2-Chlorotoluene		2.155	7.24		
2-Hexanone		0.08445	5.87		
4-Chlorotoluene		1.988	11.5		
4-Methyl-2-Pentanone		0.07433	4.03		
Acetone		0.07448	7.32		
Benzene		1.077	9.36		
Bromobenzene		0.6548	6.29		
Bromochloromethane		0.1473	9.86		
Bromodichloromethane		0.3538	5.98		
Bromomethane		0.1943	4.53		
Carbon Disulfide		0.8694	6.28		
Carbon Tetrachloride		0.3781	5.83		
Chloroethane		0.2222	4.31		
Dibromochloromethane		0.2892	7.50		
Dibromomethane		0.1362	7.62		

INT_CAL - Modified 03/06/2008
PDF File ID: 1470272
Report generated 08/20/2009 13:02

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00108375

Login Number: L09080400
Analytical Method: 8260B
ICAL Workgroup: WG308451

Instrument ID: HPMS8
Initial Calibration Date: 30-JUL-09 16:56
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Dichlorodifluoromethane		0.2977	4.78		
Hexachlorobutadiene		0.3429	6.83		
Isopropylbenzene		1.490	6.74		
Methylene Chloride		0.2893	12.8		
Naphthalene		1.608	12.1		
Styrene		0.9735	6.42		
Tetrachloroethene		0.2478	6.97		
Trichloroethene		0.2498	7.56		
Trichlorofluoromethane		0.4604	6.63		
Vinyl Acetate		0.5192	7.52		
cis-1,2-Dichloroethene		0.2769	6.89		
cis-1,3-Dichloropropene		0.4198	6.31		
m-,p-Xylene		0.5887	6.11		
n-Butylbenzene		2.428	6.85		
n-Propylbenzene		3.273	7.96		
o-Xylene		0.5838	4.84		
p-Isopropyltoluene		2.382	5.56		
sec-Butylbenzene		2.862	6.07		
tert-Butylbenzene		0.4567	4.74		
trans-1,2-Dichloroethene		0.4630	5.22		
trans-1,3-Dichloropropene		0.4836	6.38		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 1470272
Report generated 08/20/2009 13:02

Login Number: L09080400 **Instrument ID:** HPMS8
Analytical Method: 8260B **Initial Calibration Date:** 30-JUL-09 16:56
Column ID: F

Analyte	WG308451-02			WG308451-03			WG308451-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	5321.00000	0.4515	1.00	14794.0000	0.4969
1,2-Dichloropropane	NA	NA	NA	0.400	3787.00000	0.3213	1.00	9783.00000	0.3286
Chloroform	0.300	4907.00000	0.5286	0.400	5856.00000	0.4969	1.00	14946.0000	0.5020
Ethylbenzene	NA	NA	NA	0.400	3893.00000	0.4260	1.00	10907.0000	0.4766
Toluene	NA	NA	NA	0.400	13014.0000	1.424	1.00	32685.0000	1.428
Vinyl Chloride	NA	NA	NA	0.400	4281.00000	0.3633	1.00	11052.0000	0.3712
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2232.00000	0.4424	1.00	6103.00000	0.4887
1,1-Dichloroethane	NA	NA	NA	0.400	7133.00000	0.6053	1.00	17475.0000	0.5870
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3821.00000	0.1670
Chlorobenzene	NA	NA	NA	0.400	9094.00000	0.9951	1.00	20675.0000	0.9034
Chloromethane	NA	NA	NA	0.400	0	0	1.00	24210.0000	0.8132
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	2333.00000	0.2553	1.00	7198.00000	0.3145
1,1,1-Trichloroethane	NA	NA	NA	0.400	4438.00000	0.3766	1.00	12931.0000	0.4344
1,1,2-Trichloroethane	NA	NA	NA	0.400	1570.00000	0.1718	1.00	5428.00000	0.2372
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	1.00	11474.0000	0.3854
1,2,3-Trichlorobenzene	0.300	2802.00000	0.7344	0.400	3713.00000	0.7359	1.00	8801.00000	0.7048
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	1526.00000	0.1222
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	4706.00000	0.9327	1.00	11551.0000	0.9250
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	12301.0000	2.438	1.00	29906.0000	2.395
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	2156.00000	0.2359	1.00	5470.00000	0.2390
1,2-Dichlorobenzene	0.300	4777.00000	1.252	0.400	6046.00000	1.198	1.00	14933.0000	1.196
1,2-Dichloroethane	NA	NA	NA	0.400	4744.00000	0.4025	1.00	11581.0000	0.3890
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	11383.0000	2.256	1.00	27944.0000	2.238
1,3-Dichlorobenzene	NA	NA	NA	0.400	6388.00000	1.266	1.00	16731.0000	1.340
1,3-Dichloropropane	NA	NA	NA	0.400	3647.00000	0.3991	1.00	10345.0000	0.4520
1,4-Dichlorobenzene	0.300	5590.00000	1.465	0.400	6725.00000	1.333	1.00	17133.0000	1.372
2,2-Dichloropropane	NA	NA	NA	0.400	5340.00000	0.4531	1.00	13911.0000	0.4673
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	1.00	5746.00000	0.1930
2-Chlorotoluene	NA	NA	NA	0.400	11077.0000	2.195	1.00	28421.0000	2.276
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	10223.0000	2.026	1.00	26134.0000	2.093
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	14165.0000	1.202	1.00	34594.0000	1.162
Bromobenzene	0.300	2393.00000	0.6272	0.400	3243.00000	0.6427	1.00	8442.00000	0.6760
Bromochloromethane	NA	NA	NA	0.400	1366.00000	0.1159	1.00	4218.00000	0.1417
Bromodichloromethane	NA	NA	NA	0.400	3764.00000	0.3194	1.00	10541.0000	0.3541
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	6082.00000	0.2043
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	26674.0000	0.8960
Carbon Tetrachloride	NA	NA	NA	0.400	4085.00000	0.3466	1.00	11635.0000	0.3908

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Column ID: F

Analyte	WG308451-05			WG308451-06			WG308451-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	29966.0000	0.5170	5.00	69972.0000	0.4821	20.0	291916.000	0.5195
1,2-Dichloropropane	2.00	20116.0000	0.3471	5.00	46442.0000	0.3200	20.0	190186.000	0.3385
Chloroform	2.00	29692.0000	0.5123	5.00	69889.0000	0.4816	20.0	283701.000	0.5049
Ethylbenzene	2.00	23634.0000	0.5189	5.00	53594.0000	0.4820	20.0	229693.000	0.5060
Toluene	2.00	65276.0000	1.433	5.00	152322.000	1.370	20.0	626880.000	1.381
Vinyl Chloride	2.00	20469.0000	0.3532	5.00	46935.0000	0.3234	20.0	200491.000	0.3568
1,1,2,2-Tetrachloroethane	2.00	15969.0000	0.6364	5.00	32150.0000	0.5174	20.0	135525.000	0.5323
1,1-Dichloroethane	2.00	34917.0000	0.6024	5.00	83126.0000	0.5728	20.0	338154.000	0.6018
Bromoform	2.00	9227.00000	0.2026	5.00	19379.0000	0.1743	20.0	86287.0000	0.1901
Chlorobenzene	2.00	44052.0000	0.9673	5.00	97488.0000	0.8767	20.0	414031.000	0.9121
Chloromethane	2.00	40953.0000	0.7066	5.00	87147.0000	0.6005	20.0	358114.000	0.6373
1,1,1,2-Tetrachloroethane	2.00	16414.0000	0.3604	5.00	35857.0000	0.3225	20.0	149992.000	0.3304
1,1,1-Trichloroethane	2.00	25748.0000	0.4442	5.00	59249.0000	0.4082	20.0	243703.000	0.4337
1,1,2-Trichloroethane	2.00	11146.0000	0.2447	5.00	25884.0000	0.2328	20.0	105879.000	0.2333
1,1-Dichloropropene	2.00	23411.0000	0.4039	5.00	55533.0000	0.3826	20.0	228090.000	0.4059
1,2,3-Trichlorobenzene	2.00	23130.0000	0.9218	5.00	46333.0000	0.7457	20.0	191266.000	0.7512
1,2,3-Trichloropropane	2.00	4162.00000	0.1659	5.00	8223.00000	0.1323	20.0	36165.0000	0.1420
1,2,4-Trichlorobenzene	2.00	25934.0000	1.034	5.00	54995.0000	0.8851	20.0	229186.000	0.9001
1,2,4-Trimethylbenzene	2.00	65856.0000	2.625	5.00	148425.000	2.389	20.0	630525.000	2.476
1,2-Dibromo-3-Chloropropane	2.00	3531.00000	0.1407	5.00	5582.00000	0.08980	20.0	24774.0000	0.09730
1,2-Dibromoethane	2.00	11647.0000	0.2557	5.00	26875.0000	0.2417	20.0	111850.000	0.2464
1,2-Dichlorobenzene	2.00	36734.0000	1.464	5.00	74450.0000	1.198	20.0	317385.000	1.247
1,2-Dichloroethane	2.00	25316.0000	0.4368	5.00	56673.0000	0.3905	20.0	230760.000	0.4107
1,3,5-Trimethylbenzene	2.00	63032.0000	2.512	5.00	142508.000	2.294	20.0	612925.000	2.407
1,3-Dichlorobenzene	2.00	38496.0000	1.534	5.00	82249.0000	1.324	20.0	347005.000	1.363
1,3-Dichloropropane	2.00	23048.0000	0.5061	5.00	48958.0000	0.4403	20.0	201927.000	0.4449
1,4-Dichlorobenzene	2.00	39897.0000	1.590	5.00	83670.0000	1.347	20.0	352456.000	1.384
2,2-Dichloropropane	2.00	26738.0000	0.4613	5.00	63830.0000	0.4398	20.0	264601.000	0.4709
2-Butanone	NA	NA	NA	5.00	16721.0000	0.1152	20.0	69114.0000	0.1230
2-Chloroethyl Vinyl Ether	2.00	10376.0000	0.1790	5.00	25281.0000	0.1742	20.0	88388.0000	0.1573
2-Chlorotoluene	2.00	56628.0000	2.257	5.00	139237.000	2.241	20.0	576237.000	2.263
2-Hexanone	NA	NA	NA	5.00	8656.00000	0.07780	20.0	39944.0000	0.08800
4-Chlorotoluene	2.00	61142.0000	2.437	5.00	120544.000	1.940	20.0	510968.000	2.007
4-Methyl-2-Pentanone	NA	NA	NA	5.00	10159.0000	0.07000	20.0	42733.0000	0.07600
Acetone	NA	NA	NA	5.00	11683.0000	0.08050	20.0	44803.0000	0.07970
Benzene	2.00	67281.0000	1.161	5.00	153288.000	1.056	20.0	623031.000	1.109
Bromobenzene	2.00	18519.0000	0.7380	5.00	39687.0000	0.6387	20.0	174129.000	0.6839
Bromochloromethane	2.00	9148.00000	0.1578	5.00	21773.0000	0.1500	20.0	89653.0000	0.1595
Bromodichloromethane	2.00	22200.0000	0.3830	5.00	51010.0000	0.3515	20.0	210503.000	0.3746
Bromomethane	2.00	11208.0000	0.1934	5.00	28203.0000	0.1943	20.0	114728.000	0.2042
Carbon Disulfide	2.00	51195.0000	0.8833	5.00	128054.000	0.8823	20.0	522429.000	0.9297
Carbon Tetrachloride	2.00	22971.0000	0.3963	5.00	53903.0000	0.3714	20.0	228271.000	0.4062

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Analyte	WG308451-08			WG308451-09			WG308451-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	726265.000	0.5120	100	1326566.00	0.4573	200	2930142.00	0.4890
1,2-Dichloropropane	50.0	461409.000	0.3253	100	849401.000	0.2928	200	1871574.00	0.3123
Chloroform	50.0	690688.000	0.4869	100	1255610.00	0.4328	200	2711615.00	0.4525
Ethylbenzene	50.0	567735.000	0.4878	100	1057998.00	0.4378	200	2331860.00	0.4602
Toluene	50.0	1512154.00	1.299	100	2729371.00	1.129	200	5790533.00	1.143
Vinyl Chloride	50.0	470367.000	0.3316	100	857375.000	0.2956	200	1772744.00	0.2958
1,1,2,2-Tetrachloroethane	50.0	340754.000	0.5114	100	611590.000	0.4488	200	1305271.00	0.4751
1,1-Dichloroethane	50.0	828636.000	0.5842	100	1498507.00	0.5166	200	3340100.00	0.5574
Bromoform	50.0	226086.000	0.1943	100	413524.000	0.1711	200	899165.000	0.1775
Chlorobenzene	50.0	1028134.00	0.8834	100	1906608.00	0.7889	200	4135481.00	0.8162
Chloromethane	50.0	836285.000	0.5895	100	1477731.00	0.5094	NA	NA	NA
1,1,1,2-Tetrachloroethane	50.0	381626.000	0.3279	100	709233.000	0.2935	200	1591842.00	0.3142
1,1,1-Trichloroethane	50.0	603468.000	0.4254	100	1097905.00	0.3785	200	2359622.00	0.3938
1,1,2-Trichloroethane	50.0	258739.000	0.2223	100	474017.000	0.1961	200	1052007.00	0.2076
1,1-Dichloropropene	50.0	562498.000	0.3965	100	1014355.00	0.3497	200	2190822.00	0.3656
1,2,3-Trichlorobenzene	50.0	484275.000	0.7268	100	880526.000	0.6462	200	1881649.00	0.6848
1,2,3-Trichloropropane	50.0	91461.0000	0.1373	100	166077.000	0.1219	200	355293.000	0.1293
1,2,4-Trichlorobenzene	50.0	593279.000	0.8904	100	1087302.00	0.7980	200	2331068.00	0.8484
1,2,4-Trimethylbenzene	50.0	1593859.00	2.392	100	2903176.00	2.131	200	6082084.00	2.214
1,2-Dibromo-3-Chloropropane	50.0	65470.0000	0.09830	100	121750.000	0.08940	200	259406.000	0.09440
1,2-Dibromoethane	50.0	277133.000	0.2381	100	507179.000	0.2099	200	1128291.00	0.2227
1,2-Dichlorobenzene	50.0	805138.000	1.208	100	1475079.00	1.083	200	3122446.00	1.136
1,2-Dichloroethane	50.0	557958.000	0.3933	100	1019802.00	0.3516	200	2192721.00	0.3659
1,3,5-Trimethylbenzene	50.0	1545539.00	2.320	100	2815695.00	2.066	200	5969029.00	2.172
1,3-Dichlorobenzene	50.0	881969.000	1.324	100	1617952.00	1.187	200	3471609.00	1.264
1,3-Dichloropropane	50.0	495409.000	0.4257	100	922189.000	0.3816	200	2012000.00	0.3971
1,4-Dichlorobenzene	50.0	888963.000	1.334	100	1634416.00	1.200	200	3467849.00	1.262
2,2-Dichloropropane	50.0	655810.000	0.4623	100	1182310.00	0.4076	200	2587389.00	0.4318
2-Butanone	50.0	169518.000	0.1195	100	309802.000	0.1068	200	689261.000	0.1150
2-Chloroethyl Vinyl Ether	50.0	222175.000	0.1566	100	413918.000	0.1427	200	907759.000	0.1515
2-Chlorotoluene	50.0	1444953.00	2.169	100	2717715.00	1.995	200	5058987.00	1.841
2-Hexanone	50.0	106872.000	0.09180	100	196068.000	0.08110	200	422250.000	0.08330
4-Chlorotoluene	50.0	1277844.00	1.918	100	2229085.00	1.636	200	5086931.00	1.851
4-Methyl-2-Pentanone	50.0	110077.000	0.07760	100	206757.000	0.07130	200	452493.000	0.07550
Acetone	50.0	108835.000	0.07670	100	200507.000	0.06910	200	440227.000	0.07350
Benzene	50.0	1497580.00	1.056	100	2709235.00	0.9339	200	5629109.00	0.9394
Bromobenzene	50.0	437625.000	0.6568	100	807687.000	0.5927	200	1750032.00	0.6369
Bromochloromethane	50.0	226199.000	0.1595	100	412364.000	0.1422	200	907467.000	0.1514
Bromodichloromethane	50.0	517350.000	0.3647	100	959360.000	0.3307	200	2112894.00	0.3526
Bromomethane	50.0	275865.000	0.1945	100	516907.000	0.1782	200	1147796.00	0.1915
Carbon Disulfide	50.0	1276962.00	0.9002	100	2225591.00	0.7672	200	4956435.00	0.8272
Carbon Tetrachloride	50.0	558514.000	0.3937	100	1016200.00	0.3503	200	2215846.00	0.3698

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Analyte	WG308451-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
1,2-Dichloropropane	NA	NA	NA
Chloroform	NA	NA	NA
Ethylbenzene	NA	NA	NA
Toluene	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,1,1,2-Tetrachloroethane	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA
1,1,2-Trichloroethane	NA	NA	NA
1,1-Dichloropropene	NA	NA	NA
1,2,3-Trichlorobenzene	NA	NA	NA
1,2,3-Trichloropropane	NA	NA	NA
1,2,4-Trichlorobenzene	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA
1,2-Dibromo-3-Chloropropane	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA
1,2-Dichlorobenzene	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA
1,3-Dichloropropane	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA
2,2-Dichloropropane	NA	NA	NA
2-Butanone	300	1013951.00	0.1116
2-Chloroethyl Vinyl Ether	300	1374001.00	0.1512
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	633714.000	0.08470
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	687256.000	0.07560
Acetone	300	612286.000	0.06740
Benzene	NA	NA	NA
Bromobenzene	NA	NA	NA
Bromochloromethane	NA	NA	NA
Bromodichloromethane	NA	NA	NA
Bromomethane	NA	NA	NA
Carbon Disulfide	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA

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Column ID: F

Analyte	WG308451-02			WG308451-03			WG308451-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	6668.00000	0.2240
Dibromochloromethane	NA	NA	NA	0.400	2267.00000	0.2481	1.00	6577.00000	0.2874
Dibromomethane	NA	NA	NA	0.400	1402.00000	0.1190	1.00	3928.00000	0.1319
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	9104.00000	0.3058
Hexachlorobutadiene	NA	NA	NA	0.400	1523.00000	0.3018	1.00	4250.00000	0.3403
Isopropylbenzene	NA	NA	NA	0.400	13303.0000	1.456	1.00	35329.0000	1.544
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	10471.0000	0.3517
Naphthalene	NA	NA	NA	0.400	8174.00000	1.620	1.00	20354.0000	1.630
Styrene	NA	NA	NA	0.400	8096.00000	0.8859	1.00	23212.0000	1.014
Tetrachloroethene	NA	NA	NA	0.400	2209.00000	0.2417	1.00	5918.00000	0.2586
Trichloroethene	NA	NA	NA	0.400	2511.00000	0.2131	1.00	7648.00000	0.2569
Trichlorofluoromethane	NA	NA	NA	0.400	4743.00000	0.4025	1.00	14451.0000	0.4854
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3208.00000	0.2722	1.00	9021.00000	0.3030
cis-1,3-Dichloropropene	NA	NA	NA	0.400	4387.00000	0.3723	1.00	12416.0000	0.4171
m-,p-Xylene	NA	NA	NA	0.800	10964.0000	0.5999	2.00	28221.0000	0.6166
n-Butylbenzene	NA	NA	NA	0.400	13003.0000	2.577	1.00	30853.0000	2.471
n-Propylbenzene	NA	NA	NA	0.400	15884.0000	3.148	1.00	42308.0000	3.388
o-Xylene	NA	NA	NA	0.400	5231.00000	0.5724	1.00	12910.0000	0.5641
p-Isopropyltoluene	NA	NA	NA	0.400	11769.0000	2.333	1.00	29184.0000	2.337
sec-Butylbenzene	NA	NA	NA	0.400	14711.0000	2.916	1.00	35880.0000	2.873
tert-Butylbenzene	NA	NA	NA	0.400	2138.00000	0.4237	1.00	5736.00000	0.4593
trans-1,2-Dichloroethene	NA	NA	NA	0.400	5255.00000	0.4459	1.00	13757.0000	0.4621
trans-1,3-Dichloropropene	NA	NA	NA	0.400	4503.00000	0.4927	1.00	10687.0000	0.4670

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Column ID: F

Analyte	WG308451-05			WG308451-06			WG308451-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	12549.0000	0.2165	5.00	30592.0000	0.2108	20.0	132471.000	0.2357
Dibromochloromethane	2.00	14339.0000	0.3148	5.00	32217.0000	0.2897	20.0	140013.000	0.3085
Dibromomethane	2.00	8716.00000	0.1504	5.00	20420.0000	0.1407	20.0	81522.0000	0.1451
Dichlorodifluoromethane	2.00	17756.0000	0.3064	5.00	42280.0000	0.2913	20.0	177351.000	0.3156
Hexachlorobutadiene	2.00	9501.00000	0.3786	5.00	20458.0000	0.3293	20.0	89970.0000	0.3534
Isopropylbenzene	2.00	73857.0000	1.622	5.00	168250.000	1.513	20.0	710084.000	1.564
Methylene Chloride	2.00	18868.0000	0.3255	5.00	40649.0000	0.2801	20.0	161016.000	0.2865
Naphthalene	2.00	50377.0000	2.008	5.00	100072.000	1.611	20.0	419190.000	1.646
Styrene	2.00	47224.0000	1.037	5.00	107085.000	0.9630	20.0	471442.000	1.039
Tetrachloroethene	2.00	12482.0000	0.2741	5.00	28684.0000	0.2580	20.0	115069.000	0.2535
Trichloroethene	2.00	15296.0000	0.2639	5.00	35687.0000	0.2459	20.0	152095.000	0.2707
Trichlorofluoromethane	2.00	27736.0000	0.4785	5.00	65892.0000	0.4540	20.0	276503.000	0.4921
Vinyl Acetate	NA	NA	NA	5.00	79964.0000	0.5510	20.0	317279.000	0.5646
cis-1,2-Dichloroethene	2.00	17115.0000	0.2953	5.00	37329.0000	0.2572	20.0	163984.000	0.2918
cis-1,3-Dichloropropene	2.00	26114.0000	0.4506	5.00	59975.0000	0.4132	20.0	251480.000	0.4475
m-,p-Xylene	4.00	56996.0000	0.6257	10.0	130029.000	0.5847	40.0	560422.000	0.6173
n-Butylbenzene	2.00	65982.0000	2.630	5.00	150332.000	2.420	20.0	638469.000	2.508
n-Propylbenzene	2.00	90559.0000	3.609	5.00	212696.000	3.423	20.0	889596.000	3.494
o-Xylene	2.00	27880.0000	0.6122	5.00	65720.0000	0.5910	20.0	284284.000	0.6263
p-Isopropyltoluene	2.00	65044.0000	2.592	5.00	145892.000	2.348	20.0	640483.000	2.516
sec-Butylbenzene	2.00	78265.0000	3.119	5.00	176087.000	2.834	20.0	766420.000	3.010
tert-Butylbenzene	2.00	11686.0000	0.4657	5.00	28880.0000	0.4648	20.0	122948.000	0.4829
trans-1,2-Dichloroethene	2.00	28322.0000	0.4887	5.00	66956.0000	0.4613	20.0	279048.000	0.4966
trans-1,3-Dichloropropene	2.00	24250.0000	0.5325	5.00	55255.0000	0.4969	20.0	229225.000	0.5050

INT_CAL - Modified 03/06/2008
PDF File ID: 1470272
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INITIAL CALIBRATION DATA

00108382

Login Number: L09080400
Instrument ID: HPMS8
Analytical Method: 8260B
Initial Calibration Date: 30-JUL-09 16:56
Column ID: F

Analyte	WG308451-08			WG308451-09			WG308451-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	327890.000	0.2311	100	614274.000	0.2118	200	1353120.00	0.2258
Dibromochloromethane	50.0	354532.000	0.3046	100	655054.000	0.2711	200	1465185.00	0.2892
Dibromomethane	50.0	201432.000	0.1420	100	365581.000	0.1260	200	807556.000	0.1348
Dichlorodifluoromethane	50.0	429867.000	0.3030	100	792269.000	0.2731	200	1730126.00	0.2887
Hexachlorobutadiene	50.0	233540.000	0.3505	100	447745.000	0.3286	200	990980.000	0.3607
Isopropylbenzene	50.0	1775855.00	1.526	100	3233470.00	1.338	200	6858277.00	1.354
Methylene Chloride	50.0	387763.000	0.2734	100	713871.000	0.2461	200	1569508.00	0.2619
Naphthalene	50.0	1054073.00	1.582	100	1857615.00	1.363	200	3857563.00	1.404
Styrene	50.0	1187818.00	1.021	100	2175651.00	0.9003	200	4702195.00	0.9281
Tetrachloroethene	50.0	286343.000	0.2460	100	527996.000	0.2185	200	1176298.00	0.2322
Trichloroethene	50.0	375233.000	0.2645	100	680596.000	0.2346	200	1492757.00	0.2491
Trichlorofluoromethane	50.0	680320.000	0.4796	100	1253708.00	0.4322	200	2748400.00	0.4587
Vinyl Acetate	50.0	771665.000	0.5440	100	1390980.00	0.4795	200	3006687.00	0.5018
cis-1,2-Dichloroethene	50.0	398069.000	0.2806	100	723682.000	0.2495	200	1592035.00	0.2657
cis-1,3-Dichloropropene	50.0	622666.000	0.4390	100	1151912.00	0.3971	200	2525426.00	0.4215
m-,p-Xylene	100	1386261.00	0.5956	200	2554157.00	0.5284	400	5481541.00	0.5410
n-Butylbenzene	50.0	1632345.00	2.450	100	2932202.00	2.152	200	6084111.00	2.214
n-Propylbenzene	50.0	2195768.00	3.295	100	3949366.00	2.898	200	8039074.00	2.926
o-Xylene	50.0	694521.000	0.5968	100	1302776.00	0.5391	200	2880981.00	0.5686
p-Isopropyltoluene	50.0	1642222.00	2.465	100	2983091.00	2.189	200	6254737.00	2.276
sec-Butylbenzene	50.0	1933226.00	2.901	100	3520819.00	2.584	200	7309233.00	2.660
tert-Butylbenzene	50.0	312984.000	0.4697	100	576560.000	0.4231	200	1275101.00	0.4641
trans-1,2-Dichloroethene	50.0	679833.000	0.4793	100	1233688.00	0.4253	200	2666938.00	0.4451
trans-1,3-Dichloropropene	50.0	564800.000	0.4853	100	1048814.00	0.4340	200	2306363.00	0.4552

INT_CAL - Modified 03/06/2008
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Login Number: L09080400 **Instrument ID:** HPMS8
Analytical Method: 8260B **Initial Calibration Date:** 30-JUL-09 16:56
Column ID: F

Analyte	WG308451-11		
	CONC	RESP	RF
Chloroethane	NA	NA	NA
Dibromochloromethane	NA	NA	NA
Dibromomethane	NA	NA	NA
Dichlorodifluoromethane	NA	NA	NA
Hexachlorobutadiene	NA	NA	NA
Isopropylbenzene	NA	NA	NA
Methylene Chloride	NA	NA	NA
Naphthalene	NA	NA	NA
Styrene	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA
Vinyl Acetate	300	4305972.00	0.4740
cis-1,2-Dichloroethene	NA	NA	NA
cis-1,3-Dichloropropene	NA	NA	NA
m-,p-Xylene	NA	NA	NA
n-Butylbenzene	NA	NA	NA
n-Propylbenzene	NA	NA	NA
o-Xylene	NA	NA	NA
p-Isopropyltoluene	NA	NA	NA
sec-Butylbenzene	NA	NA	NA
tert-Butylbenzene	NA	NA	NA
trans-1,2-Dichloroethene	NA	NA	NA
trans-1,3-Dichloropropene	NA	NA	NA

INT_CAL - Modified 03/06/2008
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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108384

Login Number: L09080400 Run Date: 07/30/2009 Sample ID: WG308451-12
Instrument ID: HPMS8 Run Time: 18:00 Method: 8260B
File ID: 8M355452 Analyst: MES QC Key: STD
ICal Workgroup: WG308451 Cal ID: HPMS8 - 30-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.3	ug/L	0.497	1.70	30	
1,1-Dichloroethene	CCC	20.0	20.7	ug/L	0.509	3.70	30	
1,2-Dichloropropane	CCC	20.0	20.7	ug/L	0.335	3.50	30	
Ethylbenzene	CCC	20.0	20.9	ug/L	0.497	4.70	30	
Toluene	CCC	20.0	20.2	ug/L	1.34	0.800	30	
Vinyl Chloride	CCC	20.0	21.8	ug/L	0.367	9.10	30	
Bromoform	SPCC	20.0	20.5	ug/L	0.187	2.40	30	
Chlorobenzene	SPCC	20.0	20.5	ug/L	0.915	2.50	30	
Chloromethane	SPCC	20.0	20.7	ug/L	0.668	3.30	30	
1,1-Dichloroethane	SPCC	20.0	20.4	ug/L	0.589	1.90	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	20.6	ug/L	0.521	2.80	30	
Acetone		20.0	24.7	ug/L	0.0921	23.6	30	
Benzene		20.0	20.1	ug/L	1.08	0.300	30	
Bromobenzene		20.0	20.7	ug/L	0.677	3.30	30	
Bromochloromethane		20.0	22.6	ug/L	0.166	12.8	30	
Bromodichloromethane		20.0	21.6	ug/L	0.383	8.20	30	
Bromomethane		20.0	22.7	ug/L	0.221	13.6	30	
2-Butanone		20.0	21.1	ug/L	0.122	5.70	30	
n-Butylbenzene		20.0	19.9	ug/L	2.41	0.700	30	
sec-Butylbenzene		20.0	20.6	ug/L	2.94	2.80	30	
tert-Butylbenzene		20.0	20.7	ug/L	0.472	3.30	30	
Carbon Disulfide		20.0	18.8	ug/L	0.817	6.10	30	
Carbon Tetrachloride		20.0	20.6	ug/L	0.390	3.10	30	
Dibromochloromethane		20.0	21.7	ug/L	0.313	8.30	30	
Chloroethane		20.0	21.8	ug/L	0.242	8.80	30	
2-Chloroethyl Vinyl Ether		20.0	18.8	ug/L	0.153	6.10	30	
2-Chlorotoluene		20.0	21.1	ug/L	2.27	5.40	30	
4-Chlorotoluene		20.0	19.5	ug/L	1.94	2.60	30	
1,2-Dibromo-3-Chloropropane		20.0	20.9	ug/L	0.0991	4.50	30	
1,2-Dibromoethane		20.0	20.6	ug/L	0.243	3.00	30	
Dibromomethane		20.0	21.0	ug/L	0.143	4.80	30	
1,2-Dichlorobenzene		20.0	20.5	ug/L	1.25	2.50	30	
1,3-Dichlorobenzene		20.0	20.4	ug/L	1.35	1.90	30	
1,4-Dichlorobenzene		20.0	19.5	ug/L	1.33	2.40	30	
Dichlorodifluoromethane		20.0	31.8	ug/L	0.474	59.2	30	*
1,2-Dichloroethane		20.0	20.2	ug/L	0.397	1.10	30	
cis-1,2-Dichloroethene		20.0	20.7	ug/L	0.286	3.30	30	
trans-1,2-Dichloroethene		20.0	21.9	ug/L	0.508	9.60	30	
1,3-Dichloropropane		20.0	20.5	ug/L	0.441	2.40	30	
2,2-Dichloropropane		20.0	19.2	ug/L	0.431	4.10	30	
cis-1,3-Dichloropropene		20.0	20.8	ug/L	0.437	4.20	30	
trans-1,3-Dichloropropene		20.0	18.3	ug/L	0.441	8.70	30	

ALT - Modified 09/06/2007
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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108385

Login Number: L09080400 Run Date: 07/30/2009 Sample ID: WG308451-12
Instrument ID: HPMS8 Run Time: 18:00 Method: 8260B
File ID: 8M355452 Analyst: MES QC Key: STD
ICal Workgroup: WG308451 Cal ID: HPMS8 - 30-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	20.0	ug/L	0.385	0.200	30	
2-Hexanone		20.0	21.0	ug/L	0.0886	4.90	30	
Hexachlorobutadiene		20.0	19.8	ug/L	0.340	0.800	30	
Isopropylbenzene		20.0	18.8	ug/L	1.40	6.20	30	
p-Isopropyltoluene		20.0	20.1	ug/L	2.40	0.700	30	
4-Methyl-2-Pentanone		20.0	20.2	ug/L	0.0751	1.00	30	
Methylene Chloride		20.0	19.8	ug/L	0.286	1.10	30	
Naphthalene		20.0	20.6	ug/L	1.65	2.90	30	
n-Propylbenzene		20.0	20.7	ug/L	3.39	3.70	30	
Styrene		20.0	21.2	ug/L	1.03	5.90	30	
1,1,1,2-Tetrachloroethane		20.0	20.8	ug/L	0.328	4.20	30	
Tetrachloroethene		20.0	20.1	ug/L	0.249	0.500	30	
1,2,3-Trichlorobenzene		20.0	20.3	ug/L	0.749	1.30	30	
1,2,4-Trichlorobenzene		20.0	19.3	ug/L	0.868	3.70	30	
1,1,1-Trichloroethane		20.0	20.7	ug/L	0.427	3.60	30	
1,1,2-Trichloroethane		20.0	21.2	ug/L	0.232	6.20	30	
Trichloroethene		20.0	21.4	ug/L	0.267	7.00	30	
Trichlorofluoromethane		20.0	20.4	ug/L	0.469	2.00	30	
1,2,3-Trichloropropane		20.0	21.5	ug/L	0.146	7.50	30	
1,2,4-Trimethylbenzene		20.0	20.6	ug/L	2.46	3.10	30	
1,3,5-Trimethylbenzene		20.0	20.5	ug/L	2.34	2.60	30	
Vinyl Acetate		20.0	24.8	ug/L	0.644	24.0	40	
o-Xylene		20.0	21.2	ug/L	0.619	6.00	30	
m-,p-Xylene		40.0	42.0	ug/L	0.618	5.10	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108386

Login Number: L09080400 Run Date: 08/19/2009 Sample ID: WG310033-02
Instrument ID: HPMS8 Run Time: 10:53 Method: 8260B
File ID: 8M355872 Analyst: FJB QC Key: STD
Workgroup (AAB#): WG310034 Cal ID: HPMS8 - 30-JUL-09
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	45.1	ug/L	0.441	9.81	20	
1,1-Dichloroethene	CCC	50.0	45.6	ug/L	0.448	8.71	20	
1,2-Dichloropropane	CCC	50.0	44.8	ug/L	0.290	10.3	20	
Ethylbenzene	CCC	50.0	46.9	ug/L	0.445	6.12	20	
Toluene	CCC	50.0	44.8	ug/L	1.19	10.4	20	
Vinyl Chloride	CCC	50.0	48.9	ug/L	0.329	2.26	20	
Bromoform	SPCC	50.0	48.2	ug/L	0.176	3.66	40	
Chlorobenzene	SPCC	50.0	45.4	ug/L	0.812	9.12	40	
Chloromethane	SPCC	50.0	37.1	ug/L	0.480	25.8	40	
1,1-Dichloroethane	SPCC	50.0	44.7	ug/L	0.518	10.5	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	44.1	ug/L	0.447	11.8	40	
Acetone		50.0	47.1	ug/L	0.0702	5.79	40	
Benzene		50.0	44.2	ug/L	0.952	11.6	40	
Bromobenzene		50.0	45.5	ug/L	0.596	9.03	40	
Bromochloromethane		50.0	47.7	ug/L	0.141	4.55	40	
Bromodichloromethane		50.0	45.9	ug/L	0.325	8.24	40	
Bromomethane		50.0	71.1	ug/L	0.276	42.2	40	*
2-Butanone		50.0	45.5	ug/L	0.105	8.95	40	
n-Butylbenzene		50.0	38.4	ug/L	1.86	23.3	40	
sec-Butylbenzene		50.0	40.5	ug/L	2.32	19.0	40	
tert-Butylbenzene		50.0	42.9	ug/L	0.392	14.3	40	
Carbon Disulfide		50.0	50.3	ug/L	0.875	0.622	40	
Carbon Tetrachloride		50.0	47.2	ug/L	0.357	5.59	40	
Dibromochloromethane		50.0	47.1	ug/L	0.272	5.82	40	
Chloroethane		50.0	50.3	ug/L	0.224	0.579	40	
2-Chloroethyl Vinyl Ether		50.0	44.2	ug/L	0.144	11.5	40	
2-Chlorotoluene		50.0	45.7	ug/L	1.97	8.50	40	
4-Chlorotoluene		50.0	41.6	ug/L	1.65	16.9	40	
1,2-Dibromo-3-Chloropropane		50.0	44.1	ug/L	0.0830	11.8	40	
1,2-Dibromoethane		50.0	44.7	ug/L	0.211	10.5	40	
Dibromomethane		50.0	46.2	ug/L	0.126	7.54	40	
1,2-Dichlorobenzene		50.0	44.2	ug/L	1.08	11.6	40	
1,3-Dichlorobenzene		50.0	44.4	ug/L	1.18	11.2	40	
1,4-Dichlorobenzene		50.0	43.4	ug/L	1.19	13.2	40	
Dichlorodifluoromethane		50.0	52.7	ug/L	0.314	5.48	40	
1,2-Dichloroethane		50.0	43.7	ug/L	0.343	12.7	40	
cis-1,2-Dichloroethene		50.0	46.2	ug/L	0.256	7.67	40	
trans-1,2-Dichloroethene		50.0	45.6	ug/L	0.422	8.87	40	
1,3-Dichloropropane		50.0	43.9	ug/L	0.378	12.2	40	
2,2-Dichloropropane		50.0	46.1	ug/L	0.414	7.89	40	
cis-1,3-Dichloropropene		50.0	46.1	ug/L	0.387	7.71	40	
trans-1,3-Dichloropropene		50.0	44.7	ug/L	0.432	10.6	40	

CCV - Modified 03/05/2008
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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108387

Login Number: L09080400 Run Date: 08/19/2009 Sample ID: WG310033-02
Instrument ID: HPMS8 Run Time: 10:53 Method: 8260B
File ID: 8M355872 Analyst: FJB QC Key: STD
Workgroup (AAB#): WG310034 Cal ID: HPMS8 - 30-JUL-09
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	45.0	ug/L	0.346	9.98	40	
2-Hexanone		50.0	49.3	ug/L	0.0833	1.38	40	
Hexachlorobutadiene		50.0	39.3	ug/L	0.270	21.4	40	
Isopropylbenzene		50.0	45.6	ug/L	1.36	8.72	40	
p-Isopropyltoluene		50.0	41.8	ug/L	1.99	16.4	40	
4-Methyl-2-Pentanone		50.0	46.7	ug/L	0.0695	6.51	40	
Methylene Chloride		50.0	42.4	ug/L	0.246	15.1	40	
Naphthalene		50.0	41.9	ug/L	1.35	16.2	40	
n-Propylbenzene		50.0	43.3	ug/L	2.83	13.4	40	
Styrene		50.0	48.1	ug/L	0.936	3.86	40	
1,1,1,2-Tetrachloroethane		50.0	47.5	ug/L	0.299	4.92	40	
Tetrachloroethene		50.0	45.3	ug/L	0.225	9.38	40	
1,2,3-Trichlorobenzene		50.0	38.7	ug/L	0.572	22.6	40	
1,2,4-Trichlorobenzene		50.0	39.2	ug/L	0.707	21.6	40	
1,1,1-Trichloroethane		50.0	46.9	ug/L	0.386	6.19	40	
1,1,2-Trichloroethane		50.0	45.7	ug/L	0.200	8.58	40	
Trichloroethene		50.0	48.1	ug/L	0.240	3.88	40	
Trichlorofluoromethane		50.0	52.6	ug/L	0.484	5.20	40	
1,2,3-Trichloropropane		50.0	44.8	ug/L	0.122	10.5	40	
1,2,4-Trimethylbenzene		50.0	43.8	ug/L	2.09	12.4	40	
1,3,5-Trimethylbenzene		50.0	43.9	ug/L	2.01	12.1	40	
Vinyl Acetate		50.0	38.4	ug/L	0.399	23.2	40	
o-Xylene		50.0	47.0	ug/L	0.549	5.95	40	
m-,p-Xylene		100	92.3	ug/L	0.543	7.71	40	
1,2-Dichloroethene		100	91.7	ug/L	0.339	8.27	40	
Xylenes		150	139	ug/L	0.546	7.12	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1470275
Report generated 08/20/2009 13:02

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108388

Login Number: L09080400
Instrument ID: HPMS8
Workgroup (AAB#): WG310034

CCV Number: WG310033-02
CAL ID: HPMS8-30-JUL-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG310033-02	NA	NA	317387	541250	673134
Upper Limit	NA	NA	634774	1082500	1346268
Lower Limit	NA	NA	158694	270625	336567
L09080400-01	1.00	01	264570	485537	648588
L09080400-02	1.00	01	280409	514992	672337
WG310034-01	1.00	01	284670	516316	686924
WG310034-02	1.00	01	303998	529178	654919
WG310034-03	1.00	01	308695	535902	674593

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1470276
Report generated 08/20/2009 13:02

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00108389

Login Number:L09080400
Instrument ID:HPMS8
Workgroup (AAB#):WG310034

CCV Number:WG310033-02
CAL ID: HPMS8-30-JUL-09
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG310033-02	NA	NA	17.65	14.63	10.76
Upper Limit	NA	NA	18.15	15.13	11.26
Lower Limit	NA	NA	17.15	14.13	10.26
L09080400-01	1.00	01	17.65	14.63	10.77
L09080400-02	1.00	01	17.65	14.63	10.76
WG310034-01	1.00	01	17.65	14.63	10.76
WG310034-02	1.00	01	17.65	14.63	10.76
WG310034-03	1.00	01	17.65	14.63	10.76

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1470278
Report generated 08/20/2009 13:02

2.2 Semivolatiles Data

2.2.1 Semivolatiles GC/MS Data (8270)

2.2.1.1 Summary Data

LABORATORY REPORT

L09080400

00108393

08/21/09 16:46

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CLAYPIPE-081809	L09080400-01	8270C	1	19-AUG-09

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108394

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310097**
Collect Date: **08/18/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3510C**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS4**
Prep Date: **08/19/2009 11:30**
Cal Date: **05/26/2009 18:05**
Run Date: **08/19/2009 16:00**
File ID: **4M47830**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Phenol	108-95-2		U	5.00	2.50
Bis(2-Chloroethyl)ether	111-44-4		U	5.00	2.50
2-Chlorophenol	95-57-8		U	5.00	2.50
1,3-Dichlorobenzene	541-73-1		U	5.00	2.50
1,4-Dichlorobenzene	106-46-7		U	5.00	2.50
Benzyl alcohol	100-51-6		U	5.00	2.50
1,2-Dichlorobenzene	95-50-1		U	5.00	2.50
2-Methylphenol	95-48-7		U	5.00	2.50
3-,4-Methylphenol	106-44-5		U	5.00	2.50
bis(2-Chloroisopropyl)ether	108-60-1		U	5.00	2.50
N-Nitrosodipropylamine	621-64-7		U	5.00	2.50
Hexachloroethane	67-72-1		U	5.00	2.50
Nitrobenzene	98-95-3		U	5.00	2.50
Isophorone	78-59-1		U	5.00	2.50
2-Nitrophenol	88-75-5		U	5.00	2.50
2,4-Dimethylphenol	105-67-9		U	5.00	2.50
Benzoic acid	65-85-0		U	25.0	12.5
Bis(2-Chloroethoxy)Methane	111-91-1		U	5.00	2.50
2,4-Dichlorophenol	120-83-2		U	5.00	2.50
1,2,4-Trichlorobenzene	120-82-1		U	5.00	2.50
Naphthalene	91-20-3		U	5.00	2.50
4-Chloroaniline	106-47-8		U	5.00	2.50
Hexachlorobutadiene	87-68-3		U	5.00	2.50
4-Chloro-3-methylphenol	59-50-7		U	5.00	2.50
2-Methylnaphthalene	91-57-6		U	5.00	2.50
Hexachlorocyclopentadiene	77-47-4		U	5.00	2.50
2,4,6-Trichlorophenol	88-06-2		U	5.00	2.50
2,4,5-Trichlorophenol	95-95-4		U	5.00	2.50
2-Chloronaphthalene	91-58-7		U	5.00	2.50
2-Nitroaniline	88-74-4		U	25.0	12.5
Dimethylphthalate	131-11-3		U	5.00	2.50
Acenaphthylene	208-96-8		U	5.00	2.50
2,6-Dinitrotoluene	606-20-2		U	5.00	2.50
3-Nitroaniline	99-09-2		U	25.0	12.5
Acenaphthene	83-32-9		U	5.00	2.50
2,4-Dinitrophenol	51-28-5		U	25.0	12.5
4-Nitrophenol	100-02-7		U	25.0	12.5
Dibenzofuran	132-64-9		U	5.00	2.50
2,4-Dinitrotoluene	121-14-2		U	5.00	2.50
Diethylphthalate	84-66-2		U	5.00	2.50
4-Chlorophenyl-phenyl ether	7005-72-3		U	5.00	2.50
Fluorene	86-73-7		U	5.00	2.50
4-Nitroaniline	100-01-6		U	25.0	12.5
4,6-Dinitro-2-methylphenol	534-52-1		U	25.0	12.5
N-Nitrosodiphenylamine	86-30-6		U	5.00	2.50
4-Bromophenyl-phenylether	101-55-3		U	5.00	2.50
Hexachlorobenzene	118-74-1		U	5.00	2.50
Pentachlorophenol	87-86-5		U	25.0	12.5
Phenanthrene	85-01-8		U	5.00	2.50
Anthracene	120-12-7		U	5.00	2.50
Di-N-Butylphthalate	84-74-2		U	5.00	2.50
Fluoranthene	206-44-0		U	5.00	2.50
Pyrene	129-00-0		U	5.00	2.50
Butylbenzylphthalate	85-68-7		U	5.00	2.50
3,3'-Dichlorobenzidine	91-94-1		U	10.0	2.50
Benzo(a)anthracene	56-55-3		U	5.00	2.50
Chrysene	218-01-9		U	5.00	2.50
bis(2-Ethylhexyl)phthalate	117-81-7		U	10.0	3.00
Di-n-octylphthalate	117-84-0		U	5.00	2.50

Microbac®

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108395

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310097**
Collect Date: **08/18/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3510C**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS4**
Prep Date: **08/19/2009 11:30**
Cal Date: **05/26/2009 18:05**
Run Date: **08/19/2009 16:00**
File ID: **4M47830**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Benzo(b)fluoranthene	205-99-2		U	5.00	2.50
Benzo(k)fluoranthene	207-08-9		U	5.00	2.50
Benzo(a)pyrene	50-32-8		U	5.00	2.50
Indeno(1,2,3-cd)pyrene	193-39-5		U	5.00	2.50
Dibenzo(a,h)Anthracene	53-70-3		U	5.00	2.50
Benzo(g,h,i)Perylene	191-24-2		U	5.00	2.50

Surrogate	% Recovery	Lower	Upper	Qual
2-Fluorophenol	38.2	21	100	
Phenol-d5	26.8	10	94	
Nitrobenzene-d5	70.7	35	114	
2-Fluorobiphenyl	73.3	43	116	
2,4,6-Tribromophenol	100	10	123	
p-Terphenyl-d14	38.9	33	141	

U Not detected at or above adjusted sample detection limit

2.2.1.2 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:	Example
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)]

where:	Example
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)]

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

Dry weight correction:

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

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

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

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

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

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

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

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 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

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (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

Microbac Laboratories Inc.
Sample Extract Log

00108399

Workgroup: WG310045
Analyst: CAF
Spike Analyst: CAF
Method: 3510C
Run Date: 08/19/2009 11:30
SOP: EXB08 Revison 11
Spike Witness: CSH
Surr Solution: STD33058

Methylene Chloride Lot #: COA14020
Sodium Sulfate,Anhydrous,Granular (Lot #: COA14095
1:1 H2SO4 Lot #: RGT14041
10N NaOH Lot #: RGT14117
Sodium Sulfate,Anhydrous,Granular (Lot #: COA14095
Fortified Solution Lot #: RGT14076

	SAMPLE #	Type	Reference	Prod	Init Amnt	Surr Amnt	Spike Amnt	Spike Sol	Final Vol	Color
1	L09080400-01	SAMP		8270	1000 mL	.5 mL			1 mL	Colored
2	WG310045-01	BLANK		8270	1000 mL	.5 mL			1 mL	Transparent
3	WG310045-02	LCS		8270	1000 mL	.5 mL	.5 mL	STD34265	1 mL	Colored
4	WG310045-03	LCS2		8270	1000 mL	.5 mL	.5 mL	STD34265	1 mL	Colored

Analyst: Cheryl A. Flowers

Reviewer:

EXTRACT - Modified 10/22/2008
PDF ID: 1469281
Report generated: 08/19/2009 14:03

Microbac

Microbac Laboratories Inc.

00108400

Instrument Run Log

Instrument: HPMS4 Dataset: 052609
Analyst1: MDC Analyst2: NA
Method: 8270C SOP: MSS01 Rev: 14
Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 28854

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups:

Internal STD: STD20900 Surrogate STD: NA Calibration STD

Comments: ICAL 4M46921-4M26929 not used: instrument responses improved for a few compounds during the course of the calibration.
ICAL fails for #49, 64, 78 (Appendix IX compounds)

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	4M46920	WG301596-01 50ppm DFTPP	1	1	STD31842	05/26/09 07:43
2	4M46921	WG301596-02 50ppm MEGAMIX STD	1	1	STD31920	05/26/09 08:02
3	4M46922	WG301596-03 3ppm MEGAMIX STD	1	1	STD31920	05/26/09 08:45
4	4M46923	WG301596-04 10ppm MEGAMIX STD	1	1	STD31920	05/26/09 09:21
5	4M46924	WG301596-05 15ppm MEGAMIX STD	1	1	STD31920	05/26/09 09:57
6	4M46925	WG301596-06 25ppm MEGAMIX STD	1	1	STD31920	05/26/09 10:32
7	4M46926	WG301596-07 80ppm MEGAMIX STD	1	1	STD31920	05/26/09 11:07
8	4M46927	WG301596-08 100ppm MEGAMIX STD	1	1	STD31920	05/26/09 11:43
9	4M46928	WG301596-09 120ppm MEGAMIX STD	1	1	STD31920	05/26/09 12:18
10	4M46929	WG301596-02 50ppm MEGAMIX STD	1	1	STD31920	05/26/09 12:54
11	4M46930	WG301596-01 50ppm DFTPP	1	1	STD31842	05/26/09 13:39
12	4M46931	WG301596-02 50ppm MEGAMIX STD	1	1	STD31920	05/26/09 13:58
13	4M46932	WG301596-03 3ppm MEGAMIX STD	1	1	STD31920	05/26/09 14:34
14	4M46933	WG301596-04 10ppm MEGAMIX STD	1	1	STD31920	05/26/09 15:09
15	4M46934	WG301596-05 15ppm MEGAMIX STD	1	1	STD31920	05/26/09 15:44
16	4M46935	WG301596-06 25ppm MEGAMIX STD	1	1	STD31920	05/26/09 16:19
17	4M46936	WG301596-07 80ppm MEGAMIX STD	1	1	STD31920	05/26/09 16:54
18	4M46937	WG301596-08 100ppm MEGAMIX STD	1	1	STD31920	05/26/09 17:30
19	4M46938	WG301596-09 120ppm MEGAMIX STD	1	1	STD31920	05/26/09 18:05
20	4M46939	WG301596-10 50ppm Alt source STD	1	1	STD31858	05/26/09 18:41
21	4M46940	WG301596-11 50ppm A9 Alt source STD	1	1	STD30677	05/26/09 19:16
22	4M46941	WG301596-12 50ppm dioxane source STD	1	1	STD30264	05/26/09 19:51
23	4M46942	WG303199-01 50ppm TCL std	1	1	STD30935	05/26/09 20:27
24	4M46943	WG303199-02 3ppm TCL std	1	1	STD30935	05/26/09 21:03
25	4M46944	WG303199-03 10ppm TCL std	1	1	STD30935	05/26/09 21:38
26	4M46945	WG303199-04 25ppm TCL std	1	1	STD30935	05/26/09 22:14
27	4M46946	WG303199-05 80ppm TCL std	1	1	STD30935	05/26/09 22:49
28	4M46947	WG303199-06 100ppm TCL std	1	1	STD30935	05/26/09 23:24
29	4M46948	WG303199-07 50ppm TCL alt source std	1	1	STD30966	05/27/09 00:00
30	4M46949	WG302712-01 BLK 5/20	10	1	SOIL	05/27/09 00:36
31	4M46950	L09050419-03 10X	10	10	SOIL	05/27/09 01:12
32	4M46951	L09050419-05 10X	10	10	SOIL	05/27/09 01:48

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 27-MAY-09



Microbac

Microbac Laboratories Inc.

Instrument Run Log

00108401

Instrument: HPMS4 Dataset: 052609

Analyst1: MDC Analyst2: NA

Method: 8270C SOP: MSS01 Rev: 14

Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 28854

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups:

Internal STD: STD20900 Surrogate STD: NA

Comments

Seq.	Rerun	Dil.	Reason	Analytes
20				
	Pentachlorophenol >30%D.			
21				
	#39, 78, 114 >30%D.			
31				
	Four surrogates low: SMI (matrix is gloves).			
32	X		Missed Tune	

Page: 2 Approved: 27-MAY-09

Microbac Laboratories Inc.

Instrument Run Log

00108402

Instrument: HPMS4 Dataset: 081909

Analyst1: CAA Analyst2: NA

Method: 8270C SOP: MSS01 Rev: 14

Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 29846

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG309867, WG310030, WG310097

Internal STD: COA13928 Surrogate STD: NA Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	4M47818	WG310023-01 50ppm DFTPP	1	1	STD31842	08/19/09 09:19
2	4M47819	WG310023-02 50ppm MEGAMIX STD	1	1	STD34003	08/19/09 09:38
3	4M47820	WG310031-01 50ppm TCL STD	1	1	STD34192	08/19/09 10:12
4	4M47821	WG309971-02 BLK 8/18	7	1	SOIL	08/19/09 10:47
5	4M47822	WG309971-03 LCS 8/18	7	1	SOIL	08/19/09 11:22
6	4M47823	L09080333-06 5X 827-SPE-DIOX	7	5	SOIL	08/19/09 11:56
7	4M47824	L09080331-01 5X 827-SPE-DIOX	7	5	SOIL	08/19/09 12:31
8	4M47825	L09080331-02 100X 827-SPE-DIOX	7	100	SOIL	08/19/09 13:06
9	4M47826	L09080364-03	7	1	SOIL	08/19/09 13:41
10	4M47827	WG310045-01 BLK 8/19	1	1		08/19/09 14:16
11	4M47828	WG310045-02 LCS 8/19	1	1		08/19/09 14:51
12	4M47829	WG310045-03 LCS DUP 8/19	1	1		08/19/09 15:26
13	4M47830	L09080400-01	1	1		08/19/09 16:00
14	4M47831	L09080364-05	7	1	SOIL	08/19/09 16:35
15	4M47832	L09080364-09	7	1	SOIL	08/19/09 17:10
16	4M47833	L09080364-10	7	1	SOIL	08/19/09 17:44
17	4M47834	L09080364-04	7	1	SOIL	08/19/09 18:19
18	4M47835	L09080364-02	7	1	SOIL	08/19/09 18:53
19	4M47836	L09080364-06 REF	7	1	SOIL	08/19/09 19:28
20	4M47837	L09080364-07 MS	7	1	SOIL	08/19/09 20:03
21	4M47838	L09080364-08 MSD	7	1	SOIL	08/19/09 20:38
22	4M47839	L09080364-01	7	1	SOIL	08/19/09 21:13

Comments

Seq.	Rerun	Dil.	Reason	Analytes
5				
	WG309971-03 LCS 8/18 - SS FBP, PHL low; 15 compounds low - All samples associated with LCS needs re-extracted (364-01 thru 10).			
8	X	200	Over Calibration Range	#14
	L09080331-02 100X 827-SPE-DIOX			
9				
	L09080364-03 - Needs re-extracted, SS FBP low.			
14				
	L09080364-05 - Needs re-extracted, SS TBP, FBP, 2FP, PHL low.			
15				
	L09080364-09 - Needs re-extracted, SS FBP low.			

Page: 1 Approved: 20-AUG-09



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Instrument Run Log

00108403

Instrument: HPMS4 Dataset: 081909

Analyst1: CAA Analyst2: NA

Method: 8270C SOP: MSS01 Rev: 14

Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 29846

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG309867, WG310030, WG310097

Internal STD: COA13928 Surrogate STD: NA

Comments

Seq.	Rerun	Dil.	Reason	Analytes
16				
	L09080364-10 - Needs re-extracted, SS TBP, FBP, 2FP, PHL low.			
17				
	L09080364-04 - Needs re-extracted.			
18				
	L09080364-02 - Needs re-extracted, SS FBP, 2FP, PHL low.			
19				
	L09080364-06 REF - Needs re-extracted, SS FBP low.			
20				
	L09080364-07 MS - Needs re-extracted, SS FBP low.			
21				
	L09080364-08 MSD - Needs re-extracted, SS FBP, PHL low.			
22				
	L09080364-01 - Needs re-extracted, SS FBP, 2FP, PHL low.			

Page: 2 Approved: 20-AUG-09

Microbac Laboratories Inc.

00108404

Data Checklist

Date: 26-MAY-2009
Analyst: MDC
Analyst: NA
Method: 8270
Instrument: HPMS4
Curve Workgroup: NA
Runlog ID: 28254
Analytical Workgroups: ICAL, L09050419

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	NA
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	NA
Recoveries	NA
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	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	MDC
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:
27-MAY-2009



Secondary Reviewer:
27-MAY-2009



CHECKLIST1 - Modified 03/05/2008
Generated: MAY-27-2009 13:00:03

Microbac Laboratories Inc.

00108405

Data Checklist

Date: 19-AUG-2009
Analyst: CAA
Analyst: NA
Method: 8270
Instrument: HPMS4
Curve Workgroup: NA
Runlog ID: 29702
Analytical Workgroups: L09080333, L09080331, L09080400, L09080364

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
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 (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	X
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	CAA
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:
20-AUG-2009

Secondary Reviewer:
20-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-20-2009 09:24:55

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108406

Analytical Method: 8270C AAB#: WG310097

Login Number: L09080400

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
04CLAYPIPE-081809	01	08/18/09					08/19/09	.8	7		08/19/09	.2	40	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1469732
Report generated 08/20/2009 10:17

Login Number: L09080400
Instrument Id: HPMS4
Workgroup (AAB#): WG310097

Method: 8270
CAL ID: HPMS4-26-MAY-09
Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4	5	6
L09080400-01	1.00	01	100	73.3	38.2	70.7	38.9	26.8
WG310045-01	1.00	01	84.1	78.0	38.2	79.7	70.1	25.9
WG310045-02	1.00	01	111	86.6	49.0	94.9	77.6	33.3
WG310045-03	1.00	01	110	88.3	51.4	96.8	75.9	34.8

Surrogates	Surrogate Limits		
1 - 2,4,6-Tribromophenol	10	-	123
2 - 2-Fluorobiphenyl	43	-	116
3 - 2-Fluorophenol	21	-	100
4 - Nitrobenzene-d5	35	-	114
5 - p-Terphenyl-d14	33	-	141
6 - Phenol-d5	10	-	94

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1469556
Report generated: 08/20/2009 10:17

00108408

METHOD BLANK SUMMARY

Login Number:	L09080400	Work Group:	WG310097
Blank File ID:	4M47827	Blank Sample ID:	WG310045-01
Prep Date:	08/19/09 11:30	Instrument ID:	HPMS4
Analyzed Date:	08/19/09 14:16	Method:	8270C
Analyst:	CAA		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG310045-02	4M47828	08/19/09 14:51	01
LCS2	WG310045-03	4M47829	08/19/09 15:26	01
04CLAYPIPE-081809	L09080400-01	4M47830	08/19/09 16:00	01

Report Name: BLANK_SUMMARY
PDF File ID: 1469733
Report generated 08/20/2009 10:17

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108409

Login Number:L09080400 Prep Date:08/19/09 11:30 Sample ID:WG310045-01
Instrument ID:HPMS4 Run Date:08/19/09 14:16 Prep Method:3510C
File ID:4M47827 Analyst:CAA Method:8270C
Workgroup (AAB#):WG310097 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS4-26-MAY-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Phenol	2.50	5.00	2.50	1	U
Bis(2-Chloroethyl)ether	2.50	5.00	2.50	1	U
2-Chlorophenol	2.50	5.00	2.50	1	U
1,3-Dichlorobenzene	2.50	5.00	2.50	1	U
1,4-Dichlorobenzene	2.50	5.00	2.50	1	U
Benzyl alcohol	2.50	5.00	2.50	1	U
1,2-Dichlorobenzene	2.50	5.00	2.50	1	U
2-Methylphenol	2.50	5.00	2.50	1	U
3-,4-Methylphenol	2.50	5.00	2.50	1	U
bis(2-Chloroisopropyl)ether	2.50	5.00	2.50	1	U
N-Nitrosodipropylamine	2.50	5.00	2.50	1	U
Hexachloroethane	2.50	5.00	2.50	1	U
Nitrobenzene	2.50	5.00	2.50	1	U
Isophorone	2.50	5.00	2.50	1	U
2-Nitrophenol	2.50	5.00	2.50	1	U
2,4-Dimethylphenol	2.50	5.00	2.50	1	U
Benzoic acid	12.5	25.0	12.5	1	U
Bis(2-Chloroethoxy)Methane	2.50	5.00	2.50	1	U
2,4-Dichlorophenol	2.50	5.00	2.50	1	U
1,2,4-Trichlorobenzene	2.50	5.00	2.50	1	U
Naphthalene	2.50	5.00	2.50	1	U
4-Chloroaniline	2.50	5.00	2.50	1	U
Hexachlorobutadiene	2.50	5.00	2.50	1	U
4-Chloro-3-methylphenol	2.50	5.00	2.50	1	U
2-Methylnaphthalene	2.50	5.00	2.50	1	U
Hexachlorocyclopentadiene	2.50	5.00	2.50	1	U
2,4,6-Trichlorophenol	2.50	5.00	2.50	1	U
2,4,5-Trichlorophenol	2.50	5.00	2.50	1	U
2-Chloronaphthalene	2.50	5.00	2.50	1	U
2-Nitroaniline	12.5	25.0	12.5	1	U
Dimethylphthalate	2.50	5.00	2.50	1	U
Acenaphthylene	2.50	5.00	2.50	1	U
2,6-Dinitrotoluene	2.50	5.00	2.50	1	U
3-Nitroaniline	12.5	25.0	12.5	1	U
Acenaphthene	2.50	5.00	2.50	1	U
2,4-Dinitrophenol	12.5	25.0	12.5	1	U
4-Nitrophenol	12.5	25.0	12.5	1	U
Dibenzofuran	2.50	5.00	2.50	1	U
2,4-Dinitrotoluene	2.50	5.00	2.50	1	U
Diethylphthalate	2.50	5.00	2.50	1	U
4-Chlorophenyl-phenyl ether	2.50	5.00	2.50	1	U
Fluorene	2.50	5.00	2.50	1	U

Report Name:BLANK
PDF ID: 1469554
20-AUG-2009 10:17

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108410

Login Number:L09080400 Prep Date:08/19/09 11:30 Sample ID:WG310045-01
Instrument ID:HPMS4 Run Date:08/19/09 14:16 Prep Method:3510C
File ID:4M47827 Analyst:CAA Method:8270C
Workgroup (AAB#):WG310097 Matrix:Water Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS4-26-MAY-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
4-Nitroaniline	12.5	25.0	12.5	1	U
4,6-Dinitro-2-methylphenol	12.5	25.0	12.5	1	U
N-Nitrosodiphenylamine	2.50	5.00	2.50	1	U
4-Bromophenyl-phenylether	2.50	5.00	2.50	1	U
Hexachlorobenzene	2.50	5.00	2.50	1	U
Pentachlorophenol	12.5	25.0	12.5	1	U
Phenanthrene	2.50	5.00	2.50	1	U
Anthracene	2.50	5.00	2.50	1	U
Di-N-Butylphthalate	2.50	5.00	2.50	1	U
Fluoranthene	2.50	5.00	2.50	1	U
Pyrene	2.50	5.00	2.50	1	U
Butylbenzylphthalate	2.50	5.00	2.50	1	U
3,3'-Dichlorobenzidine	2.50	10.0	2.50	1	U
Benzo(a)anthracene	2.50	5.00	2.50	1	U
Chrysene	2.50	5.00	2.50	1	U
bis(2-Ethylhexyl)phthalate	3.00	10.0	3.00	1	U
Di-n-octylphthalate	2.50	5.00	2.50	1	U
Benzo(b)fluoranthene	2.50	5.00	2.50	1	U
Benzo(k)fluoranthene	2.50	5.00	2.50	1	U
Benzo(a)pyrene	2.50	5.00	2.50	1	U
Indeno(1,2,3-cd)pyrene	2.50	5.00	2.50	1	U
Dibenzo(a,h)Anthracene	2.50	5.00	2.50	1	U
Benzo(g,h,i)Perylene	2.50	5.00	2.50	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
2-Fluorophenol	38.2	21 - 100	PASS
Phenol-d5	25.9	10 - 94	PASS
Nitrobenzene-d5	79.7	35 - 114	PASS
2-Fluorobiphenyl	78.0	43 - 116	PASS
2,4,6-Tribromophenol	84.1	10 - 123	PASS
p-Terphenyl-d14	70.1	33 - 141	PASS

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: 1469554
20-AUG-2009 10:17

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L09080400 Analyst: CAA Prep Method: 3510C
Instrument ID: HPMS4 Matrix: Water Method: 8270C
Workgroup (AAB#): WG310097 Units: ug/L
QC Key: STD Lot #: STD34265

Sample ID: WG310045-02 LCS File ID: 4M47828 Run Date: 08/19/2009 14:51
Sample ID: WG310045-03 LCS2 File ID: 4M47829 Run Date: 08/19/2009 15:26

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Phenol	50.0	16.6	33.2	50.0	17.3	34.7	4.45	10 - 120	30	
Bis(2-Chloroethyl)ether	50.0	40.6	81.3	50.0	42.5	84.9	4.36	25 - 110	30	
2-Chlorophenol	50.0	33.4	66.8	50.0	37.1	74.2	10.5	25 - 110	30	
1,3-Dichlorobenzene	50.0	38.0	75.9	50.0	39.1	78.3	3.02	25 - 110	30	
1,4-Dichlorobenzene	50.0	36.2	72.4	50.0	38.4	76.7	5.80	25 - 110	30	
Benzyl alcohol	50.0	36.7	73.4	50.0	36.9	73.8	0.591	20 - 110	30	
1,2-Dichlorobenzene	50.0	37.4	74.9	50.0	39.4	78.8	5.15	25 - 110	30	
2-Methylphenol	50.0	30.4	60.7	50.0	32.8	65.6	7.73	20 - 110	30	
3-,4-Methylphenol	50.0	33.3	66.6	50.0	35.1	70.3	5.29	20 - 110	30	
bis(2-Chloroisopropyl)ether	50.0	38.7	77.3	50.0	39.8	79.6	2.86	20 - 110	30	
N-Nitrosodipropylamine	50.0	48.1	96.3	50.0	50.5	101	4.85	28 - 120	30	
Hexachloroethane	50.0	42.0	83.9	50.0	43.6	87.2	3.87	25 - 95	30	
Nitrobenzene	50.0	44.1	88.2	50.0	46.4	92.9	5.20	30 - 110	30	
Isophorone	50.0	43.9	87.8	50.0	45.2	90.3	2.87	30 - 110	30	
2-Nitrophenol	50.0	39.1	78.1	50.0	43.2	86.4	10.1	20 - 115	30	
2,4-Dimethylphenol	50.0	36.6	73.2	50.0	39.7	79.4	8.20	20 - 120	30	
Benzoic acid	50.0	27.7	55.4	50.0	35.1	70.3	23.6	10 - 100	30	
Bis(2-Chloroethoxy)Methane	50.0	40.2	80.3	50.0	41.7	83.4	3.79	20 - 105	30	
2,4-Dichlorophenol	50.0	40.2	80.4	50.0	44.4	88.7	9.88	20 - 110	30	
1,2,4-Trichlorobenzene	50.0	37.7	75.3	50.0	40.1	80.1	6.15	25 - 105	30	
Naphthalene	50.0	39.0	77.9	50.0	41.0	81.9	4.99	25 - 110	30	
4-Chloroaniline	50.0	41.0	82.1	50.0	42.0	83.9	2.24	25 - 120	30	
Hexachlorobutadiene	50.0	47.5	95.0	50.0	49.5	99.0	4.03	24 - 105	30	
4-Chloro-3-methylphenol	50.0	44.4	88.7	50.0	47.4	94.8	6.62	25 - 110	30	
2-Methylnaphthalene	50.0	44.7	89.4	50.0	46.4	92.8	3.75	25 - 120	30	
Hexachlorocyclopentadiene	50.0	24.3	48.7	50.0	27.8	55.6	13.3	20 - 143	30	
2,4,6-Trichlorophenol	50.0	40.8	81.5	50.0	43.3	86.5	5.94	30 - 120	30	
2,4,5-Trichlorophenol	50.0	45.5	91.0	50.0	49.5	99.1	8.50	35 - 120	30	
2-Chloronaphthalene	50.0	36.2	72.5	50.0	37.6	75.2	3.77	25 - 120	30	
2-Nitroaniline	50.0	54.4	109	50.0	54.4	109	0.00	45 - 115	30	
Dimethylphthalate	50.0	50.1	100	50.0	50.5	101	0.927	25 - 112	30	
Acenaphthylene	50.0	48.8	97.6	50.0	49.8	99.6	2.05	30 - 120	30	
2,6-Dinitrotoluene	50.0	48.3	96.6	50.0	47.6	95.2	1.53	50 - 120	30	
3-Nitroaniline	50.0	50.8	102	50.0	50.6	101	0.508	40 - 120	30	
Acenaphthene	50.0	43.7	87.5	50.0	45.0	89.9	2.75	30 - 120	30	
2,4-Dinitrophenol	50.0	35.5	70.9	50.0	39.1	78.3	9.88	20 - 140	30	
4-Nitrophenol	50.0	20.1	40.2	50.0	20.7	41.4	2.96	10 - 132	30	
Dibenzofuran	50.0	52.2	104	50.0	52.0	104	0.469	35 - 115	30	
2,4-Dinitrotoluene	50.0	50.0	100	50.0	48.3	96.7	3.47	50 - 139	30	
Diethylphthalate	50.0	56.4	113	50.0	54.4	109	3.65	45 - 120	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1469555
Report generated: 08/20/2009 10:17

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L09080400 Analyst: CAA Prep Method: 3510C
Instrument ID: HPMS4 Matrix: Water Method: 8270C
Workgroup (AAB#): WG310097 Units: ug/L
QC Key: STD Lot #: STD34265

Sample ID: WG310045-02 LCS File ID: 4M47828 Run Date: 08/19/2009 14:51
Sample ID: WG310045-03 LCS2 File ID: 4M47829 Run Date: 08/19/2009 15:26

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
4-Chlorophenyl-phenyl ether	50.0	48.0	95.9	50.0	48.0	96.1	0.189	35 - 120	30	
Fluorene	50.0	45.5	90.9	50.0	45.5	91.1	0.192	40 - 120	30	
4-Nitroaniline	50.0	49.1	98.3	50.0	47.7	95.4	3.02	53 - 135	30	
4,6-Dinitro-2-methylphenol	50.0	44.0	87.9	50.0	46.9	93.8	6.55	40 - 145	30	
N-Nitrosodiphenylamine	50.0	40.5	81.0	50.0	40.7	81.3	0.353	40 - 110	30	
4-Bromophenyl-phenylether	50.0	50.3	101	50.0	50.5	101	0.289	40 - 115	30	
Hexachlorobenzene	50.0	46.3	92.6	50.0	46.6	93.3	0.665	50 - 130	30	
Pentachlorophenol	50.0	51.6	103	50.0	52.4	105	1.58	40 - 140	30	
Phenanthrene	50.0	45.1	90.2	50.0	45.0	89.9	0.321	55 - 120	30	
Anthracene	50.0	45.7	91.5	50.0	45.8	91.5	0.0536	55 - 130	30	
Di-N-Butylphthalate	50.0	52.5	105	50.0	51.6	103	1.69	55 - 118	30	
Fluoranthene	50.0	47.7	95.5	50.0	47.3	94.6	0.879	50 - 137	30	
Pyrene	50.0	40.7	81.3	50.0	41.5	83.0	1.98	55 - 130	30	
Butylbenzylphthalate	50.0	53.5	107	50.0	53.0	106	0.894	55 - 150	30	
3,3'-Dichlorobenzidine	50.0	39.0	77.9	50.0	38.3	76.6	1.76	30 - 140	30	
Benzo(a)anthracene	50.0	40.1	80.2	50.0	40.7	81.4	1.48	60 - 130	30	
Chrysene	50.0	42.5	85.1	50.0	42.3	84.5	0.634	55 - 130	30	
bis(2-Ethylhexyl)phthalate	50.0	50.6	101	50.0	50.8	102	0.333	50 - 150	30	
Di-n-octylphthalate	50.0	57.2	114	50.0	57.5	115	0.565	40 - 146	30	
Benzo(b)fluoranthene	50.0	47.2	94.5	50.0	43.5	86.9	8.31	45 - 125	30	
Benzo(k)fluoranthene	50.0	45.8	91.7	50.0	45.9	91.8	0.161	55 - 140	30	
Benzo(a)pyrene	50.0	44.7	89.5	50.0	44.8	89.6	0.189	55 - 135	30	
Indeno(1,2,3-cd)pyrene	50.0	43.5	87.1	50.0	43.3	86.7	0.435	50 - 135	30	
Dibenzo(a,h)Anthracene	50.0	43.8	87.6	50.0	43.6	87.3	0.357	45 - 125	30	
Benzo(g,h,i)Perylene	50.0	44.3	88.6	50.0	44.0	88.1	0.581	45 - 140	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
2,4,6-Tribromophenol	111	110	10 - 123	PASS
2-Fluorobiphenyl	86.6	88.3	43 - 116	PASS
2-Fluorophenol	49.0	51.4	21 - 100	PASS
Nitrobenzene-d5	94.9	96.8	35 - 114	PASS
p-Terphenyl-d14	77.6	75.9	33 - 141	PASS
Phenol-d5	33.3	34.8	10 - 94	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1469555
Report generated: 08/20/2009 10:17

DFTPP

Login Number: L09080400
Instrument: HPMS4
Analyst: MDC
Workgroup: WG301596

Tune ID: WG301596-01
Run Date: 05/26/2009
Run Time: 13:39
File ID: 4M46930
Cal ID: HPMS4-26-MAY-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	44.8	261827	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	46.9	274102	PASS
70.0	69.0	0	2.00	0.440	1207	PASS
127	198	40.0	60.0	52.7	307669	PASS
197	198	0	1.00	0.205	1195	PASS
198	198	100	100	100	583936	PASS
199	198	5.00	9.00	7.49	43738	PASS
275	198	10.0	30.0	22.5	131240	PASS
365	198	1.00	100	2.72	15891	PASS
441	443	0.0100	100	83.3	73706	PASS
442	198	40.0	100	74.7	436416	PASS
443	442	17.0	23.0	20.3	88440	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG301596-02	STD-CCV	01	05/26/2009 13:58	
WG301596-03	STD	01	05/26/2009 14:34	
WG301596-04	STD	01	05/26/2009 15:09	
WG301596-05	STD	01	05/26/2009 15:44	
WG301596-06	STD	01	05/26/2009 16:19	
WG301596-07	STD	01	05/26/2009 16:54	
WG301596-08	STD	01	05/26/2009 17:30	
WG301596-09	STD	01	05/26/2009 18:05	
WG301596-10	SSCV	01	05/26/2009 18:41	
WG301596-11	SSCV	01	05/26/2009 19:16	
WG301596-12	SSCV	01	05/26/2009 19:51	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
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DFTPP

Login Number: L09080400
Instrument: HPMS4
Analyst: CAA
Workgroup: WG310023

Tune ID: WG310023-01
Run Date: 08/19/2009
Run Time: 09:19
File ID: 4M47818
Cal ID: HPMS4-26-MAY-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	51.0	59797	PASS
68.0	69.0	0	2.00	0.860	504	PASS
69.0	198	0	100	50.1	58637	PASS
70.0	69.0	0	2.00	0.292	171	PASS
127	198	40.0	60.0	58.3	68296	PASS
197	198	0	1.00	0.349	409	PASS
198	198	100	100	100	117152	PASS
199	198	5.00	9.00	5.74	6728	PASS
275	198	10.0	30.0	24.7	28968	PASS
365	198	1.00	100	4.62	5416	PASS
441	443	0.0100	100	56.8	8138	PASS
442	198	40.0	100	64.5	75557	PASS
443	442	17.0	23.0	19.0	14329	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG310023-02	CCV	01	08/19/2009 09:38	
WG310045-01	BLANK	01	08/19/2009 14:16	
WG310045-02	LCS	01	08/19/2009 14:51	
WG310045-03	LCS2	01	08/19/2009 15:26	
L09080400-01	04CLAYPIPE-081809	01	08/19/2009 16:00	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1469736
Report generated 08/20/2009 10:17

Login Number: L09080400 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
ICAL Workgroup: WG301596 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,4-Dichlorobenzene	CCC	1.658	7.44		
2,4,6-Trichlorophenol	CCC	0.3977	4.51		
2,4-Dichlorophenol	CCC	0.2909	5.32		
2-Nitrophenol	CCC	0.2097	5.23		
4-Chloro-3-Methylphenol	CCC	0.3150	4.99		
Acenaphthene	CCC	1.301	13.1		
Benzo[a]pyrene	CCC	1.268	6.63		
Di-n-Octyl Phthalate	CCC	1.513	10.9		
Fluoranthene	CCC	1.311	10.2		
Hexachlorobutadiene	CCC	0.1766	6.93		
Pentachlorophenol	CCC	0.09363	24.4	0.99500	
Phenol	CCC	1.897	5.56		
2,4-Dinitrophenol	SPCC	0.1082	39.3	0.99500	
4-Nitrophenol	SPCC	0.2531	10.7		
Hexachlorocyclopentadiene	SPCC	0.1496	30.8	0.99500	
n-Nitrosodipropylamine	SPCC	0.9646	11.4		
1,2,4-Trichlorobenzene		0.3486	9.43		
1,2-Dichlorobenzene		1.484	8.26		
1,3-Dichlorobenzene		1.643	6.56		
2,4,5-Trichlorophenol		0.3870	4.84		
2,4-Dimethylphenol		0.3767	6.50		
2,4-Dinitrotoluene		0.4314	6.57		
2,6-Dinitrotoluene		0.3471	6.36		
2-Chloronaphthalene		1.419	12.7		
2-Chlorophenol		1.497	4.17		
2-Methylnaphthalene		0.7144	10.3		
2-Methylphenol		1.107	6.59		
2-Nitroaniline		0.4072	4.67		
3,3'-Dichlorobenzidine		0.4000	7.65		
3-Nitroaniline		0.3538	10.1		
4,6-Dinitro-2-Methylphenol		0.1133	15.5	0.99800	
4-Bromophenyl Phenyl Ether		0.2414	8.14		
4-Chloroaniline		0.4443	4.84		
4-Chlorophenyl Phenyl Ether		0.7223	12.2		
4-Nitroaniline		0.3642	3.27		
Acenaphthylene		2.024	15.7	0.99600	
Anthracene		1.327	13.1		
Benzo[a]anthracene		1.288	8.55		
Benzo[b]fluoranthene		1.333	4.09		
Benzo[ghi]perylene		1.109	3.58		
Benzo[k]fluoranthene		1.209	9.85		
Benzoic Acid		0.05453	68.6		0.99100
Benzyl Alcohol		1.004	3.03		
Butyl Benzyl Phthalate		0.6429	10.2		
Chrysene		1.197	9.40		

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Login Number: L09080400 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
ICAL Workgroup: WG301596 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Di-n-Butyl Phthalate		1.410	12.6		
Dibenz[ah]anthracene		1.100	3.66		
Dibenzofuran		1.705	16.0	0.99600	
Diethylphthalate		1.406	12.0		
Dimethylphthalate		1.396	11.2		
Fluorene		1.466	14.7		
Hexachlorobenzene		0.2425	8.14		
Hexachloroethane		0.5955	4.20		
Indeno[1,2,3-cd]pyrene		1.301	3.83		
Isophorone		0.7895	9.61		
Naphthalene		1.159	14.0		
Nitrobenzene		0.4106	7.83		
Phenanthrene		1.314	13.2		
Pyrene		1.456	11.4		
bis(2-Chloroethoxy)methane		0.5767	15.3	0.99500	
bis(2-Chloroethyl)ether		1.139	5.70		
bis(2-Chloroisopropyl)ether		2.145	8.04		
bis(2-Ethylhexyl)phthalate		0.8907	9.48		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

Login Number: L09080400 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-02			WG301596-03			WG301596-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	50.0	632614.000	1.556	3.00	35548.0000	1.923	10.0	115714.000	1.659
2,4,6-Trichlorophenol	50.0	317357.000	0.3874	3.00	15358.0000	0.4349	10.0	54107.0000	0.3959
2,4-Dichlorophenol	50.0	431298.000	0.2803	3.00	22018.0000	0.3209	10.0	76179.0000	0.2911
2-Nitrophenol	50.0	312344.000	0.2030	3.00	14628.0000	0.2132	10.0	55698.0000	0.2128
4-Chloro-3-Methylphenol	50.0	478290.000	0.3108	3.00	23629.0000	0.3444	10.0	82944.0000	0.3169
Acenaphthene	50.0	996420.000	1.216	3.00	56774.0000	1.608	10.0	189612.000	1.387
Benzo[a]pyrene	50.0	1630404.00	1.230	3.00	80589.0000	1.450	10.0	277757.000	1.255
Di-n-Octyl Phthalate	50.0	1899758.00	1.433	3.00	100707.000	1.812	10.0	350205.000	1.582
Fluoranthene	50.0	1744586.00	1.218	3.00	96435.0000	1.552	10.0	328905.000	1.357
Hexachlorobutadiene	50.0	261362.000	0.1699	3.00	13745.0000	0.2003	10.0	47369.0000	0.1810
Pentachlorophenol	50.0	145192.000	0.1014	NA	NA	NA	NA	NA	NA
Phenol	50.0	735377.000	1.809	3.00	39105.0000	2.115	10.0	134721.000	1.931
2,4-Dinitrophenol	50.0	93541.0000	0.1142	NA	NA	NA	NA	NA	NA
4-Nitrophenol	50.0	210873.000	0.2574	NA	NA	NA	10.0	30924.0000	0.2263
Hexachlorocyclopentadiene	50.0	156761.000	0.1913	3.00	1977.00000	0.05600	10.0	15753.0000	0.1153
n-Nitrosodipropylamine	50.0	368528.000	0.9064	3.00	21147.0000	1.144	10.0	72700.0000	1.042
1,2,4-Trichlorobenzene	50.0	514553.000	0.3344	3.00	28276.0000	0.4122	10.0	94553.0000	0.3613
1,2-Dichlorobenzene	50.0	559610.000	1.376	3.00	31881.0000	1.725	10.0	107141.000	1.536
1,3-Dichlorobenzene	50.0	626977.000	1.542	3.00	34696.0000	1.877	10.0	116021.000	1.663
2,4,5-Trichlorophenol	50.0	305220.000	0.3726	3.00	14600.0000	0.4134	10.0	53513.0000	0.3915
2,4-Dimethylphenol	50.0	561966.000	0.3652	3.00	28776.0000	0.4194	10.0	100468.000	0.3839
2,4-Dinitrotoluene	50.0	344473.000	0.4205	3.00	16862.0000	0.4774	10.0	61050.0000	0.4467
2,6-Dinitrotoluene	50.0	273334.000	0.3336	3.00	13838.0000	0.3918	10.0	48444.0000	0.3545
2-Chloronaphthalene	50.0	1095479.00	1.337	3.00	62361.0000	1.766	10.0	205049.000	1.500
2-Chlorophenol	50.0	583660.000	1.436	3.00	29741.0000	1.609	10.0	103685.000	1.486
2-Methylnaphthalene	50.0	1045252.00	0.6793	3.00	57360.0000	0.8361	10.0	198609.000	0.7589
2-Methylphenol	50.0	425558.000	1.047	3.00	23061.0000	1.248	10.0	79222.0000	1.136
2-Nitroaniline	50.0	324297.000	0.3958	3.00	15787.0000	0.4470	10.0	54613.0000	0.3996
3,3'-Dichlorobenzidine	50.0	528925.000	0.3905	3.00	27450.0000	0.4717	10.0	89232.0000	0.3875
3-Nitroaniline	50.0	301445.000	0.3680	3.00	13873.0000	0.3928	10.0	44205.0000	0.3234
4,6-Dinitro-2-Methylphenol	50.0	163183.000	0.1140	NA	NA	NA	NA	NA	NA
4-Bromophenyl Phenyl Ether	50.0	324160.000	0.2264	3.00	17216.0000	0.2770	10.0	59220.0000	0.2444
4-Chloroaniline	50.0	697953.000	0.4536	3.00	33811.0000	0.4928	10.0	114384.000	0.4370
4-Chlorophenyl Phenyl Ether	50.0	549741.000	0.6710	3.00	30927.0000	0.8757	10.0	104712.000	0.7662
4-Nitroaniline	50.0	293782.000	0.3586	NA	NA	NA	10.0	50564.0000	0.3700
Acenaphthylene	50.0	1537324.00	1.877	3.00	90207.0000	2.554	10.0	303220.000	2.219
Anthracene	50.0	1763050.00	1.231	3.00	101208.000	1.629	10.0	343838.000	1.419
Benzo[a]anthracene	50.0	1664442.00	1.229	3.00	88186.0000	1.515	10.0	300857.000	1.307
Benzo[b]fluoranthene	50.0	1681192.00	1.268	3.00	77798.0000	1.400	10.0	294241.000	1.329
Benzo[ghi]perylene	50.0	1447020.00	1.091	3.00	66302.0000	1.193	10.0	241654.000	1.092
Benzo[k]fluoranthene	50.0	1486685.00	1.121	3.00	77798.0000	1.400	10.0	267715.000	1.209
Benzoic Acid	50.0	92682.0000	0.06020	NA	NA	NA	10.0	3630.00000	0.01390

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Login Number: L09080400 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-05			WG301596-06			WG301596-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	15.0	144534.000	1.741	25.0	237644.000	1.609	80.0	711919.000	1.545
2,4,6-Trichlorophenol	15.0	66588.0000	0.4069	25.0	115596.000	0.4003	80.0	353039.000	0.3743
2,4-Dichlorophenol	15.0	94389.0000	0.3053	25.0	156211.000	0.2833	80.0	486532.000	0.2717
2-Nitrophenol	15.0	72272.0000	0.2337	25.0	114269.000	0.2073	80.0	354537.000	0.1980
4-Chloro-3-Methylphenol	15.0	101897.000	0.3295	25.0	173445.000	0.3146	80.0	530596.000	0.2963
Acenaphthene	15.0	234307.000	1.432	25.0	386056.000	1.337	80.0	1106929.00	1.174
Benzo[a]pyrene	15.0	346706.000	1.330	25.0	586561.000	1.255	80.0	1822627.00	1.193
Di-n-Octyl Phthalate	15.0	426424.000	1.635	25.0	727176.000	1.556	80.0	2146857.00	1.405
Fluoranthene	15.0	409664.000	1.437	25.0	682714.000	1.341	80.0	1979179.00	1.203
Hexachlorobutadiene	15.0	57812.0000	0.1870	25.0	96024.0000	0.1742	80.0	294696.000	0.1645
Pentachlorophenol	15.0	16339.0000	0.05730	25.0	38217.0000	0.07510	80.0	163393.000	0.09930
Phenol	15.0	162695.000	1.960	25.0	273128.000	1.849	80.0	823141.000	1.786
2,4-Dinitrophenol	15.0	6949.00000	0.04250	25.0	20746.0000	0.07180	80.0	118971.000	0.1261
4-Nitrophenol	15.0	39960.0000	0.2442	25.0	62562.0000	0.2166	80.0	239932.000	0.2544
Hexachlorocyclopentadiene	15.0	21853.0000	0.1335	25.0	47263.0000	0.1637	80.0	178067.000	0.1888
n-Nitrosodipropylamine	15.0	87721.0000	1.057	25.0	146206.000	0.9897	80.0	408000.000	0.8853
1,2,4-Trichlorobenzene	15.0	114998.000	0.3719	25.0	193410.000	0.3508	80.0	576988.000	0.3222
1,2-Dichlorobenzene	15.0	130694.000	1.574	25.0	217135.000	1.470	80.0	626862.000	1.360
1,3-Dichlorobenzene	15.0	141006.000	1.698	25.0	239379.000	1.621	80.0	715243.000	1.552
2,4,5-Trichlorophenol	15.0	67767.0000	0.4141	25.0	112311.000	0.3889	80.0	348465.000	0.3694
2,4-Dimethylphenol	15.0	122455.000	0.3960	25.0	214184.000	0.3885	80.0	627068.000	0.3501
2,4-Dinitrotoluene	15.0	74506.0000	0.4553	25.0	127252.000	0.4406	80.0	384871.000	0.4080
2,6-Dinitrotoluene	15.0	59385.0000	0.3629	25.0	99124.0000	0.3432	80.0	307769.000	0.3263
2-Chloronaphthalene	15.0	250888.000	1.533	25.0	417558.000	1.446	80.0	1204350.00	1.277
2-Chlorophenol	15.0	128883.000	1.552	25.0	215414.000	1.458	80.0	653951.000	1.419
2-Methylnaphthalene	15.0	241745.000	0.7818	25.0	400252.000	0.7260	80.0	1170990.00	0.6538
2-Methylphenol	15.0	96870.0000	1.167	25.0	159105.000	1.077	80.0	470862.000	1.022
2-Nitroaniline	15.0	69269.0000	0.4233	25.0	116349.000	0.4029	80.0	365631.000	0.3876
3,3'-Dichlorobenzidine	15.0	105754.000	0.3888	25.0	181375.000	0.3758	80.0	594993.000	0.3791
3-Nitroaniline	15.0	50536.0000	0.3088	25.0	88348.0000	0.3059	80.0	340858.000	0.3614
4,6-Dinitro-2-Methylphenol	15.0	24429.0000	0.08570	25.0	51039.0000	0.1002	80.0	197808.000	0.1202
4-Bromophenyl Phenyl Ether	15.0	74503.0000	0.2614	25.0	124659.000	0.2449	80.0	361970.000	0.2199
4-Chloroaniline	15.0	138230.000	0.4470	25.0	237603.000	0.4310	80.0	765028.000	0.4272
4-Chlorophenyl Phenyl Ether	15.0	130652.000	0.7984	25.0	213998.000	0.7410	80.0	619698.000	0.6570
4-Nitroaniline	15.0	62367.0000	0.3811	25.0	107512.000	0.3723	80.0	324667.000	0.3442
Acenaphthylene	15.0	372577.000	2.277	25.0	610595.000	2.114	80.0	1686168.00	1.788
Anthracene	15.0	418664.000	1.469	25.0	698594.000	1.372	80.0	1981646.00	1.204
Benzo[a]anthracene	15.0	370215.000	1.361	25.0	624746.000	1.295	80.0	1865789.00	1.189
Benzo[b]fluoranthene	15.0	371439.000	1.425	25.0	616382.000	1.319	80.0	2022286.00	1.324
Benzo[ghi]perylene	15.0	295446.000	1.133	25.0	510088.000	1.091	80.0	1619968.00	1.060
Benzo[k]fluoranthene	15.0	345583.000	1.325	25.0	553704.000	1.185	80.0	1680956.00	1.100
Benzoic Acid	15.0	5039.00000	0.01630	25.0	13573.0000	0.02460	80.0	117811.000	0.06580

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Login Number: L09080400 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-08			WG301596-09		
	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	100	1080973.00	1.619	120	1222100.00	1.611
2,4,6-Trichlorophenol	100	548565.000	0.3952	120	621778.000	0.3869
2,4-Dichlorophenol	100	756300.000	0.2876	120	865776.000	0.2867
2-Nitrophenol	100	543051.000	0.2065	120	613704.000	0.2032
4-Chloro-3-Methylphenol	100	808149.000	0.3073	120	906618.000	0.3002
Acenaphthene	100	1595648.00	1.149	120	1776666.00	1.106
Benzo[a]pyrene	100	2799052.00	1.224	120	3214081.00	1.212
Di-n-Octyl Phthalate	100	3117731.00	1.363	120	3500570.00	1.320
Fluoranthene	100	2875266.00	1.200	120	3214386.00	1.183
Hexachlorobutadiene	100	448751.000	0.1706	120	499524.000	0.1654
Pentachlorophenol	100	270852.000	0.1130	120	314422.000	0.1157
Phenol	100	1248012.00	1.869	120	1406398.00	1.853
2,4-Dinitrophenol	100	204820.000	0.1475	120	235949.000	0.1468
4-Nitrophenol	100	394064.000	0.2839	120	464310.000	0.2889
Hexachlorocyclopentadiene	100	244738.000	0.1763	120	276085.000	0.1718
n-Nitrosodipropylamine	100	572322.000	0.8573	120	634050.000	0.8356
1,2,4-Trichlorobenzene	100	846718.000	0.3219	120	947865.000	0.3139
1,2-Dichlorobenzene	100	947340.000	1.419	120	1071394.00	1.412
1,3-Dichlorobenzene	100	1070566.00	1.604	120	1207348.00	1.591
2,4,5-Trichlorophenol	100	528020.000	0.3804	120	588172.000	0.3660
2,4-Dimethylphenol	100	944747.000	0.3592	120	1059617.00	0.3509
2,4-Dinitrotoluene	100	568274.000	0.4093	120	631997.000	0.3933
2,6-Dinitrotoluene	100	467404.000	0.3367	120	526878.000	0.3279
2-Chloronaphthalene	100	1758946.00	1.267	120	1972845.00	1.228
2-Chlorophenol	100	1002747.00	1.502	120	1147344.00	1.512
2-Methylnaphthalene	100	1702031.00	0.6472	120	1908361.00	0.6319
2-Methylphenol	100	717610.000	1.075	120	825753.000	1.088
2-Nitroaniline	100	559076.000	0.4027	120	640602.000	0.3986
3,3'-Dichlorobenzidine	100	939925.000	0.4050	120	1076366.00	0.4018
3-Nitroaniline	100	537937.000	0.3875	120	615165.000	0.3828
4,6-Dinitro-2-Methylphenol	100	313637.000	0.1309	120	350573.000	0.1290
4-Bromophenyl Phenyl Ether	100	544939.000	0.2274	120	624504.000	0.2297
4-Chloroaniline	100	1142326.00	0.4343	120	1302928.00	0.4314
4-Chlorophenyl Phenyl Ether	100	897975.000	0.6468	120	1000062.00	0.6223
4-Nitroaniline	100	506955.000	0.3652	120	575714.000	0.3583
Acenaphthylene	100	2390972.00	1.722	120	2633395.00	1.639
Anthracene	100	2780400.00	1.160	120	3083025.00	1.134
Benzo[a]anthracene	100	2824273.00	1.217	120	3194654.00	1.192
Benzo[b]fluoranthene	100	3022785.00	1.322	120	3383903.00	1.276
Benzo[ghi]perylene	100	2540286.00	1.111	120	2918841.00	1.101
Benzo[k]fluoranthene	100	2406050.00	1.052	120	3384114.00	1.276
Benzoic Acid	100	256609.000	0.09760	120	312091.000	0.1033

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Login Number: L09080400
Analytical Method: 8270C
Instrument ID: HPMS4
Initial Calibration Date: 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-02			WG301596-03			WG301596-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	50.0	400734.000	0.9857	3.00	18757.0000	1.015	10.0	67945.0000	0.9740
Butyl Benzyl Phthalate	50.0	831238.000	0.6137	3.00	43793.0000	0.7525	10.0	155272.000	0.6743
Chrysene	50.0	1544722.00	1.141	3.00	83463.0000	1.434	10.0	276993.000	1.203
Di-n-Butyl Phthalate	50.0	1892486.00	1.322	3.00	105966.000	1.705	10.0	364980.000	1.506
Dibenz[ah]anthracene	50.0	1433825.00	1.081	3.00	65390.0000	1.177	10.0	235992.000	1.066
Dibenzofuran	50.0	1289853.00	1.574	3.00	76662.0000	2.171	10.0	255969.000	1.873
Diethylphthalate	50.0	1086320.00	1.326	3.00	60278.0000	1.707	10.0	206640.000	1.512
Dimethylphthalate	50.0	1075206.00	1.312	3.00	59711.0000	1.691	10.0	201560.000	1.475
Fluorene	50.0	1104761.00	1.349	3.00	65523.0000	1.855	10.0	215943.000	1.580
Hexachlorobenzene	50.0	326614.000	0.2281	3.00	17692.0000	0.2847	10.0	59421.0000	0.2452
Hexachloroethane	50.0	233834.000	0.5751	3.00	11930.0000	0.6454	10.0	40961.0000	0.5872
Indeno[1,2,3-cd]pyrene	50.0	1688044.00	1.273	3.00	77825.0000	1.400	10.0	283981.000	1.283
Isophorone	50.0	1164295.00	0.7567	3.00	63250.0000	0.9219	10.0	214901.000	0.8211
Naphthalene	50.0	1673752.00	1.088	3.00	98939.0000	1.442	10.0	328255.000	1.254
Nitrobenzene	50.0	607149.000	0.3946	3.00	32636.0000	0.4757	10.0	108922.000	0.4162
Phenanthrene	50.0	1753306.00	1.224	3.00	101242.000	1.629	10.0	336041.000	1.387
Pyrene	50.0	1855478.00	1.370	3.00	101716.000	1.748	10.0	352726.000	1.532
bis(2-Chloroethoxy)methane	50.0	828680.000	0.5386	3.00	49425.0000	0.7204	10.0	165103.000	0.6308
bis(2-Chloroethyl)ether	50.0	443906.000	1.092	3.00	23296.0000	1.260	10.0	82099.0000	1.177
bis(2-Chloroisopropyl)ether	50.0	808870.000	1.990	3.00	46034.0000	2.490	10.0	153938.000	2.207
bis(2-Ethylhexyl)phthalate	50.0	1151114.00	0.8499	3.00	60586.0000	1.041	10.0	212394.000	0.9223

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Login Number: L09080400 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-05			WG301596-06			WG301596-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	15.0	84544.0000	1.018	25.0	143076.000	0.9685	80.0	453610.000	0.9843
Butyl Benzyl Phthalate	15.0	191123.000	0.7027	25.0	319517.000	0.6621	80.0	928369.000	0.5915
Chrysene	15.0	345878.000	1.272	25.0	577202.000	1.196	80.0	1742997.00	1.111
Di-n-Butyl Phthalate	15.0	446312.000	1.566	25.0	747010.000	1.467	80.0	2093109.00	1.272
Dibenz[ah]anthracene	15.0	295505.000	1.133	25.0	509105.000	1.089	80.0	1601066.00	1.048
Dibenzofuran	15.0	311555.000	1.904	25.0	513551.000	1.778	80.0	1429816.00	1.516
Diethylphthalate	15.0	249909.000	1.527	25.0	412959.000	1.430	80.0	1209780.00	1.283
Dimethylphthalate	15.0	245373.000	1.500	25.0	410852.000	1.423	80.0	1194445.00	1.266
Fluorene	15.0	266429.000	1.628	25.0	436765.000	1.512	80.0	1222616.00	1.296
Hexachlorobenzene	15.0	72616.0000	0.2547	25.0	121940.000	0.2395	80.0	368348.000	0.2238
Hexachloroethane	15.0	50625.0000	0.6097	25.0	85134.0000	0.5763	80.0	261745.000	0.5680
Indeno[1,2,3-cd]pyrene	15.0	350452.000	1.344	25.0	601207.000	1.286	80.0	1889098.00	1.236
Isophorone	15.0	266604.000	0.8622	25.0	440532.000	0.7990	80.0	1291564.00	0.7212
Naphthalene	15.0	394945.000	1.277	25.0	659049.000	1.195	80.0	1863610.00	1.041
Nitrobenzene	15.0	134519.000	0.4350	25.0	226437.000	0.4107	80.0	682116.000	0.3809
Phenanthrene	15.0	414744.000	1.455	25.0	684799.000	1.345	80.0	1943923.00	1.181
Pyrene	15.0	433945.000	1.596	25.0	721641.000	1.495	80.0	2071272.00	1.320
bis(2-Chloroethoxy)methane	15.0	201460.000	0.6515	25.0	329414.000	0.5975	80.0	924290.000	0.5161
bis(2-Chloroethyl)ether	15.0	98800.0000	1.190	25.0	167652.000	1.135	80.0	493935.000	1.072
bis(2-Chloroisopropyl)ether	15.0	188495.000	2.270	25.0	314933.000	2.132	80.0	923402.000	2.004
bis(2-Ethylhexyl)phthalate	15.0	262965.000	0.9669	25.0	437670.000	0.9069	80.0	1290967.00	0.8225

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Login Number: L09080400 **Instrument ID:** HPMS4
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 18:05
Column ID: F

Analyte	WG301596-08			WG301596-09		
	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	100	697693.000	1.045	120	792431.000	1.044
Butyl Benzyl Phthalate	100	1353477.00	0.5832	120	1509786.00	0.5635
Chrysene	100	2613581.00	1.126	120	2926413.00	1.092
Di-n-Butyl Phthalate	100	2968117.00	1.239	120	3274729.00	1.205
Dibenz[ah]anthracene	100	2525722.00	1.104	120	2916227.00	1.100
Dibenzofuran	100	2012770.00	1.450	120	2206282.00	1.373
Diethylphthalate	100	1742710.00	1.255	120	1942614.00	1.209
Dimethylphthalate	100	1759330.00	1.267	120	1987513.00	1.237
Fluorene	100	1779390.00	1.282	120	1973838.00	1.228
Hexachlorobenzene	100	554904.000	0.2316	120	631356.000	0.2323
Hexachloroethane	100	402762.000	0.6033	120	454576.000	0.5990
Indeno[1,2,3-cd]pyrene	100	2971637.00	1.299	120	3420588.00	1.290
Isophorone	100	1906397.00	0.7249	120	2141103.00	0.7090
Naphthalene	100	2619032.00	0.9958	120	2944002.00	0.9748
Nitrobenzene	100	1022694.00	0.3889	120	1156670.00	0.3830
Phenanthrene	100	2770515.00	1.156	120	3074214.00	1.131
Pyrene	100	3042850.00	1.311	120	3413455.00	1.274
bis(2-Chloroethoxy)methane	100	1298134.00	0.4936	120	1403261.00	0.4647
bis(2-Chloroethyl)ether	100	735828.000	1.102	120	824820.000	1.087
bis(2-Chloroisopropyl)ether	100	1367288.00	2.048	120	1532312.00	2.019
bis(2-Ethylhexyl)phthalate	100	1903060.00	0.8200	120	2133024.00	0.7962

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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108423

Login Number: L09080400 Run Date: 05/26/2009 Sample ID: WG301596-10
Instrument ID: HPMS4 Run Time: 18:41 Method: 8270C
File ID: 4M46939 Analyst: MDC QC Key: STD
ICal Workgroup: WG301596 Cal ID: HPMS4 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Phenol	CCC	50000	50900	ug/L	1.93	1.70	30	
1,4-Dichlorobenzene	CCC	50000	47900	ug/L	1.59	4.20	30	
2-Nitrophenol	CCC	50000	53400	ug/L	0.224	6.70	30	
2,4-Dichlorophenol	CCC	50000	50900	ug/L	0.296	1.70	30	
Hexachlorobutadiene	CCC	50000	53800	ug/L	0.190	7.70	30	
4-Chloro-3-Methylphenol	CCC	50000	51500	ug/L	0.325	3.00	30	
2,4,6-Trichlorophenol	CCC	50000	50200	ug/L	0.399	0.400	30	
Acenaphthene	CCC	50000	46400	ug/L	1.21	7.20	30	
n-Nitrosodiphenylamine	CCC	50000	45900	ug/L	0.663	8.30	30	
Pentachlorophenol	CCC	50000	67300	ug/L	0.142	34.6	40	
Fluoranthene	CCC	50000	50200	ug/L	1.32	0.300	30	
Di-n-Octyl Phthalate	CCC	50000	46500	ug/L	1.41	7.10	30	
Benzo[a]pyrene	CCC	50000	50000	ug/L	1.27	0.100	30	
n-Nitrosodipropylamine	SPCC	50000	53500	ug/L	1.03	7.10	30	
Hexachlorocyclopentadiene	SPCC	50000	64000	ug/L	0.225	28.0	40	
2,4-Dinitrophenol	SPCC	50000	59400	ug/L	0.150	18.9	40	
4-Nitrophenol	SPCC	50000	50800	ug/L	0.257	1.50	40	
bis(2-Chloroethyl)ether		50000	49400	ug/L	1.13	1.10	30	
2-Chlorophenol		50000	49800	ug/L	1.49	0.400	30	
1,3-Dichlorobenzene		50000	49400	ug/L	1.62	1.30	30	
Benzyl Alcohol		50000	53200	ug/L	1.07	6.30	30	
1,2-Dichlorobenzene		50000	48600	ug/L	1.44	2.80	30	
2-Methylphenol		50000	48100	ug/L	1.07	3.80	30	
3-,4-Methylphenol		50000	49700	ug/L	1.47	0.600	30	
bis(2-Chloroisopropyl)ether		50000	47400	ug/L	2.04	5.10	30	
Hexachloroethane		50000	49400	ug/L	0.589	1.10	30	
Nitrobenzene		50000	50900	ug/L	0.418	1.70	30	
Isophorone		50000	48000	ug/L	0.758	4.00	30	
2,4-Dimethylphenol		50000	49300	ug/L	0.372	1.30	30	
bis(2-Chloroethoxy)methane		50000	43800	ug/L	0.455	12.5	30	
1,2,4-Trichlorobenzene		50000	49700	ug/L	0.347	0.600	30	
Naphthalene		50000	47600	ug/L	1.10	4.90	30	
4-Chloroaniline		50000	52500	ug/L	0.467	5.00	40	
2-Methylnaphthalene		50000	52000	ug/L	0.743	4.00	30	
2,4,5-Trichlorophenol		50000	55500	ug/L	0.430	11.0	30	
2-Chloronaphthalene		50000	41600	ug/L	1.18	16.7	30	
2-Nitroaniline		50000	54700	ug/L	0.445	9.30	40	
Dimethylphthalate		50000	45400	ug/L	1.27	9.10	30	
Acenaphthylene		50000	52100	ug/L	1.86	4.10	30	
2,6-Dinitrotoluene		50000	50400	ug/L	0.350	0.800	30	
3-Nitroaniline		50000	48000	ug/L	0.339	4.10	40	
Dibenzofuran		50000	52500	ug/L	1.58	5.00	30	

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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108424

Login Number: L09080400 Run Date: 05/26/2009 Sample ID: WG301596-10
Instrument ID: HPMS4 Run Time: 18:41 Method: 8270C
File ID: 4M46939 Analyst: MDC QC Key: STD
ICal Workgroup: WG301596 Cal ID: HPMS4 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
2,4-Dinitrotoluene		50000	50300	ug/L	0.434	0.500	30	
Diethylphthalate		50000	44100	ug/L	1.24	11.8	30	
4-Chlorophenyl Phenyl Ether		50000	45100	ug/L	0.651	9.80	30	
Fluorene		50000	48400	ug/L	1.42	3.20	30	
4-Nitroaniline		50000	40700	ug/L	0.297	18.6	40	
4,6-Dinitro-2-Methylphenol		50000	56100	ug/L	0.135	12.3	30	
4-Bromophenyl Phenyl Ether		50000	42400	ug/L	0.205	15.2	30	
Hexachlorobenzene		50000	51300	ug/L	0.249	2.60	30	
Phenanthrene		50000	47200	ug/L	1.24	5.60	30	
Anthracene		50000	48000	ug/L	1.27	3.90	30	
Di-n-Butyl Phthalate		50000	43500	ug/L	1.23	12.9	30	
Pyrene		50000	47900	ug/L	1.40	4.10	30	
Butyl Benzyl Phthalate		50000	50500	ug/L	0.649	1.00	30	
Benzo[a]anthracene		50000	49500	ug/L	1.27	1.10	30	
Chrysene		50000	49900	ug/L	1.20	0.100	30	
bis(2-Ethylhexyl)phthalate		50000	47000	ug/L	0.838	5.90	30	
Benzo[b]fluoranthene		50000	48600	ug/L	1.29	2.90	30	
Benzo[k]fluoranthene		50000	47900	ug/L	1.16	4.20	30	
Indeno[1,2,3-cd]pyrene		50000	49800	ug/L	1.30	0.500	30	
Dibenz[ah]anthracene		50000	51000	ug/L	1.12	2.00	30	
Benzo[ghi]perylene		50000	51800	ug/L	1.15	3.60	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108425

Login Number: L09080400 Run Date: 05/26/2009 Sample ID: WG301596-11
Instrument ID: HPMS4 Run Time: 19:16 Method: 8270C
File ID: 4M46940 Analyst: MDC QC Key: STD
ICal Workgroup: WG301596 Cal ID: HPMS4 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Benzoic Acid		50000	90900	ug/L	0.152	81.9	30	*
3,3'-Dichlorobenzidine		50000	53600	ug/L	0.429	7.20	40	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1469735
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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108426

Login Number: L09080400 Run Date: 08/19/2009 Sample ID: WG310023-02
Instrument ID: HPMS4 Run Time: 09:38 Method: 8270C
File ID: 4M47819 Analyst: CAA QC Key: STD
Workgroup (AAB#): WG310097 Cal ID: HPMS4 - 26-MAY-09
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Phenol	CCC	50000	47300	ug/L	1.79	5.46	20	
1,4-Dichlorobenzene	CCC	50000	48900	ug/L	1.62	2.27	20	
2-Nitrophenol	CCC	50000	50700	ug/L	0.213	1.35	20	
2,4-Dichlorophenol	CCC	50000	48900	ug/L	0.285	2.18	20	
Hexachlorobutadiene	CCC	50000	58500	ug/L	0.207	17.0	20	
4-Chloro-3-Methylphenol	CCC	50000	55100	ug/L	0.347	10.2	20	
2,4,6-Trichlorophenol	CCC	50000	50000	ug/L	0.398	0.00960	20	
Acenaphthene	CCC	50000	50000	ug/L	1.30	0.0530	20	
n-Nitrosodiphenylamine	CCC	50000	47000	ug/L	0.679	6.06	20	
Pentachlorophenol	CCC	50000	49900	ug/L	0.0993	0.117	20	
Fluoranthene	CCC	50000	47900	ug/L	1.26	4.27	20	
Di-n-Octyl Phthalate	CCC	50000	56000	ug/L	1.69	11.9	20	
Benzo[a]pyrene	CCC	50000	47600	ug/L	1.21	4.76	20	
n-Nitrosodipropylamine	SPCC	50000	55500	ug/L	1.07	10.9	40	
Hexachlorocyclopentadiene	SPCC	50000	37300	ug/L	0.129	25.3	40	
2,4-Dinitrophenol	SPCC	50000	47600	ug/L	0.111	4.83	40	
4-Nitrophenol	SPCC	50000	58700	ug/L	0.297	17.3	40	
bis(2-Chloroethyl)ether		50000	47700	ug/L	1.09	4.61	40	
2-Chlorophenol		50000	49100	ug/L	1.47	1.84	40	
1,3-Dichlorobenzene		50000	48900	ug/L	1.61	2.19	40	
Benzyl Alcohol		50000	47700	ug/L	0.959	4.52	40	
1,2-Dichlorobenzene		50000	47500	ug/L	1.41	4.97	40	
2-Methylphenol		50000	48300	ug/L	1.07	3.44	40	
3-,4-Methylphenol		50000	47300	ug/L	1.40	5.40	40	
bis(2-Chloroisopropyl)ether		50000	44500	ug/L	1.91	11.1	40	
Hexachloroethane		50000	57100	ug/L	0.680	14.2	40	
Nitrobenzene		50000	54200	ug/L	0.445	8.45	40	
Isophorone		50000	51200	ug/L	0.809	2.41	40	
2,4-Dimethylphenol		50000	46800	ug/L	0.353	6.37	40	
Benzoic Acid		50000	41700	ug/L	0.0380	16.6	40	
bis(2-Chloroethoxy)methane		50000	58100	ug/L	0.588	16.2	40	
1,2,4-Trichlorobenzene		50000	50000	ug/L	0.349	0.0986	40	
Naphthalene		50000	48300	ug/L	1.12	3.31	40	
4-Chloroaniline		50000	49300	ug/L	0.438	1.42	40	
2-Methylnaphthalene		50000	48900	ug/L	0.699	2.13	40	
2,4,5-Trichlorophenol		50000	52100	ug/L	0.404	4.29	40	
2-Chloronaphthalene		50000	47200	ug/L	1.34	5.55	40	
2-Nitroaniline		50000	55200	ug/L	0.450	10.5	40	
Dimethylphthalate		50000	50700	ug/L	1.42	1.38	40	
Acenaphthylene		50000	54800	ug/L	1.95	9.61	40	
2,6-Dinitrotoluene		50000	51700	ug/L	0.359	3.44	40	
3-Nitroaniline		50000	53900	ug/L	0.382	7.86	40	

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CONTINUING CALIBRATION VERIFICATION (CCV)

00108427

Login Number: L09080400 Run Date: 08/19/2009 Sample ID: WG310023-02
Instrument ID: HPMS4 Run Time: 09:38 Method: 8270C
File ID: 4M47819 Analyst: CAA QC Key: STD
Workgroup (AAB#): WG310097 Cal ID: HPMS4 - 26-MAY-09
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Dibenzofuran		50000	56000	ug/L	1.67	11.9	40	
2,4-Dinitrotoluene		50000	53300	ug/L	0.460	6.52	40	
Diethylphthalate		50000	54800	ug/L	1.54	9.62	40	
4-Chlorophenyl Phenyl Ether		50000	51600	ug/L	0.745	3.13	40	
Fluorene		50000	49600	ug/L	1.46	0.712	40	
4-Nitroaniline		50000	53100	ug/L	0.387	6.24	40	
4,6-Dinitro-2-Methylphenol		50000	47900	ug/L	0.112	4.19	40	
4-Bromophenyl Phenyl Ether		50000	50300	ug/L	0.243	0.651	40	
Hexachlorobenzene		50000	50000	ug/L	0.243	0.0268	40	
Phenanthrene		50000	47500	ug/L	1.25	5.05	40	
Anthracene		50000	47600	ug/L	1.26	4.76	40	
Di-n-Butyl Phthalate		50000	50900	ug/L	1.44	1.85	40	
Pyrene		50000	42700	ug/L	1.24	14.5	40	
Butyl Benzyl Phthalate		50000	49700	ug/L	0.639	0.604	40	
3,3'-Dichlorobenzidine		50000	46400	ug/L	0.371	7.21	40	
Benzo[a]anthracene		50000	41900	ug/L	1.08	16.3	40	
Chrysene		50000	43000	ug/L	1.03	14.1	40	
bis(2-Ethylhexyl)phthalate		50000	48100	ug/L	0.858	3.71	40	
Benzo[b]fluoranthene		50000	48600	ug/L	1.29	2.88	40	
Benzo[k]fluoranthene		50000	48200	ug/L	1.17	3.60	40	
Indeno[1,2,3-cd]pyrene		50000	46200	ug/L	1.20	7.51	40	
Dibenz[ah]anthracene		50000	46500	ug/L	1.02	7.06	40	
Benzo[ghi]perylene		50000	46100	ug/L	1.02	7.72	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1469737
Report generated 08/20/2009 10:17

Microbac

Microbac Laboratories Inc.
INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108428

Login Number: L09080400
Instrument ID: HPMS4
Workgroup (AAB#): WG310097

CCV Number: WG310023-02
CAL ID: HPMS4-26-MAY-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG310023-02	NA	NA	316680	668886	1312640	1191761	1117122	1246300
Upper Limit	NA	NA	633360	1337772	2625280	2383522	2234244	2492600
Lower Limit	NA	NA	158340	334443	656320	595881	558561	623150
L09080400-01	1.00	01	222562	411713	802476	822281	689331	742399
WG310045-01	1.00	01	220176	420102	779638	814935	652590	753163
WG310045-02	1.00	01	289026	613136	1203808	1107821	1049538	1100627
WG310045-03	1.00	01	292302	608686	1138287	1106946	988600	1073734

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1469738
Report generated 08/20/2009 10:17

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00108429

Login Number:L09080400 CCV Number:WG310023-02
Instrument ID:HPMS4 CAL ID: HPMS4-26-MAY-09
Workgroup (AAB#):WG310097 Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG310023-02	NA	NA	7.63	10.73	16.86	8.92	19.94	12.36
Upper Limit	NA	NA	8.13	11.23	17.36	9.42	20.44	12.86
Lower Limit	NA	NA	7.13	10.23	16.36	8.42	19.44	11.86
L09080400-01	1.00	01	7.63	10.73	16.85	8.92	19.93	12.36
WG310045-01	1.00	01	7.63	10.73	16.85	8.92	19.93	12.35
WG310045-02	1.00	01	7.63	10.73	16.86	8.92	19.94	12.36
WG310045-03	1.00	01	7.64	10.73	16.86	8.92	19.94	12.36

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1469739
Report generated 08/20/2009 10:17

2.3 Metals Data

2.3.1 Metals I C P Data

2.3.1.1 Summary Data

LABORATORY REPORT

L09080400

00108433

08/21/09 16:46

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CLAYPIPE-081809	L09080400-01	6010B	1	19-AUG-09

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108434

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310178**
Collect Date: **08/18/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3005A**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/20/2009 06:44**
Cal Date: **08/20/2009 09:40**
Run Date: **08/20/2009 10:57**
File ID: **P2.082009.105738**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Aluminum, Total	7429-90-5	15.2		0.100	0.0500
Beryllium, Total	7440-41-7	0.000528	J	0.00200	0.000500
Calcium, Total	7440-70-2	52.9		0.200	0.100
Cobalt, Total	7440-48-4	0.0186		0.00500	0.00250
Iron, Total	7439-89-6	13.3		0.100	0.0250
Magnesium, Total	7439-95-4	11.7		0.500	0.250
Potassium, Total	7440-09-7	6.74		1.00	0.250
Sodium, Total	7440-23-5	118		0.500	0.250
Vanadium, Total	7440-62-2	0.0216		0.0100	0.00500
Zinc, Total	7440-66-6	0.0405		0.0200	0.00500

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

2.3.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Example 6010 Calculations
Thermo Scientific iCAP 6500

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Microbac Laboratories Inc.
Metals Digest Log

00108439

Workgroup: WG310125
Analyst: REK
Spike Analyst: REK
Method: 3005A
Run Date: 08/20/2009 06:44
Hotblock Start Temp: 94.9 @ 05:35
Hotblock End Temp: 94.9 @ 09:35

SOP: ME401 Revison 13
Spike Solution: STD34341
Spike Witness: VC
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
HCL Lot #: COA14028

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG310125-02	BLANK	1	50 mL	50 mL		
2	WG310125-03	LCS	1	50 mL	50 mL	5 mL	
3	L09080329-09	SAMP	1	50 mL	50 mL		08/25/09
4	L09080350-02	SAMP	1	50 mL	50 mL		08/28/09
5	WG310125-01	REF	1	50 mL	50 mL		
6	L09080350-05	RS02	1	50 mL	50 mL		08/28/09
7	WG310125-04	MS	1	50 mL	50 mL	5 mL	
8	L09080350-08	MS02	1	50 mL	50 mL	5 mL	08/28/09
9	WG310125-05	MSD	1	50 mL	50 mL	5 mL	
10	L09080350-11	SD02	1	50 mL	50 mL	5 mL	08/28/09
11	L09080350-14	SAMP	1	50 mL	50 mL		08/28/09
12	L09080350-17	SAMP	1	50 mL	50 mL		08/28/09
13	L09080350-20	SAMP	1	50 mL	50 mL		08/28/09
14	L09080350-23	SAMP	1	50 mL	50 mL		08/28/09
15	L09080350-26	SAMP	1	50 mL	50 mL		08/28/09
16	L09080350-29	SAMP	1	50 mL	50 mL		08/28/09
17	L09080393-01	SAMP	1	50 mL	50 mL		08/28/09
18	L09080393-02	SAMP	1	50 mL	50 mL		08/28/09
19	L09080393-03	SAMP	1	50 mL	50 mL		08/28/09
20	L09080393-04	SAMP	1	50 mL	50 mL		08/28/09
21	L09080393-05	SAMP	1	50 mL	50 mL		08/28/09
22	L09080393-06	SAMP	1	50 mL	50 mL		08/28/09
23	L09080393-07	SAMP	1	50 mL	50 mL		08/28/09
24	L09080393-08	SAMP	1	50 mL	50 mL		08/28/09
25	L09080393-09	SAMP	1	50 mL	50 mL		08/28/09
26	L09080393-10	SAMP	1	50 mL	50 mL		08/28/09
27	L09080400-01	SAMP	1	50 mL	50 mL		08/20/09

Analyst: 

Reviewer: 

BLOCK_DIG - Modified 07/22/2008
PDF ID: 1469657
Report generated: 08/20/2009 09:46

Microbac

00108440

Microbac Laboratories Inc.

Instrument Run Log

Instrument: PE-ICP2 Dataset: 082009HR.CSV

Analyst1: PDM Analyst2: N/A

Method: 6010B SOP: ME600E Rev: 10

Maintenance Log ID: 29854

Calibration Std: STD34504 ICV/CCV Std: STD34772 Post Spike: STD34340

ICSA: STD34565 ICSAB: STD34508 Int. Std: STD34770

Workgroups: WG310178,WG310199

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.082009.091347	WG310193-01	Calibration Point		1		08/20/09 09:13
2	P2.082009.092021	WG310193-02	Calibration Point		1		08/20/09 09:20
3	P2.082009.092700	WG310193-03	Calibration Point		1		08/20/09 09:27
4	P2.082009.093341	WG310193-04	Calibration Point		1		08/20/09 09:33
5	P2.082009.094017	WG310193-05	Calibration Point		1		08/20/09 09:40
6	P2.082009.094611	WG310193-06	ICV 2nd Vendor		1		08/20/09 09:46
7	P2.082009.095707	WG310193-07	Initial Calibration Verification		1		08/20/09 09:57
8	P2.082009.100254	WG310193-08	ICB		1		08/20/09 10:02
9	P2.082009.100828	WG310193-09	Initial Calib Blank		1		08/20/09 10:08
10	P2.082009.101504	WG310193-10	Interference Check		1		08/20/09 10:15
11	P2.082009.102045	WG310193-11	Interference Check		1		08/20/09 10:20
12	P2.082009.102626	WG310193-12	CCV		1		08/20/09 10:26
13	P2.082009.103311	WG310193-13	CCB		1		08/20/09 10:33
14	P2.082009.103953	WG310125-02	Method/Prep Blank	50/50	1		08/20/09 10:39
15	P2.082009.105045	WG310125-03	Laboratory Control S	50/50	1		08/20/09 10:50
16	P2.082009.105738	L09080400-01	04CLAYPIPE-081809	50/50	1		08/20/09 10:57
17	P2.082009.110329	WG310178-01	Post Digestion Spike		1	L09080400-01	08/20/09 11:03
18	P2.082009.110916	WG310178-02	Serial Dilution		5	L09080400-01	08/20/09 11:09
19	P2.082009.111550	WG310125-01	Reference Sample		1	L09080350-05	08/20/09 11:15
20	P2.082009.112235	WG310125-04	Matrix Spike	50/50	1	L09080350-05	08/20/09 11:22
21	P2.082009.112915	WG310125-05	Matrix Spike Duplica	50/50	1	L09080350-05	08/20/09 11:29
22	P2.082009.113551	WG310193-14	CCV		1		08/20/09 11:35
23	P2.082009.114242	WG310193-15	CCB		1		08/20/09 11:42
24	P2.082009.114925	L09080329-09	IDW-WW-130809	50/50	1		08/20/09 11:49
25	P2.082009.115506	L09080350-02	MW2A-240-14	50/50	1		08/20/09 11:55
26	P2.082009.120149	L09080350-14	MW4A-240-14	50/50	1		08/20/09 12:01
27	P2.082009.120831	L09080350-17	MW4A2-240-14	50/50	1		08/20/09 12:08
28	P2.082009.121506	L09080350-20	MW5A-240-14	50/50	1		08/20/09 12:15
29	P2.082009.122154	L09080350-23	OW1A-240-14	50/50	1		08/20/09 12:21
30	P2.082009.122836	L09080350-26	OW2A-240-14	50/50	1		08/20/09 12:28
31	P2.082009.123513	L09080350-29	OW3A-240-14	50/50	1		08/20/09 12:35
32	P2.082009.124157	L09080393-01	GM-1	50/50	1		08/20/09 12:41
33	P2.082009.124843	L09080393-02	GM-1	50/50	1		08/20/09 12:48
34	P2.082009.125530	WG310193-16	CCV		1		08/20/09 12:55
35	P2.082009.130113	WG310193-17	CCB		1		08/20/09 13:01
36	P2.082009.130757	L09080393-03	GM-2	50/50	1		08/20/09 13:07
37	P2.082009.131338	L09080393-04	GM-2	50/50	1		08/20/09 13:13

Page: 1 Approved: August 21, 2009

Sheri L. Babgard

Microbac

Microbac Laboratories Inc.

Instrument Run Log

00108441

Instrument: PE-ICP2 Dataset: 082009HR.CSV

Analyst1: PDM Analyst2: N/A

Method: 6010B SOP: ME600E Rev: 10

Maintenance Log ID: 29854

Calibration Std: STD34504 ICV/CCV Std: STD34772 Post Spike: STD34340

ICSA: STD34565 ICSAB: STD34508 Int. Std: STD34770

Workgroups: WG310178,WG310199

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.082009.131927	L09080393-05	GM-4	50/50	1		08/20/09 13:19
39	P2.082009.132606	L09080393-06	GM-4	50/50	1		08/20/09 13:26
40	P2.082009.133243	L09080393-07	GM-7D	50/50	1		08/20/09 13:32
41	P2.082009.133828	L09080393-08	GM-7D	50/50	1		08/20/09 13:38
42	P2.082009.134413	L09080393-09	GM-8	50/50	1		08/20/09 13:44
43	P2.082009.135050	L09080393-10	GM-8	50/50	1		08/20/09 13:50
44	P2.082009.135739	WG310193-18	CCV		1		08/20/09 13:57
45	P2.082009.140422	WG310193-19	CCB		1		08/20/09 14:04
46	P2.082009.141153	WG310127-02	Method/Prep Blank	50/50	1		08/20/09 14:11
47	P2.082009.141830	WG310127-03	Laboratory Control S	50/50	1		08/20/09 14:18
48	P2.082009.142514	L09080417-01	OUTFALL 002/COMP	50/50	1		08/20/09 14:25
49	P2.082009.143202	WG310199-01	Post Digestion Spike		1	L09080417-01	08/20/09 14:32
50	P2.082009.143837	WG310199-02	Serial Dilution		5	L09080417-01	08/20/09 14:38
51	P2.082009.144525	WG310127-01	Reference Sample		1	L09080398-01	08/20/09 14:45
52	P2.082009.145118	WG310127-04	Matrix Spike	50/50	1	L09080398-01	08/20/09 14:51
53	P2.082009.145701	WG310127-05	Matrix Spike Duplica	50/50	1	L09080398-01	08/20/09 14:57
54	P2.082009.150251	WG310193-20	CCV		1		08/20/09 15:02
55	P2.082009.150833	WG310193-21	CCB		1		08/20/09 15:08
56	P2.082009.151612	L09080363-01	010	50/50	1		08/20/09 15:16
57	P2.082009.152301	L09080363-02	012	50/50	1		08/20/09 15:23
58	P2.082009.152949	L09080363-03	016	50/50	1		08/20/09 15:29
59	P2.082009.153627	L09080363-04	017	50/50	1		08/20/09 15:36
60	P2.082009.154318	L09080378-01	FC 101	50/50	1		08/20/09 15:43
61	P2.082009.155008	L09080378-02	FC 102	50/50	1		08/20/09 15:50
62	P2.082009.155646	L09080378-03	FC 103	50/50	1		08/20/09 15:56
63	P2.082009.160335	L09080378-04	FC 104	50/50	1		08/20/09 16:03
64	P2.082009.161015	L09080379-01	OUTFALL 110	50/50	1		08/20/09 16:10
65	P2.082009.161701	L09080396-01	LCL-Z-OUTLET 101	50/50	1		08/20/09 16:17
66	P2.082009.162346	WG310193-22	CCV		1		08/20/09 16:23
67	P2.082009.162930	WG310193-23	CCB		1		08/20/09 16:29
68	P2.082009.163608	L09080398-02	LCL-K-EQBLK-2	50/50	1		08/20/09 16:36
69	P2.082009.164254	L09080420-04	OUTFALL 003/COMP	50/50	1		08/20/09 16:42
70	P2.082009.164938	L09080420-06	OUTFALL 800/COMP	50/50	1		08/20/09 16:49
71	P2.082009.165616	WG310193-24	CCV		1		08/20/09 16:56
72	P2.082009.170205	WG310193-25	CCB		1		08/20/09 17:02

Page: 2 Approved: August 21, 2009

Sheri L. Babgard

Microbac

Microbac Laboratories Inc.

00108442

Data Checklist

Date: 20-AUG-2009
Analyst: PDM
Analyst: NA
Method: 6010B
Instrument: PE-ICP2
Curve Workgroup: 310193
Runlog ID: 29713
Analytical Workgroups: 310178,310199

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
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	0329,0350,0396,0398,0378
Client Forms	X
Level X	
Level 3	
Level 4	0329
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:
21-AUG-2009
Pierce Morris

Secondary Reviewer:
21-AUG-2009
Sheri L. Blodgett

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-21-2009 15:36:05

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108443

Analytical Method: 6010B AAB#: WG310178

Login Number: L09080400

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
04CLAYPIPE-081809	01	08/18/09					08/20/09	1.6	180		08/20/09	1.8	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1469961
Report generated 08/20/2009 11:58

00108444

METHOD BLANK SUMMARY

Login Number:	L09080400	Work Group:	WG310178
Blank File ID:	P2.082009.103953	Blank Sample ID:	WG310125-02
Prep Date:	08/20/09 06:44	Instrument ID:	PE-ICP2
Analyzed Date:	08/20/09 10:39	Method:	6010B
Analyst:	PDM		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG310125-03	P2.082009.105045	08/20/09 10:50	01
04CLAYPIPE-081809	L09080400-01	P2.082009.105738	08/20/09 10:57	01

Report Name: BLANK_SUMMARY
PDF File ID: 1469962
Report generated 08/20/2009 11:58

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108445

Login Number:L09080400 Prep Date:08/20/09 06:44 Sample ID:WG310125-02
Instrument ID:PE-ICP2 Run Date:08/20/09 10:39 Prep Method:3005A
File ID:P2.082009.103953 Analyst:PDM Method:6010B
Workgroup (AAB#):WG310178 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:PE-ICP-20-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Aluminum, Total	0.0500	0.100	0.0500	1	U
Beryllium, Total	0.000500	0.00200	0.000500	1	U
Calcium, Total	0.100	0.200	0.100	1	U
Cobalt, Total	0.00250	0.00500	0.00250	1	U
Iron, Total	0.0250	0.100	0.0250	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Potassium, Total	0.250	1.00	0.250	1	U
Sodium, Total	0.250	0.500	0.250	1	U
Vanadium, Total	0.00500	0.0100	0.00500	1	U
Zinc, Total	0.00500	0.0200	-0.00564	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1469963
20-AUG-2009 11:58

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108446

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310125-03
Instrument ID: PE-ICP2 Run Time: 10:50 Prep Method: 3005A
File ID: P2.082009.105045 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG310178 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD34341 Cal ID: PE-ICP-20-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	5.00	5.20	104	85 - 115	
Beryllium, Total	0.0250	0.0249	99.7	85 - 115	
Calcium, Total	5.00	5.15	103	85 - 115	
Cobalt, Total	0.100	0.104	104	85 - 115	
Iron, Total	2.00	2.15	107	85 - 115	
Magnesium, Total	5.00	5.29	106	85 - 115	
Potassium, Total	25.0	25.5	102	85 - 115	
Sodium, Total	25.0	25.8	103	85 - 115	
Vanadium, Total	0.500	0.519	104	85 - 115	
Zinc, Total	0.500	0.515	103	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1469964
Report generated: 08/20/2009 11:58

Loginnum:L09080400 Cal ID: PE-ICP2- Worknum:WG310178
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG310125-01 File ID:P2.082009.111550 Dil:1 Matrix:WATER
Sample ID:WG310125-04 MS File ID:P2.082009.112235 Dil:1 Units:mg/L
Sample ID:WG310125-05 MSD File ID:P2.082009.112915 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	0.131	5.00	5.27	103	5.00	5.32	104	0.759	80 - 120	20	
Beryllium, Total	ND	0.0250	0.0241	96.5	0.0250	0.0236	94.3	2.28	80 - 120	20	
Calcium, Total	0.706	5.00	5.78	102	5.00	5.73	101	0.837	80 - 120	20	
Cobalt, Total	ND	0.100	0.103	103	0.100	0.100	100	2.52	80 - 120	20	
Iron, Total	0.144	2.00	2.44	115	2.00	2.50	118	2.23	80 - 120	20	
Magnesium, Total	0.582	5.00	5.79	104	5.00	5.92	107	2.27	80 - 120	20	
Potassium, Total	0.408	25.0	25.2	99.2	25.0	25.4	100	0.788	80 - 120	20	
Sodium, Total	1.84	25.0	26.9	100	25.0	27.2	101	0.966	80 - 120	20	
Vanadium, Total	ND	0.500	0.504	101	0.500	0.498	99.6	1.21	80 - 120	20	
Zinc, Total	ND	0.500	0.513	103	0.500	0.499	99.7	2.77	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1469965
Report generated 08/20/2009 11:58

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080400 **Worknum:** WG310178
Instrument: PE-ICP2 **Method:** 6010B
Serial Dil: WG310178-02 **File ID:** P2.082009.110916 **Dil:** 5 **Units:** mg/L
Sample: L09080400-01 **File ID:** P2.082009.105738 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	15.2		15.15		0.33	
Beryllium	.000528	F	ND	U		
Calcium	52.9		50.5		4.54	
Cobalt	.0186	X	.0157	F	15.60	
Iron	13.3		13.85		4.14	
Magnesium	11.7	X	12.2	X	4.27	
Potassium	6.74	X	6.85	X	1.63	
Sodium	118		117		0.85	
Vanadium	.0216	X	ND	U		
Zinc	.0405	X	ND	U		

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 50 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 50 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1469959
08/20/2009 11:58

Sample Login ID: L09080400 **Worknum:** WG310178
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG310178-01 **File ID:** P2.082009.110329 **Dil:** 1 **Units:** mg/L
Sample ID: L09080400-01 **File ID:** P2.082009.105738 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	18.6		15.2		5	99.1	75 - 125	
BERYLLIUM	0.0245		0.000528	F	.025	96.2	75 - 125	
CALCIUM	52.6		52.9		5	100.9	75 - 125	
COBALT	0.116		0.0186		.1	99.1	75 - 125	
IRON	14.2		13.3		2	114.3	75 - 125	
MAGNESIUM	15.9		11.7		5	107.2	75 - 125	
POTASSIUM	30.3		6.74		25	96.8	75 - 125	
SODIUM	132		118		25	105.0	75 - 125	
VANADIUM	0.516		0.0216		.5	99.3	75 - 125	
ZINC	0.522		0.0405		.5	97.1	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: 1469960
Report generated: 08/20/2009 11:58

Microbac Laboratories Inc.
Initial Calibration Summary

00108450

Login:	**L09080400**	Workgroup (AAB#):	**WG310178**
Analytical Method:	**6010B**	Instrument ID:	**PE-ICP2**
ICAL Worknum:	**WG310193**	Initial Calibration Date:	**20-AUG-2009 09:40**

	WG310193-01		WG310193-02		WG310193-03		WG310193-04		WG310193-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	853	.1	970	.2	1940	10	97600	20	193000	.999989	
BERYLLIUM	0	-768	.0005	310	.001	620	.05	31700	.1	60800	.999801	
CALCIUM	0	-6.34	.1	17.4	.2	34.6	10	1510	20	3030	.999995	
COBALT	0	-67.7	.002	71.8	.004	137	.1	6820	.4	13000	.999742	
IRON	0	4.27	.04	31.9	.08	61.7	4	3010	8	5980	.999996	
MAGNESIUM	0	26.0	.1	102	.2	203	10	9400	20	18700	.999997	
POTASSIUM	0	-286	.5	1710	1	3350	50	164000	100	325000	1	
SODIUM	0	797	.5	5110	1	10100	50	477000	100	934000	1	
VANADIUM	0	2830	.01	1480	.02	3100	1	137000	2	263000	.999836	
ZINC	0	35.9	.01	146	.02	271	1	13000	2	24700	.999711	

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 ID: 1469968
Report generated: 20-AUG-2009 11:58

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310193-09
Instrument ID: PE-ICP2 Run Time: 10:08 Method: 6010B
File ID: P2.082009.100828 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG310178 Cal ID: PE-ICP2 - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.05	.1	.05	U
BERYLLIUM	.0005	.002	.0005	U
CALCIUM	.1	.2	.1	U
COBALT	.0025	.005	.0025	U
IRON	.025	.1	.025	U
MAGNESIUM	.25	.5	.25	U
POTASSIUM	.25	1	.25	U
SODIUM	.25	.5	.25	U
VANADIUM	.005	.01	.005	U
ZINC	.005	.02	.005	U

ICB - Modified 07/14/2009
PDF File ID: 1469970
Report generated 08/20/2009 11:58

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108452

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310193-13
Instrument ID: PE-ICP2 Run Time: 10:33 Method: 6010B
File ID: P2.082009.103311 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG310178 Cal ID: PE-ICP - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0500	0.100	0.0500	U
Beryllium	0.000500	0.00200	0.000500	U
Calcium	0.100	0.200	0.100	U
Cobalt	0.00250	0.00500	0.00250	U
Iron	0.0250	0.100	0.0250	U
Magnesium	0.250	0.500	0.250	U
Potassium	0.250	1.00	0.250	U
Sodium	0.250	0.500	0.250	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.00500	0.0200	-0.00731	U

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

CCB - Modified 03/05/2008
PDF File ID: 1469973
Report generated 08/20/2009 11:58

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108453

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310193-15
Instrument ID: PE-ICP2 Run Time: 11:42 Method: 6010B
File ID: P2.082009.114242 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG310178 Cal ID: PE-ICP - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0500	0.100	0.0500	U
Beryllium	0.000500	0.00200	0.000500	U
Calcium	0.100	0.200	0.100	U
Cobalt	0.00250	0.00500	0.00250	U
Iron	0.0250	0.100	0.0250	U
Magnesium	0.250	0.500	0.250	U
Potassium	0.250	1.00	0.250	U
Sodium	0.250	0.500	0.250	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.00500	0.0200	-0.00762	U

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

CCB - Modified 03/05/2008
PDF File ID: 1469973
Report generated 08/20/2009 11:58

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00108454

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310193-07
Instrument ID: PE-ICP2 Run Time: 09:57 Method: 6010B
File ID: P2.082009.095707 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG310178 Cal ID: PE-ICP - 20-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	9.95	99.5	90 - 110	
Beryllium		.05	0.0499	99.9	90 - 110	
Calcium		10	10.4	104	90 - 110	
Cobalt		.2	0.205	102	90 - 110	
Iron		4	4.00	100	90 - 110	
Magnesium		10	9.99	99.9	90 - 110	
Potassium		50	49.9	99.8	90 - 110	
Sodium		50	50.4	101	90 - 110	
Vanadium		1	1.00	100	90 - 110	
Zinc		1	1.01	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1469969
Report generated 08/20/2009 11:58

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108455

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310193-12
Instrument ID: PE-ICP2 Run Time: 10:26 Method: 6010B
File ID: P2.082009.102626 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG310178 Cal ID: PE-ICP - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Beryllium		0.0500	0.0513	mg/L	103	90 - 110		
Calcium		10.0	10.4	mg/L	104	90 - 110		
Cobalt		0.200	0.212	mg/L	106	90 - 110		
Iron		4.00	4.16	mg/L	104	90 - 110		
Magnesium		10.0	10.4	mg/L	104	90 - 110		
Potassium		50.0	51.0	mg/L	102	90 - 110		
Sodium		50.0	51.6	mg/L	103	90 - 110		
Vanadium		1.00	1.03	mg/L	103	90 - 110		
Zinc		1.00	1.04	mg/L	104	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1469972
Report generated 08/20/2009 11:58

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108456

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310193-14
Instrument ID: PE-ICP2 Run Time: 11:35 Method: 6010B
File ID: P2.082009.113551 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG310178 Cal ID: PE-ICP - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.83	mg/L	98.3	90 - 110		
Beryllium		0.0500	0.0499	mg/L	99.7	90 - 110		
Calcium		10.0	10.2	mg/L	102	90 - 110		
Cobalt		0.200	0.201	mg/L	101	90 - 110		
Iron		4.00	4.12	mg/L	103	90 - 110		
Magnesium		10.0	10.3	mg/L	103	90 - 110		
Potassium		50.0	49.4	mg/L	98.8	90 - 110		
Sodium		50.0	50.0	mg/L	100	90 - 110		
Vanadium		1.00	0.987	mg/L	98.7	90 - 110		
Zinc		1.00	0.993	mg/L	99.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1469972
Report generated 08/20/2009 11:58

Login number: L09080400 **Workgroup (AAB#):** WG310178
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG310193-10 **File ID:** P2.082009.101504 **Units:** mg/L
Sol. AB : WG310193-11 **File ID:** P2.082009.102045 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	251	100	250	245	98.0	
Beryllium	NS	-0.0000100	NS	0.250	0.255	102	
Calcium	250	270	108	250	277	111	
Cobalt	NS	-0.000440	NS	0.250	0.230	92.0	
Iron	100	97.4	97.4	100	98.8	98.8	
Magnesium	250	246	98.4	250	250	100	
Potassium	NS	-0.148	NS	NS	4.84	NS	
Sodium	NS	0.0435	NS	NS	5.05	NS	
Vanadium	NS	-0.00183	NS	0.250	0.249	99.6	
Zinc	NS	-0.00964	NS	0.500	0.444	88.8	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L09080400 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	396.15	0	0	0.206	0	0
ANTIMONY	206.84	0	0	-0.740	0	0
ARSENIC	188.98	0	-0.00216	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	-0.370	0.0414	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-1.07
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.107	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-0.185	0	-0.231	-0.0949	-0.230
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.207	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0.200	0	0.0400
ZINC	206.20	0	0.0753	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1469967
Report generated: 08/20/2009 11:58

Login Number: L09080400 **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: 1469967
Report generated: 08/20/2009 11:58

Login Number: L09080400 **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: 1469967
Report generated: 08/20/2009 11:58

Login Number: L09080400 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	32.9	0	0	0
ANTIMONY	206.84	0	-17.4	0	0	0
ARSENIC	188.98	0	3.66	0	0	0
BARIUM	233.53	0	-0.548	0	0	0
BERYLLIUM	234.86	-0.131	-0.529	0	-0.00974	0
BORON	249.68	0	-2.08	0	0	0
CADMIUM	228.80	0	0.0112	0	-0.0299	0
CALCIUM	227.55	0	-18.6	0	-1090	0
CHROMIUM	267.72	0.434	-0.00100	0	0	0
COBALT	228.62	0	-0.835	0	0.129	0
COPPER	327.39	0.136	-0.0774	0	0.150	0.257
IRON	239.56	0.480	0	0	0	0.407
LEAD	220.35	0.0756	-2.50	0	-0.174	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.58	0	0	0.0252
MANGANESE	257.61	0	-0.0482	-0.00916	-0.0340	-0.0413
MOLYBDENUM	202.03	-0.209	0	0	0.120	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	1.00	0	0
SELENIUM	196.03	0.451	0.199	0	0.0799	0
SILICON	251.61	0	12.9	0	0	0
SILVER	328.07	0.130	0.0781	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-0.00100	1.20	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.578	0	0	0
ZINC	206.20	0	0.180	0	-0.200	-0.100

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1469967
Report generated: 08/20/2009 11:58

Login Number: L09080400 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	SB	SE	SI	SN	SR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	-10.6	0
ARSENIC	188.98	0	0	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	0	2.79	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	0.148	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	-0.0100	0	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-0.0924	0	0	0
MANGANESE	257.61	-0.0505	-0.0281	-0.185	-0.0445	-0.625
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	-0.0500	-0.0100	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0.200
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	-0.300	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1469967
Report generated: 08/20/2009 11:58

Login Number: L09080400 **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: 1469967
Report generated: 08/20/2009 11:58

Login Number: L09080400 **Date:** 06/30/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	450.0
Antimony	10.00	45.0
Arsenic	10.00	9.0
Barium	10.00	9.0
Beryllium	10.00	4.5
Boron	10.00	45.0
Cadmium	10.00	9.0
Calcium	10.00	450.0
Chromium	10.00	45.0
Cobalt	10.00	45.0
Copper	10.00	45.0
Iron	10.00	450.0
Lead	10.00	90.0
Lithium	10.00	0.8
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	90.0
Selenium	10.00	45.0
Silicon	10.00	36.0
Silver	10.00	4.5
Sodium	10.00	180.0
Strontium	10.00	4.5
Thallium	10.00	45.0
Tin	10.00	45.0
Titanium	10.00	45.0
Vanadium	10.00	45.0
Zinc	10.00	45.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1469966
Report generated: 08/20/2009 11:58

2.3.2 Metals ICP-MS Data

2.3.2.1 Summary Data

LABORATORY REPORT

L09080400

00108467

08/21/09 16:46

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CLAYPIPE-081809	L09080400-01	6020	1	19-AUG-09
04CLAYPIPE-081809	L09080400-01	6020	50	19-AUG-09

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108468

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310184**
Collect Date: **08/18/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **1**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **08/20/2009 06:53**
Cal Date: **08/20/2009 12:35**
Run Date: **08/20/2009 14:14**
File ID: **EL.082009.141440**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Silver, Total	7440-22-4		U	0.00100	0.000250
Arsenic, Total	7440-38-2	0.125		0.00100	0.000250
Barium, Total	7440-39-3	0.168		0.00300	0.000500
Cadmium, Total	7440-43-9	0.000283	J	0.000500	0.000125
Chromium, Total	7440-47-3	0.0169		0.00200	0.000500
Copper, Total	7440-50-8	0.0100		0.00200	0.000500
Lead, Total	7439-92-1	0.0128		0.000500	0.000250
Nickel, Total	7440-02-0	0.0287		0.00400	0.00100
Antimony, Total	7440-36-0	0.00463		0.00100	0.000250
Selenium, Total	7782-49-2	0.00419		0.00100	0.000500
Thallium, Total	7440-28-0	0.000307		0.000200	0.0000500

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108469

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310184**
Collect Date: **08/18/2009 15:20**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **50**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **08/20/2009 06:53**
Cal Date: **08/20/2009 12:35**
Run Date: **08/20/2009 14:20**
File ID: **EL.082009.142055**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Manganese, Total	7439-96-5	2.28		0.100	0.0250

2.3.2.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer ELAN 6100

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 (ug/L)	0.1
Vf = Final volume	100
Vi = Initial volume	40
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/L)	0.25

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 (ug/L)	0.1
Vf = Final volume	200
Vi = Initial volume	0.5
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/kg)	40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	40
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	50

50 ug/kg = 0.050 mg/kg

Perkin Elmer ELAN ICP/MS

STANDARDS KEY

QC Std 1 - ICV
QC Std 2 - ICB
QC Std 3 - CRI - Soil
QC Std 4 - CRI - Water
QC Std 5 - ICSA
QC Std 6 - ICSAB
QC Std 7 - CCV
QC Std 8 - CCB

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.0004	0.05	0.1
Sb	10	0	0.0004	0.05	0.1
As	10	0	0.0004	0.05	0.1
Ba	10	0	0.0004	0.05	0.1
Be	10	0	0.0004	0.05	0.1
Ca	1000	0	0.04	5	10
Cd	10	0	0.0004	0.05	0.1
Cr	10	0	0.0004	0.05	0.1
Co	10	0	0.0004	0.05	0.1
Cu	10	0	0.0004	0.05	0.1
Fe	1000	0	0.04	5	10
Pb	10	0	0.0004	0.05	0.1
Mg	1000	0	0.04	5	10
Mn	10	0	0.0004	0.05	0.1
Ni	10	0	0.0004	0.05	0.1
K	1000	0	0.04	5	10
Se	10	0	0.0004	0.05	0.1
Ag	10	0	0.0004	0.05	0.1
Na	1000	0	0.04	5	10
Tl	10	0	0.0004	0.05	0.1
V	10	0	0.0004	0.05	0.1
U	1000	0	0.0004	0.05	0.1
Zn	10	0	0.0004	0.05	0.1

Microbac Laboratories Inc.
Microwave Digestion Log

00108473

Workgroup: WG310128
Analyst: VC
Spike Analyst: VC
Run Date: 08/20/2009 06:53
Method: 3015

SOP: ME407 Revison 10
Spike Solution: STD33694
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	WG310128-04	BLANK	1	40 mL	100 mL	207.882 g	207.87 g		
2	WG310060-01	FBLK	18	40 mL	100 mL	208.085 g	208.074 g		
3	WG310128-05	LCS	1	40 mL	100 mL	207.959 g	207.935 g	.25 mL	
4	L09080386-03	SAMP	18	40 mL	100 mL	204.916 g	204.904 g		08/28/09
5	L09080386-05	SAMP	18	40 mL	100 mL	206.7 g	206.672 g		08/28/09
6	WG310128-01	REF	2	40 mL	100 mL	206.359 g	206.34 g		
7	L09080398-01	SAMP	2	40 mL	100 mL	206.359 g	206.34 g		08/28/09
8	L09080398-02	SAMP	2	40 mL	100 mL	207.223 g	207.197 g		08/28/09
9	L09080400-01	SAMP	1	40 mL	100 mL	204.861 g	204.843 g		08/20/09
10	L09080412-01	SAMP	1	40 mL	100 mL	205.601 g	205.561 g		08/21/09
11	WG310128-02	REF	2	40 mL	100 mL	206.527 g	206.482 g		
12	L09080417-01	SAMP	2	40 mL	100 mL	206.527 g	206.482 g		08/21/09
13	L09080428-02	SAMP	1	40 mL	100 mL	206.148 g	206.125 g		09/02/09
14	WG310128-03	REF	1	40 mL	100 mL	205.822 g	205.792 g		
15	L09080428-05	RS02	1	40 mL	100 mL	205.822 g	205.792 g		09/02/09
16	WG310128-09	MS	1	40 mL	100 mL	209.677 g	209.641 g	.25 mL	
17	L09080428-08	MS02	1	40 mL	100 mL	209.677 g	209.641 g	.25 mL	09/02/09
18	WG310128-10	MSD	1	40 mL	100 mL	207.396 g	207.358 g	.25 mL	
19	L09080428-11	SD02	1	40 mL	100 mL	207.396 g	207.358 g	.25 mL	09/02/09
20	L09080428-14	SAMP	1	40 mL	100 mL	208.859 g	208.804 g		09/02/09
21	L09080428-17	SAMP	1	40 mL	100 mL	206.385 g	206.309 g		09/02/09
22	L09080428-20	SAMP	1	40 mL	100 mL	206.1 g	206.06 g		09/02/09
23	L09080428-23	SAMP	1	40 mL	100 mL	206.97 g	206.92 g		09/02/09
24	WG310128-06	MS	1	40 mL	100 mL	208.467 g	208.432 g	.25 mL	
25	WG310128-07	MSD	1	40 mL	100 mL	206.192 g	206.16 g	.25 mL	
26	WG310128-08	DUP	1	40 mL	100 mL	206.544 g	206.523 g		

Analyst: Vicki Collins

Reviewer:

MW_DIG - Modified 07/02/2008
PDF ID: 1469569
Report generated: 08/20/2009 08:43

Microbac

00108474

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 082009B.REP

Analyst1: JYH Analyst2: N/A

Method: 6020 SOP: ME700 Rev: 6

Maintenance Log ID: 29797

Calibration Std: STD34775 ICV/CCV Std: STD34615 Post Spike: STD33697

ICSA: STD34738 ICSAB: STD34739 Int. Std: STD34771

Workgroups: 310184,309636,309961,310115

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	EL.082009.121236	Blank	Blank		1		08/20/09 12:12
2	EL.082009.121819	WG310220-01	Calibration Point		1		08/20/09 12:18
3	EL.082009.122402	WG310220-02	Calibration Point		1		08/20/09 12:24
4	EL.082009.122946	WG310220-03	Calibration Point		1		08/20/09 12:29
5	EL.082009.123531	WG310220-04	Calibration Point		1		08/20/09 12:35
6	EL.082009.124116	WG310220-05	Initial Calibration Verification		1		08/20/09 12:41
7	EL.082009.124811	WG310220-06	Initial Calib Blank		1		08/20/09 12:48
8	EL.082009.125506	WG310220-07	CRQL Check Solid		1		08/20/09 12:55
9	EL.082009.130205	WG310220-08	CRQL Check Water		1		08/20/09 13:02
10	EL.082009.130903	WG310220-09	Interference Check		1		08/20/09 13:09
11	EL.082009.131600	WG310220-10	Interference Check		1		08/20/09 13:16
12	EL.082009.132256	WG310220-11	CCV		1		08/20/09 13:22
13	EL.082009.132951	WG310220-12	CCB		1		08/20/09 13:29
14	EL.082009.133623	WG310128-04	Method/Prep Blank	40/100	1		08/20/09 13:36
15	EL.082009.134237	WG310128-05	Laboratory Control S	40/100	1		08/20/09 13:42
16	EL.082009.134850	L09080400-01	04CLAYPIPE-081809		5		08/20/09 13:48
17	EL.082009.135504	L09080428-14	SW3A-240-14	40/100	1		08/20/09 13:55
18	EL.082009.140118	WG310184-01	Post Digestion Spike		1	L09080428-14	08/20/09 14:01
19	EL.082009.140825	WG310184-02	Serial Dilution		5	L09080428-14	08/20/09 14:08
20	EL.082009.141440	L09080400-01	04CLAYPIPE-081809	40/100	1		08/20/09 14:14
21	EL.082009.142055	L09080400-01	04CLAYPIPE-081809	40/100	50		08/20/09 14:20
22	EL.082009.142730	WG310220-13	CCV		1		08/20/09 14:27
23	EL.082009.143425	WG310220-14	CCB		1		08/20/09 14:34
24	EL.082009.145947	WG310060-01	Fluid Blank		1		08/20/09 14:59
25	EL.082009.150603	WG310128-03	Reference Sample		1	L09080428-05	08/20/09 15:06
26	EL.082009.151246	WG310128-09	Matrix Spike	40/100	1	L09080428-05	08/20/09 15:12
27	EL.082009.151902	WG310128-10	Matrix Spike Duplica	40/100	1	L09080428-05	08/20/09 15:19
28	EL.082009.152517	L09080386-03	AV-NCB-PE-VIS-38-C2-0817	40/100	1		08/20/09 15:25
29	EL.082009.153131	L09080386-05	AV-NCB-AS-VIS-8-081709	40/100	1		08/20/09 15:31
30	EL.082009.153745	WG310128-01	Reference Sample		5	L09080398-01	08/20/09 15:37
31	EL.082009.154359	WG310128-06	Matrix Spike	40/100	5	L09080398-01	08/20/09 15:43
32	EL.082009.155014	WG310128-07	Matrix Spike Duplica	40/100	5	L09080398-01	08/20/09 15:50
33	EL.082009.155629	L09080398-02	LCL-K-EQBLK-2	40/100	1		08/20/09 15:56
34	EL.082009.160304	WG310220-15	CCV		1		08/20/09 16:03
35	EL.082009.161000	WG310220-16	CCB		1		08/20/09 16:10
36	EL.082009.161635	L09080412-01	RINSATE	40/100	1		08/20/09 16:16
37	EL.082009.162250	L09080417-01	OUTFALL 002/COMP	40/100	1	WG310128-02	08/20/09 16:22

Page: 1 Approved: August 21, 2009

Maren Berry

Microbac

00108475

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 082009B.REP

Analyst1: JYH Analyst2: N/A

Method: 6020 SOP: ME700 Rev: 6

Maintenance Log ID: 29797

Calibration Std: STD34775 ICV/CCV Std: STD34615 Post Spike: STD33697

ICSA: STD34738 ICSAB: STD34739 Int. Std: STD34771

Workgroups: 310184,309636,309961,310115

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	EL.082009.162906	WG310128-08	Duplicate	40/100	1	L09080417-01	08/20/09 16:29
39	EL.082009.163523	L09080428-02	SW1A-240-14	40/100	1		08/20/09 16:35
40	EL.082009.164139	L09080428-17	SW3B-240-14	40/100	1		08/20/09 16:41
41	EL.082009.164756	L09080428-20	SW4A-240-14	40/100	1		08/20/09 16:47
42	EL.082009.165412	L09080428-23	SW5A-240-14	40/100	1		08/20/09 16:54
43	EL.082009.170026	L09080213-04	FB018 (081009)		1		08/20/09 17:00
44	EL.082009.170640	WG309636-01	Post Digestion Spike		1	L09080213-04	08/20/09 17:06
45	EL.082009.171255	WG309636-02	Serial Dilution		5	L09080213-04	08/20/09 17:12
46	EL.082009.171930	WG310220-17	CCV		1		08/20/09 17:19
47	EL.082009.172624	WG310220-18	CCB		1		08/20/09 17:26
48	EL.082009.173258	WG309881-02	Reference Sample		1	L09080340-15	08/20/09 17:32
49	EL.082009.173913	WG309881-07	Matrix Spike	.529/200	1	L09080340-15	08/20/09 17:39
50	EL.082009.174529	WG309881-08	Matrix Spike Duplica	.529/200	1	L09080340-15	08/20/09 17:45
51	EL.082009.175145	L09080340-18	SO-310	.501/200	1		08/20/09 17:51
52	EL.082009.175801	L09080340-19	SO-40	.511/200	1		08/20/09 17:58
53	EL.082009.180418	L09080340-20	SO-41	.53/200	1		08/20/09 18:04
54	EL.082009.181035	L09080340-21	SO-42	.539/200	1		08/20/09 18:10
55	EL.082009.181652	L09080340-23	SO-50	.502/200	1		08/20/09 18:16
56	EL.082009.182308	WG310079-01	Reference Sample		5	L09080412-15	08/20/09 18:23
57	EL.082009.182922	WG310079-04	Matrix Spike	.524/200	5	L09080412-15	08/20/09 18:29
58	EL.082009.183557	WG310220-19	CCV		1		08/20/09 18:35
59	EL.082009.184252	WG310220-20	CCB		1		08/20/09 18:42
60	EL.082009.184925	WG310079-05	Matrix Spike Duplica	.525/200	5	L09080412-15	08/20/09 18:49
61	EL.082009.185540	WG310079-01	Reference Sample		50	L09080412-15	08/20/09 18:55
62	EL.082009.190156	WG310079-04	Matrix Spike	.524/200	50	L09080412-15	08/20/09 19:01
63	EL.082009.190811	WG310079-05	Matrix Spike Duplica	.525/200	50	L09080412-15	08/20/09 19:08
64	EL.082009.191427	L09080412-02	AREA4	.507/200	50		08/20/09 19:14
65	EL.082009.192044	L09080412-03	AREA2A	.532/200	10		08/20/09 19:20
66	EL.082009.192701	WG310115-01	Post Digestion Spike		10	L09080412-03	08/20/09 19:27
67	EL.082009.193318	WG310115-02	Serial Dilution		50	L09080412-03	08/20/09 19:33
68	EL.082009.193935	L09080412-04	AREA2A-02	.506/200	10		08/20/09 19:39
69	EL.082009.194553	L09080412-05	AREA2B	.502/200	10		08/20/09 19:45
70	EL.082009.195230	WG310220-21	CCV		1		08/20/09 19:52
71	EL.082009.195924	WG310220-22	CCB		1		08/20/09 19:59
72	EL.082009.200557	L09080412-06	AREA2B-02	.506/200	10		08/20/09 20:05
73	EL.082009.201212	L09080412-08	AREA2D	.507/200	10		08/20/09 20:12
74	EL.082009.201827	L09080412-09	AREA2E	.503/200	10		08/20/09 20:18

Page: 2 Approved: August 21, 2009

Maren Berry

00108476

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 082009B.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID: 29797

Calibration Std: STD34775 ICV/CCV Std: STD34615 Post Spike: STD33697
ICSA: STD34738 ICSAB: STD34739 Int. Std: STD34771

Workgroups: 310184,309636,309961,310115

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	EL.082009.202442	L09080412-10	AREA2F	.547/200	10		08/20/09 20:24
76	EL.082009.203058	L09080412-11	AREA2G	.508/200	10		08/20/09 20:30
77	EL.082009.203714	L09080412-12	AREA2H	.507/200	50		08/20/09 20:37
78	EL.082009.204331	L09080412-13	AREA2I	.518/200	10		08/20/09 20:43
79	EL.082009.204948	L09080412-14	AREA2J	.511/200	50		08/20/09 20:49
80	EL.082009.205624	WG310220-23	CCV		1		08/20/09 20:56
81	EL.082009.210319	WG310220-24	CCB		1		08/20/09 21:03

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Maren Berry

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00108477

Microbac Laboratories Inc.

Data Checklist

Date: 20-AUG-2009
Analyst: JYH
Analyst: NA
Method: 6020
Instrument: ELAN
Curve Workgroup: 310220
Runlog ID: 29724
Analytical Workgroups: 310184,309636,309961,310115

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
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	386,398,400,412,428,213,340,412
Client Forms	X
Level X	
Level 3	400
Level 4	412,386,213,340
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	JYH
Secondary Reviewer	MMB
Comments	

Primary Reviewer:

Secondary Reviewer:
21-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-21-2009 15:58:35

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108478

Analytical Method: 6020 AAB#: WG310184

Login Number: L09080400

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
04CLAYPIPE-081809	01	08/18/09					08/20/09	1.6	180		08/20/09	2	180	
04CLAYPIPE-081809	01	08/18/09					08/20/09	1.6	180		08/20/09	2	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1470539
Report generated 08/20/2009 15:12

00108479

METHOD BLANK SUMMARY

Login Number:	L09080400	Work Group:	WG310184
Blank File ID:	EL.082009.133623	Blank Sample ID:	WG310128-04
Prep Date:	08/20/09 06:53	Instrument ID:	ELAN-ICP
Analyzed Date:	08/20/09 13:36	Method:	6020
Analyst:	JYH		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG310128-05	EL.082009.134237	08/20/09 13:42	01
04CLAYPIPE-081809	L09080400-01	EL.082009.141440	08/20/09 14:14	01
04CLAYPIPE-081809	L09080400-01	EL.082009.142055	08/20/09 14:20	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1470540
Report generated 08/20/2009 15:12

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108480

Login Number:L09080400 Prep Date:08/20/09 06:53 Sample ID:WG310128-04
Instrument ID:ELAN-ICP Run Date:08/20/09 13:36 Prep Method:3015
File ID:EL.082009.133623 Analyst:JYH Method:6020
Workgroup (AAB#):WG310184 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:ELAN-I-20-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Silver, Total	0.000250	0.00100	0.000250	1	U
Arsenic, Total	0.000250	0.00100	0.000250	1	U
Barium, Total	0.000500	0.00300	0.000500	1	U
Cadmium, Total	0.000125	0.000500	0.000125	1	U
Chromium, Total	0.000500	0.00200	0.000500	1	U
Copper, Total	0.000500	0.00200	0.000500	1	U
Lead, Total	0.000250	0.000500	0.000250	1	U
Manganese, Total	0.000500	0.00200	0.000500	1	U
Nickel, Total	0.00100	0.00400	0.00100	1	U
Antimony, Total	0.000250	0.00100	-0.000304	1	U
Selenium, Total	0.000500	0.00100	0.000500	1	U
Thallium, Total	0.0000500	0.000200	0.0000500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1470541
20-AUG-2009 15:12

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108481

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310128-05
Instrument ID: ELAN-ICP Run Time: 13:42 Prep Method: 3015
File ID: EL.082009.134237 Analyst: JYH Method: 6020
Workgroup (AAB#): WG310184 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD33694 Cal ID: ELAN-I-20-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Silver, Total	0.0625	0.0649	104	80 - 120	
Arsenic, Total	0.0625	0.0649	104	80 - 120	
Barium, Total	0.0625	0.0621	99.3	80 - 120	
Cadmium, Total	0.0625	0.0648	104	80 - 120	
Chromium, Total	0.0625	0.0629	101	80 - 120	
Copper, Total	0.0625	0.0655	105	80 - 120	
Lead, Total	0.0625	0.0639	102	80 - 120	
Manganese, Total	0.0625	0.0635	102	80 - 120	
Nickel, Total	0.0625	0.0644	103	80 - 120	
Antimony, Total	0.0625	0.0598	95.7	80 - 120	
Selenium, Total	0.0625	0.0674	108	80 - 120	
Thallium, Total	0.0625	0.0635	102	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1470542
Report generated: 08/20/2009 15:12

*** FAILS %REC LIMIT**

 # FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080400 **Worknum:** WG310184
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG310184-02 **File ID:** EL.082009.140825 **Dil:** 5 **Units:** ug/L
Sample: L09080428-14 **File ID:** EL.082009.135504 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Antimony	ND	U	ND	U		
Arsenic	.13	F	ND	U		
Barium	5.26	X	4.525	F	14.00	
Cadmium	ND	U	ND	U		
Chromium	.445	F	ND	U		
Copper	.282	F	1.14	F	304.00	
Lead	.176	F	ND	U		
Manganese	13.5	X	11.9	X	11.90	
Nickel	ND	U	ND	U		
Selenium	ND	U	ND	U		
Silver	ND	U	ND	U		
Thallium	ND	U	.1145	F	*******	

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 100 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 100 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1470537
08/20/2009 15:15

Sample Login ID: L09080400 **Worknum:** WG310184
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG310184-01 **File ID:** EL.082009.140118 **Dil:** 1 **Units:** ug/L
Sample ID: L09080428-14 **File ID:** EL.082009.135504 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ANTIMONY	51.7		0	U	50	103.5	75 - 125	
ARSENIC	50.2		0.130	F	50	100.1	75 - 125	
BARIUM	55.9		5.26		50	101.3	75 - 125	
CADMIUM	51.7		0	U	50	103.3	75 - 125	
CHROMIUM	52.6		0.445	F	50	104.3	75 - 125	
COPPER	54.3		0.282	F	50	108.1	75 - 125	
LEAD	50.9		0.176	F	50	101.5	75 - 125	
MANGANESE	66.0		13.5		50	104.9	75 - 125	
NICKEL	53.7		0	U	50	107.4	75 - 125	
SELENIUM	48.7		0	U	50	97.4	75 - 125	
SILVER	53.8		0	U	50	107.7	75 - 125	
THALLIUM	50.5		0	U	50	100.9	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: 1470538
Report generated: 08/20/2009 15:12

Microbac Laboratories Inc.
Initial Calibration Summary

00108485

Login:	**L09080400**	Workgroup (AAB#):	**WG310184**
Analytical Method:	**6020**	Instrument ID:	**ELAN-ICP**
ICAL Worknum:	**WG310220**	Initial Calibration Date:	**20-AUG-2009 12:35**

	WG310220-01		WG310220-02		WG310220-03		WG310220-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	279	.4	3340	50	271000	100	562000	.999546	
ARSENIC	0	-276	.4	332	50	81100	100	163000	.999971	
BARIUM	0	34.7	.4	960	50	112000	100	226000	.999883	
CADMIUM	0	12.7	.4	674	50	86900	100	173000	.999963	
CHROMIUM	0	8730	.4	11100	50	336000	100	676000	.999859	
COPPER	0	128	.4	1050	50	117000	100	229000	.999993	
LEAD	0	342	.4	12000	50	1440000	100	2920000	.999967	
MANGANESE	0	374	.4	4680	50	522000	100	1040000	.999987	
NICKEL	0	34.7	.4	825	50	96300	100	191000	.999998	
SELENIUM	0	1.10	.4	69.8	50	7350	100	14800	.999956	
SILVER	0	53.3	.4	3620	50	440000	100	890000	.999865	
THALLIUM	0	31.0	.4	3560	50	434000	100	874000	.999992	

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 ID: 1470547
Report generated: 20-AUG-2009 15:12

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

00108486

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310220-06
Instrument ID: ELAN-ICP Run Time: 12:48 Method: 6020
File ID: EL.082009.124811 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG310184 Cal ID: ELAN-ICP - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
SILVER	.1	.4	.1	U
ARSENIC	.1	.4	.1	U
BARIUM	.2	1.2	.2	U
CADMIUM	.05	.2	.05	U
CHROMIUM	.2	.8	.2	U
COPPER	.2	.8	.2	U
MANGANESE	.2	.8	.2	U
NICKEL	.4	1.6	.4	U
LEAD	.1	.2	.1	U
ANTIMONY	.1	.4	.1	U
SELENIUM	.2	.4	.2	U
THALLIUM	.02	.08	.02	U

ICB - Modified 07/14/2009
PDF File ID: 1470549
Report generated 08/20/2009 15:12

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108487

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310220-12
Instrument ID: ELAN-ICP Run Time: 13:29 Method: 6020
File ID: EL.082009.132951 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG310184 Cal ID: ELAN-I - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Silver	0.100	0.400	0.100	U
Arsenic	0.100	0.400	0.100	U
Barium	0.200	1.20	0.200	U
Cadmium	0.0500	0.200	0.0500	U
Chromium	0.200	0.800	0.200	U
Copper	0.200	0.800	0.200	U
Lead	0.100	0.200	0.100	U
Manganese	0.200	0.800	0.200	U
Nickel	0.400	1.60	0.400	U
Antimony	0.100	0.400	0.100	U
Selenium	0.200	0.400	0.200	U
Thallium	0.0200	0.0800	0.0244	F

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: 1470552
Report generated 08/20/2009 15:12

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108488

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310220-14
Instrument ID: ELAN-ICP Run Time: 14:34 Method: 6020
File ID: EL.082009.143425 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG310184 Cal ID: ELAN-I - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Silver	0.100	0.400	0.100	U
Arsenic	0.100	0.400	0.100	U
Barium	0.200	1.20	0.200	U
Cadmium	0.0500	0.200	0.0500	U
Chromium	0.200	0.800	0.200	U
Copper	0.200	0.800	0.200	U
Lead	0.100	0.200	0.100	U
Manganese	0.200	0.800	0.200	U
Nickel	0.400	1.60	0.400	U
Antimony	0.100	0.400	0.100	U
Selenium	0.200	0.400	0.200	U
Thallium	0.0200	0.0800	0.0200	U

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

CCB - Modified 03/05/2008
PDF File ID: 1470552
Report generated 08/20/2009 15:12

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00108489

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310220-05
Instrument ID: ELAN-ICP Run Time: 12:41 Method: 6020
File ID: EL.082009.124116 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG310184 Cal ID: ELAN-I - 20-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Silver		50	53.0	106	90 - 110	
Arsenic		50	53.6	107	90 - 110	
Barium		50	53.1	106	90 - 110	
Cadmium		50	51.9	104	90 - 110	
Chromium		50	52.7	105	90 - 110	
Copper		50	53.4	107	90 - 110	
Lead		50	52.2	104	90 - 110	
Manganese		50	52.3	105	90 - 110	
Nickel		50	53.7	107	90 - 110	
Antimony		50	51.3	103	90 - 110	
Selenium		50	53.5	107	90 - 110	
Thallium		50	53.4	107	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1470548
Report generated 08/20/2009 15:12

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108490

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310220-11
Instrument ID: ELAN-ICP Run Time: 13:22 Method: 6020
File ID: EL.082009.132256 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG310184 Cal ID: ELAN-I - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	49.3	ug/L	98.6	90 - 110		
Arsenic		50.0	50.0	ug/L	100	90 - 110		
Barium		50.0	49.5	ug/L	99.0	90 - 110		
Cadmium		50.0	48.4	ug/L	96.8	90 - 110		
Chromium		50.0	48.2	ug/L	96.5	90 - 110		
Copper		50.0	49.7	ug/L	99.4	90 - 110		
Lead		50.0	48.8	ug/L	97.6	90 - 110		
Manganese		50.0	48.5	ug/L	97.1	90 - 110		
Nickel		50.0	49.1	ug/L	98.3	90 - 110		
Antimony		50.0	48.9	ug/L	97.9	90 - 110		
Selenium		50.0	51.5	ug/L	103	90 - 110		
Thallium		50.0	49.2	ug/L	98.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1470551
Report generated 08/20/2009 15:12

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108491

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310220-13
Instrument ID: ELAN-ICP Run Time: 14:27 Method: 6020
File ID: EL.082009.142730 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG310184 Cal ID: ELAN-I - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Silver		50.0	51.5	ug/L	103	90 - 110		
Arsenic		50.0	50.2	ug/L	100	90 - 110		
Barium		50.0	49.6	ug/L	99.2	90 - 110		
Cadmium		50.0	51.4	ug/L	103	90 - 110		
Chromium		50.0	49.3	ug/L	98.5	90 - 110		
Copper		50.0	49.7	ug/L	99.3	90 - 110		
Lead		50.0	50.0	ug/L	100	90 - 110		
Manganese		50.0	48.5	ug/L	97.0	90 - 110		
Nickel		50.0	49.0	ug/L	98.0	90 - 110		
Antimony		50.0	50.9	ug/L	102	90 - 110		
Selenium		50.0	51.9	ug/L	104	90 - 110		
Thallium		50.0	49.4	ug/L	98.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1470551
Report generated 08/20/2009 15:12

Login number: L09080400 **Workgroup (AAB#):** WG310184
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG310220-09 **File ID:** EL.082009.130903 **Units:** ug/L
Sol. AB : WG310220-10 **File ID:** EL.082009.131600 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	-0.133	NS	100	104	104	
Arsenic	NS	0.00210	NS	100	98.4	98.4	
Barium	NS	0.167	NS	100	99.8	99.8	
Cadmium	NS	0.101	NS	100	98.4	98.4	
Chromium	NS	0.290	NS	100	91.8	91.8	
Copper	NS	0.343	NS	100	95.8	95.8	
Lead	NS	0.0769	NS	100	96.9	96.9	
Manganese	NS	0.377	NS	100	95.0	95.0	
Nickel	NS	0.804	NS	100	93.7	93.7	
Selenium	NS	-0.128	NS	100	99.8	99.8	
Silver	NS	0.00580	NS	100	87.3	87.3	
Thallium	NS	0.0150	NS	100	96.5	96.5	

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: 1470550
Report generated 08/20/2009 15:12

Microbac Laboratories Inc.
CRI SAMPLE

00108493

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310220-08
Instrument ID: ELAN-ICP Run Time: 13:02 Prep Method: 3015
File ID: EL.082009.130205 Analyst: JYH Method: 6020
Workgroup (AAB#): WG310220 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: ELAN-ICP-20-AUG-2009 12:35

Analytes	Expected	Found	% Rec	Limits	Q
Cadmium, Total	0.200	0.240	120	50 - 150	
Thallium, Total	0.0800	0.0773	96.6	50 - 150	

CRI - Modified 03/06/2008
PDF File ID: 1470545
Report generated 08/20/2009 15:17

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L09080400 **Analytical Method:** 6020
Analytical Workgroup: WG310184 **Matrix:** 1
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 20-AUG-2009 12:18

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L09080400-01	SAMP	20-AUG-2009 14:14	103.55	101.477	94.559	98.938
L09080400-01	SAMP	20-AUG-2009 14:20	92.773	92.981	91.028	93.376
L09080428-14	SAMP	20-AUG-2009 13:55	109.638	104.809	100.997	100.363
WG310128-04	BLANK	20-AUG-2009 13:36	96.255	97.428	97.486	97.622
WG310128-05	LCS	20-AUG-2009 13:42	98.258	97.244	96.309	97.764
WG310184-01	PSPK	20-AUG-2009 14:01	104.682	101.442	98.883	100.733
WG310184-02	SERIAL	20-AUG-2009 14:08	91.939	92.295	92.059	92.108
WG310220-05	ICV	20-AUG-2009 12:41	98.149	99.664	99.648	99.032
WG310220-06	ICB	20-AUG-2009 12:48	99.074	102.106	97.684	99.433
WG310220-11	CCV	20-AUG-2009 13:22	101.557	98.606	98.249	97.93
WG310220-12	CCB	20-AUG-2009 13:29	96.826	99.348	97.042	95.619
WG310220-13	CCV	20-AUG-2009 14:27	99.095	96.762	92.527	94.658
WG310220-14	CCB	20-AUG-2009 14:34	97.472	97.959	95.183	96.946

Acceptance criteria: 30% - 120%
Underlined recoveries are out of range

INT_STD_ICPMS - Modified 03/05/2008
PDF File ID: 1470546
Report generated: 08/20/2009 15:12

Login Number: L09080400 **Date:** 06/08/2009
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1470544
Report generated: 08/20/2009 15:12

Login Number: L09080400 **Date:** 06/17/2009
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Uranium	1.00	100.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1470544
Report generated: 08/20/2009 15:12

2.3.3 Metals CVAA Data (Mercury)

2.3.3.1 Summary Data

LABORATORY REPORT

L09080400

00108499

08/21/09 16:46

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CLAYPIPE-081809	L09080400-01	7470A	1	19-AUG-09

Report Number: **L09080400**
Report Date : **August 21, 2009**

00108500

Sample Number: **L09080400-01**
Client ID: **04CLAYPIPE-081809**
Matrix: **Water**
Workgroup Number: **WG310187**
Collect Date: **08/18/2009 15:20**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **7470A**
Analytical Method: **7470A**
Analyst: **SLP**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **08/20/2009 06:55**
Cal Date: **08/20/2009 12:13**
Run Date: **08/20/2009 12:39**
File ID: **HY.082009.123905**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury	7439-97-6		U	0.000200	0.000100

U Not detected at or above adjusted sample detection limit

2.3.3.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**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

Microbac Laboratories Inc.
Metals Digest Log

00108503

Workgroup: WG310131
Analyst: REK
Spike Analyst: REK
Method: 7470A
Run Date: 08/20/2009 06:55
Hotblock Start Temp: 95.8 @ 06:15
Hotblock End Temp: 93.2 @ 08:15

SOP: ME404 Revison 12
Spike Solution: STD34777
Spike Witness: VC
H2SO4 Lot #: COA13254
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
K2S2O8 1:1 Lot #: RGT14066
KMnO4 1:1 Lot #: RGT14157
Mercury Water ICV Lot #: STD34779
HG H2O STDS 10PPM Lot #: STD34785

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG310131-03	BLANK	1	40 mL	40 mL		
2	WG310131-04	LCS	1	40 mL	40 mL	4 mL	
3	L09080329-01	SAMP	1	40 mL	40 mL		08/25/09
4	L09080329-05	SAMP	1	40 mL	40 mL		08/25/09
5	L09080329-06	SAMP	1	40 mL	40 mL		08/25/09
6	L09080329-07	SAMP	1	40 mL	40 mL		08/25/09
7	L09080329-09	SAMP	1	40 mL	40 mL		08/25/09
8	L09080329-10	SAMP	1	40 mL	40 mL		08/25/09
9	L09080329-12	SAMP	1	40 mL	40 mL		08/25/09
10	L09080329-18	SAMP	1	40 mL	40 mL		08/25/09
11	WG310131-01	REF	1	40 mL	40 mL		
12	L09080329-20	RS02	1	40 mL	40 mL		08/25/09
13	WG310131-05	MS	1	36 mL	40 mL	4 mL	
14	L09080329-21	MS02	1	36 mL	40 mL	4 mL	08/25/09
15	WG310131-06	MSD	1	36 mL	40 mL	4 mL	
16	L09080329-22	SD02	1	36 mL	40 mL	4 mL	08/25/09
17	L09080329-23	SAMP	1	40 mL	40 mL		08/25/09
18	L09080329-24	SAMP	1	40 mL	40 mL		08/25/09
19	L09080329-25	SAMP	1	40 mL	40 mL		08/25/09
20	L09080353-01	SAMP	1	40 mL	40 mL		08/31/09
21	WG310131-02	REF	1	40 mL	40 mL		
22	L09080353-02	RS01	1	40 mL	40 mL		08/31/09
23	WG310131-07	MS	1	36 mL	40 mL	4 mL	
24	L09080353-03	MS01	1	36 mL	40 mL	4 mL	08/31/09
25	WG310131-08	MSD	1	36 mL	40 mL	4 mL	
26	L09080353-04	SD01	1	36 mL	40 mL	4 mL	08/31/09
27	L09080400-01	SAMP	1	40 mL	40 mL		08/20/09

Analyst: [signature]

Reviewer: Brenda Gregory

BLOCK_DIG - Modified 07/22/2008
PDF ID: 1469593
Report generated: 08/20/2009 08:55

Microbac®

00108504

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 082009B.PRN

Analyst1: SLP Analyst2: N/A

Method: 7470A SOP: ME404 Rev: 11

Maintenance Log ID: 29855

Calibration Std: STD34785 ICV/CCV Std: STD34779 Post Spike: STD34785

ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 310187

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.082009.120336	WG310216-01	Calibration Point		1		08/20/09 12:03
2	HY.082009.120522	WG310216-02	Calibration Point		1		08/20/09 12:05
3	HY.082009.120744	WG310216-03	Calibration Point		1		08/20/09 12:07
4	HY.082009.120930	WG310216-04	Calibration Point		1		08/20/09 12:09
5	HY.082009.121124	WG310216-05	Calibration Point		1		08/20/09 12:11
6	HY.082009.121309	WG310216-06	Calibration Point		1		08/20/09 12:13
7	HY.082009.121851	WG310216-07	Initial Calibration Verification		1		08/20/09 12:18
8	HY.082009.122033	WG310216-08	Initial Calib Blank		1		08/20/09 12:20
9	HY.082009.122227	WG310216-09	CCV		1		08/20/09 12:22
10	HY.082009.122421	WG310216-10	CCB		1		08/20/09 12:24
11	HY.082009.123436	WG310131-03	Method/Prep Blank	40/40	1		08/20/09 12:34
12	HY.082009.123709	WG310131-04	Laboratory Control S	40/40	1		08/20/09 12:37
13	HY.082009.123905	L09080400-01	04CLAYPIPE-081809	40/40	1		08/20/09 12:39
14	HY.082009.124056	L09080329-01	OU6-MW-128-120809	40/40	1		08/20/09 12:40
15	HY.082009.124240	WG310187-01	Post Digestion Spike		1	L09080329-01	08/20/09 12:42
16	HY.082009.124426	L09080329-05	OU6-MW-129-120809	40/40	1		08/20/09 12:44
17	HY.082009.124608	L09080329-06	OU6-MW-131-120809	40/40	1		08/20/09 12:46
18	HY.082009.124813	L09080329-07	OU6-MW-133-120809	40/40	1		08/20/09 12:48
19	HY.082009.125017	L09080329-09	IDW-WW-130809	40/40	1		08/20/09 12:50
20	HY.082009.125159	L09080329-10	EB13080901	40/40	1		08/20/09 12:51
21	HY.082009.125344	WG310216-11	CCV		1		08/20/09 12:53
22	HY.082009.125541	WG310216-12	CCB		1		08/20/09 12:55
23	HY.082009.125723	L09080329-12	OU6-MW-132-120809	40/40	1		08/20/09 12:57
24	HY.082009.125926	L09080329-18	OU6-AEHA-1-130809	40/40	1		08/20/09 12:59
25	HY.082009.130110	L09080329-20	OU6-MW-123-120809	40/40	1	WG310131-01	08/20/09 13:01
26	HY.082009.130305	L09080329-21	OU6-MW-123-120809-MS	36/40	1	WG310131-05	08/20/09 13:03
27	HY.082009.130448	L09080329-22	OU6-MW-123-120809-MSD	36/40	1	WG310131-06	08/20/09 13:04
28	HY.082009.130634	L09080329-23	OU6-MW-126-120809	40/40	1		08/20/09 13:06
29	HY.082009.130817	L09080329-24	OU6-MW-125-120809	40/40	1		08/20/09 13:08
30	HY.082009.131009	L09080329-25	OU6-MW-127-120809	40/40	1		08/20/09 13:10
31	HY.082009.131152	L09080353-01	09225G01	40/40	1		08/20/09 13:11
32	HY.082009.131335	L09080353-02	09225G02	40/40	1	WG310131-02	08/20/09 13:13
33	HY.082009.131522	WG310216-13	CCV		1		08/20/09 13:15
34	HY.082009.131704	WG310216-14	CCB		1		08/20/09 13:17
35	HY.082009.131858	L09080353-03	09225G02-MS	36/40	1	WG310131-07	08/20/09 13:18
36	HY.082009.132051	L09080353-04	09225G02-MSD	36/40	1	WG310131-08	08/20/09 13:20
37	HY.082009.132233	WG310216-15	CCV		1		08/20/09 13:22

Page: 1 Approved: August 21, 2009

Maren Berry

Microbac

00108505

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 082009B.PRN

Analyst1: SLP Analyst2: N/A

Method: 7470A SOP: ME404 Rev: 11

Maintenance Log ID: 29855

Calibration Std: STD34785 ICV/CCV Std: STD34779 Post Spike: STD34785

ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 310187

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.082009.132435	WG310216-16	CCB		1		08/20/09 13:24

Approved: August 21, 2009

Maren Berry

Microbac®

Microbac Laboratories Inc.

00108506

Data Checklist

Date: 20-AUG-2009
Analyst: SLP
Analyst: NA
Method: 7471A
Instrument: HYDRA
Curve Workgroup: 310216
Runlog ID: 29721
Analytical Workgroups: 310187

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	0329, 0353, 0400
Client Forms	X
Level X	
Level 3	0400
Level 4	0329, 0353
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:
21-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-21-2009 16:28:30

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108507

Analytical Method: 7470A AAB#: WG310187

Login Number: L09080400

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
04CLAYPIPE-081809	01	08/18/09					08/20/09	1.6	28		08/20/09	1.9	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1470487
Report generated 08/20/2009 14:19

00108508

METHOD BLANK SUMMARY

Login Number:	L09080400	Work Group:	WG310187
Blank File ID:	HY.082009.123436	Blank Sample ID:	WG310131-03
Prep Date:	08/20/09 06:55	Instrument ID:	HYDRA
Analyzed Date:	08/20/09 12:34	Method:	7470A
Analyst:	SLP		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG310131-04	HY.082009.123709	08/20/09 12:37	01
04CLAYPIPE-081809	L09080400-01	HY.082009.123905	08/20/09 12:39	01

Report Name: BLANK_SUMMARY
PDF File ID: 1470488
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108509

Login Number:L09080400 Prep Date:08/20/09 06:55 Sample ID:WG310131-03
Instrument ID:HYDRA Run Date:08/20/09 12:34 Prep Method:7470A
File ID:HY.082009.123436 Analyst:SLP Method:7470A
Workgroup (AAB#):WG310187 Matrix:Water Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID: HYDRA-20-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury	0.000100	0.000200	0.000100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1470489
20-AUG-2009 14:19

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108510

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310131-04
Instrument ID: HYDRA Run Time: 12:37 Prep Method: 7470A
File ID: HY.082009.123709 Analyst: SLP Method: 7470A
Workgroup (AAB#): WG310187 Matrix: Water Units: mg/L
QC Key: STD Lot#: STD34777 Cal ID: HYDRA-20-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury	0.00400	0.00434	109	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1470490
Report generated: 08/20/2009 14:19

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00108511

Loginnum:L09080400 Cal ID: HYDRA- Worknum:WG310187

Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7470A

Parent ID:WG310131-01 File ID:HY.082009.130110 Dil:1 Matrix:WATER

Sample ID:WG310131-05 MS File ID:HY.082009.130305 Dil:1 Units:mg/L

Sample ID:WG310131-06 MSD File ID:HY.082009.130448 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury	ND	0.00444	0.00482	109	0.00444	0.00494	111	2.50	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008

PDF File ID:1470491

Report generated 08/20/2009 14:19

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00108512

Loginnum:L09080400 Cal ID:HYDRA- Worknum:WG310187
Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7470A
Parent ID:WG310131-02 File ID:HY.082009.131335 Dil:1 Matrix:WATER
Sample ID:WG310131-07 MS File ID:HY.082009.131858 Dil:1 Units:mg/L
Sample ID:WG310131-08 MSD File ID:HY.082009.132051 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury	ND	0.00444	0.00492	111	0.00444	0.00489	110	0.680	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1470491
Report generated 08/20/2009 14:19

Sample Login ID: L09080400 **Worknum:** WG310187
Instrument ID: HYDRA **Method:** 7470A
Post Spike ID: WG310187-01 **File ID:** HY.082009.124240 **Dil:** 1 **Units:** ug/L
Sample ID: L09080329-01 **File ID:** HY.082009.124056 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	2.32		1.51		1	96.1	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

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1470486
Report generated: 08/20/2009 14:21

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00108514

Login Number: L09080400
Analytical Method: 7470A
ICAL Worknum: WG310216

Workgroup (AAB#): WG310187
Instrument ID: HYDRA
Initial Calibration Date: 08/20/2009 12:13

Analyte	WG310216-01		WG310216-02		WG310216-03		WG310216-04		WG310216-05		WG310216-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	-85	0.200	760	1.00	3079	2.00	5840	5.00	14547	10.0	30042

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1470492
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00108515

Login Number: L09080400
Analytical Method: 7470A
ICAL Worknum: WG310216

Workgroup (AAB#): WG310187
Instrument ID: HYDRA
Initial Calibration Date: 08/20/2009 12:13

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1470492
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

00108516

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-08
Instrument ID: HYDRA Run Time: 12:20 Method: 7470A
File ID: HY.082009.122033 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.1	.2	.1	U

ICB - Modified 07/14/2009
PDF File ID: 1470494
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108517

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-10
Instrument ID: HYDRA Run Time: 12:24 Method: 7470A
File ID: HY.082009.122421 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1470496
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108518

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-12
Instrument ID: HYDRA Run Time: 12:55 Method: 7470A
File ID: HY.082009.125541 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.102	F

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: 1470496
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108519

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-14
Instrument ID: HYDRA Run Time: 13:17 Method: 7470A
File ID: HY.082009.131704 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1470496
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108520

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-16
Instrument ID: HYDRA Run Time: 13:24 Method: 7470A
File ID: HY.082009.132435 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1470496
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00108521

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-07
Instrument ID: HYDRA Run Time: 12:18 Method: 7470A
File ID: HY.082009.121851 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
QC Key: STD

Analyte	Expected	Found	%REC	LIMITS	Q
Mercury	2	2.06	103	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1470493
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108522

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-09
Instrument ID: HYDRA Run Time: 12:22 Method: 7470A
File ID: HY.082009.122227 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00201	mg/L	101	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1470495
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108523

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-11
Instrument ID: HYDRA Run Time: 12:53 Method: 7470A
File ID: HY.082009.125344 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00200	mg/L	100	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1470495
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108524

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-13
Instrument ID: HYDRA Run Time: 13:15 Method: 7470A
File ID: HY.082009.131522 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00198	mg/L	99.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1470495
Report generated 08/20/2009 14:19

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108525

Login Number: L09080400 Run Date: 08/20/2009 Sample ID: WG310216-15
Instrument ID: HYDRA Run Time: 13:22 Method: 7470A
File ID: HY.082009.132233 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG310187 Cal ID: HYDRA - 20-AUG-09
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00192	mg/L	96.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1470495
Report generated 08/20/2009 14:19

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 21, 2009

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

Qualkey: STD_ND=U

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

COC NO. 081809-01

00108529

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 (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 Hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print:
ALLEN WILLMORE
(713) 247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	VOCs (8260)	SVOCs (8270)	TAL METALS (6010/6020)	MERCURY (7470)						Comments
04CLAYPIPE-081809	X	8/18/2009	15:20	Water	5	X	X	X	X						
TB-081809	X	8/18/2009	14:10	Water	2	X									

Relinquished By:
Date/Time 8/18/09

Received By:
Date/Time

Microbac OVD
Received: 08/19/2009 10:01
By: ROBIN KLINGER

Special Instructions
221000001166

Relinquished By:
Date/Time

Received fc
Date/Time

1000001166
00108530

COOLER INSPECTION

Received: 08/19/2009 10:01
Delivery Method: UPS
Opened By: Robin Klinger
Comments:

Login(s): L09080400

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0012223	H	3.0	1Z66V7250195092977	081809-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	No	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	Yes	Were correct perservatives used? (water only)
9	Yes	Were pH ranges acceptable? (voa's excluded)
10	Yes	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Discrepancies:

6	Rec'd 3 VOA's for TB-081809, instead of 2.	

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

Internal Chain of Custody Report

Login: L09080400
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 20-AUG-2009

Samplenum	Container ID	Products
L09080400-01	607195	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-AUG-2009 11:15	RLK	
2	ANALYZ	V1	ORG4	19-AUG-2009 11:20	TMB	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-AUG-2009 11:15	RLK	
2	ANALYZ	V1	ORG4	19-AUG-2009 11:20	TMB	JKT

Samplenum	Container ID	Products
L09080400-01	607196	8270

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:15	RLK	
2	PREP	W1	EXT	19-AUG-2009 11:19	CEB	JKT
3	ANALYZ*	EXT	SEMI	19-AUG-2009 14:09	CAA	CEB
4	DISP	EXT	DISP	19-AUG-2009 19:40	RB	RB

Sample extract/digestate

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:15	RLK	
2	PREP	W1	EXT	19-AUG-2009 11:18	CEB	JKT
3	ANALYZ*	EXT	SEMI	19-AUG-2009 14:09	CAA	CEB

Sample extract/digestate

Samplenum	Container ID	Products
L09080400-01	607197	AG-MS AL AS-MS BA-MS BE-AX CA CD-MS CO-AX CR-M

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	19-AUG-2009 11:15	RLK	
2	PREP	W1	DIG	19-AUG-2009 11:24	REK	JKT
3	ANALYZ*	DIG	METALS	20-AUG-2009 09:53	PDM	REK
4	STORE	DIG	A1	20-AUG-2009 13:04	JKT	REK

Sample extract/digestate

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

Internal Chain of Custody Report

00108532

Login: L09080400
Account: 2773
Project: 2773.025
Samples: 2
Due Date: 20-AUG-2009

Samplenum	Container ID	Products
L09080400-02	607198	826-LOW

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-AUG-2009 11:15	RLK	
2	ANALYZ	V1	ORG4	19-AUG-2009 11:20	TMB	JKT

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-AUG-2009 11:15	RLK	
2	ANALYZ	V1	ORG4	19-AUG-2009 11:20	TMB	JKT

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	19-AUG-2009 11:15	RLK	
2	ANALYZ	V1	ORG4	19-AUG-2009 11:20	TMB	JKT

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

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

08/11/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67138

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: **26**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67138

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F67138-1	08/05/09	10:05	AW	08/06/09	SO	Soil	04DS01 (0-2)
F67138-2	08/05/09	10:40	AW	08/06/09	SO	Soil	04DS02 (0-2)
F67138-3	08/05/09	11:00	AW	08/06/09	SO	Soil	04DS03 (0-3)
F67138-4	08/05/09	11:05	AW	08/06/09	SO	Soil	04DS04 (0-2)
F67138-5	08/05/09	10:20	AW	08/06/09	SO	Soil	04DS05 (0-4)
F67138-6	08/05/09	12:45	AW	08/06/09	SO	Soil	04CONC01
F67138-7	08/05/09	12:55	AW	08/06/09	SO	Soil	04CONC02

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67138

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 8/11/2009 10:44:52

7 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 F67138. 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.

Wet Chemistry by Method EPA 120.1 M

Matrix: SO **Batch ID:** GN36173

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample F67138-1DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 314M

Matrix: SO **Batch ID:** GP13412

All samples were prepped 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 F67138-1DUP, F67138-1MS were used as the QC samples for Perchlorate.

Wet Chemistry by Method SM19 2540B M

Matrix: SO **Batch ID:** GN36168

Sample F67138-1DUP was used as the QC sample for Solids, Percent.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: August 11, 2009

Ellen Pampel, Inorganic QA (signature on file)

Tuesday, August 11, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04DS01 (0-2)		
Lab Sample ID:	F67138-1	**Date Sampled:**	08/05/09
Matrix:	SO - Soil	**Date Received:**	08/06/09
		Percent Solids:	87.8
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	82.8 B	160	52	ug/kg	5	08/09/09 10:49	LT	EPA 314M
Solids, Percent	87.8			%	1	08/10/09	LE	SM19 2540B M
Specific Conductivity	90.1	1.0	1.0	umhos/cm	1	08/08/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04DS02 (0-2)		
Lab Sample ID:	F67138-2	**Date Sampled:**	08/05/09
Matrix:	SO - Soil	**Date Received:**	08/06/09
		Percent Solids:	82.6
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	126000	8200	2700	ug/kg	250	08/09/09 11:06	LT	EPA 314M
Solids, Percent	82.6			%	1	08/10/09	LE	SM19 2540B M
Specific Conductivity	454	1.0	1.0	umhos/cm	1	08/08/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04DS03 (0-3)		
Lab Sample ID:	F67138-3	**Date Sampled:**	08/05/09
Matrix:	SO - Soil	**Date Received:**	08/06/09
		Percent Solids:	82.2
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	55.6 B	160	54	ug/kg	5	08/09/09 11:24	LT	EPA 314M
Solids, Percent	82.2			%	1	08/10/09	LE	SM19 2540B M
Specific Conductivity	21.2	1.0	1.0	umhos/cm	1	08/08/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04DS04 (0-2)		
Lab Sample ID:	F67138-4	**Date Sampled:**	08/05/09
Matrix:	SO - Soil	**Date Received:**	08/06/09
		Percent Solids:	82.6
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	12400	830	280	ug/kg	25	08/09/09 11:41	LT	EPA 314M
Solids, Percent	82.6			%	1	08/10/09	LE	SM19 2540B M
Specific Conductivity	88.2	1.0	1.0	umhos/cm	1	08/08/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04DS05 (0-4)		
Lab Sample ID:	F67138-5	**Date Sampled:**	08/05/09
Matrix:	SO - Soil	**Date Received:**	08/06/09
		Percent Solids:	80.2
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	13900	1700	570	ug/kg	50	08/09/09 11:59	LT	EPA 314M
Solids, Percent	80.2			%	1	08/10/09	LE	SM19 2540B M
Specific Conductivity	70.2	1.0	1.0	umhos/cm	1	08/08/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CONC01		
Lab Sample ID:	F67138-6	**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		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	6930	1300	430	ug/kg	50	08/09/09 12:51	LT	EPA 314M
Specific Conductivity	226	1.0	1.0	umhos/cm	1	08/08/09	LT	EPA 120.1 M

(a) Percent solids not analyzed due to sample matrix. Results reported on wet weight basis.

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CONC02		
Lab Sample ID:	F67138-7	**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		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	83300	6500	2200	ug/kg	250	08/09/09 13:08	LT	EPA 314M
Specific Conductivity	1970	1.0	1.0	umhos/cm	1	08/08/09	LT	EPA 120.1 M

(a) Percent solids not analyzed due to sample matrix. Results reported on wet weight basis.

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

COC NO.

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

F67138

PM: Praveen Svrlvastav (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

24 HOUR TAT!!

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04DS01 (0-2)	X	8/5/09	10:05	Soils	1	X	
04DS02 (0-2)	X	8/5/09	10:40	Soils	1	X	
04DS03 (0-2)	X	8/5/09	11:00	Soils	1	X	
04DS04 (0-2)	X	8/5/09	11:05	Soils	1	X	
04DS05 (0-4)	X	8/5/09	10:20	Soils	1	X	
04CONC01	X	8/5/09	12:45	Soils	1	X	SOIL ADHERED TO CONCRETE SAMPLE IN ZIPLOCK BAG
04CONC02	X	8/5/09	12:55	Soils	1	X	
	X			Soils			
	X			Soils			

Relinquished By: Date/Time 8/5/09 17:30
Received By: UPS Date/Time

Special Instructions: 24-HOUR TAT!!

Relinquished By: UPS Date/Time
Received for Laboratory By: Accutest Date/Time 8.6.09 09:30

Remarks:

3.4

F67138: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67138 CLIENT: Shaw PROJECT: CHAAP-04

DATE/TIME RECEIVED: 8.6.09 09:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 3.4

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 1Z 66V 725 01 9158 2490

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [ ] TRIP BLANK NOT PROVIDED
- [ ] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? ____

NUMBER OF 5035 FIELD KITS ? ____

NUMBER OF LAB FILTERED METALS ? ____

SUMMARY OF COMMENTS: ____

TECHNICIAN SIGNATURE/DATE E.T. 8.6.09 TECHNICIAN SIGNATURE/DATE JC 8-6-09

ASBD 12/17/07

4.1 4

F67138: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 08/11/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67138					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36174, GN36168, GN36173, GP13412					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?	X					
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?			X			
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?	X					
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 08/11/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67138					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36174, GN36168, GN36173, GP13412					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 08/11/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67138
Reviewer Name: Ellen Pampel	Batch Number(s): GN36174, GN36168, GN36173, GP13412

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	08/11/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67138
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13412/GN36174	9.1	0.0	ug/kg	151	145	96.0	75-125%
Specific Conductivity	GN36173	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36173: F67138-1, F67138-2, F67138-3, F67138-4, F67138-5, F67138-6, F67138-7
Batch GP13412: F67138-1, F67138-2, F67138-3, F67138-4, F67138-5, F67138-6, F67138-7
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67138
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13412/GN36174	F67138-1	ug/kg	82.8 B	81.4	1.7	0-30%
Solids, Percent	GN36168	F67138-1	%	87.8	85.5	2.7	0-10%
Specific Conductivity	GN36173	F67138-1	umhos/cm	90.1	87.7	2.7	0-10%

Associated Samples:
Batch GN36168: F67138-1, F67138-2, F67138-3, F67138-4, F67138-5
Batch GN36173: F67138-1, F67138-2, F67138-3, F67138-4, F67138-5, F67138-6, F67138-7
Batch GP13412: F67138-1, F67138-2, F67138-3, F67138-4, F67138-5, F67138-6, F67138-7
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67138
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13412/GN36174	F67138-1	ug/kg	82.8 B	171	279	114.9	50-150%

Associated Samples:
Batch GP13412: F67138-1, F67138-2, F67138-3, F67138-4, F67138-5, F67138-6, F67138-7
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67138
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209080901.TXT Date Analyzed: 08/09/09 Methods: EPA 314M
Analyst: LT Run ID: GN36174
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
08:47	GN36174-CCV1	1		
09:05	GN36174-CCB1	1		
10:14	GP13412-MB1	1		
10:32	GP13412-B1	1		
10:49	F67138-1	5		
11:06	F67138-2	250		
11:24	F67138-3	5		
11:41	F67138-4	25		
11:59	F67138-5	50		
12:16	GN36174-CCV2	1		
12:33	GN36174-CCB2	1		
12:51	F67138-6	50		
13:08	F67138-7	250		
13:26	GP13412-D1	5		
13:43	GP13412-S1	5		
15:45	GN36174-CCV3	1		
16:02	GN36174-CCB3	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67138
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209080901.TXT Date Analyzed: 08/09/09 Methods: EPA 314M
Run ID: GN36174 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36174-CCV1	Perchlorate	50.0	3.0	0.80	50	100.0	85-115
GN36174-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36174-CCV2	Perchlorate	203	3.0	0.80	50	102.0	85-115
GN36174-CCB2	Perchlorate	0.80 U	3.0	0.80			
GN36174-CCV3	Perchlorate	46.8	3.0	0.80	50	93.6	85-115
GN36174-CCB3	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits

Percent Solids Raw Data Summary

Job Number: F67138
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67138-1 **Analyzed:** 10-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04DS01 (0-2)

Wet Weight (Total)	6.72	g
Tare Weight	.98	g
Dry Weight (Total)	6.02	g
Solids, Percent	87.8	%

Sample: F67138-2 **Analyzed:** 10-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04DS02 (0-2)

Wet Weight (Total)	7.05	g
Tare Weight	.96	g
Dry Weight (Total)	5.99	g
Solids, Percent	82.6	%

Sample: F67138-3 **Analyzed:** 10-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04DS03 (0-3)

Wet Weight (Total)	7.6	g
Tare Weight	.98	g
Dry Weight (Total)	6.42	g
Solids, Percent	82.2	%

Sample: F67138-4 **Analyzed:** 10-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04DS04 (0-2)

Wet Weight (Total)	9.18	g
Tare Weight	1.04	g
Dry Weight (Total)	7.76	g
Solids, Percent	82.6	%

Sample: F67138-5 **Analyzed:** 10-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04DS05 (0-4)

Wet Weight (Total)	8.25	g
Tare Weight	.97	g
Dry Weight (Total)	6.81	g
Solids, Percent	80.2	%

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

08/30/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67278

Sampling Date: 08/12/09

Report to:

SHAW E & I

jennifer.hoang@shawgrp.com

ATTN: Jennifer Hoang

Total number of pages in report: **21**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Accutest Laboratories is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.

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Accutest LabLink@93201 10:18 30-Aug-2009

Sample Summary

SHAW E & I

Job No: F67278

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
F67278-1	08/12/09	08:20	AW	08/13/09	SO	Soil	O4CSFL04
F67278-1D	08/12/09	08:20	AW	08/13/09	SO	Soil Dup/MSD	O4CSFL04
F67278-1S	08/12/09	08:20	AW	08/13/09	SO	Soil Matrix Spike	O4CSFL04
F67278-2	08/12/09	08:30	AW	08/13/09	SO	Soil	O4CSWAB

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67278

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 8/18/2009 3:14:52 PM

2 Samples were collected on 08/12/2009 and were received at Accutest SE on 08/13/2009 properly preserved, at 3.4 Deg. C and intact. These Samples received an Accutest job number of F67278. 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.

Wet Chemistry by Method EPA 120.1 M

Matrix: SO **Batch ID:** GN36258

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample F67278-1DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 314M

Matrix: SO **Batch ID:** GP13440

All samples were prepped 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 F67278-1DUP, F67278-1MS were used as the QC samples for Perchlorate.

Wet Chemistry by Method SM19 2540B M

Matrix: SO **Batch ID:** GN36245

Sample F67278-1DUP was used as the QC sample for Solids, Percent.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: August 18, 2009

Ellen Pampel, Inorganic QA (signature on file)

Tuesday, August 18, 2009

Sample Results

Report of Analysis

Accutest LabLink@93201 10:18 30-Aug-2009

Report of Analysis

Client Sample ID:	O4CSFL04		
Lab Sample ID:	F67278-1	**Date Sampled:**	08/12/09
Matrix:	SO - Soil	**Date Received:**	08/13/09
		Percent Solids:	81.9
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	2.9 U	11	2.9	ug/kg	1	08/15/09 14:59	LT	EPA 314M
Solids, Percent	81.9			%	1	08/14/09	LE	SM19 2540B M
Specific Conductivity	82.9	1.0	1.0	umhos/cm	1	08/15/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest LabLink@93201 10:18 30-Aug-2009

Report of Analysis

Client Sample ID:	O4CSWAB		
Lab Sample ID:	F67278-2	**Date Sampled:**	08/12/09
Matrix:	SO - Soil	**Date Received:**	08/13/09
		Percent Solids:	73.9
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	3.2 U	12	3.2	ug/kg	1	08/15/09 15:16	LT	EPA 314M
Solids, Percent	73.9			%	1	08/14/09	LE	SM19 2540B M
Specific Conductivity	48.7	1.0	1.0	umhos/cm	1	08/15/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

COC NO.

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

F67278

PM: Praveen Svrivastav (713.996.4588) TAT: 24 hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: LHAAP-04 Site: Confirmation Sampling
Project #: 117591-0009B300 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292
Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04CSFL04	X	8/12/09	8:20	Soils	1	X	24-hour TAT
04CSFL04-MS	X	8/12/09	8:20	Soils	1	X	24-hour TAT
04CSFL04-MSD	X	8/12/09	8:20	Soils	1	X	24-hour TAT
04CSWAB	X	8/12/09	8:30	Soils	1	X	24-hour TAT
	X			Soils			
	X			Soils			
	X			Soils			
	X			Soils			
	X			Soils			

Relinquished By: Date/Time 8/12/09 17:30
Received By: UPS Date/Time

Special Instructions: 3.4

Relinquished By: UPS Date/Time
Received for Laboratory By: Accutest Date/Time 8.13.09 10:00

Remarks:

F67278: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67278 CLIENT: Shaw PROJECT: LHAAP-04

DATE/TIME RECEIVED: 8.13.09 10:00 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 3.4

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 1Z 66V 725 01 9163 2784

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? 0

NUMBER OF 5035 FIELD KITS ? 0

NUMBER OF LAB FILTERED METALS ? 0

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE E.T. 8.13.09 TECHNICIAN SIGNATURE/DATE JC 8-13-09

ASBD 12/17/07

F67278: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 08/20/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67278					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36264, GN36245, GN36258, GP13440					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?	X					
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?			X			
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?	X					
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 08/20/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67278					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36264, GN36245, GN36258, GP13440					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 08/20/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67278
Reviewer Name: Ellen Pampel	Batch Number(s): GN36264, GN36245, GN36258, GP13440

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	08/20/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67278
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13440/GN36264	9.1	0.0	ug/kg	152	145	95.7	75-125%
Specific Conductivity	GN36258	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36258: F67278-1, F67278-2
Batch GP13440: F67278-1, F67278-2
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67278
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13440/GN36264	F67278-1	ug/kg	2.9 U	0.0	0.0	0-30%
Solids, Percent	GN36245	F67278-1	%	81.9	81	1.1	0-10%
Specific Conductivity	GN36258	F67278-1	umhos/cm	82.9	75.1	9.9	0-10%

Associated Samples:
Batch GN36245: F67278-1, F67278-2
Batch GN36258: F67278-1, F67278-2
Batch GP13440: F67278-1, F67278-2
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67278
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13440/GN36264	F67278-1	ug/kg	2.9 U	184	141	76.7	50-150%

Associated Samples:
Batch GP13440: F67278-1, F67278-2
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67278
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209081501.TXT Date Analyzed: 08/15/09 Methods: EPA 314M
Analyst: LT Run ID: GN36264
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:57	GN36264-CCV1	1		
13:14	GN36264-CCB1	1		
14:24	GP13440-MB1	1		
14:41	GP13440-B1	1		
14:59	F67278-1	1		
15:16	F67278-2	1		
15:51	GP13440-D1	1		
16:08	GP13440-S1	1		
16:26	GN36264-CCV2	1		
16:43	GN36264-CCB2	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67278
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209081501.TXT Date Analyzed: 08/15/09 Methods: EPA 314M
Run ID: GN36264 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36264-CCV1	Perchlorate	45.7	3.0	0.80	50	91.4	85-115
GN36264-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36264-CCV2	Perchlorate	201(a)	3.0	0.80	50	101.0	85-115
GN36264-CCB2	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Percent Solids Raw Data Summary

Job Number: F67278
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67278-1 **Analyzed:** 14-AUG-09 by LE **Method:** SM19 2540B M
ClientID: O4CSFL04

Wet Weight (Total)	7.23	g
Tare Weight	1.05	g
Dry Weight (Total)	6.11	g
Solids, Percent	81.9	%

Sample: F67278-2 **Analyzed:** 14-AUG-09 by LE **Method:** SM19 2540B M
ClientID: O4CSWAB

Wet Weight (Total)	8.64	g
Tare Weight	1.02	g
Dry Weight (Total)	6.65	g
Solids, Percent	73.9	%

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

08/26/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67366

Sampling Date: 08/14/09

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: **29**

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

ACCUTEST LABORATORIES 50 YEARS 1956-2006

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67366

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F67366-1	08/14/09	08:00	AW	08/17/09	SO	Soil	04CSFL01 (4)
F67366-2	08/14/09	08:00	AW	08/17/09	SO	Soil	04CSFL01 (4) QC
F67366-3	08/14/09	08:05	AW	08/17/09	SO	Soil	04CSWCJ
F67366-4	08/14/09	08:10	AW	08/17/09	SO	Soil	04CSWHA
F67366-5	08/14/09	08:20	AW	08/17/09	SO	Soil	04CSWBC
F67366-6	08/14/09	08:30	AW	08/17/09	SO	Soil	04CSFL03 (4)
F67366-7	08/14/09	10:50	AW	08/17/09	SO	Soil	04CSWJK

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67366

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 8/25/2009 2:59:02 PM

7 Samples were collected on 08/14/2009 and were received at Accutest SE on 08/17/2009 properly preserved, at 3.8 Deg. C and intact. These Samples received an Accutest job number of F67366. 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.

Wet Chemistry by Method EPA 120.1 M

Matrix: SO **Batch ID:** GN36318

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample F67366-1DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 314M

Matrix: SO **Batch ID:** GP13444

All samples were prepped 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 F67366-1DUP, F67366-1MS were used as the QC samples for Perchlorate.

Matrix Spike Recovery for Perchlorate is outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Wet Chemistry by Method SM19 2540B M

Matrix: SO **Batch ID:** GN36273

Sample F67260-2DUP was used as the QC sample for Solids, Percent.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: August 25, 2009

Ellen Pampel, Inorganic QA (signature on file)

Tuesday, August 25, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL01 (4)		
Lab Sample ID:	F67366-1	**Date Sampled:**	08/14/09
Matrix:	SO - Soil	**Date Received:**	08/17/09
		Percent Solids:	80.9
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	36400	550	150	ug/kg	50	08/20/09 18:39	LT	EPA 314M
Solids, Percent	80.9			%	1	08/17/09	LE	SM19 2540B M
Specific Conductivity	203	1.0	1.0	umhos/cm	1	08/19/09 18:00	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL01 (4) QC		
Lab Sample ID:	F67366-2	**Date Sampled:**	08/14/09
Matrix:	SO - Soil	**Date Received:**	08/17/09
		Percent Solids:	80.8
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	46200	1100	300	ug/kg	100	08/20/09 18:56	LT	EPA 314M
Solids, Percent	80.8			%	1	08/17/09	LE	SM19 2540B M
Specific Conductivity	196	1.0	1.0	umhos/cm	1	08/19/09 18:00	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWCJ		
Lab Sample ID:	F67366-3	**Date Sampled:**	08/14/09
Matrix:	SO - Soil	**Date Received:**	08/17/09
		Percent Solids:	84.5
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	7390	160	43	ug/kg	15	08/20/09 19:14	LT	EPA 314M
Solids, Percent	84.5			%	1	08/17/09	LE	SM19 2540B M
Specific Conductivity	227	1.0	1.0	umhos/cm	1	08/19/09 18:00	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWHA		
Lab Sample ID:	F67366-4	**Date Sampled:**	08/14/09
Matrix:	SO - Soil	**Date Received:**	08/17/09
		Percent Solids:	82.8
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	117	11	2.9	ug/kg	1	08/20/09 19:31	LT	EPA 314M
Solids, Percent	82.8			%	1	08/17/09	LE	SM19 2540B M
Specific Conductivity	53.1	1.0	1.0	umhos/cm	1	08/19/09 18:00	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWBC		
Lab Sample ID:	F67366-5	**Date Sampled:**	08/14/09
Matrix:	SO - Soil	**Date Received:**	08/17/09
		Percent Solids:	89.4
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	2.7 U	10	2.7	ug/kg	1	08/20/09 19:49	LT	EPA 314M
Solids, Percent	89.4			%	1	08/17/09	LE	SM19 2540B M
Specific Conductivity	66.3	1.0	1.0	umhos/cm	1	08/19/09 18:00	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL03 (4)		
Lab Sample ID:	F67366-6	**Date Sampled:**	08/14/09
Matrix:	SO - Soil	**Date Received:**	08/17/09
		Percent Solids:	80.3
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	5920	110	30	ug/kg	10	08/21/09 17:08	LT	EPA 314M
Solids, Percent	80.3			%	1	08/17/09	LE	SM19 2540B M
Specific Conductivity	84.1	1.0	1.0	umhos/cm	1	08/19/09 18:00	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWJK		
Lab Sample ID:	F67366-7	**Date Sampled:**	08/14/09
Matrix:	SO - Soil	**Date Received:**	08/17/09
		Percent Solids:	81.6
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	2.9 U	11	2.9	ug/kg	1	08/21/09 17:26	LT	EPA 314M
Solids, Percent	81.6			%	1	08/17/09	LE	SM19 2540B M
Specific Conductivity	41.1	1.0	1.0	umhos/cm	1	08/19/09 18:00	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

COC NO.

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

F67366

PM: Praveen Svrivastav (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

24-Hour TAT!!

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04CSFL01(4)	X	8/14/09	8:00	Soils	1	X	
04CSFL01(4) QC	X	8/14/09	8:00	Soils	1	X	
04CSWCJ	X	8/14/09	8:05	Soils	1	X	
04CSWHA	X	8/14/09	8:10	Soils	1	X	
04CSWBC	X	8/14/09	8:20	Soils	1	X	
04CSFL03(4)	X	8/14/09	8:30	Soils	1	X	
04CSWJK	X	8/14/09	10:50	Soils	1	X	
	X			Soils			
	X			Soils			

Relinquished By: Date/Time 8.14.09 17:30
Received By: UPS Date/Time

Special Instructions

Relinquished By: UPS Date/Time
Received for Laboratory By: J. Comer (ACCUTEST) Date/Time 8-17-09 09:30

Remarks:

5.8

F67366: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67366 CLIENT: SHAW PROJECT: LHAAP-04

DATE/TIME RECEIVED: 8-17-09 09:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 5.8

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 1 223 880 130 0

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [X] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? _____

NUMBER OF 5035 FIELD KITS ? _____

NUMBER OF LAB FILTERED METALS ? _____

SUMMARY OF COMMENTS: FOR SAMPLE #5 COC reads 8:20 : NO TIME ON LABEL

TECHNICIAN SIGNATURE/DATE JC 8-17-09 TECHNICIAN SIGNATURE/DATE _____

ASBD 12/17/07

F67366: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 08/25/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67366					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36341, GN36357, GN36273, GN36318, GP13444					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2	
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?			X			
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?	X					
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 08/25/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67366					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36341, GN36357, GN36273, GN36318, GP13444					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 08/25/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67366
Reviewer Name: Ellen Pampel	Batch Number(s): GN36341, GN36357, GN36273, GN36318, GP13444

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	08/25/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67366
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13444/GN36341	9.1	0.0	ug/kg	152	163	107.6	75-125%
Specific Conductivity	GN36318	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36318: F67366-1, F67366-2, F67366-3, F67366-4, F67366-5, F67366-6, F67366-7
Batch GP13444: F67366-1, F67366-2, F67366-3, F67366-4, F67366-5, F67366-6, F67366-7
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67366
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13444/GN36357	F67366-1	ug/kg	36400	29400	21.3	0-30%
Solids, Percent	GN36273	F67260-2	%	77.8	80.4	3.3	0-10%
Specific Conductivity	GN36318	F67366-1	umhos/cm	203	203	0.2	0-10%

Associated Samples:
Batch GN36273: F67366-1, F67366-2, F67366-3, F67366-4, F67366-5, F67366-6, F67366-7
Batch GN36318: F67366-1, F67366-2, F67366-3, F67366-4, F67366-5, F67366-6, F67366-7
Batch GP13444: F67366-1, F67366-2, F67366-3, F67366-4, F67366-5, F67366-6, F67366-7
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67366
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13444/GN36357	F67366-1	ug/kg	36400	183	29200	0.0(a)	50-150%

Associated Samples:
Batch GP13444: F67366-1, F67366-2, F67366-3, F67366-4, F67366-5, F67366-6, F67366-7
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67366
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082001.TXT Date Analyzed: 08/20/09 Methods: EPA 314M
Analyst: LT Run ID: GN36341
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
16:37	GN36341-CCV1	1		
16:55	GN36341-CCB1	1		
18:04	GP13444-MB1	1		
18:22	GP13444-B1	1		
18:39	F67366-1	50		
18:56	F67366-2	100		
19:14	F67366-3	15		
19:31	F67366-4	1		
19:49	F67366-5	1		
20:06	GN36341-CCV2	1		
20:23	GN36341-CCB2	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67366
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082001.TXT Date Analyzed: 08/20/09 Methods: EPA 314M
Run ID: GN36341 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36341-CCV1	Perchlorate	211(a)	3.0	0.80	50	106.0	85-115
GN36341-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36341-CCV2	Perchlorate	48.8	3.0	0.80	50	97.6	85-115
GN36341-CCB2	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67366
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082101.TXT Date Analyzed: 08/21/09 Methods: EPA 314, EPA 314M
Analyst: LT Run ID: GN36357
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:12	GN36357-CCV1	1		
12:30	GN36357-CCB1	1		
13:39	GP13467-MB1	1		
13:57	GP13467-B1	1		
14:14	F67414-1	500		(sample used for QC only; not part of login F67366)
14:32	GP13467-D1	500		
14:49	GP13467-S1	500		
15:06	GN36357-CCV2	1		
15:24	GN36357-CCB2	1		
17:08	F67366-6	10		
17:26	F67366-7	1		
18:00	GP13444-S1	100		
18:18	GP13444-D1	100		
18:35	GN36357-CCV3	1		
18:53	GN36357-CCB3	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67366
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082101.TXT Date Analyzed: 08/21/09 Methods: EPA 314, EPA 314M
Run ID: GN36357 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36357-CCV1	Perchlorate	47.9	10	4.0	50	95.8	85-115
GN36357-CCB1	Perchlorate	4.0 U	10	4.0			
GN36357-CCV2	Perchlorate	200(a)	10	4.0	50	100.0	85-115
GN36357-CCB2	Perchlorate	4.0 U	10	4.0			
GN36357-CCV3	Perchlorate	46.1	10	4.0	50	92.2	85-115
GN36357-CCB3	Perchlorate	4.0 U	10	4.0			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Percent Solids Raw Data Summary

Job Number: F67366
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67366-1 **Analyzed:** 17-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSFL01 (4)

Wet Weight (Total)	8.29	g
Tare Weight	1.02	g
Dry Weight (Total)	6.9	g
Solids, Percent	80.9	%

Sample: F67366-2 **Analyzed:** 17-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSFL01 (4) QC

Wet Weight (Total)	6.87	g
Tare Weight	.97	g
Dry Weight (Total)	5.74	g
Solids, Percent	80.8	%

Sample: F67366-3 **Analyzed:** 17-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWCJ

Wet Weight (Total)	7.22	g
Tare Weight	1.02	g
Dry Weight (Total)	6.26	g
Solids, Percent	84.5	%

Sample: F67366-4 **Analyzed:** 17-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWHA

Wet Weight (Total)	7.57	g
Tare Weight	1	g
Dry Weight (Total)	6.44	g
Solids, Percent	82.8	%

Sample: F67366-5 **Analyzed:** 17-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWBC

Wet Weight (Total)	6.48	g
Tare Weight	1	g
Dry Weight (Total)	5.9	g
Solids, Percent	89.4	%

Sample: F67366-6 **Analyzed:** 17-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSFL03 (4)

Wet Weight (Total)	7.35	g
Tare Weight	1.01	g
Dry Weight (Total)	6.1	g
Solids, Percent	80.3	%

Percent Solids Raw Data Summary

Job Number: F67366
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67366-7 **Analyzed:** 17-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWJK

Wet Weight (Total)	7.15	g
Tare Weight	1.01	g
Dry Weight (Total)	6.02	g
Solids, Percent	81.6	%

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

08/25/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67382

Sampling Date: 08/17/09

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: **31**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67382

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F67382-1	08/17/09	13:15	AW	08/18/09	SO	Soil	04CSWEF1
F67382-2	08/17/09	13:25	AW	08/18/09	SO	Soil	04CSWEF2
F67382-3	08/17/09	13:35	AW	08/18/09	SO	Soil	04CSWJI
F67382-4	08/17/09	13:35	AW	08/18/09	SO	Soil	04CSWJI-QC
F67382-5	08/17/09	13:40	AW	08/18/09	SO	Soil	04CSWLK
F67382-6	08/17/09	13:50	AW	08/18/09	SO	Soil	04CSWLI
F67382-7	08/17/09	13:55	AW	08/18/09	SO	Soil	04CSFL02 (4)
F67382-8	08/17/09	14:00	AW	08/18/09	SO	Soil	04CSFL05 (7)

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67382

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 8/25/2009 3:03:33 PM

8 Samples were collected on 08/17/2009 and were received at Accutest SE on 08/18/2009 properly preserved, at 2.6 Deg. C and intact. These Samples received an Accutest job number of F67382. 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.

Wet Chemistry by Method EPA 120.1 M

Matrix: SO **Batch ID:** GN36346

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample F67413-7DUP was used as the QC sample for Specific Conductivity.

RPD for Duplicate for Specific Conductivity is outside control limits for sample GN36346-D1. High RPD due to possible sample nonhomogeneity.

Wet Chemistry by Method EPA 314M

Matrix: SO **Batch ID:** GP13466

All samples were prepped 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 F67413-7DUP, F67413-7MS, F67413-7MSD were used as the QC samples for Perchlorate.

Matrix Spike and Matrix Spike Duplicate Recoverys for Perchlorate are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Wet Chemistry by Method SM19 2540B M

Matrix: SO **Batch ID:** GN36295

Sample F67372-1DUP was used as the QC sample for Solids, Percent.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ellen Pampel, Inorganic QA (signature on file)

Date: August 25, 2009

Tuesday, August 25, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWEF1		
Lab Sample ID:	F67382-1	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	77.6
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	182	12	3.1	ug/kg	1	08/21/09 20:37	LT	EPA 314M
Solids, Percent	77.6			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	123	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWEF2		
Lab Sample ID:	F67382-2	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	83.1
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	266	11	2.9	ug/kg	1	08/21/09 20:55	LT	EPA 314M
Solids, Percent	83.1			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	36.7	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWJI		
Lab Sample ID:	F67382-3	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	82.8
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	81100	2700	730	ug/kg	250	08/23/09 20:11	LT	EPA 314M
Solids, Percent	82.8			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	240	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWJI-QC		
Lab Sample ID:	F67382-4	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	80.1
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	118000	5700	1500	ug/kg	500	08/23/09 20:45	LT	EPA 314M
Solids, Percent	80.1			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	270	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWLK		
Lab Sample ID:	F67382-5	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	81.8
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	7700	280	73	ug/kg	25	08/23/09 21:55	LT	EPA 314M
Solids, Percent	81.8			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	204	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWLI		
Lab Sample ID:	F67382-6	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	86.0
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	572000	11000	2800	ug/kg	1000	08/23/09 22:30	LT	EPA 314M
Solids, Percent	86			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	781	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL02 (4)		
Lab Sample ID:	F67382-7	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	83.9
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	71600	2100	570	ug/kg	200	08/23/09 23:39	LT	EPA 314M
Solids, Percent	83.9			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	199	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL05 (7)		
Lab Sample ID:	F67382-8	**Date Sampled:**	08/17/09
Matrix:	SO - Soil	**Date Received:**	08/18/09
		Percent Solids:	73.9
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	229000	6100	1600	ug/kg	500	08/24/09 00:14	LT	EPA 314M
Solids, Percent	73.9			%	1	08/19/09	LE	SM19 2540B M
Specific Conductivity	194	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

COC NO.

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

F67382

PM: Praveen Svrivastav (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

All samples 24-hour TAT!!

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04CSWEF1	X	8/17/09	13:15	Soils	1	X	
04CSWEF2	X	8/17/09	13:25	Soils	1	X	
04CSWJI	X	8/17/09	13:35	Soils	1	X	
04CSWJI-QC	X	8/17/09	13:35	Soils	1	X	
04CSWLK	X	8/17/09	13:40	Soils	1	X	
04CSWLI	X	8/17/09	13:50	Soils	1	X	
04CSFL02 (4)	X	8/17/09	13:55	Soils	1	X	
04CSFL05 (7)	X	8/17/09	14:00	Soils	1	X	
	X			Soils			

Relinquished By: Date/Time 8.17.09 17:30

Received By: UPS Date/Time

Special Instructions: 24-hour TAT!!

Relinquished By: UPS Date/Time

Received for Laboratory By: Accutest Date/Time 8.18.09 09:30

Remarks: 26

F67382: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67382 CLIENT: Shaw PROJECT: LHAAP-04

DATE/TIME RECEIVED: 8.18.09 09:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 2.6

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 12 66V 725 01 9470 4692

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ?

NUMBER OF 5035 FIELD KITS ?

NUMBER OF LAB FILTERED METALS ?

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE E.T. 8.18.09 TECHNICIAN SIGNATURE/DATE CR 8/18/09

ASBD 12/17/07

F67382: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 08/25/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67382					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36367, GN36376, GN36295, GN36346, GP13466					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2	
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?		X			2	
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?		X			2	
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 08/25/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67382					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36367, GN36376, GN36295, GN36346, GP13466					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 08/25/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67382
Reviewer Name: Ellen Pampel	Batch Number(s): GN36367, GN36376, GN36295, GN36346, GP13466

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	08/25/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13466/GN36367	9.1	0.0	ug/kg	152	138	91.1	75-125%
Specific Conductivity	GN36346	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36346: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
Batch GP13466: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13466/GN36367	F67413-7	ug/kg	58.8	71.7	19.8	0-30%
Solids, Percent	GN36295	F67372-1	%	86.1	86.3	0.2	0-10%
Specific Conductivity	GN36346	F67413-7	umhos/cm	60.4	54.6	10.1*(a)	0-10%

Associated Samples:
Batch GN36295: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
Batch GN36346: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
Batch GP13466: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
(*) Outside of QC limits
(a) High RPD due to possible sample nonhomogeneity.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13466/GN36367	F67413-7	ug/kg	58.8	180	148	49.4N(a)	50-150%

Associated Samples:
Batch GN36346: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
Batch GP13466: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Perchlorate	GP13466/GN36367	F67413-7	ug/kg	58.8	183	133	10.7N(a)	30%

Associated Samples:
Batch GP13466: F67382-1, F67382-2, F67382-3, F67382-4, F67382-5, F67382-6, F67382-7, F67382-8
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082102.TXT Date Analyzed: 08/21/09 Methods: EPA 314M
Analyst: LT Run ID: GN36367
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:35	GN36367-CCV1	1		
18:53	GN36367-CCB1	1		
20:02	GP13466-MB1	1		
20:20	GP13466-B1	1		
20:37	F67382-1	1		
20:55	F67382-2	1		
22:04	GN36367-CCV2	1		
22:22	GN36367-CCB2	1		
01:16	F67413-7	1		(sample used for QC only; not part of login F67382)
01:33	GN36367-CCV3	1		
01:50	GN36367-CCB3	1		
02:08	ZZZZZZ	1		
03:00	ZZZZZZ	1		
03:17	ZZZZZZ	1		
03:35	GP13466-D1	1		
03:52	GP13466-S1	1		
04:10	GP13466-S2	1		
04:27	GN36367-CCV4	1		
04:44	GN36367-CCB4	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082102.TXT Date Analyzed: 08/21/09 Methods: EPA 314M
Run ID: GN36367 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36367-CCV1	Perchlorate	46.1	3.0	0.80	50	92.2	85-115
GN36367-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36367-CCV2	Perchlorate	201(a)	3.0	0.80	50	101.0	85-115
GN36367-CCB2	Perchlorate	0.80 U	3.0	0.80			
GN36367-CCV3	Perchlorate	45.3	3.0	0.80	50	90.6	85-115
GN36367-CCB3	Perchlorate	0.80 U	3.0	0.80			
GN36367-CCV4	Perchlorate	198(a)	3.0	0.80	50	99.0	85-115
GN36367-CCB4	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082301.TXT Date Analyzed: 08/23/09 Methods: EPA 314M
Analyst: LT Run ID: GN36376
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:34	GN36376-CCV1	1		
17:51	GN36376-CCB1	1		
20:11	F67382-3	250		
20:45	F67382-4	500		
21:03	GN36376-CCV2	1		
21:20	GN36376-CCB2	1		
21:55	F67382-5	25		
22:30	F67382-6	1000		
23:39	F67382-7	200		
00:14	F67382-8	500		
00:32	GN36376-CCV3	1		
00:49	GN36376-CCB3	1		
02:51	ZZZZZZ	500		
03:26	ZZZZZZ	500		
04:01	GN36376-CCV4	1		
04:18	GN36376-CCB4	1		
04:35	ZZZZZZ	100		
05:10	ZZZZZZ	500		
05:45	ZZZZZZ	100		
06:20	ZZZZZZ	100		
07:12	ZZZZZZ	100		
07:30	GN36376-CCV5	1		
07:47	GN36376-CCB5	1		
08:22	ZZZZZZ	100		
09:32	GN36376-CCV6	1		
09:49	GN36376-CCB6	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67382
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082301.TXT Date Analyzed: 08/23/09 Methods: EPA 314M
Run ID: GN36376 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36376-CCV1	Perchlorate	49.8	3.0	0.80	50	99.6	85-115
GN36376-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV2	Perchlorate	208(a)	3.0	0.80	50	104.0	85-115
GN36376-CCB2	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV3	Perchlorate	47.7	3.0	0.80	50	95.4	85-115
GN36376-CCB3	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV4	Perchlorate	193(a)	3.0	0.80	50	96.5	85-115
GN36376-CCB4	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV5	Perchlorate	43.2	3.0	0.80	50	86.4	85-115
GN36376-CCB5	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV6	Perchlorate	197(a)	3.0	0.80	50	98.5	85-115
GN36376-CCB6	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Percent Solids Raw Data Summary

Job Number: F67382
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67382-1 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWEF1

Wet Weight (Total)	8.51	g
Tare Weight	1.11	g
Dry Weight (Total)	6.85	g
Solids, Percent	77.6	%

Sample: F67382-2 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWEF2

Wet Weight (Total)	7.84	g
Tare Weight	.98	g
Dry Weight (Total)	6.68	g
Solids, Percent	83.1	%

Sample: F67382-3 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWJI

Wet Weight (Total)	7.12	g
Tare Weight	.97	g
Dry Weight (Total)	6.06	g
Solids, Percent	82.8	%

Sample: F67382-4 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWJI-QC

Wet Weight (Total)	9.7	g
Tare Weight	1.01	g
Dry Weight (Total)	7.97	g
Solids, Percent	80.1	%

Sample: F67382-5 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWLK

Wet Weight (Total)	10.07	g
Tare Weight	.98	g
Dry Weight (Total)	8.42	g
Solids, Percent	81.8	%

Sample: F67382-6 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWLI

Wet Weight (Total)	6.76	g
Tare Weight	1.04	g
Dry Weight (Total)	5.96	g
Solids, Percent	86	%

Percent Solids Raw Data Summary

Job Number: F67382
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67382-7 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSFL02 (4)

Wet Weight (Total)	7.98	g
Tare Weight	.96	g
Dry Weight (Total)	6.85	g
Solids, Percent	83.9	%

Sample: F67382-8 **Analyzed:** 19-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSFL05 (7)

Wet Weight (Total)	7.82	g
Tare Weight	.96	g
Dry Weight (Total)	6.03	g
Solids, Percent	73.9	%

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

08/26/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67413

Sampling Date: 08/18/09

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: **36**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67413

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F67413-1	08/18/09	08:15	AW	08/19/09	SO	Soil	04CSWOP
F67413-2	08/18/09	08:15	AW	08/19/09	SO	Soil	04CSWOP-QC
F67413-3	08/18/09	08:25	AW	08/19/09	SO	Soil	04CSWMN
F67413-4	08/18/09	08:30	AW	08/19/09	SO	Soil	04CSWON
F67413-5	08/18/09	08:45	AW	08/19/09	SO	Soil	04CSWPM
F67413-6	08/18/09	08:50	AW	08/19/09	SO	Soil	04CSFL06 (10)
F67413-7	08/18/09	14:15	AW	08/19/09	SO	Soil	04CSWRQ
F67413-7D	08/18/09	14:15	AW	08/19/09	SO	Soil Dup/MSD	04CSWRQ
F67413-7S	08/18/09	14:15	AW	08/19/09	SO	Soil Matrix Spike	04CSWRQ
F67413-8	08/18/09	14:20	AW	08/19/09	SO	Soil	04CSWQH
F67413-9	08/18/09	14:30	AW	08/19/09	SO	Soil	04CSFL07 (5)
F67413-10	08/18/09	14:30	AW	08/19/09	SO	Soil	04CSFL07 (5)-QC
F67413-11	08/18/09	14:30	AW	08/19/09	SO	Soil	04CSFL08 (5)

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Sample Summary
(continued)

SHAW E & I

Job No: F67413

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F67413-12	08/18/09	18:30	AW	08/19/09	SO	Soil	04CSWFR

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67413

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 8/25/2009 3:07:16 PM

12 Samples were collected on 08/18/2009 and were received at Accutest SE on 08/19/2009 properly preserved, at 2.4 Deg. C and intact. These Samples received an Accutest job number of F67413. 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.

Wet Chemistry by Method EPA 120.1 M

Matrix: SO **Batch ID:** GN36346

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample F67413-7DUP was used as the QC sample for Specific Conductivity.

RPD for Duplicate for Specific Conductivity is outside control limits for sample GN36346-D1. High RPD due to possible sample nonhomogeneity.

Wet Chemistry by Method EPA 314M

Matrix: SO **Batch ID:** GP13466

All samples were prepped 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 F67413-7DUP, F67413-7MS, F67413-7MSD were used as the QC samples for Perchlorate.

Matrix Spike and Matrix Spike Duplicate Recoverys for Perchlorate are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Wet Chemistry by Method SM19 2540B M

Matrix: SO **Batch ID:** GN36311

Sample F67413-7DUP was used as the QC sample for Solids, Percent.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ellen Pampel, Inorganic QA (signature on file)

Date: August 25, 2009

Tuesday, August 25, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWOP		
Lab Sample ID:	F67413-1	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	84.9
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	212000	5300	1400	ug/kg	500	08/24/09 02:51	LT	EPA 314M
Solids, Percent	84.9			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	395	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWOP-QC		
Lab Sample ID:	F67413-2	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	85.3
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	302000	5300	1400	ug/kg	500	08/24/09 03:26	LT	EPA 314M
Solids, Percent	85.3			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	372	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWMN		
Lab Sample ID:	F67413-3	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	83.0
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	47200	1100	290	ug/kg	100	08/24/09 04:35	LT	EPA 314M
Solids, Percent	83			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	179	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWON		
Lab Sample ID:	F67413-4	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	82.7
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	323000	5400	1400	ug/kg	500	08/24/09 05:10	LT	EPA 314M
Solids, Percent	82.7			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	412	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWPM		
Lab Sample ID:	F67413-5	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	82.4
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	42100	1100	290	ug/kg	100	08/24/09 05:45	LT	EPA 314M
Solids, Percent	82.4			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	109	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL06 (10)		
Lab Sample ID:	F67413-6	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	77.7
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	7640	1100	300	ug/kg	100	08/24/09 06:20	LT	EPA 314M
Solids, Percent	77.7			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	126	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWRQ		
Lab Sample ID:	F67413-7	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	82.2
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	58.8	11	2.9	ug/kg	1	08/22/09 01:16	LT	EPA 314M
Solids, Percent	82.2			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	60.4	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWQH		
Lab Sample ID:	F67413-8	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	84.8
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	143	11	2.8	ug/kg	1	08/22/09 02:08	LT	EPA 314M
Solids, Percent	84.8			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	44.4	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL07 (5)		
Lab Sample ID:	F67413-9	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	83.4
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	10100	1100	290	ug/kg	100	08/24/09 07:12	LT	EPA 314M
Solids, Percent	83.4			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	150	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL07 (5)-QC		
Lab Sample ID:	F67413-10	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	83.4
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	15800	1100	290	ug/kg	100	08/24/09 08:22	LT	EPA 314M
Solids, Percent	83.4			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	144	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL08 (5)		
Lab Sample ID:	F67413-11	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	82.2
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	341	11	2.9	ug/kg	1	08/22/09 03:00	LT	EPA 314M
Solids, Percent	82.2			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	40.3	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWFR		
Lab Sample ID:	F67413-12	**Date Sampled:**	08/18/09
Matrix:	SO - Soil	**Date Received:**	08/19/09
		Percent Solids:	83.9
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	372	11	2.9	ug/kg	1	08/22/09 03:17	LT	EPA 314M
Solids, Percent	83.9			%	1	08/19/09	CP	SM19 2540B M
Specific Conductivity	289	1.0	1.0	umhos/cm	1	08/21/09	SJL	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

COC NO.

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

F67413

PM: Praveen Svrivastav (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04CSWOP-	X	8/18/09	08:15	Soils	1	X	
04CSWOP-QC	X	8/18/09	08:15	Soils	1	X	
04CSWMN	X	8/19/09	09:25	Soils	1	X	
04CSWON	X	8/19/09	8:30	Soils	1	X	
~~04CSWOP~~	~~X~~	~~8/19/09~~		~~Soils~~	1	X	
~~04CSWOP-QC~~	~~X~~	~~8/19/09~~		~~Soils~~	1	X	
04CSWPM	X	8/18/09	8:45	Soils	1	X	
04CSFL06(10)	X	8/18/09	8:50	Soils	1	X	
04CSWRQ	X	8/18/09	14:15	Soils	1	X	
04CSWRQ-MS	X	8/18/09	14:15	Soils	1	X	
04CSWRQ-MSD	X	8/18/09	14:15	Soils	1	X	
04CSWQH	X	8/18/09	14:20	Soils	1	X	
04CSFL07(5)	X	8/18/09	14:30	Soils	1	X	
04CSFL07@QC	X	8/18/09	14:30	Soils	1	X	
04CSFL08(5)	X	8/18/09	14:40	Soils	1	X	
04CSWFR	X	8/18/09	15:30	Soils	1	X	

Relinquished By:
Date/Time 8/18/09 17:30

Received By:
UPS
Date/Time

Special Instructions

Relinquished By:
UPS
Date/Time

Received for Laboratory By:
Accutest
Date/Time 8.19.09 09:20

Remarks:

2-4

F67413: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67413 CLIENT: Shaw PROJECT: LHAAP-04

DATE/TIME RECEIVED: 8-19-09 09:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 2.4

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 1z 66V 785 01 9748 1945

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? 0

NUMBER OF 5035 FIELD KITS ? 0

NUMBER OF LAB FILTERED METALS ? 0

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE ET 8-19-09 TECHNICIAN SIGNATURE/DATE JC 8-19-09

ASBD 12/17/07

4.1 4

F67413: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 08/26/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67413					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36367, GN36376, GN36311, GN36346, GP13466					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2	
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?		X			2	
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?		X			2	
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 08/26/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67413					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36367, GN36376, GN36311, GN36346, GP13466					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 08/26/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67413
Reviewer Name: Ellen Pampel	Batch Number(s): GN36367, GN36376, GN36311, GN36346, GP13466

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	08/26/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13466/GN36367	9.1	0.0	ug/kg	152	138	91.1	75-125%
Specific Conductivity	GN36346	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36346: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
Batch GP13466: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13466/GN36367	F67413-7	ug/kg	58.8	71.7	19.8	0-30%
Solids, Percent	GN36311	F67413-7	%	82.2	82.4	0.2	0-10%
Specific Conductivity	GN36346	F67413-7	umhos/cm	60.4	54.6	10.1*(a)	0-10%

Associated Samples:
Batch GN36311: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
Batch GN36346: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
Batch GP13466: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
(*) Outside of QC limits
(a) High RPD due to possible sample nonhomogeneity.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13466/GN36367	F67413-7	ug/kg	58.8	180	148	49.4N(a)	50-150%

Associated Samples:
Batch GN36346: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
Batch GP13466: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Perchlorate	GP13466/GN36367	F67413-7	ug/kg	58.8	183	133	10.7N(a)	30%

Associated Samples:
Batch GP13466: F67413-1, F67413-10, F67413-11, F67413-12, F67413-2, F67413-3, F67413-4, F67413-5, F67413-6, F67413-7, F67413-8, F67413-9
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082102.TXT Date Analyzed: 08/21/09 Methods: EPA 314M
Analyst: LT Run ID: GN36367
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
18:35	GN36367-CCV1	1		
18:53	GN36367-CCB1	1		
20:02	GP13466-MB1	1		
20:20	GP13466-B1	1		
20:37	ZZZZZZ	1		
20:55	ZZZZZZ	1		
22:04	GN36367-CCV2	1		
22:22	GN36367-CCB2	1		
01:16	F67413-7	1		
01:33	GN36367-CCV3	1		
01:50	GN36367-CCB3	1		
02:08	F67413-8	1		
03:00	F67413-11	1		
03:17	F67413-12	1		
03:35	GP13466-D1	1		
03:52	GP13466-S1	1		
04:10	GP13466-S2	1		
04:27	GN36367-CCV4	1		
04:44	GN36367-CCB4	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082102.TXT Date Analyzed: 08/21/09 Methods: EPA 314M
Run ID: GN36367 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36367-CCV1	Perchlorate	46.1	3.0	0.80	50	92.2	85-115
GN36367-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36367-CCV2	Perchlorate	201(a)	3.0	0.80	50	101.0	85-115
GN36367-CCB2	Perchlorate	0.80 U	3.0	0.80			
GN36367-CCV3	Perchlorate	45.3	3.0	0.80	50	90.6	85-115
GN36367-CCB3	Perchlorate	0.80 U	3.0	0.80			
GN36367-CCV4	Perchlorate	198(a)	3.0	0.80	50	99.0	85-115
GN36367-CCB4	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082301.TXT Date Analyzed: 08/23/09 Methods: EPA 314M
Analyst: LT Run ID: GN36376
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
17:34	GN36376-CCV1	1		
17:51	GN36376-CCB1	1		
20:11	ZZZZZZ	250		
20:45	ZZZZZZ	500		
21:03	GN36376-CCV2	1		
21:20	GN36376-CCB2	1		
21:55	ZZZZZZ	25		
22:30	ZZZZZZ	1000		
23:39	ZZZZZZ	200		
00:14	ZZZZZZ	500		
00:32	GN36376-CCV3	1		
00:49	GN36376-CCB3	1		
02:51	F67413-1	500		
03:26	F67413-2	500		
04:01	GN36376-CCV4	1		
04:18	GN36376-CCB4	1		
04:35	F67413-3	100		
05:10	F67413-4	500		
05:45	F67413-5	100		
06:20	F67413-6	100		
07:12	F67413-9	100		
07:30	GN36376-CCV5	1		
07:47	GN36376-CCB5	1		
08:22	F67413-10	100		
09:32	GN36376-CCV6	1		
09:49	GN36376-CCB6	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67413
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082301.TXT Date Analyzed: 08/23/09 Methods: EPA 314M
Run ID: GN36376 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36376-CCV1	Perchlorate	49.8	3.0	0.80	50	99.6	85-115
GN36376-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV2	Perchlorate	208(a)	3.0	0.80	50	104.0	85-115
GN36376-CCB2	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV3	Perchlorate	47.7	3.0	0.80	50	95.4	85-115
GN36376-CCB3	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV4	Perchlorate	193(a)	3.0	0.80	50	96.5	85-115
GN36376-CCB4	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV5	Perchlorate	43.2	3.0	0.80	50	86.4	85-115
GN36376-CCB5	Perchlorate	0.80 U	3.0	0.80			
GN36376-CCV6	Perchlorate	197(a)	3.0	0.80	50	98.5	85-115
GN36376-CCB6	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Percent Solids Raw Data Summary

Job Number: F67413
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67413-1 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWOP

Wet Weight (Total)	9.74	g
Tare Weight	.99	g
Dry Weight (Total)	8.42	g
Solids, Percent	84.9	%

Sample: F67413-2 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWOP-QC

Wet Weight (Total)	10.78	g
Tare Weight	.97	g
Dry Weight (Total)	9.34	g
Solids, Percent	85.3	%

Sample: F67413-3 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWMN

Wet Weight (Total)	8.92	g
Tare Weight	.98	g
Dry Weight (Total)	7.57	g
Solids, Percent	83	%

Sample: F67413-4 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWON

Wet Weight (Total)	8.4	g
Tare Weight	.98	g
Dry Weight (Total)	7.12	g
Solids, Percent	82.7	%

Sample: F67413-5 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWPM

Wet Weight (Total)	9.76	g
Tare Weight	.99	g
Dry Weight (Total)	8.22	g
Solids, Percent	82.4	%

Sample: F67413-6 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSFL06 (10)

Wet Weight (Total)	7.68	g
Tare Weight	1	g
Dry Weight (Total)	6.19	g
Solids, Percent	77.7	%

Percent Solids Raw Data Summary

Job Number: F67413
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67413-7 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWRQ

Wet Weight (Total)	7.9	g
Tare Weight	1	g
Dry Weight (Total)	6.67	g
Solids, Percent	82.2	%

Sample: F67413-8 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWQH

Wet Weight (Total)	10.04	g
Tare Weight	.97	g
Dry Weight (Total)	8.66	g
Solids, Percent	84.8	%

Sample: F67413-9 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSFL07 (5)

Wet Weight (Total)	10.93	g
Tare Weight	.97	g
Dry Weight (Total)	9.28	g
Solids, Percent	83.4	%

Sample: F67413-10 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSFL07 (5)-QC

Wet Weight (Total)	9.27	g
Tare Weight	.97	g
Dry Weight (Total)	7.89	g
Solids, Percent	83.4	%

Sample: F67413-11 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSFL08 (5)

Wet Weight (Total)	10	g
Tare Weight	.96	g
Dry Weight (Total)	8.39	g
Solids, Percent	82.2	%

Sample: F67413-12 **Analyzed:** 19-AUG-09 by CP **Method:** SM19 2540B M
ClientID: 04CSWFR

Wet Weight (Total)	10.42	g
Tare Weight	.96	g
Dry Weight (Total)	8.9	g
Solids, Percent	83.9	%

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

08/26/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67414

Sampling Date: 08/18/09

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: **19**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Test results relate only to samples analyzed.

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67414

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
F67414-1	08/18/09	15:20	AW	08/19/09	AQ	Ground Water	04CLAYPIPE-081809

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67414

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 8/25/2009 3:09:37 PM

1 Sample was collected on 08/18/2009 and was received at Accutest SE on 08/19/2009 properly preserved, at 3 Deg. C and intact. The Sample received an Accutest job number of F67414. 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.

Wet Chemistry by Method EPA 120.1

Matrix: AQ **Batch ID:** GN36317

All method blanks for this batch meet method specific criteria.

Sample F67414-1DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 314

Matrix: AQ **Batch ID:** GP13467

All samples were prepped 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 F67414-1DUP, F67414-1MS were used as the QC samples for Perchlorate.

Matrix Spike Recovery for Perchlorate is outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____

Ellen Pampel, Inorganic QA (signature on file)

Date: August 25, 2009

Tuesday, August 25, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CLAYPIPE-081809		
Lab Sample ID:	F67414-1	**Date Sampled:**	08/18/09
Matrix:	AQ - Ground Water	**Date Received:**	08/19/09
		Percent Solids:	n/a
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	43800	5000	2000	ug/l	500	08/21/09 14:14	LT	EPA 314
Specific Conductivity	722	1.0	1.0	umhos/cm	1	08/19/09 17:00	LT	EPA 120.1

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

COC NO. 081809-01

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

F67414

PM: Praveen Svrivastav (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04CLAYPIPE-081809	X	8/18/2009	15:20	Water	1	X	

Relinquished By: Date/Time 8/18/09

Received By: UPS Date/Time

Special Instructions

Relinquished By: UPS Date/Time

Received for Laboratory By: Accutest Date/Time 8.19.09 09:30

Remarks: 3.0

4.1 4

F67414: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67414 CLIENT: Shaw PROJECT: CHAAP-04

DATE/TIME RECEIVED: 8.19.09 09:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 3.0

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS:

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ?

NUMBER OF 5035 FIELD KITS ?

NUMBER OF LAB FILTERED METALS ?

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE: ET 8.19.09 TECHNICIAN SIGNATURE/DATE: JC 8-19-09

ASBD 12/17/07

4.1 4

F67414: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 08/26/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67414					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36357, GN36317, GP13467					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2	
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?			X			
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?		X			2	
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 08/26/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67414					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36357, GN36317, GP13467					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 08/26/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67414
Reviewer Name: Ellen Pampel	Batch Number(s): GN36357, GN36317, GP13467

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	08/26/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67414
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13467/GN36357	10	0.0	ug/l	50	45.4	90.8	85-115%
Specific Conductivity	GN36317	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36317: F67414-1
Batch GP13467: F67414-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67414
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13467/GN36357	F67414-1	ug/l	43800	44000	0.5	0-15%
Specific Conductivity	GN36317	F67414-1	umhos/cm	722	737	2.1	0-10%

Associated Samples:
Batch GN36317: F67414-1
Batch GP13467: F67414-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67414
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13467/GN36357	F67414-1	ug/l	43800	50	40100	0.0(a)	80-120%

Associated Samples:
Batch GP13467: F67414-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67414
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082101.TXT Date Analyzed: 08/21/09 Methods: EPA 314, EPA 314M
Analyst: LT Run ID: GN36357
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:12	GN36357-CCV1	1		
12:30	GN36357-CCB1	1		
13:39	GP13467-MB1	1		
13:57	GP13467-B1	1		
14:14	F67414-1	500		
14:32	GP13467-D1	500		
14:49	GP13467-S1	500		
15:06	GN36357-CCV2	1		
15:24	GN36357-CCB2	1		
17:08	ZZZZZZ	10		
17:26	ZZZZZZ	1		
18:00	GP13444-S1	100		
18:18	GP13444-D1	100		
18:35	GN36357-CCV3	1		
18:53	GN36357-CCB3	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67414
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082101.TXT Date Analyzed: 08/21/09 Methods: EPA 314, EPA 314M
Run ID: GN36357 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36357-CCV1	Perchlorate	47.9	10	4.0	50	95.8	85-115
GN36357-CCB1	Perchlorate	4.0 U	10	4.0			
GN36357-CCV2	Perchlorate	200(a)	10	4.0	50	100.0	85-115
GN36357-CCB2	Perchlorate	4.0 U	10	4.0			
GN36357-CCV3	Perchlorate	46.1	10	4.0	50	92.2	85-115
GN36357-CCB3	Perchlorate	4.0 U	10	4.0			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

08/26/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67470

Sampling Date: 08/20/09

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: **19**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Test results relate only to samples analyzed.

Accutest Laboratories is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67470

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
F67470-1	08/20/09	11:55	AW	08/21/09	AQ	Ground Water	04CLAYPIPE-081809

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67470

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 8/26/2009 10:40:39

1 Sample was collected on 08/20/2009 and was received at Accutest SE on 08/21/2009 properly preserved, at 4.8 Deg. C and intact. The Sample received an Accutest job number of F67470. 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.

Wet Chemistry by Method EPA 120.1

Matrix: AQ **Batch ID:** GN36375

All method blanks for this batch meet method specific criteria.

Sample F67470-1DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 314

Matrix: AQ **Batch ID:** GP13490

All samples were prepped 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 F67470-1DUP, F67470-1MS were used as the QC samples for Perchlorate.

Matrix Spike Recovery for Perchlorate is outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: August 26, 2009

Ellen Pampel, Inorganic QA (signature on file)

Wednesday, August 26, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CLAYPIPE-081809		
Lab Sample ID:	F67470-1	**Date Sampled:**	08/20/09
Matrix:	AQ - Ground Water	**Date Received:**	08/21/09
		Percent Solids:	n/a
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	1100	250	100	ug/l	25	08/25/09 14:35	LT	EPA 314
Specific Conductivity	241	1.0	1.0	umhos/cm	1	08/24/09 09:20	LE	EPA 120.1

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

00108702

F67470

COC NO. 081809-01

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

PM: Praveen Svrivastav (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04CLAYPIPE-081809	X	8/18/2009	11:55	Water	1	X	24-Hour TAT!! 8/20/09

Relinquished By: Date/Time 8.20.09 11:55

Received By: FX Date/Time

Special Instructions

Relinquished By: FX Date/Time 8/21/09 9:00

Received for Laboratory By: CLR/Accutest Date/Time 8/21/09 9:00

Remarks:

4.8

4.1 4

F67470: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67470 CLIENT: TetraTech PROJECT: LHAAP

DATE/TIME RECEIVED: 8/21/09 9:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 4.8

METHOD OF DELIVERY: FEDEX UPS ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 1223 880 131 9

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
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- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? Ø

NUMBER OF 5035 FIELD KITS ? Ø

NUMBER OF LAB FILTERED METALS ? Ø

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE CLR 8/21/09 TECHNICIAN SIGNATURE/DATE JC 8-21-09

ASBD 12/17/07

4.1 4

F67470: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 08/26/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67470					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36387, GN36375, GP13490					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2	
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?			X			
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?	X					
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 08/26/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67470					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36387, GN36375, GP13490					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 08/26/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67470
Reviewer Name: Ellen Pampel	Batch Number(s): GN36387, GN36375, GP13490

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	08/26/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67470
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13490/GN36387	10	0.0	ug/l	50	48.0	96.0	85-115%
Specific Conductivity	GN36375	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36375: F67470-1
Batch GP13490: F67470-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67470
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13490/GN36387	F67470-1	ug/l	1100	1200	8.7	0-15%
Specific Conductivity	GN36375	F67470-1	umhos/cm	241	247	2.7	0-10%

Associated Samples:
Batch GN36375: F67470-1
Batch GP13490: F67470-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67470
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13490/GN36387	F67470-1	ug/l	1100	50	1350	500.0(a)	80-120%

Associated Samples:
Batch GP13490: F67470-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67470
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082501.TXT Date Analyzed: 08/25/09 Methods: EPA 314
Analyst: LT Run ID: GN36387
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
12:33	GN36387-CCV1	1		
12:50	GN36387-CCB1	1		
14:00	GP13490-MB1	1		
14:17	GP13490-B1	1		
14:35	F67470-1	25		
14:52	GP13490-D1	25		
15:09	GP13490-S1	25		
15:27	GN36387-CCV2	1		
15:44	GN36387-CCB2	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67470
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082501.TXT Date Analyzed: 08/25/09 Methods: EPA 314
Run ID: GN36387 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36387-CCV1	Perchlorate	49.0	10	4.0	50	98.0	85-115
GN36387-CCB1	Perchlorate	4.0 U	10	4.0			
GN36387-CCV2	Perchlorate	214(a)	10	4.0	50	107.0	85-115
GN36387-CCB2	Perchlorate	4.0 U	10	4.0			

(!) Outside of QC limits
(a) T.V.= 200 ppb.

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

09/03/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67524

Sampling Date: 08/24/09

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: **21**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Test results relate only to samples analyzed.

Accutest Laboratories is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67524

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F67524-1	08/24/09	13:50	AW	08/25/09	SO	Soil	04CSWCDRE (2)
F67524-2	08/24/09	14:00	AW	08/25/09	SO	Soil	04CSFL01 (4) RE (W)

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67524

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 9/3/2009 1:59:17 PM

2 Sample were collected on 08/24/2009 and were received at Accutest SE on 08/25/2009 properly preserved, at 4.6 Deg. C and intact. These Samples received an Accutest job number of F67524. 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.

Wet Chemistry by Method EPA 120.1 M

Matrix: SO **Batch ID:** GN36391

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample F67524-1DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 314M

Matrix: SO **Batch ID:** GP13489

All samples were prepped 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 F67524-1DUP, F67524-1MS were used as the QC samples for Perchlorate.

Matrix Spike Recovery for Perchlorate is outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Wet Chemistry by Method SM19 2540B M

Matrix: SO **Batch ID:** GN36392

Sample F67501-2DUP was used as the QC sample for Solids, Percent.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: September 3, 2009

Ellen Pampel, Inorganic QA (signature on file)

Thursday, September 03, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSWCDRE (2)		
Lab Sample ID:	F67524-1	**Date Sampled:**	08/24/09
Matrix:	SO - Soil	**Date Received:**	08/25/09
		Percent Solids:	84.5
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	45700	1100	280	ug/kg	100	08/26/09 12:21	LT	EPA 314M
Solids, Percent	84.5			%	1	08/26/09	LE	SM19 2540B M
Specific Conductivity	45.1	1.0	1.0	umhos/cm	1	08/26/09	CC	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL01 (4) RE (W)		
Lab Sample ID:	F67524-2	**Date Sampled:**	08/24/09
Matrix:	SO - Soil	**Date Received:**	08/25/09
		Percent Solids:	83.4
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	33600	1100	290	ug/kg	100	08/26/09 14:58	LT	EPA 314M
Solids, Percent	83.4			%	1	08/26/09	LE	SM19 2540B M
Specific Conductivity	46.9	1.0	1.0	umhos/cm	1	08/26/09	CC	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

COC NO. F67524-0010872

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

PM: Praveen Svrivastav (713.996.4588) TAT: 24 hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: LHAAP-04 Site: Confirmation Sampling
Project #: 117591-0009B300 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292
Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
04CSWCDRE(7)	X	8/24/09	13:50	Soils	1	X	
04CSFL01(4)RE(L)	X	8/24/09	14:00	Soils	1	X	
	X			Soils			
	X			Soils			
	X			Soils			
	X			Soils			
	X			Soils			
	X			Soils			
	X			Soils			

Relinquished By: Date/Time 8/24/09 17:30
Received By: UPS Date/Time

Special Instructions: 24 hour TAT!

Relinquished By: UPS 8/25/09 9:30 Date/Time
Received for Laboratory By: Client/Accutest 8/25/09 9:30 Date/Time

Remarks:

4.6

4.1 4

F67524: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67524 CLIENT: Shaw PROJECT: LHAAP-04

DATE/TIME RECEIVED: 8/25/09 9:30 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 4.6

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 1223 880 137 3

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? 0

NUMBER OF 5035 FIELD KITS ? 0

NUMBER OF LAB FILTERED METALS ? 0

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE: 8/25/09 TECHNICIAN SIGNATURE/DATE: E.T. 8.25.09

ASBD 12/17/07

4.1 4

F67524: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 09/03/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67524					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36403, GN36391, GN36392, GP13489					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2	
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?			X			
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?	X					
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA								
Laboratory Name: Accutest Southeast			Date: 09/03/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67524					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36403, GN36391, GN36392, GP13489					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):						
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X					
		2) Were percent RSDs or correlation coefficient criteria met?	X					
		3) Were the number of standards recommended in the method used for all analytes?	X					
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X					
		5) Are ICV data available for all instruments used?	X					
		6) Has the calibration curve been verified using a NIST-traceable second source?	X					
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):						
		1) Was the CCV analyzed at the method-required frequency?	X					
		2) Were percent differences within the method-required QC acceptance criteria?	X					
		3) Was the ICAL curve verified for each analyte of interest?	X					
	O	MASS SPECTRAL TUNING:						
		1) Was the appropriate compound for the method used for tuning?			X			
		2) Were ion abundance data within the method-required QC acceptance criteria?			X			
	O	INTERNAL STANDARD (IS):						
		1) Were IS area counts within the method-required QC acceptance criteria?			X			
		2) Were IS retention times within the method-required QC acceptance criteria?			X			
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):						
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X					
		2) Were all data associated with manual integrations flagged?	X					
	O	DUAL COLUMN CONFIRMATION:						
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X			
		2) Were all percent differences less than 25%?			X			
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):						
		If TICs were requested, were the mass spectra and TIC data reviewed?			X			
	I	ICS RESULTS:						
		1) Were percent recoveries within method acceptance criteria?			X			
		2) Were the absolute values for all analytes less than the IDL?			X			
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:						
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:						
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X			
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:						
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X					
	OI	STANDARDS TRACEABILITY:						
		Are all standards used in the analyses NIST-traceable?	X					
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:						
		Is documentation of the quality of water and reagents used in the analyses on file?	X					
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:						
		Are the procedures for compound identification documented?	X					
	OI	DEMONSTRATION OF ANALYST CAPABILITY:						
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X					
		2) Is documentation of the analyst's demonstration of capability on file?	X					
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X					
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):						
		Are proficiency testing or interlaboratory comparison results on file?	X					
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):						
		Are laboratory SOPs current and on file for each method performed?	X					

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 09/03/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67524
Reviewer Name: Ellen Pampel	Batch Number(s): GN36403, GN36391, GN36392, GP13489

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

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

X R1 Field chain-of-custody documentation;

X R2 Sample identification cross-reference;

X R3 Test reports (analytical data sheets) for each environmental sample that includes:
- a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
- b) dilution factors,
- c) preparation methods,
- d) cleanup methods, and
- e) if required for the project, tentatively identified compounds (TICs).

R4 Surrogate recovery data including:
- a) Calculated recovery (%R), and
- b) The laboratory's surrogate QC limits.

X R5 Test reports/summary forms for blank samples;

X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
- a) LCS spiking amounts,
- b) Calculated %R for each analyte, and
- c) The laboratory's LCS QC limits.

X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
- a) Samples associated with the MS/MSD clearly identified,
- b) MS/MSD spiking amounts,
- c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
- d) Calculated %Rs and relative percent differences (RPDs), and
- e) The laboratory's MS/MSD QC limits

X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
- a) the amount of analyte measured in the duplicate,
- b) the calculated RPD, and
- c) the laboratory's QC limits for analytical duplicates.

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

. R10 Other problems or anomalies.

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

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

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

Ellen Pampel	On file	Inorganic QA	08/26/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67524
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13489/GN36403	9.1	0.0	ug/kg	152	158	104.3	75-125%
Specific Conductivity	GN36391	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36391: F67524-1, F67524-2
Batch GP13489: F67524-1, F67524-2
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67524
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13489/GN36403	F67524-1	ug/kg	45700	46000	0.7	0-30%
Solids, Percent	GN36392	F67501-2	%	81.9	82.1	0.2	0-10%
Specific Conductivity	GN36391	F67524-1	umhos/cm	45.1	47.9	6.0	0-10%

Associated Samples:
Batch GN36391: F67524-1, F67524-2
Batch GN36392: F67524-1, F67524-2
Batch GP13489: F67524-1, F67524-2
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67524
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13489/GN36403	F67524-1	ug/kg	45700	178	31300	0.0(a)	50-150%

Associated Samples:
Batch GP13489: F67524-1, F67524-2
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67524
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082601.TXT Date Analyzed: 08/26/09 Methods: EPA 314M
Analyst: LT Run ID: GN36403
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
10:20	GN36403-CCV1	1		
10:37	GN36403-CCB1	1		
11:47	GP13489-MB1	1		
12:04	GP13489-B1	1		
12:21	F67524-1	100		
13:31	GP13489-D1	100		
13:48	GN36403-CCV2	1		
14:06	GN36403-CCB2	1		
14:41	GP13489-S1	100		
14:58	F67524-2	100		
15:15	GN36403-CCV3	1		
15:33	GN36403-CCB3	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67524
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082601.TXT Date Analyzed: 08/26/09 Methods: EPA 314M
Run ID: GN36403 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36403-CCV1	Perchlorate	50.6	3.0	0.80	50	101.2	85-115
GN36403-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36403-CCV2	Perchlorate	230(a)	3.0	0.80	50	115.0	85-115
GN36403-CCB2	Perchlorate	0.80 U	3.0	0.80			
GN36403-CCV3	Perchlorate	50.3	3.0	0.80	50	100.6	85-115
GN36403-CCB3	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Percent Solids Raw Data Summary

Job Number: F67524
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67524-1 **Analyzed:** 26-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSWCDRE (2)

Wet Weight (Total)	6.97	g
Tare Weight	.98	g
Dry Weight (Total)	6.04	g
Solids, Percent	84.5	%

Sample: F67524-2 **Analyzed:** 26-AUG-09 by LE **Method:** SM19 2540B M
ClientID: 04CSFL01 (4) RE (W)

Wet Weight (Total)	7.38	g
Tare Weight	1.04	g
Dry Weight (Total)	6.33	g
Solids, Percent	83.4	%

Columbia Analytical Services™ 1 Mustard Street, Suite 250, Rochester, NY 14609-6925 | 585.288.5380 | www.caslab.com

September 01, 2009 Service Request No: R0904872

Ms. Jennifer Hoang
Shaw Group-Texas
3010 Briarpark Drive, Suite 400
Houston, TX 77042

Laboratory Results for: LHAAP-04/117591-0009B300

Dear Ms. Hoang:

Enclosed are the results of the sample(s) submitted to our laboratory on August 27, 2009. For your reference, these analyses have been assigned our service request number **R0904872**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 129. You may also contact me via email at MPerry@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Michael K P

Michael Perry
Laboratory Manager

100% Recycled Paper

CASE NARRATIVE
COMPANY: Shaw Group
PROJECT: LHAAP-04
SUBMISSION #: R0904872

Samples were collected on 8/24/09 and 8/26/09 and received at CAS/Rochester on 8/27/09 in good condition at a cooler temperature of 4 °C. "Rush" results were sent via e-mail on 8/28/09.

PERCHLORATE ANALYSIS

Three soil samples and one water sample were analyzed for Perchlorate by LC/MS method 6850 with DOD modifications from the DOD Perchlorate Handbook. Values detected between the MDL and PQL have been flagged with a "J" as estimated.

All three soil samples were analyzed at dilutions to bring target analytes within the calibration range of the method.

All the initial and continuing calibration criteria were met for all analytes.

A Matrix Spike/Matrix Spike Duplicate was performed was not requested.

The Blank Spike (LCS/LCSD) for the soil samples were all within QC limits. The LCS for the water sample was outside QC limits due to an Internal Standing spiking error. The LCSD was within QC limits.

The Laboratory Blank associated with these samples was free of contamination.

No other analytical or QC problems were encountered.

CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R0904872

Lab ID	Client ID
R0904872-001	04CSWCDRE(2)-SPLIT
R0904872-002	04CSFL01(4)RE(W)-SPLIT
R0904872-003	04CSFL06(10)RE(13)-SPLIT
R0904872-004	04CLAYPIPE-082509-SPLIT

Columbia Analytical Services™

REPORT QUALIFIERS

U - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. The flag is used either when estimating a concentration for tentatively identified compounds, or when the concentration is less than the reporting limit and greater than the MDL (concentrations are not verified within the initial calibration range).

For DoD reports, the J-flag may also be used to indicate that the concentration between two columns for pesticides/Aroclors is greater than 40% difference.

B - Indicates this compound was also detected in the associated method blank at a concentration that may have contributed to the sample result.

B- Metals - Indicates an estimated value. The concentration is less than the reporting limit and greater than the MDL (concentrations are not verified within the initial calibration range).

E - Indicates that the sample concentration had exceeded the calibration range for that specific analysis.

D - Indicates the sample concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range.

* - Indicates that a quality control parameter has exceeded laboratory limits.

X - See Case Narrative for discussion.

P - This flag is used for a pesticide/Aroclor target concentration when there is a greater than 40% (25% for CLP) difference for detected concentrations between the two GC columns.

For DoD reports, the J-flag is used instead of "P".

- Spike was diluted out.

N - Inorganics- Indicates the matrix spike recovery was outside laboratory limits.

N- Organics- Indicates presumptive evidence of a compound (reported as a tentatively identified compound) based on the mass spectral library search.

ACCREDITED IN ACCORDANCE WITH nelac

CAS/Rochester Lab ID # for State Certifications[1]

NELAP Accredited
Delaware Accredited
Connecticut ID # PH0556
Florida ID # E87674
Illinois ID #200047
Maine ID #NY0032
Nebraska Accredited
Navy Facilities Engineering Service Center Approved
Nevada ID # NY-00032
New Jersey ID # NY004
New York ID # 10145
New Hampshire ID # 294100 A/B
Pennsylvania ID# 68-786
Rhode Island ID # 158
West Virginia ID # 292

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to the certifications section at www.caslab.com.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/24/09 1350
Sample Matrix:	Soil	**Date Received:**	8/27/09
Sample Name:	04CSWCDRE(2)-SPLIT		
Lab Code:	R0904872-001	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**76.6**		Percent	1.0	1	NA	8/27/09 16:30

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/24/09 1350
Sample Matrix:	Soil	**Date Received:**	8/27/09
Sample Name:	04CSWCDRE(2)-SPLIT	**Units:**	µg/Kg
Lab Code:	R0904872-001	**Basis:**	Dry
		Percent Solids:	76.6

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**78000**		5200	470	2000	8/27/09	8/28/09 14:02	93839	167972	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/24/09 1400
Sample Matrix:	Soil	**Date Received:**	8/27/09
Sample Name:	04CSFL01(4)RE(W)-SPLIT		
Lab Code:	R0904872-002	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**82.5**		Percent	1.0	1	NA	8/27/09 16:30

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/24/09 1400
Sample Matrix:	Soil	**Date Received:**	8/27/09
Sample Name:	04CSFL01(4)RE(W)-SPLIT	**Units:**	µg/Kg
Lab Code:	R0904872-002	**Basis:**	Dry
		Percent Solids:	82.5

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**98000**		4800	440	2000	8/27/09	8/28/09 14:23	93839	167972	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/26/09 1345
Sample Matrix:	Soil	**Date Received:**	8/27/09
Sample Name:	04CSFL06(10)RE(13)-SPLIT		
Lab Code:	R0904872-003	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**76.8**		Percent	1.0	1	NA	8/27/09 16:30

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/26/09 1345
Sample Matrix:	Soil	**Date Received:**	8/27/09
Sample Name:	04CSFL06(10)RE(13)-SPLIT	**Units:**	µg/Kg
Lab Code:	R0904872-003	**Basis:**	Dry
		Percent Solids:	76.8

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**4800**		260	24	100	8/27/09	8/28/09 12:57	93839	167972	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/26/09 0900
Sample Matrix:	Water	**Date Received:**	8/27/09
Sample Name:	04CLAYPIPE-082509-SPLIT	**Units:**	µg/L
Lab Code:	R0904872-004	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.81**		0.20	0.027	1	8/27/09	8/28/09 10:43	94766	167971	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R0904872-MB1	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	1.0	U	Percent	1.0	1	NA	8/27/09 14:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R0904872-MB2	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	1.0	U	Percent	1.0	1	NA	8/27/09 16:30

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R0904872-MB3	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	1.0	U	Percent	1.0	1	NA	8/27/09 16:30

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/Kg
Lab Code:	RQ0907856-01	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	2.0	U	2.0	0.18	1	8/27/09	8/27/09 18:17	93839	167972	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904872
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/L
Lab Code:	RQ0907858-01	**Basis:**	NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	0.20	U	0.20	0.027	1	8/27/09	8/27/09 12:47	94766	167971	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Shaw Environmental & Infrastructure, Inc.
Project: LHAAAP-04/117591-0009B300
Sample Matrix: Soil

Service Request: R0904872
Date Analyzed: 8/27/09

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/Kg
Basis: Dry

Extraction Lot: 93839

Analyte Name	Lab Control Sample RQ0907856-02 Result	Expected	% Rec	Duplicate Lab Control Sample RQ0907856-03 Result	Expected	% Rec	% Rec Limits	RPD	RPD Limit
Perchlorate	**1.80**	2.00	90	**1.80**	2.00	90	80 - 120	0	15

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Shaw Environmental & Infrastructure, Inc.
Project: LHAAAP-04/117591-0009B300
Sample Matrix: Water

Service Request: R0904872
Date Analyzed: 8/27/09

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 94766

Analyte Name	Lab Control Sample RQ0907858-02 Result	Expected	% Rec		Duplicate Lab Control Sample RQ0907858-03 Result	Expected	% Rec	% Rec Limits	RPD		RPD Limit
Perchlorate	**0.0800**	0.200	40	*	**0.170**	0.200	85	80 - 120	72	*	15

Comments:

00108753

COC NO. 082409-01

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

Laboratory Name: Columbia Analytical Services, Inc.
Address : 1 Mustard Street, Suite 250, Rochester, NY 14609
Contact : Mike Perry
Phone: 1-585-288-5380

PM: Praveen Svrivastav (713.996.4588) TAT: 24 hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: LHAAP-04 Site: Confirmation Sampling
Project #: 117591-0009B300 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign: A. Willmore

Sample Number	Grab	Date	Time	Matrix	# of Containers	SW-846 method 6850
04CSWCDRE(2)-SPLIT	X	8/24/2009	1350	Soil	1	X
04CSFL01(4)RE(W)-SPLIT	X	8/24/2009	1400	Soil	1	X
04CSFL06(10)RE(D)-SPLIT	X	8/25/09	13:45	SOIL	1	X
04CLAYPIPE-082509-SPLIT	X	8/25/09	0900	WATER	1	X

24 HOUR TAT

Comments

R0904872
Shaw Group-Texas
LHAAAP-04

Relinquished By: A. Willmore
Date/Time 8/25/09 17:30

Received By: Matt Cain
Date/Time 8/27/09 1000

Special Instructions
Samples accidentally labelled 8/25/09; should be 8/26/09

Relinquished By:
Date/Time

Received for Laboratory By:
Date/Time

Remarks:

00108754

Cooler Receipt And Preservation Check Form

Project/Client Shaw Submission Number 109472

Cooler received on 8/27/09 by: MLC **COURIER:** CAS (UPS) FEDEX VELOCITY CLIENT

1.	Were custody seals on outside of cooler?	(YES)	NO			
2.	Were custody papers properly filled out (ink, signed, etc.)?	(YES)	NO			
3.	Did all bottles arrive in good condition (unbroken)?	(YES)	NO			
4.	Did any VOA vials have significant* air bubbles?	YES	NO	(N/A)		
5.	Were **Ice** or **Ice packs** present?	(YES)	NO			
6.	Where did the bottles originate?	(CAS/ROC, CLIENT)				
7.	Temperature of cooler(s) upon receipt:	4°				
	Is the temperature within 0° - 6° C?:	(Yes)	Yes	Yes	Yes	Yes
	If No, Explain Below	No	No	No	No	No

Date/Time Temperatures Taken: 8/27/09 1025

Thermometer ID: 161 / IR GUN#2 / (IR GUN#3) Reading From: Temp Blank / (Sample Bottle)

If out of Temperature, note packing/ice condition, Client Approval to Run Samples: _____

PC Secondary Review: MKP 8/27/09

Cooler Breakdown: Date: 8/27/09 by: MLC

1.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	(YES)	NO
2.	Did all bottle labels and tags agree with custody papers?	YES	NO
3.	Were correct containers used for the tests indicated?	(YES)	NO
4.	Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated		(N/A)

Explain any discrepancies: _____

pH	Reagent	YES	NO	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH								
≤2	HNO_3								
≤2	H_2SO_4								
Residual Chlorine (-)	For TCN and Phenol			If present, contact PM to add ascorbic acid					
	$Na_2S_2O_3$	-	-						
	Zn Aceta	-	-						
	HCl	*	*						

*Not to be tested before analysis – pH tested and recorded by VOAs or GenChem on a separate worksheet

Yes = All samples OK

No = Samples were preserved at lab as listed

PM OK to Adjust: _____

Bottle lot numbers: _____

Other Comments:

Location 03 was labeled 04CSFL06(10) RE(13) - SPLIT, but was logged in as 04CSFL06(10)RE(D) - SPLIT. Location 2 was labeled 04CSFL01(4) RE(6) - SPLIT, the chain was followed, PC was notified.

PC Secondary Review: _____

*significant air bubbles are greater than 5-6 mm

H:\SMODOCS\Cooler Receipt 2.doc

00020

Southeast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

09/03/09



Technical Report for

SHAW E & I

Longhorn Army Ammunitions Plant, Karnack, TX

117591-0009B300

Accutest Job Number: F67580

Sampling Date: 08/26/09

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: **24**

ACCREDITED IN ACCORDANCE WITH nelac

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.

Harry Behzadi, Ph.D.
Laboratory Director

Client Service contact: Sue Bell 407-425-6700

ACCUTEST LABORATORIES 50 YEARS 1956-2006

Certifications: FL (DOH E83510), NC (573), NJ (FL002), MA (FL946), IA (366), LA (03051), KS (E-10327), SC, AK

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Test results relate only to samples analyzed.

Accutest Laboratories is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.

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Accutest Laboratories

Sample Summary

SHAW E & I

Job No: F67580

Longhorn Army Ammunitions Plant, Karnack, TX
Project No: 117591-0009B300

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
F67580-1	08/26/09	09:00	AW	08/27/09	AQ	Water	04CLAYPIPE-082609
F67580-2	08/26/09	13:45	AW	08/27/09	SO	Soil	04CSFL06 (10) RE(13)

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: SHAW E & I **Job No:** F67580

Site: Longhorn Army Ammunitions Plant, Karnack, TX **Report Date:** 9/3/2009 2:19:03 PM

2 Samples were collected on 08/26/2009 and were received at Accutest SE on 08/27/2009 properly preserved, at 1.8 Deg. C and intact. These Samples received an Accutest job number of F67580. 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.

Wet Chemistry by Method EPA 120.1

Matrix: AQ **Batch ID:** GN36439

All method blanks for this batch meet method specific criteria.

Sample F67580-1DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 120.1 M

Matrix: SO **Batch ID:** GN36440

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample F67580-2DUP was used as the QC sample for Specific Conductivity.

Wet Chemistry by Method EPA 314

Matrix: AQ **Batch ID:** GP13512

All samples were prepped 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 F67580-1DUP, F67580-1MS were used as the QC samples for Perchlorate.

Wet Chemistry by Method EPA 314M

Matrix: SO **Batch ID:** GP13511

All samples were prepped 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 F67580-2DUP, F67580-2MS were used as the QC samples for Perchlorate.

Matrix Spike Recovery for Perchlorate is 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 Perchlorate is outside control limits for sample GP13511-D1. High RPD due to possible sample nonhomogeneity.

Wet Chemistry by Method SM19 2540B M

Matrix: SO **Batch ID:** GN36437

Sample F67564-1DUP was used as the QC sample for Solids, Percent.

Thursday, September 03, 2009

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used.

Narrative prepared by:

_____ Date: September 3, 2009

Ellen Pampel, Inorganic QA (signature on file)

Thursday, September 03, 2009

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CLAYPIPE-082609		
Lab Sample ID:	F67580-1	**Date Sampled:**	08/26/09
Matrix:	AQ - Water	**Date Received:**	08/27/09
		Percent Solids:	n/a
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	4.0 U	10	4.0	ug/l	1	08/29/09 15:39	LT	EPA 314
Specific Conductivity	488	1.0	1.0	umhos/cm	1	08/29/09	LT	EPA 120.1

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Accutest Laboratories

Report of Analysis

Client Sample ID:	04CSFL06 (10) RE(13)		
Lab Sample ID:	F67580-2	**Date Sampled:**	08/26/09
Matrix:	SO - Soil	**Date Received:**	08/27/09
		Percent Solids:	78.6
Project:	Longhorn Army Ammunitions Plant, Karnack, TX		

General Chemistry

Analyte	Result	MQL	SDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	1520	58	15	ug/kg	5	08/31/09 23:48	LT	EPA 314M
Solids, Percent	78.6			%	1	08/28/09	SJL	SM19 2540B M
Specific Conductivity	34.2	1.0	1.0	umhos/cm	1	08/29/09	LT	EPA 120.1 M

MQL = Method Quantitation Limit
SDL = Sample Detection Limit

U = Indicates a result < SDL
B = Indicates a result > = SDL but < MQL

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Chain of Custody
- LRC Form

00108764

COC NO. 081809-01

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

Laboratory Name: Accutest Southeast
Address : 4405 Vineland Rd. C15, Orlando, FL 32811
Contact : Sue Bell
Phone: 1-813-741-3338

F67580

PM: Praveen Svrivastav (713.996.4588) TAT: 24 hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: LHAAP-04 Site: Confirmation Sampling
Project #: 117591-0009B300 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292
Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (314.0)	Comments
~~04CLAYPIPE-081809~~	~~X~~	~~8/18/2009~~	(A)	~~Water~~			
04CLAYPIPE-082509	X	8/25/09	0900	WATER	1	X	Drilled hole to collect sample
04CSFLOG(10)REG(3)	X	8/25/09	13:45	SOIL	1	X	

Relinquished By: Date/Time 8/25/09 17:30
Received By: UPS Date/Time

Special Instructions: 24-hour TAT!! Samples accidentally labelled 8/25/09 should be 8/26/09

Relinquished By: UPS Date/Time
Received for Laboratory By: Date/Time 8.27.09 09:20

Remarks: 1.8

F67580: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES SAMPLE RECEIPT CONFIRMATION

ACCUTEST'S JOB NUMBER: F67580 CLIENT: Shaw PROJECT: LHAAP-04

DATE/TIME RECEIVED: 8.27.09 0900 # OF COOLERS RECEIVED: 1 COOLER TEMPS: 1.8

METHOD OF DELIVERY: FEDEX (UPS) ACCUTEST COURIER GREYHOUND DELIVERY OTHER

AIRBILL NUMBERS: 1223 880 138 2

COOLER INFORMATION

- [ ] CUSTODY SEAL NOT PRESENT OR NOT INTACT
- [ ] CHAIN OF CUSTODY NOT RECEIVED (COC)
- [ ] ANALYSIS REQUESTED IS UNCLEAR OR MISSING
- [ ] SAMPLE DATES OR TIMES UNCLEAR OR MISSING
- [ ] TEMPERATURE CRITERIA NOT MET
- [ ] WET ICE RECEIVED IN COOLER

TRIP BLANK INFORMATION

- [ ] TRIP BLANK PROVIDED
- [X] TRIP BLANK NOT PROVIDED
- [X] TRIP BLANK NOT ON COC
- [ ] TRIP BLANK INTACT
- [ ] TRIP BLANK NOT INTACT
- [ ] RECEIVED WATER TRIP BLANK
- [ ] RECEIVED SOIL TRIP BLANK

SAMPLE INFORMATION

- [ ] SAMPLE LABELS NOT PRESENT ON ALL BOTTLES
- [ ] CORRECT NUMBER OF CONTAINERS USED
- [ ] SAMPLE RECEIVED IMPROPERLY PRESERVED
- [ ] INSUFFICIENT VOLUME FOR ANALYSIS
- [ ] TIMES ON COC DOES NOT MATCH LABEL(S)
- [ ] ID'S ON COC DOES NOT MATCH LABEL(S)
- [ ] VOC VIALS HAVE HEADSPACE (MACRO BUBBLES)
- [ ] BOTTLES RECEIVED BUT ANALYSIS NOT REQUESTED
- [ ] NO BOTTLES RECEIVED FOR ANALYSIS REQUESTED
- [ ] UNCLEAR FILTERING INSTRUCTIONS
- [ ] UNCLEAR COMPOSITING INSTRUCTIONS
- [ ] SAMPLE CONTAINER(S) RECEIVED BROKEN
- [ ] % SOLIDS JAR NOT RECEIVED
- [ ] 5035 FIELD KIT NOT FROZEN WITHIN 48 HOUR'S
- [ ] RESIDUAL CHLORINE PRESENT

(APPLICABLE TO EPA 600 SERIES OR NORTH CAROLINA ORGANICS)

MISC. INFORMATION

NUMBER OF ENCORES ? 0

NUMBER OF 5035 FIELD KITS ? 0

NUMBER OF LAB FILTERED METALS ? 0

SUMMARY OF COMMENTS:

TECHNICIAN SIGNATURE/DATE ET 8.27.09 TECHNICIAN SIGNATURE/DATE JC 8-27-09

ASBD 12/17/07

4.1 4

F67580: Chain of Custody
Page 2 of 2

LABORATORY REVIEW CHECKLIST: REPORTABLE DATA								
Laboratory Name: Accutest Southeast			Date: 09/03/2009					
Project Name: SEITXH: Longhorn Army Ammunitions Plant			Laboratory Job Number: F67580					
Reviewer Name: Ellen Pampel			Batch Number(s): GN36450, GN36475, GN36437, GN36439, GN36440, GP13511, GP13512					
#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]	
	OI	CHAIN-OF-CUSTODY (COC):						
		1) Were all samples included on a completed COC?	X					
		2) Did the samples requiring chemical preservation arrive at the laboratory preserved?	X					
		3) Were samples requiring thermal preservation within temperature specs at log-in?	X					
		4) Were the samples in the appropriate containers?	X					
	OI	SAMPLE AND QUALITY CONTROL (QC) IDENTIFICATION:						
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X					
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X					
	OI	TEST REPORTS:						
		1) Were samples prepared and analyzed within holding times?	X					
		2) Were reported results within calibration range?	X					
		3) Were all calculations verified?	X					
		4) Were all analyte identifications verified?	X					
		5) Were sample quantitation limits reported for all analytes not detected?	X					
		6) If required for the project, were the tentatively identified compounds reported?			X			
		7) Were results reported on a dry weight basis?	X					
	O	SURROGATE RECOVERY DATA:						
		1) Were surrogates added prior to extraction?			X			
		2) Were surrogate percent recoveries in all samples within the laboratory QC acceptance criteria?			X			
	OI	TEST REPORTS FOR BLANK SAMPLES:						
		1) Were appropriate type(s) of blanks analyzed?	X					
		2) Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X					
		3) Were blanks free of detected compounds?	X					
	OI	LABORATORY CONTROL SAMPLES (LCSs):						
		1) Was each LCS prepared from a source external to the calibration standards?	X					
		2) Were all project-required analytes included in the LCS?	X					
		3) Was each LCS taken through the entire analytical procedure, including preparation and, if applicable, cleanup procedures?	X					
		4) Were LCSs analyzed at the required frequency?	X					
		5) Were LCS percent recoveries within the laboratory QC acceptance criteria?	X					
	OI	MATRIX SPIKE (MS) and MATRIX SPIKE DUPLICATE (MSD) DATA:						
		1) Were all project-required analytes included in the MS and MSD?	X					
		2) Were MS/MSD analyzed at the appropriate frequency?	X					
		3) Were MS percent recoveries within the laboratory QC acceptance criteria?		X			2	
		4) Were MSD percent recoveries and relative percent differences (RPDs) within the laboratory QC acceptance criteria?			X			
	OI	ANALYTICAL DUPLICATE DATA:						
		1) Were appropriate analytical duplicates analyzed for each matrix?	X					
		2) Were analytical duplicates analyzed at the appropriate frequency?	X					
		3) Were RPDs or relative standard deviations within the laboratory QC acceptance criteria?		X			2	
	OI	METHOD QUANTITATION LIMITS (MQLs):						
		Is the concentration of the lowest non-zero calibration standard in the calibration curve reported?	X				1	
	OI	The ND listed on the hard copy reports and/or EDD represents non detection of the target analyte at a concentration below the MDL.			X			
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS						
		Were all samples prepared and analyzed using a Reference Method?	X					
	OI	OTHER PROBLEMS/ANOMALIES:						
		Are all known problems, anomalies or special conditions (e.g., use of minimum analytical limits) associated with the data noted in the Laboratory Review Checklist and Exception Reports?	X					

LAB REVIEW CHECKLIST (continued): SUPPORTING DATA	
Laboratory Name: Accutest Southeast	Date: 09/03/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67580
Reviewer Name: Ellen Pampel	Batch Number(s): GN36450, GN36475, GN36437, GN36439, GN36440, GP13511, GP13512

#[1]	Analysis[2]	Description	Yes	No	NA[3]	NR[4]	ER #[5]
	OI	INITIAL CALIBRATION (ICAL) and ICAL VERIFICATION (ICV):					
		1) Were response factors (RFs) and/or relative response factors (RRFs) within the method-required QC acceptance criteria?	X				
		2) Were percent RSDs or correlation coefficient criteria met?	X				
		3) Were the number of standards recommended in the method used for all analytes?	X				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		5) Are ICV data available for all instruments used?	X				
		6) Has the calibration curve been verified using a NIST-traceable second source?	X				
	OI	CONTINUING CALIBRATION VERIFICATION (CCV):					
		1) Was the CCV analyzed at the method-required frequency?	X				
		2) Were percent differences within the method-required QC acceptance criteria?	X				
		3) Was the ICAL curve verified for each analyte of interest?	X				
	O	MASS SPECTRAL TUNING:					
		1) Was the appropriate compound for the method used for tuning?			X		
		2) Were ion abundance data within the method-required QC acceptance criteria?			X		
	O	INTERNAL STANDARD (IS):					
		1) Were IS area counts within the method-required QC acceptance criteria?			X		
		2) Were IS retention times within the method-required QC acceptance criteria?			X		
	OI	RAW DATA (NELAC Section 1 Appendix A Glossary, and Section 5.12):					
		1) Were the raw data (e.g., chromatograms, spectral data) reviewed by an analyst?	X				
		2) Were all data associated with manual integrations flagged?	X				
	O	DUAL COLUMN CONFIRMATION:					
		1) Did dual column confirmation results meet the method-required QC acceptance criteria?			X		
		2) Were all percent differences less than 25%?			X		
	O	TENTATIVELY IDENTIFIED COMPOUNDS (TICs):					
		If TICs were requested, were the mass spectra and TIC data reviewed?			X		
	I	ICS RESULTS:					
		1) Were percent recoveries within method acceptance criteria?			X		
		2) Were the absolute values for all analytes less than the IDL?			X		
	I	SERIAL DILUTIONS, POST DIGESTION SPIKES, AND METHOD OF STANDARD ADDITIONS:					
		Were percent differences, recoveries, and linearity within the QC acceptance criteria specified in the method?			X		
	OI	VALIDATION RESULTS FOR NON-REFERENCE METHODS:					
		Are all non-Reference Methods documented and validated (NELAC 5.10.2.1)?			X		
	OI	METHOD DETECTION LIMIT (MDL) STUDIES:					
		Are MDL studies for each analyte in a given matrix current, on file, less than a year old?	X				
	OI	STANDARDS TRACEABILITY:					
		Are all standards used in the analyses NIST-traceable?	X				
	OI	DOCUMENTATION OF WATER AND REAGENTS QUALITY:					
		Is documentation of the quality of water and reagents used in the analyses on file?	X				
	OI	COMPOUND/ANALYTE IDENTIFICATION PROCEDURES:					
		Are the procedures for compound identification documented?	X				
	OI	DEMONSTRATION OF ANALYST CAPABILITY:					
		1) Was demonstration of capability conducted according to NELAC Appendix 5C?	X				
		2) Is documentation of the analyst's demonstration of capability on file?	X				
		3) Is documentation of the analyst's proficiency up-to-date and on file?	X				
	OI	PROFICIENCY TEST REPORTS (NELAC 5.4.2):					
		Are proficiency testing or interlaboratory comparison results on file?	X				
	OI	LABORATORY STANDARD OPERATING PROCEDURES (SOPs):					
		Are laboratory SOPs current and on file for each method performed?	X				

[1] Items identified by the letter "R" should be submitted to 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.

[2] O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);

[3] NA = Not applicable;

[4] NR = Not Reviewed;

[5] ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked.

LAB REVIEW CHECKLIST (continued): Exception Reports	
Laboratory Name: Accutest Southeast	Date: 09/03/2009
Project Name: SEITXH: Longhorn Army Ammunitions Plant	Laboratory Job Number: F67580
Reviewer Name: Ellen Pampel	Batch Number(s): GN36450, GN36475, GN36437, GN36439, GN36440, GP13511, GP13512

ER #	Description
1	For reporting purposes, the RL on the reports is equal to the MQL. The MDL is equal to the MDL/SQL. The unadjusted MQL is reported in the blank result page for all analysis.
2	All anomalies are discussed in the case narrative.
	All supporting laboratory documentation is on file with the laboratory's QA/QC department

1. APPENDIX A LABORATORY DATA PACKAGE COVER PAGE

This data package consists of:

X This signature page, the laboratory review checklist, and the following reportable data:
X R1 Field chain-of-custody documentation;
X R2 Sample identification cross-reference;
X R3 Test reports (analytical data sheets) for each environmental sample that includes:
a) Items consistent with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) cleanup methods, and
e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
a) Calculated recovery (%R), and
b) The laboratory's surrogate QC limits.
X R5 Test reports/summary forms for blank samples;
X R6 Test reports/summary forms for laboratory control samples (LCSs) including:
a) LCS spiking amounts,
b) Calculated %R for each analyte, and
c) The laboratory's LCS QC limits.
X R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %Rs and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits
X R8 Laboratory analytical duplicate (if applicable) recovery and precision:
a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for analytical duplicates.
X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;
R10 Other problems or anomalies.
X The Exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

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

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

Ellen Pampel	On file	Inorganic QA	09/03/09
Name:	Signature:	Title:	Date:

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries
- Instrument Runlogs/QC
- Percent Solids Raw Data Summary

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67580
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP13511/GN36475	9.1	0.0	ug/kg	151	175	115.5	75-125%
Perchlorate	GP13512/GN36450	10	0.0	ug/l	50	49.3	98.6	85-115%
Specific Conductivity	GN36439	1.0	0.0	umhos/cm				
Specific Conductivity	GN36440	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN36439: F67580-1
Batch GN36440: F67580-2
Batch GP13511: F67580-2
Batch GP13512: F67580-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67580
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Perchlorate	GP13511/GN36475	F67580-2	ug/kg	1520	925	48.7*(a)	0-30%
Perchlorate	GP13512/GN36450	F67580-1	ug/l	4.0 U	0.0	0.0	0-15%
Solids, Percent	GN36437	F67564-1	%	80	81.5	1.9	0-10%
Specific Conductivity	GN36439	F67580-1	umhos/cm	488	481	1.6	0-10%
Specific Conductivity	GN36440	F67580-2	umhos/cm	34.2	34.1	0.3	0-10%

Associated Samples:
Batch GN36437: F67580-2
Batch GN36439: F67580-1
Batch GN36440: F67580-2
Batch GP13511: F67580-2
Batch GP13512: F67580-1
(*) Outside of QC limits
(a) High RPD due to possible sample nonhomogeneity.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: F67580
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP13511/GN36475	F67580-2	ug/kg	1520	188	1600	42.6(a)	50-150%
Perchlorate	GP13512/GN36450	F67580-1	ug/l	4.0 U	50	48.4	96.8	80-120%

Associated Samples:
Batch GP13511: F67580-2
Batch GP13512: F67580-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67580
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082901.TXT Date Analyzed: 08/29/09 Methods: EPA 314
Analyst: LT Run ID: GN36450
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
13:02	GN36450-CCV1	1		
13:25	GN36450-CCB1	1		
14:54	GP13512-MB1	1		
15:17	GP13512-B1	1		
15:39	F67580-1	1		
16:02	GP13512-D1	1		
16:24	GP13512-S1	1		
16:46	GN36450-CCV2	1		
17:09	GN36450-CCB2	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67580
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209082901.TXT Date Analyzed: 08/29/09 Methods: EPA 314
Run ID: GN36450 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36450-CCV1	Perchlorate	48.5	10	4.0	50	97.0	85-115
GN36450-CCB1	Perchlorate	4.0 U	10	4.0			
GN36450-CCV2	Perchlorate	216	10	4.0	50	108.0	85-115
GN36450-CCB2	Perchlorate	4.0 U	10	4.0			

(!) Outside of QC limits

Accutest Laboratories Instrument Runlog
Inorganics Analyses

Login Number: F67580
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209083101.TXT Date Analyzed: 08/31/09 Methods: EPA 314M
Analyst: LT Run ID: GN36475
Parameters: Perchlorate

Time	Sample Description	Dilution Factor	PS Recov	Comments
21:46	GN36475-CCV1	1		
22:03	GN36475-CCB1	1		
23:13	GP13511-MB1	1		
23:30	GP13511-B1	1		
23:48	F67580-2	5		
00:05	GP13511-D1	5		
00:23	GP13511-S1	5		
00:40	GN36475-CCV2	1		
00:57	GN36475-CCB2	1		

Refer to raw data for calibration curve and standards.

Instrument QC Summary
Inorganics Analyses

Login Number: F67580
Account: SEITXH - SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

File ID: 209083101.TXT Date Analyzed: 08/31/09 Methods: EPA 314M
Run ID: GN36475 Units: ug/l

Sample Number	Parameter	Result	RL	IDL/MDL	True Value	% Recov.	QC Limits
GN36475-CCV1	Perchlorate	53.8	3.0	0.80	50	107.6	85-115
GN36475-CCB1	Perchlorate	0.80 U	3.0	0.80			
GN36475-CCV2	Perchlorate	190(a)	3.0	0.80	50	95.0	85-115
GN36475-CCB2	Perchlorate	0.80 U	3.0	0.80			

(!) Outside of QC limits
(a) T.V. = 200 ppb.

Percent Solids Raw Data Summary

Job Number: F67580
Account: SEITXH SHAW E & I
Project: Longhorn Army Ammunitions Plant, Karnack, TX

Sample: F67580-2 **Analyzed:** 28-AUG-09 by SJL **Method:** SM19 2540B M
ClientID: 04CSFL06 (10) RE(13)

Wet Weight (Total)	7.45	g
Tare Weight	1	g
Dry Weight (Total)	6.07	g
Solids, Percent	78.6	%

00108779

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

Laboratory Report Number: L09080653

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

This report was reviewed on September 03, 2009.

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 September 03, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 63 pages.

Look closer. Go further. Do more.

00108780

Microbac

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 L09080653
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080653

CHAIN OF CUSTODY: The chain of custody number was 082709-01.

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: 31-AUG-09
Stephanie Mossburg

2.1 Semivolatiles Data

2.1.1 Semivolatiles GC/MS Data (6850)

2.1.1.1 Summary Data

Loginnum: L09080653

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: All acceptance criteria were met.

Internal Standards: All acceptance criteria were met.

Surrogates: Not applicable.

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: 

LABORATORY REPORT

00108789

L09080653

09/03/09 12:29

Submitted By

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

For

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

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX
Invoice Number: 603538
P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04MH01-W01	L09080653-01	6850	1	28-AUG-09
04MH03-W01	L09080653-02	6850	1	28-AUG-09
04MH04-W01	L09080653-03	6850	1	28-AUG-09
04MH05-W01	L09080653-04	6850	1	28-AUG-09
04MH06-W01	L09080653-05	6850	1	28-AUG-09

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Microbac Laboratories Inc.

Report Number: **L09080653**
Report Date : **September 3, 2009**

00108790

Sample Number:	**L09080653-01**	PrePrep Method:	**NONE**	Instrument:	**LCMS1**
Client ID:	**04MH01-W01**	Prep Method:	**6850**	Prep Date:	**08/28/2009 14:22**
Matrix:	**Water**	Analytical Method:	**6850**	Cal Date:	**08/26/2009 12:56**
Workgroup Number:	**WG310797**	Analyst:	**WTD**	Run Date:	**08/28/2009 19:53**
Collect Date:	**08/27/2009 11:15**	Dilution:	**1**	File ID:	**1LM.LM00515**
Sample Tag:	**01**	Units:	**ug/L**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**		**U**	**0.200**	**0.100**

U Not detected at or above adjusted sample detection limit

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Report Number: **L09080653**
Report Date : **September 3, 2009**

00108791

Sample Number:	L09080653-02	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04MH03-W01	Prep Method:	6850	Prep Date:	08/28/2009 14:22
Matrix:	Water	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG310797	Analyst:	WTD	Run Date:	08/28/2009 20:08
Collect Date:	08/27/2009 12:00	Dilution:	1	File ID:	1LM.LM00516
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0		U	0.200	0.100

U Not detected at or above adjusted sample detection limit

Report Number: **L09080653**
Report Date : **September 3, 2009**

00108792

Sample Number: **L09080653-03**
Client ID: **04MH04-W01**
Matrix: **Water**
Workgroup Number: **WG310797**
Collect Date: **08/27/2009 12:15**
Sample Tag: **01**

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

Instrument: **LCMS1**
Prep Date: **08/28/2009 14:22**
Cal Date: **08/26/2009 12:56**
Run Date: **08/28/2009 20:22**
File ID: **1LM.LM00517**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**0.849**		**0.200**	**0.100**

Microbac®

Report Number: **L09080653**
Report Date : **September 3, 2009**

00108793

Sample Number:	L09080653-04	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04MH05-W01	Prep Method:	6850	Prep Date:	08/28/2009 14:22
Matrix:	Water	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG310797	Analyst:	WTD	Run Date:	08/28/2009 21:20
Collect Date:	08/27/2009 12:35	Dilution:	1	File ID:	1LM.LM00521
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0		U	0.200	0.100

U Not detected at or above adjusted sample detection limit

Report Number: **L09080653**
Report Date : **September 3, 2009**

00108794

Sample Number:	L09080653-05	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04MH06-W01	Prep Method:	6850	Prep Date:	08/28/2009 14:22
Matrix:	Water	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG310797	Analyst:	WTD	Run Date:	08/28/2009 21:34
Collect Date:	08/27/2009 12:45	Dilution:	1	File ID:	1LM.LM00522
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0		U	0.200	0.100

U Not detected at or above adjusted sample detection limit

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:

	Example
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)]

where:

	Example
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)]

where:

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

Dry weight correction:

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

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

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

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

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

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

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

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 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

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (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

00108798

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 082609_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Column 1 ID: KP-RPPX250 Column 2 ID: NA

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

Approved: 28-AUG-09

Microbac

00108799

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 082809_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29953

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: 310797

Internal STD: COA14015 Surrogate STD: NA Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
36	1LM.LM00492	WG310796-02 CCB	1	1		08/28/09 14:22
2	1LM.LM00493	WG310797-01 ICS/MCT 0.2	1	1	STD34946	08/28/09 14:37
3	1LM.LM00494	WG310796-01 CCV1.0	1	1	STD34872	08/28/09 14:51
4	1LM.LM00495	WG310797-05 QCMRL 0.2	1	1	STD34872	08/28/09 15:05
5	1LM.LM00496	WG310796-03 CCB	1	1		08/28/09 15:20
6	1LM.LM00497	WG310797-02 MBLK	1	1		08/28/09 15:34
7	1LM.LM00498	WG310797-03 LCS	1	1	STD34872	08/28/09 15:49
8	1LM.LM00499	WG310797-04 LCSD	1	1	STD34872	08/28/09 16:03
9	1LM.LM00500	L09080653-01 A 5000X	1	5000		08/28/09 16:17
10	1LM.LM00501	L09080653-02 A 5000X	1	5000		08/28/09 16:32
11	1LM.LM00502	L09080653-03 A 5000X	1	5000		08/28/09 16:46
12	1LM.LM00503	L09080653-04 A 5000X	1	5000		08/28/09 17:01
13	1LM.LM00504	L09080653-05 A 5000X	1	5000		08/28/09 17:15
14	1LM.LM00505	WG310796-04 CCV 1.0	1	1	STD34872	08/28/09 17:29
15	1LM.LM00506	WG310797-06 QCMRL 0.2	1	1	STD34872	08/28/09 17:44
16	1LM.LM00507	WG310796-05 CCB	1		STD34872	08/28/09 17:58
17	1LM.LM00508	L09080692-01 B 1000X	1	1000		08/28/09 18:13
18	1LM.LM00509	L09080653-01 A 100X	1	100		08/28/09 18:27
19	1LM.LM00510	L09080653-02 A 100X	1	100		08/28/09 18:41
20	1LM.LM00511	L09080653-03 A 100X	1	100		08/28/09 18:56
21	1LM.LM00512	L09080653-04 A 100X	1	100		08/28/09 19:10
22	1LM.LM00513	L09080653-05 A 100X	1	100		08/28/09 19:25
23	1LM.LM00514	L09080692-01 B 10X	1	10		08/28/09 19:39
24	1LM.LM00515	L09080653-01 A	1	1		08/28/09 19:53
25	1LM.LM00516	L09080653-02 A	1	1		08/28/09 20:08
26	1LM.LM00517	L09080653-03 A	1	1		08/28/09 20:22
27	1LM.LM00518	WG310796-06 CCV 1.0	1	1	STD34872	08/28/09 20:36
28	1LM.LM00519	WG310797-07 QCMRL 0.2	1	1	STD34872	08/28/09 20:51
29	1LM.LM00520	WG310796-07 CCB	1	1		08/28/09 21:05
30	1LM.LM00521	L09080653-04 A	1	1		08/28/09 21:20
31	1LM.LM00522	L09080653-05 A	1	1		08/28/09 21:34
32	1LM.LM00523	L09080692-01 B	1	1		08/28/09 21:48
33	1LM.LM00524	WG310796-08 CCV 1.0	1	1	STD34872	08/28/09 22:03
34	1LM.LM00525	WG310797-08 QCMRL 0.2	1	1	STD34872	08/28/09 22:17
35	1LM.LM00526	WG310796-09 CCB	1	1		08/28/09 22:32

Approved: 31-AUG-09

Microbac

00108800

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 082809_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29953

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: 310797

Internal STD: COA14015 Surrogate STD: NA

Comments

Seq.	Rerun	Dil.	Reason	Analytes
9	X	100	Analyzed too dilute	
10	X	100	Analyzed too dilute	
11	X	100	Analyzed too dilute	
12	X	100	Analyzed too dilute	
13	X	100	Analyzed too dilute	
17	X	10	Analyzed too dilute	
18	X	1	Analyzed too dilute	
19	X	1	Analyzed too dilute	
20	X	1	Analyzed too dilute	
21	X	1	Analyzed too dilute	
22	X	1	Analyzed too dilute	
23	X	1	Analyzed too dilute	

Approved: 31-AUG-09

Checklist ID: 41221

00108801

Microbac Laboratories Inc.

Data Checklist

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

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

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009

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

Checklist ID: 41273

00108802

Microbac Laboratories Inc.

Data Checklist

Date: 28-AUG-2009

Analyst: WTD

Analyst: NA

Method: 6850

Instrument: LCMS1

Curve Workgroup: NA

Runlog ID: 29856

Analytical Workgroups: L09080653 (8/31), L09080692 (8/31)

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

Primary Reviewer:

Secondary Reviewer:
31-AUG-2009

CHECKLIST1 - Modified 03/05/2008

Generated: AUG-31-2009 10:31:17

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HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108803

Analytical Method: 6850 AAB#: WG310797

Login Number: L09080653

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
04MH01-W01	01	08/27/09					08/28/09	1.1	28		08/28/09	.2	28	
04MH03-W01	02	08/27/09					08/28/09	1.1	28		08/28/09	.2	28	
04MH04-W01	03	08/27/09					08/28/09	1.1	28		08/28/09	.3	28	
04MH05-W01	04	08/27/09					08/28/09	1.1	28		08/28/09	.3	28	
04MH06-W01	05	08/27/09					08/28/09	1.1	28		08/28/09	.3	28	

* = SEE PROJECT QAPP REQUIREMENTS

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

Microbac Laboratories Inc.

00108805

METHOD BLANK SUMMARY

Login Number: L09080653
Work Group: WG310797
Blank File ID: 1LM.LM00492
Blank Sample ID: WG310797-02
Prep Date: 08/28/09 14:22
Instrument ID: LCMS1
Analyzed Date: 08/28/09 14:22
Method: 6850
Analyst: WTD

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
MCT	WG310797-01	1LM.LM00493	08/28/09 14:37	01
QCMRL	WG310797-05	1LM.LM00495	08/28/09 15:05	01
LCS	WG310797-03	1LM.LM00498	08/28/09 15:49	01
LCS2	WG310797-04	1LM.LM00499	08/28/09 16:03	01
QCMRL	WG310797-06	1LM.LM00506	08/28/09 17:44	01
04MH01-W01	L09080653-01	1LM.LM00515	08/28/09 19:53	01
04MH03-W01	L09080653-02	1LM.LM00516	08/28/09 20:08	01
04MH04-W01	L09080653-03	1LM.LM00517	08/28/09 20:22	01
QCMRL	WG310797-07	1LM.LM00519	08/28/09 20:51	01
04MH05-W01	L09080653-04	1LM.LM00521	08/28/09 21:20	01
04MH06-W01	L09080653-05	1LM.LM00522	08/28/09 21:34	01
QCMRL	WG310797-08	1LM.LM00525	08/28/09 22:17	01

Report Name: BLANK_SUMMARY
PDF File ID: 1477626
Report generated 08/31/2009 11:26

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Microbac Laboratories Inc.

00108806

METHOD BLANK SUMMARY

Login Number: L09080653
Work Group: WG310797
Blank File ID: 1LM.LM00497
Blank Sample ID: WG310797-02
Prep Date: 08/28/09 14:22
Instrument ID: LCMS1
Analyzed Date: 08/28/09 15:34
Method: 6850
Analyst: WTD

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
MCT	WG310797-01	1LM.LM00493	08/28/09 14:37	01
QCMRL	WG310797-05	1LM.LM00495	08/28/09 15:05	01
LCS	WG310797-03	1LM.LM00498	08/28/09 15:49	01
LCS2	WG310797-04	1LM.LM00499	08/28/09 16:03	01
QCMRL	WG310797-06	1LM.LM00506	08/28/09 17:44	01
04MH01-W01	L09080653-01	1LM.LM00515	08/28/09 19:53	01
04MH03-W01	L09080653-02	1LM.LM00516	08/28/09 20:08	01
04MH04-W01	L09080653-03	1LM.LM00517	08/28/09 20:22	01
QCMRL	WG310797-07	1LM.LM00519	08/28/09 20:51	01
04MH05-W01	L09080653-04	1LM.LM00521	08/28/09 21:20	01
04MH06-W01	L09080653-05	1LM.LM00522	08/28/09 21:34	01
QCMRL	WG310797-08	1LM.LM00525	08/28/09 22:17	01

Report Name: BLANK_SUMMARY
PDF File ID: 1477626
Report generated 08/31/2009 11:26

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METHOD BLANK REPORT

00108807

Login Number: L09080653 Prep Date: 08/28/09 14:22 Sample ID: WG310797-02
Instrument ID: LCMS1 Run Date: 08/28/09 14:22 Prep Method: 6850
File ID: 1LM.LM00492 Analyst: WTD Method: 6850
Workgroup (AAB#): WG310797 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.100	0.200	0.100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1477143
31-AUG-2009 11:26

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108808

Login Number: L09080653 Prep Date: 08/28/09 14:22 Sample ID: WG310797-02
Instrument ID: LCMS1 Run Date: 08/28/09 15:34 Prep Method: 6850
File ID: 1LM.LM00497 Analyst: WTD Method: 6850
Workgroup (AAB#): WG310797 Matrix: Water Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.100	0.200	0.100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1477143
31-AUG-2009 11:26

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LABORATORY CONTROL SAMPLE (LCS)

00108809

Login Number: L09080653 Analyst: WTD Prep Method: 6850

Instrument ID: LCMS1 Matrix: Water Method: 6850

Workgroup (AAB#): WG310797 Units: ug/L

QC Key: STD Lot #: STD34872

Sample ID: WG310797-03 LCS File ID: 1LM.LM00498 Run Date: 08/28/2009 15:49

Sample ID: WG310797-04 LCS2 File ID: 1LM.LM00499 Run Date: 08/28/2009 16:03

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	0.200	0.206	103	0.200	0.206	103	0.00	80 - 120	15	

LCS_LCS2 - Modified 03/06/2008

PDF File ID: 1477144

Report generated: 08/31/2009 11:26

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Conductivity Probe Calibration Check: 1417 /1410 µs/cm

Perchlorate Conductivity Check

Working MCT Level: 10,000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
L0908D653-01 A	92.3	N/A
-02 A	269	
-03 A	204	
-04 A	628	
-05 A	376	
L0908D692-01A	419	N/A

Wade T. Dr
Analyst

08-28-09 / 11:45
Date/Time

DCN#80555

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00108811

Login Number: L09080653 **Instrument ID:** LCMS1

Analytical Method: 6850 **Initial Calibration Date:** 26-AUG-09 12:56

ICAL Workgroup: WG310580 **Column ID:** F

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

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00108812

Login Number: L09080653
Analytical Method: 6850

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

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

INT_CAL - Modified 03/06/2008
PDF File ID: 1477627
Report generated 08/31/2009 11:26

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00108813

Login Number: L09080653
Analytical Method: 6850

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

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

INT_CAL - Modified 03/06/2008
PDF File ID: 1477627
Report generated 08/31/2009 11:26

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00108814

Login Number: L09080653
Analytical Method: 6850

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

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

INT_CAL - Modified 03/06/2008
PDF File ID: 1477627
Report generated 08/31/2009 11:26

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Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

00108815

Login Number: L09080653 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: 1477628

Report generated 08/31/2009 11:26

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CONTINUING CALIBRATION BLANK (CCB)

00108816

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-02

Instrument ID: LCMS1 Run Time: 14:22 Method: 6850

File ID: 1LM.LM00492 Analyst: WTD Units: ug/L

Workgroup (AAB#): WG310797 Cal ID: LCMS1 -

Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008

PDF File ID: 1477147

Report generated 08/31/2009 11:26

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CONTINUING CALIBRATION BLANK (CCB)

00108817

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-03

Instrument ID: LCMS1 Run Time: 15:20 Method: 6850

File ID: 1LM.LM00496 Analyst: WTD Units: ug/L

Workgroup (AAB#): WG310797 Cal ID: LCMS1 -

Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008

PDF File ID: 1477147

Report generated 08/31/2009 11:26

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Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00108818

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-05

Instrument ID: LCMS1 Run Time: 17:58 Method: 6850

File ID: 1LM.LM00507 Analyst: WTD Units: ug/L

Workgroup (AAB#): WG310797 Cal ID: LCMS1 -

Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008

PDF File ID: 1477147

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00108819

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-07

Instrument ID: LCMS1 Run Time: 21:05 Method: 6850

File ID: 1LM.LM00520 Analyst: WTD Units: ug/L

Workgroup (AAB#): WG310797 Cal ID: LCMS1 -

Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008

PDF File ID: 1477147

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00108820

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-09

Instrument ID: LCMS1 Run Time: 22:32 Method: 6850

File ID: 1LM.LM00526 Analyst: WTD Units: ug/L

Workgroup (AAB#): WG310797 Cal ID: LCMS1 -

Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008

PDF File ID: 1477147

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00108821

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-01

Instrument ID: LCMS1 Run Time: 14:51 Method: 6850

File ID: 1LM.LM00494 Analyst: WTD QC Key: STD

Workgroup (AAB#): WG310797 Cal ID: LCMS1 - 26-AUG-09

Matrix: WATER

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

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1477146

Report generated 08/31/2009 11:26

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CONTINUING CALIBRATION VERIFICATION (CCV)

00108822

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-04

Instrument ID: LCMS1 Run Time: 17:29 Method: 6850

File ID: 1LM.LM00505 Analyst: WTD QC Key: STD

Workgroup (AAB#): WG310797 Cal ID: LCMS1 - 26-AUG-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.03	ug/L	1.49	3.00	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1477146

Report generated 08/31/2009 11:26

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Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00108823

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-06

Instrument ID: LCMS1 Run Time: 20:36 Method: 6850

File ID: 1LM.LM00518 Analyst: WTD QC Key: STD

Workgroup (AAB#): WG310797 Cal ID: LCMS1 - 26-AUG-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.983	ug/L	1.42	1.70	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1477146

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00108824

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310796-08

Instrument ID: LCMS1 Run Time: 22:03 Method: 6850

File ID: 1LM.LM00524 Analyst: WTD QC Key: STD

Workgroup (AAB#): WG310797 Cal ID: LCMS1 - 26-AUG-09

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.06	ug/L	1.53	6.00	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008

PDF File ID: 1477146

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

QCMRL SAMPLE

00108825

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310797-05

Instrument ID: LCMS1 Run Time: 15:05 Prep Method: 6850

File ID: 1LM.LM00495 Analyst: WTD Method: 6850

Workgroup (AAB#): WG310797 Matrix: Water Units: ug/L

Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.199	99.5	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1477145

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

QCMRL SAMPLE

00108826

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310797-06

Instrument ID: LCMS1 Run Time: 17:44 Prep Method: 6850

File ID: 1LM.LM00506 Analyst: WTD Method: 6850

Workgroup (AAB#): WG310797 Matrix: Water Units: ug/L

Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.220	110	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1477145

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

QCMRL SAMPLE

00108827

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310797-07

Instrument ID: LCMS1 Run Time: 20:51 Prep Method: 6850

File ID: 1LM.LM00519 Analyst: WTD Method: 6850

Workgroup (AAB#): WG310797 Matrix: Water Units: ug/L

Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.211	106	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1477145

Report generated 08/31/2009 11:26

Microbac®

Microbac Laboratories Inc.

QCMRL SAMPLE

00108828

Login Number: L09080653 Run Date: 08/28/2009 Sample ID: WG310797-08

Instrument ID: LCMS1 Run Time: 22:17 Prep Method: 6850

File ID: 1LM.LM00525 Analyst: WTD Method: 6850

Workgroup (AAB#): WG310797 Matrix: Water Units: ug/L

Contract #: DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	Expected	Found	% Rec	Limits	Q
Perchlorate	0.200	0.225	113	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1477145

Report generated 08/31/2009 11:26

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Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108829

Login Number: L09080653
Instrument ID: LCMS1
Workgroup (AAB#): WG310797

CCV Number: WG310581-05
CAL ID: LCMS1-26-AUG-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG310581-05	NA	NA	243000
Upper Limit	NA	NA	486000
Lower Limit	NA	NA	121500
WG310797-02	1.00	01	235000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1481283
Report generated 09/03/2009 11:00

Microbac®

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108830

Login Number: L09080653
Instrument ID: LCMS1
Workgroup (AAB#): WG310797

CCV Number: WG310796-01
CAL ID: LCMS1-26-AUG-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG310796-01	NA	NA	261000
Upper Limit	NA	NA	522000
Lower Limit	NA	NA	130500
WG310797-02	1.00	02	251000
WG310797-03	1.00	01	253000
WG310797-04	1.00	01	250000
WG310797-05	1.00	01	262000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1481283
Report generated 09/03/2009 11:00

Microbac

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108831

Login Number: L09080653
Instrument ID: LCMS1
Workgroup (AAB#): WG310797

CCV Number: WG310796-04
CAL ID: LCMS1-26-AUG-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG310796-04	NA	NA	234000
Upper Limit	NA	NA	468000
Lower Limit	NA	NA	117000
L09080653-01	1.00	01	232000
L09080653-02	1.00	01	239000
L09080653-03	1.00	01	224000
WG310797-06	1.00	01	229000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1481283
Report generated 09/03/2009 11:00

Microbac

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108832

Login Number: L09080653
Instrument ID: LCMS1
Workgroup (AAB#): WG310797

CCV Number: WG310796-06
CAL ID: LCMS1-26-AUG-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG310796-06	NA	NA	222000
Upper Limit	NA	NA	444000
Lower Limit	NA	NA	111000
L09080653-04	1.00	01	257000
L09080653-05	1.00	01	241000
WG310797-07	1.00	01	222000

IS-1 - O18LP

Underline = Response outside limits

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00108833

Login Number: L09080653
Instrument ID: LCMS1
Workgroup (AAB#): WG310797

CCV Number: WG310796-08
CAL ID: LCMS1-26-AUG-09
Matrix: WATER

Sample Number	Dilution	Tag	IS-1
WG310796-08	NA	NA	215000
Upper Limit	NA	NA	430000
Lower Limit	NA	NA	107500
WG310797-08	1.00	01	212000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1481283
Report generated 09/03/2009 11:00

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO AVERAGE OF ICAL)

00108834

Login Number:L09080653
Instrument ID:LCMS1
Workgroup (AAB#):WG310797

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

Sample Number	Dilution	Tag	IS-1
WG310580-05	NA	NA	253000
Upper Limit	NA	NA	506000
Lower Limit	NA	NA	126500
L09080653-01	1.00	01	232000
L09080653-02	1.00	01	239000
L09080653-03	1.00	01	224000
L09080653-04	1.00	01	257000
L09080653-05	1.00	01	241000
WG310797-02	1.00	01	235000
WG310797-02	1.00	02	251000
WG310797-03	1.00	01	253000
WG310797-04	1.00	01	250000

IS-1 - O18LP

Underline = Response outside limits

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
September 3, 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 03, 2009

00108837

Qualkey: STD_ND=U

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

Microbac®

COC NO. 082709-01

00108838

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 (713.996.4588) TAT: 24 Hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: LHAAP-04 Site: Confirmation Sampling
Project #: 117591-0009B300 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713) 247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (6850)	Comments
04MH01-W01	X	8/27/2009	11:15	Water	1	X	
04MH03-W01	X	8/27/2009	12:00	Water	1	X	
04MH04-W01	X	8/27/2009	12:15	Water	1	X	
04MH05-W01	X	8/27/2009	12:35	Water	1	X	
04MH06-W01	X	8/27/2009	12:45	Water	1	X	

24 HOUR TAT

Relinquished By:
Date/Time 8/27/09 17:30

Received By:
Date/Time

Relinquished By:
Date/Time

Received for Laboratory By:
Date/Time

Special Instructions

Microbac OVD
Received: 08/28/2009 09:48
By: ERIN PORTER

221000001361

Rem:

1000001361

COOLER INSPECTION

00108839

Received: 08/28/2009 09:48
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09080653

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0013996	G	1.0	J2238801426	082709-01	

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	Yes	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?

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

Microbac Laboratories Inc.

00108840

Internal Chain of Custody Report

Login: L09080653
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 31-AUG-2009

Samplenum	Container ID	Products
L09080653-01	610061	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-AUG-2009 11:18	RLK	
2	ANALYZ	W1	SEM	28-AUG-2009 11:25	WTD	JKT
3	ANALYZ	SEM	A2	01-SEP-2009 09:47	RLK	WTD

Samplenum	Container ID	Products
L09080653-02	610062	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-AUG-2009 11:18	RLK	
2	ANALYZ	W1	SEM	28-AUG-2009 11:25	WTD	JKT
3	ANALYZ	SEM	A2	01-SEP-2009 09:47	RLK	WTD

Samplenum	Container ID	Products
L09080653-03	610063	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-AUG-2009 11:18	RLK	
2	ANALYZ	W1	SEM	28-AUG-2009 11:25	WTD	JKT
3	ANALYZ	SEM	A2	01-SEP-2009 09:47	RLK	WTD

Samplenum	Container ID	Products
L09080653-04	610064	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-AUG-2009 11:18	RLK	
2	ANALYZ	W1	SEM	28-AUG-2009 11:25	WTD	JKT
3	ANALYZ	SEM	A2	01-SEP-2009 09:47	RLK	WTD

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

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Microbac Laboratories Inc.

00108841

Internal Chain of Custody Report

Login: L09080653
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 31-AUG-2009

Samplenum	Container ID	Products
L09080653-05	610065	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	28-AUG-2009 11:18	RLK	
2	ANALYZ	W1	SEM	28-AUG-2009 11:25	WTD	JKT
3	ANALYZ	SEM	A2	01-SEP-2009 09:47	RLK	WTD

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

Microbac®

Columbia Analytical Services, Inc. 1 Mustard Street, Suite 250, Rochester, NY 14609-6925 | 585.288.5380 | www.caslab.com

September 01, 2009

Service Request No: R0904885

Ms. Jennifer Hoang
Shaw Group-Texas
3010 Briarpark Drive, Suite 400
Houston, TX 77042

Laboratory Results for: LHAAP-04/117591-0009B300

Dear Ms. Hoang:

Enclosed are the results of the sample(s) submitted to our laboratory on August 28, 2009. For your reference, these analyses have been assigned our service request number **R0904885**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 129. You may also contact me via email at MPerry@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Michael K. Perry

Michael Perry
Laboratory Manager

100% Recycled Paper

CASE NARRATIVE
COMPANY: Shaw Group
PROJECT: LHAAP-04
SUBMISSION #: R0904885

Samples were collected on 8/27/09 and received at CAS/Rochester on 8/28/09 in good condition at a cooler temperature of 0 °C. "Rush" results were sent via e-mail on 8/31/09.

PERCHLORATE ANALYSIS

Twelve soil samples and one water sample were analyzed for Perchlorate by LC/MS method 6850 with DOD modifications from the DOD Perchlorate Handbook. Values detected between the MDL and PQL have been flagged with a "J" as estimated.

All three soil samples were analyzed at dilutions to bring target analytes within the calibration range of the method.

All the initial and continuing calibration criteria were met for all analytes.

A Matrix Spike/Matrix Spike Duplicate was performed was not requested.

The Blank Spike (LCS/LCSD) for the soil samples were all within QC limits.

The Laboratory Blank associated with these samples had a "J" flagged value for Perchlorate between the MRL and MDL. No data was affected.

No other analytical or QC problems were encountered.

CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R0904885

Lab ID	Client ID
R0904885-001	04MH02-SD01
R0904885-002	04CSFL08(5)RE(7)
R0904885-003	04CSFL02(4)RE(6)
R0904885-004	04CSFL12(8)
R0904885-005	04CSFL11(8)
R0904885-006	04CSFL05(7)RE(8)
R0904885-007	04CSWLKQC(1)
R0904885-008	04CSWLK(2)
R0904885-009	04CSWJI(4)
R0904885-010	04CSWHM
R0904885-011	04CSWIM
R0904885-012	04CSWLH

Columbia Analytical Services™

REPORT QUALIFIERS

U - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. The flag is used either when estimating a concentration for tentatively identified compounds, or when the concentration is less than the reporting limit and greater than the MDL (concentrations are not verified within the initial calibration range).

For DoD reports, the J-flag may also be used to indicate that the concentration between two columns for pesticides/Aroclors is greater than 40% difference.

B - Indicates this compound was also detected in the associated method blank at a concentration that may have contributed to the sample result.

B- Metals - Indicates an estimated value. The concentration is less than the reporting limit and greater than the MDL (concentrations are not verified within the initial calibration range).

E - Indicates that the sample concentration had exceeded the calibration range for that specific analysis.

D - Indicates the sample concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range.

* - Indicates that a quality control parameter has exceeded laboratory limits.

X - See Case Narrative for discussion.

P - This flag is used for a pesticide/Aroclor target concentration when there is a greater than 40% (25% for CLP) difference for detected concentrations between the two GC columns.

For DoD reports, the J-flag is used instead of "P".

- Spike was diluted out.

N - Inorganics- Indicates the matrix spike recovery was outside laboratory limits.

N- Organics- Indicates presumptive evidence of a compound (reported as a tentatively identified compound) based on the mass spectral library search.

ACCREDITED IN ACCORDANCE WITH nelac

CAS/Rochester Lab ID # for State Certifications[1]

NELAP Accredited
Delaware Accredited
Connecticut ID # PH0556
Florida ID # E87674
Illinois ID #200047
Maine ID #NY0032
Nebraska Accredited
Navy Facilities Engineering Service Center Approved
Nevada ID # NY-00032
New Jersey ID # NY004
New York ID # 10145
New Hampshire ID # 294100 A/B
Pennsylvania ID# 68-786
Rhode Island ID # 158
West Virginia ID # 292

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to the certifications section at www.caslab.com.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1140
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04MH02-SD01		
Lab Code:	R0904885-001	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**40.6**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1140
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04MH02-SD01	**Units:**	µg/Kg
Lab Code:	R0904885-001	**Basis:**	Dry
		Percent Solids:	40.6

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**8.6**		25	2.3	5	8/28/09	8/31/09 12:46	94852	168257	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1500
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL08(5)RE(7)		
Lab Code:	R0904885-002	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**81.4**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1500
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL08(5)RE(7)	**Units:**	µg/Kg
Lab Code:	R0904885-002	**Basis:**	Dry
		Percent Solids:	81.4

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**36000**		4900	450	2000	8/28/09	8/29/09 14:47	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1505
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL02(4)RE(6)		
Lab Code:	R0904885-003	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**80.1**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1505
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL02(4)RE(6)	**Units:**	µg/Kg
Lab Code:	R0904885-003	**Basis:**	Dry
		Percent Solids:	80.1

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**11000**		1200	120	500	8/28/09	8/29/09 15:09	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1510
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL12(8)		
Lab Code:	R0904885-004	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**78.3**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1510
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL12(8)	**Units:**	µg/Kg
Lab Code:	R0904885-004	**Basis:**	Dry
		Percent Solids:	78.3

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	77000		5100	460	2000	8/28/09	8/29/09 15:30	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1515
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL11(8)		
Lab Code:	R0904885-005	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**82.4**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1515
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL11(8)	**Units:**	µg/Kg
Lab Code:	R0904885-005	**Basis:**	Dry
		Percent Solids:	82.4

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**28000**		4900	440	2000	8/28/09	8/29/09 16:14	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1520
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL05(7)RE(8)		
Lab Code:	R0904885-006	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**83.9**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1520
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSFL05(7)RE(8)	**Units:**	µg/Kg
Lab Code:	R0904885-006	**Basis:**	Dry
		Percent Solids:	83.9

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**31000**		4800	430	2000	8/28/09	8/29/09 16:35	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1525
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWLKQC(1)		
Lab Code:	R0904885-007	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**80.9**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1525
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWLKQC(1)	**Units:**	µg/Kg
Lab Code:	R0904885-007	**Basis:**	Dry
		Percent Solids:	80.9

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**1000**		120	12	50	8/28/09	8/31/09 10:24	94852	168257	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1525
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWLK(2)		
Lab Code:	R0904885-008	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**84.7**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1525
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWLK(2)	**Units:**	µg/Kg
Lab Code:	R0904885-008	**Basis:**	Dry
		Percent Solids:	84.7

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**670**		120	11	50	8/28/09	8/31/09 10:45	94852	168257	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1535
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWJI(4)		
Lab Code:	R0904885-009	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**77.0**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1535
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWJI(4)	**Units:**	µg/Kg
Lab Code:	R0904885-009	**Basis:**	Dry
		Percent Solids:	77.0

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**440000**		52000	4700	20000	8/28/09	8/29/09 17:40	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1540
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWHM		
Lab Code:	R0904885-010	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**77.1**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1540
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWHM	**Units:**	µg/Kg
Lab Code:	R0904885-010	**Basis:**	Dry
		Percent Solids:	77.1

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**7600**		520	47	200	8/28/09	8/31/09 12:24	94852	168257	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1545
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWIM		
Lab Code:	R0904885-011	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**75.2**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1545
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWIM	**Units:**	µg/Kg
Lab Code:	R0904885-011	**Basis:**	Dry
		Percent Solids:	75.2

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**45000**		5300	480	2000	8/28/09	8/29/09 19:28	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1550
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWLH		
Lab Code:	R0904885-012	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**74.6**		Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	8/27/09 1550
Sample Matrix:	Soil	**Date Received:**	8/28/09
Sample Name:	04CSWLH	**Units:**	µg/Kg
Lab Code:	R0904885-012	**Basis:**	Dry
		Percent Solids:	74.6

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**82000**		5400	490	2000	8/28/09	8/29/09 19:50	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R0904885-MB	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	1.0	U	Percent	1.0	1	NA	8/28/09 13:00

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904885
Project:	LHAAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/Kg
Lab Code:	RQ0907919-01	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**0.50**	J	2.0	0.18	1	8/28/09	8/29/09 12:16	94852	168216	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Shaw Environmental & Infrastructure, Inc.
Project: LHAAAP-04/117591-0009B300
Sample Matrix: Soil

Service Request: R0904885
Date Analyzed: 8/29/09

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/Kg
Basis: Dry

Extraction Lot: 94852

Analyte Name	Lab Control Sample RQ0907919-02 Result	Expected	% Rec	Duplicate Lab Control Sample RQ0907919-03 Result	Expected	% Rec	% Rec Limits	RPD	RPD Limit
Perchlorate	**1.80**	2.00	90	**1.70**	2.00	85	80 - 120	6	15

Comments:

COC NO. 082709-01

00108873

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

Laboratory Name: Columbia Analytical Services, Inc.
Address : 1 Mustard Street, Suite 250, Rochester, NY 14609
Contact : Mike Perry
Phone: 1-585-288-5380

PM: Praveen Svrivastav (713.996.4588) TAT: 24 hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: LHAAP-04 Site: Confirmation Sampling
Project #: 117591-0009B300 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (6850)										Comments
04MH02-SD01	X	8/27/2009	11:40	Soil	1	X										
04CSFL08(5)RE(7)	X	8/27/2009	15:00	Soil	1	X										
04CSFL02(4)RE(6)	X	8/27/2009	15:05	Soil	1	X										
04CSFL12(8)	X	8/27/2009	15:10	Soil	1	X										
04CSFL11(8)	X	8/27/2009	15:15	Soil	1	X										
04CSFL05(7)RE(8)	X	8/27/2009	15:20	Soil	1	X										
04CSWKL QC(1)	X	8/27/2009	15:25	Soil	1	X										should be "WLK"
04CSWKL(2)	X	8/27/2009	15:25	Soil	1	X										should be "WLK"
04CSWJI(4)	X	8/27/09	15:35	SOIL	1	X										
04CSWJIMS(4)	X	8/27/09	15:35	SOIL	1	X										
04CSWJIMSD(4)	X	8/27/09	15:35	SOIL	1	X										
04CSWHM1	X	8/27/09	15:46	SOIL	1	X										
04CSWJM	X	8/27/09	15:45	SOIL	1	X										
04CSWLH	X	8/27/09	15:50	SOIL	1	X										

24 HOUR TAT

Relinquished By: Date/Time 8/27/09 17:30

Received By: Amy Hewett Date/Time 8/27/09 940

Special Instructions

R0904885
Shaw Group-Texas
LHAAAP-04

Relinquished By: Date/Time

Received for Laboratory By: Date/Time

Remarks:

12588

00108874

Cooler Receipt And Preservation Check Form

Project/Client Shaw Submission Number R09-4685

Cooler received on 8/28/09 by: AHH **COURIER:** CAS (UPS) FEDEX VELOCITY CLIENT

1.	Were custody seals on outside of cooler?	(YES)	NO			
2.	Were custody papers properly filled out (ink, signed, etc.)?	(YES)	NO			
3.	Did all bottles arrive in good condition (unbroken)?	(YES)	NO			
4.	Did any VOA vials have significant* air bubbles?	YES	NO	(N/A)		
5.	Were **Ice** or **Ice packs** present?	(YES)	NO			
6.	Where did the bottles originate?	(CAS/ROC, CLIENT) AHH 8/28/09				
7.	Temperature of cooler(s) upon receipt:	0°				
	Is the temperature within 0° - 6° C?:	(Yes)	Yes	Yes	Yes	Yes
	If No, Explain Below	No	No	No	No	No

Date/Time Temperatures Taken: 8/28/09 1004

Thermometer ID: 161 / IR GUN#2 / (IR GUN#3) Reading From: (Temp Blank) / Sample Bottle

If out of Temperature, note packing/ice condition, Client Approval to Run Samples: _____

PC Secondary Review: AHH 8/31/09

Cooler Breakdown: Date: 8/28/09 by: MWC

1.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	(YES)	NO
2.	Did all bottle labels and tags agree with custody papers?	YES	(NO)
3.	Were correct containers used for the tests indicated?	(YES)	NO
4.	Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated		(N/A)

Explain any discrepancies: _____

pH	Reagent	YES	NO	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH								
≤2	HNO_3								
≤2	H_2SO_4								
Residual Chlorine (-)	For TCN and Phenol			If present, contact PM to add ascorbic acid					
	$Na_2S_2O_3$	-	-						
	Zn Aceta	-	-						
	HCl	*	*						

*Not to be tested before analysis – pH tested and recorded by VOAs or GenChem on a separate worksheet

Yes = All samples OK

No = Samples were preserved at lab as listed

PM OK to Adjust: _____

Bottle lot numbers: 042009-1P

Other Comments:

Location 8 is labeled 04CSWLK(1), but on chain is listed as 04CSWLK PC was notified and the chain was followed. Location 9 was labeled 04CSWJI instead of 04CSWJI(4), which was on the chain. The chain was followed.

PC Secondary Review: _____

*significant air bubbles are greater than 5-6 mm

H:\SMODOCS\Cooler Receipt 2.doc

00033

Columbia Analytical Services, Inc. 1 Mustard Street, Suite 250, Rochester, NY 14609-6825 • 585.288.5380 www.caslab.com

September 08, 2009 Service Request No: R0904936

Ms. Jennifer Hoang
Shaw Group-Texas
3010 Briarpark Drive, Suite 400
Houston, TX 77042

Laboratory Results for: LHAAP-04/117591-0009B300

Dear Ms. Hoang:

Enclosed are the results of the sample(s) submitted to our laboratory on September 1, 2009. For your reference, these analyses have been assigned our service request number **R0904936**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 129. You may also contact me via email at MPerry@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Michael K. P

Michael Perry
Laboratory Manager

CASE NARRATIVE
COMPANY: Shaw Group
PROJECT: LHAAP-04
SUBMISSION #: R0904936

Samples were collected on 8/31/09 and received at CAS/Rochester on 9/01/09 in good condition at a cooler temperature of 2 °C. "Rush" results were sent via e-mail on 9/02/09.

PERCHLORATE ANALYSIS

Five soil samples were analyzed for Perchlorate by LC/MS method 6850 with DOD modifications from the DOD Perchlorate Handbook. Values detected between the MDL and PQL have been flagged with a "J" as estimated.

Several of the soil samples were analyzed at dilutions to bring target analytes within the calibration range of the method.

All the initial and continuing calibration criteria were met for all analytes.

A Matrix Spike/Matrix Spike Duplicate was performed was not requested.

The Blank Spike (LCS/LCSD) for the soil samples were all within QC limits. The LCSD was within QC limits.

The Laboratory Blank associated with these samples was free of contamination.

No other analytical or QC problems were encountered.

CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R0904936

Lab ID	Client ID
R0904936-001	04CSW5A
R0904936-002	04CSW5B
R0904936-003	04CSWI11
R0904936-004	04CSWC12
R0904936-005	04CSWC11

Columbia Analytical Services

REPORT QUALIFIERS

U - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture.

J - Indicates an estimated value. The flag is used either when estimating a concentration for tentatively identified compounds, or when the concentration is less than the reporting limit and greater than the MDL (concentrations are not verified within the initial calibration range).

For DoD reports, the J-flag may also be used to indicate that the concentration between two columns for pesticides/Aroclors is greater than 40% difference.

B - Indicates this compound was also detected in the associated method blank at a concentration that may have contributed to the sample result.

B- Metals - Indicates an estimated value. The concentration is less than the reporting limit and greater than the MDL (concentrations are not verified within the initial calibration range).

E - Indicates that the sample concentration had exceeded the calibration range for that specific analysis.

D - Indicates the sample concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range.

* - Indicates that a quality control parameter has exceeded laboratory limits.

X - See Case Narrative for discussion.

P - This flag is used for a pesticide/Aroclor target concentration when there is a greater than 40% (25% for CLP) difference for detected concentrations between the two GC columns.

For DoD reports, the J-flag is used instead of "P".

- Spike was diluted out.

N - Inorganics- Indicates the matrix spike recovery was outside laboratory limits.

N- Organics- Indicates presumptive evidence of a compound (reported as a tentatively identified compound) based on the mass spectral library search.

ACCREDITED IN ACCORDANCE WITH nelac

CAS/Rochester Lab ID # for State Certifications[1]

NELAP Accredited
Delaware Accredited
Connecticut ID # PH0556
Florida ID # E87674
Illinois ID #200047
Maine ID #NY0032
Nebraska Accredited
Navy Facilities Engineering Service Center Approved
Nevada ID # NY-00032
New Jersey ID # NY004
New York ID # 10145
New Hampshire ID # 294100 A/B
Pennsylvania ID# 68-786
Rhode Island ID # 158
West Virginia ID # 292

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to the certifications section at www.caslab.com.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1600
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSW5A		
Lab Code:	R0904936-001	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**91.0**		Percent	1.0	1	NA	9/1/09 09:25

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1600
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSW5A	**Units:**	µg/Kg
Lab Code:	R0904936-001	**Basis:**	Dry
		Percent Solids:	91.0

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**210000**		44000	4000	20000	9/ 1/09	9/1/09 18:51	95035	168634	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1605
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSW5B	**Basis:**	NA
Lab Code:	R0904936-002		

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**86.6**		Percent	1.0	1	NA	9/1/09 09:25

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1605
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSW5B	**Units:**	µg/Kg
Lab Code:	R0904936-002	**Basis:**	Dry
		Percent Solids:	86.6

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**42000**		4600	420	2000	9/ 1/09	9/1/09 19:56	95035	168634	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1610
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSWI11		
Lab Code:	R0904936-003	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**85.9**		Percent	1.0	1	NA	9/1/09 09:25

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1610
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSWI11	**Units:**	µg/Kg
Lab Code:	R0904936-003	**Basis:**	Dry
		Percent Solids:	85.9

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**17**		2.3	0.21	1	9/ 1/09	9/2/09 11:28	95035	168721	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1615
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSWC12		
Lab Code:	R0904936-004	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**75.2**		Percent	1.0	1	NA	9/1/09 09:25

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1615
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSWC12	**Units:**	µg/Kg
Lab Code:	R0904936-004	**Basis:**	Dry
		Percent Solids:	75.2

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**50000**		5300	480	2000	9/ 1/09	9/1/09 21:01	95035	168634	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1620
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSWC11		
Lab Code:	R0904936-005	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	**94.1**		Percent	1.0	1	NA	9/1/09 09:25

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	8/31/09 1620
Sample Matrix:	Soil	**Date Received:**	9/ 1/09
Sample Name:	04CSWC11	**Units:**	µg/Kg
Lab Code:	R0904936-005	**Basis:**	Dry
		Percent Solids:	94.1

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	**31**		2.1	0.20	1	9/ 1/09	9/2/09 11:50	95035	168721	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank		
Lab Code:	R0904936-MB	**Basis:**	NA

Total Solids, Modified for Solids [Residue, Total (Gravimetric, Dried at 103-105 Deg C)]

Analyte Name	Method	Result	Q	Units	MRL	Dilution Factor	Date Extracted	Date Analyzed
Solids, Total	160.3 Modified	1.0	U	Percent	1.0	1	NA	9/1/09 09:25

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Shaw Environmental & Infrastructure, Inc.	**Service Request:**	R0904936
Project:	LHAAP-04/117591-0009B300	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	µg/Kg
Lab Code:	RQ0908048-01	**Basis:**	Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Analysis Lot	Note
Perchlorate	2.0	U	2.0	0.18	1	9/ 1/09	9/1/09 16:43	95035	168634	

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Shaw Environmental & Infrastructure, Inc.
Project: LHAAP-04/117591-0009B300
Sample Matrix: Soil

Service Request: R0904936
Date Analyzed: 9/ 1/09

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/Kg
Basis: Dry

Extraction Lot: 95035

Analyte Name	Lab Control Sample RQ0908048-02 Result	Expected	% Rec	Duplicate Lab Control Sample RQ0908048-03 Result	Expected	% Rec	% Rec Limits	RPD	RPD Limit
Perchlorate	**1.70**	2.00	85	**1.80**	2.00	90	80 - 120	6	15

Comments:

00108892

COC NO. 082409-01

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

Laboratory Name: Columbia Analytical Services, Inc.
Address : 1 Mustard Street, Suite 250, Rochester, NY 14609
Contact : Mike Perry
Phone: 1-585-288-5380

PM: Praveen Svrivastav (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: LHAAP-04
Project #: 117591-0009B300

TAT: 24 hr
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713)247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	SW-846 method 6850	Comments
04CSW5A	X	8/31/09	16:00	Soil	1	X	
04CSW5B	X	8/31/09	16:05	Soil	1	X	
04CSWI1	X	8/31/09	16:10	Soil	1	X	
04CSWCT2	X	8/31/09	16:15	Soil	1	X	04CSWCT2
04CSWCT1	X	8/31/09	16:20	Soil	1	X	

24 HOUR TAT

R0904936
Shaw Group-Texas
LHAAAP-04

Relinquished By:
Date/Time 8.31.09 17:30

Received By:
Date/Time 9-1-09 @ 8:05

Special Instructions

Relinquished By:
Date/Time

Received for Laboratory By:
Date/Time

Remarks:

Cooler Receipt And Preservation Check Form

Project/Client Shaw Submission Number R09-4936

Cooler received on 9-1-09 by: KE **COURIER:** CAS (UPS) FEDEX VELOCITY CLIENT

1.	Were custody seals on outside of cooler?	(YES)	NO			
2.	Were custody papers properly filled out (ink, signed, etc.)?	(YES)	NO			
3.	Did all bottles arrive in good condition (unbroken)?	(YES)	NO			
4.	Did any VOA vials have significant* air bubbles?	YES	NO	(N/A)		
5.	Were **Ice** or **Ice packs** present?	(YES)	NO			
6.	Where did the bottles originate?	(CAS/ROC,)	CLIENT			
7.	Temperature of cooler(s) upon receipt:	2°				
	Is the temperature within 0° - 6° C?:	(Yes)	Yes	Yes	Yes	Yes
	If No, Explain Below	No	No	No	No	No

Date/Time Temperatures Taken: 9-1-09 @ 8:10

Thermometer ID: 161 / IR GUN#2 / (IR GUN#3) Reading From: Temp Blank / (Sample Bottle)

If out of Temperature, note packing/ice condition, Client Approval to Run Samples: _____

PC Secondary Review: JMP 9/1/09

Cooler Breakdown: Date: 9-1-09 by: KE

1.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?	(YES)	NO
2.	Did all bottle labels and tags agree with custody papers?	(YES)	NO
3.	Were correct containers used for the tests indicated?	(YES)	NO
4.	Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated		(N/A)

Explain any discrepancies: _____

pH	Reagent	YES	NO	Lot Received	Exp	Sample ID	Vol. Added	Lot Added	Final pH
≥12	NaOH								
≤2	HNO_3								
≤2	H_2SO_4								
Residual Chlorine (-)	For TCN and Phenol			If present, contact PM to add ascorbic acid					
	$Na_2S_2O_3$	-	-						
	Zn Aceta	-	-						
	HCl	*	*						

*Not to be tested before analysis – pH tested and recorded by VOAs or GenChem on a separate worksheet

Yes = All samples OK

No = Samples were preserved at lab as listed

PM OK to Adjust: _____

Bottle lot numbers: 071606-1

Other Comments: _____

PC Secondary Review: _____

*significant air bubbles are greater than 5-6 mm

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

Laboratory Report Number: L09090027

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

This report was reviewed on September 04, 2009.

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 September 04, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 72 pages.

Look closer. Go further. Do more.

Microbac

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 L09090027
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090027

CHAIN OF CUSTODY: The chain of custody number was 090109-01.

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: 04-SEP-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00108899

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 laboratoy 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	Deanna Hesson	Conventional Lab Supervisor	September 3, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090027
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG311232
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 03, 2009

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

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

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090027
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG311232
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 03, 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 GC/MS Data (6850)

2.1.1.1 Summary Data

Loginnum: L09090027

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 and 05 were run at a dilution to be within calibration range.

Internal Standards: All acceptance criteria were met.

Manual Integration Reason Codes

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

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

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

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

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

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

LABORATORY REPORT

L09090027

00108909

09/04/09 09:24

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL08(6)	L09090027-01	6850	1000	02-SEP-09
04CSFL11(11)	L09090027-02	6850	1000	02-SEP-09
04CSWFH(2)	L09090027-03	6850	1000	02-SEP-09
04CSFL12(11)	L09090027-04	6850	1000	02-SEP-09
04CSWHM	L09090027-05	6850	5000	02-SEP-09

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108910

Sample Number:	L09090027-01	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04CSFL08(6)	Prep Method:	6850	Prep Date:	09/02/2009 12:51
Matrix:	Soil	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG311224	Analyst:	WTD	Run Date:	09/02/2009 20:10
Collect Date:	09/01/2009 15:25	Dilution:	1000	File ID:	1LM.LM00553
Sample Tag:	DL01	Units:	ug/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	28200		1790	894

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108911

Sample Number: **L09090027-02**
Client ID: **04CSFL11(11)**
Matrix: **Soil**
Workgroup Number: **WG311224**
Collect Date: **09/01/2009 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: **09/02/2009 12:51**
Cal Date: **08/26/2009 12:56**
Run Date: **09/02/2009 20:24**
File ID: **1LM.LM00554**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**50100**		**1980**	**989**

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108912

Sample Number:	L09090027-03	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04CSWFH(2)	Prep Method:	6850	Prep Date:	09/02/2009 12:51
Matrix:	Soil	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG311224	Analyst:	WTD	Run Date:	09/02/2009 20:38
Collect Date:	09/01/2009 15:20	Dilution:	1000	File ID:	1LM.LM00555
Sample Tag:	DL01	Units:	ug/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	58800		2000	999

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108913

Sample Number: **L09090027-04**
Client ID: **04CSFL12(11)**
Matrix: **Soil**
Workgroup Number: **WG311224**
Collect Date: **09/01/2009 15:05**
Sample Tag: **DL01**

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

Instrument: **LCMS1**
Prep Date: **09/02/2009 12:51**
Cal Date: **08/26/2009 12:56**
Run Date: **09/02/2009 20:53**
File ID: **1LM.LM00556**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**32300**		**1950**	**977**

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108914

Sample Number:	L09090027-05	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04CSWHM	Prep Method:	6850	Prep Date:	09/02/2009 12:51
Matrix:	Soil	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG311224	Analyst:	WTD	Run Date:	09/02/2009 21:07
Collect Date:	09/01/2009 15:15	Dilution:	5000	File ID:	1LM.LM00557
Sample Tag:	DL01	Units:	ug/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	232000		9810	4900

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:		Example
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)]

where:		Example
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)]

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

Dry weight correction:

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

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

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

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

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

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

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

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 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

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (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

00108918

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 082609_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Column 1 ID: KP-RPPX250 Column 2 ID: NA

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



Microbac

00108919

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 090209_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30013

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: 311224

Internal STD: COA14015 Surrogate STD: NA Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00527	WG311195-01 CCB	1	1		09/02/09 12:51
2	1LM.LM00528	WG311195-02 CCV 1.0	1	1	STD35403	09/02/09 13:06
3	1LM.LM00529	WG311224-05 QCMRL 0.2	7	1	STD35403	09/02/09 13:20
4	1LM.LM00530	WG311224-01 MCT/ICS 0.2	7	1	STD35045	09/02/09 13:36
5	1LM.LM00531	WG311224-02 Method Blank	7	1		09/02/09 13:50
6	1LM.LM00532	WG311224-03 LCS	7	1	STD35043	09/02/09 14:05
7	1LM.LM00533	WG311224-04 LCSD	7	1	STD35043	09/02/09 14:19
8	1LM.LM00534	L09090027-01 A 10X	7	10		09/02/09 14:33
9	1LM.LM00535	L09090027-02 A 10X	7	10		09/02/09 14:48
10	1LM.LM00536	L09090027-03 A 10X	7	10		09/02/09 15:02
11	1LM.LM00537	L09090027-04 A 10X	7	10		09/02/09 15:17
12	1LM.LM00538	L09090027-05 A 10X	7	10		09/02/09 15:31
13	1LM.LM00539	WG311195-03 CCV 1.0	1	1	STD35043	09/02/09 15:45
14	1LM.LM00540	WG311224-06 QCMRL 0.2	7	1	STD35043	09/02/09 16:00
15	1LM.LM00541	WG311195-04 CCB	1	1		09/02/09 16:14
16	1LM.LM00542	L09090027-01 A 5000X	7	5000		09/02/09 16:28
17	1LM.LM00543	L09090027-02 A 10000X	7	10000		09/02/09 16:43
18	1LM.LM00544	L09090027-03 A 10000X	7	10000		09/02/09 16:57
19	1LM.LM00545	L09090027-04 A 5000X	7	5000		09/02/09 17:12
20	1LM.LM00546	L09090027-05 A 100000X	7	100000		09/02/09 17:26
21	1LM.LM00547	WG311195-05 CCV 1.0	1	1	STD35043	09/02/09 17:40
22	1LM.LM00548	WG311224-07 QCMRL 0.2	7	1	STD35043	09/02/09 17:55
23	1LM.LM00549	WG311195-06 CCB	1	1		09/02/09 18:09
24	1LM.LM00550	WG311195-07 CCV 1.0	1	1	STD35043	09/02/09 19:27
25	1LM.LM00551	WG311224-08 QCMRL 0.2	7	1	STD35043	09/02/09 19:41
26	1LM.LM00552	WG311195-08 CCB	1	1		09/02/09 19:55
27	1LM.LM00553	L09090027-01 A 1000X	7	1000		09/02/09 20:10
28	1LM.LM00554	L09090027-02 A 1000X	7	1000		09/02/09 20:24
29	1LM.LM00555	L09090027-03 A 1000X	7	1000		09/02/09 20:38
30	1LM.LM00556	L09090027-04 A 1000X	7	1000		09/02/09 20:53
31	1LM.LM00557	L09090027-05 A 5000X	7	5000		09/02/09 21:07
32	1LM.LM00558	WG311195-09 CCV 1.0	1	1	STD35043	09/02/09 21:21
33	1LM.LM00559	WG311224-09 QCMRL 0.2	7	1	STD35043	09/02/09 21:36
34	1LM.LM00560	WG311195-10 CCB	1	1		09/02/09 21:50

Page: 1 Approved: 03-SEP-09



Microbac

Microbac Laboratories Inc.

00108920

Instrument Run Log

Instrument: LCMS1 Dataset: 090209_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30013

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: 311224

Internal STD: COA14015 Surrogate STD: NA

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X	5000	Over Calibration Range	Perchlorate
	Injection also failed IS recovery. DNR			
9	X	10000	Over Calibration Range	Perchlorate
	Injection also failed IS recovery. DNR			
10	X	10000	Over Calibration Range	Perchlorate
	Injection also failed IS recovery. DNR			
11	X	5000	Over Calibration Range	Perchlorate
	Injection also failed IS recovery. DNR			
12	X	100000	Over Calibration Range	Perchlorate
	Injection also failed IS recovery. DNR			
16	X	1000	Check Standard Failure	
	Closing QCMRL had high recovery.			
17	X	1000	Check Standard Failure	
	Closing QCMRL had high recovery.			
18	X	1000	Check Standard Failure	
	Closing QCMRL had high recovery.			
19	X	1000	Check Standard Failure	
	Closing QCMRL had high recovery.			
20	X	5000	Check Standard Failure	
	Closing QCMRL had high recovery.			

Page: 2 Approved: 03-SEP-09



Microbac®

Microbac Laboratories Inc.

00108921

Data Checklist

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

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

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009

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

00108922

Microbac Laboratories Inc.

Data Checklist

Date: 02-SEP-2009
Analyst: WTD
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 29940
Analytical Workgroups: 311224

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

Primary Reviewer:

Secondary Reviewer:
03-SEP-2009

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-03-2009 09:37:11

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108923

Analytical Method:6850 AAB#:WG311224

Login Number:L09090027

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
04CSFL08(6)	01	09/01/09					09/02/09	.9	28		09/02/09	.3	28	
04CSFL11(11)	02	09/01/09					09/02/09	.9	28		09/02/09	.3	28	
04CSWFH(2)	03	09/01/09					09/02/09	.9	28		09/02/09	.3	28	
04CSFL12(11)	04	09/01/09					09/02/09	.9	28		09/02/09	.3	28	
04CSWHM	05	09/01/09					09/02/09	.9	28		09/02/09	.3	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1480960
Report generated 09/03/2009 09:48

00108924

METHOD BLANK SUMMARY

Login Number: L09090027
Work Group: WG311224
Blank File ID: 1LM.LM00531
Blank Sample ID: WG311224-02
Prep Date: 09/02/09 12:51
Instrument ID: LCMS1
Analyzed Date: 09/02/09 13:50
Method: 6850
Analyst: WTD

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
QCMRL	WG311224-05	1LM.LM00529	09/02/09 13:20	01
MCT	WG311224-01	1LM.LM00530	09/02/09 13:36	01
LCS	WG311224-03	1LM.LM00532	09/02/09 14:05	01
LCS2	WG311224-04	1LM.LM00533	09/02/09 14:19	01
QCMRL	WG311224-06	1LM.LM00540	09/02/09 16:00	01
QCMRL	WG311224-07	1LM.LM00548	09/02/09 17:55	01
QCMRL	WG311224-08	1LM.LM00551	09/02/09 19:41	01
04CSFL08(6)	L09090027-01	1LM.LM00553	09/02/09 20:10	DL01
04CSFL11(11)	L09090027-02	1LM.LM00554	09/02/09 20:24	DL01
04CSWFH(2)	L09090027-03	1LM.LM00555	09/02/09 20:38	DL01
04CSFL12(11)	L09090027-04	1LM.LM00556	09/02/09 20:53	DL01
04CSWHM	L09090027-05	1LM.LM00557	09/02/09 21:07	DL01
QCMRL	WG311224-09	1LM.LM00559	09/02/09 21:36	01

Report Name: BLANK_SUMMARY
PDF File ID: 1480961
Report generated 09/03/2009 09:48

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108925

Login Number:L09090027 Prep Date:09/02/09 12:51 Sample ID:WG311224-02
Instrument ID:LCMS1 Run Date:09/02/09 13:50 Prep Method:6850
File ID:1LM.LM00531 Analyst:WTD Method:6850
Workgroup (AAB#):WG311224 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

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

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1480962
03-SEP-2009 09:48

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108926

Login Number: L09090027 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG311224 Units: ug/kg
QC Key: STD Lot #: STD35043

Sample ID: WG311224-03 LCS File ID: 1LM.LM00532 Run Date: 09/02/2009 14:05
Sample ID: WG311224-04 LCS2 File ID: 1LM.LM00533 Run Date: 09/02/2009 14:19

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.99	2.12	107	1.98	2.05	104	3.21	80 - 120	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1480963
Report generated: 09/03/2009 09:48

Conductivity Probe Calibration Check: 1394 /1410 µs/cm

Perchlorate Conductivity Check

Working MCT Level: 10,000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
MCT/ICS	10,400	
MB1	8.0	NA
LCS	6.6	
LCSD	6.3	
L09090027-01A	50.1	
-02A	33.2	
-03A	30.3	
-04A	33.3	
-05A	149.0	

Wade T. Doll
Analyst

9-2-09 / 13:46
Date/Time

DCN#80610

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00108928

Login Number: L09090027 Instrument ID: LCMS1

Analytical Method: 6850 Initial Calibration Date: 26-AUG-09 12:56

ICAL Workgroup: WG310580 Column ID: F

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

R = Correlation coefficient; 0.995 minimum

R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008

PDF File ID: 1481189

Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00108929

Login Number: L09090027
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

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

INT_CAL - Modified 03/06/2008
PDF File ID: 1481189
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00108930

Login Number: L09090027
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

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

INT_CAL - Modified 03/06/2008
PDF File ID: 1481189
Report generated 09/03/2009 09:49

Login Number: L09090027
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

INT_CAL - Modified 03/06/2008
PDF File ID: 1481189
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00108932

Login Number: L09090027 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: 1481190
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108933

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-04
Instrument ID: LCMS1 Run Time: 16:14 Method: 6850
File ID: 1LM.LM00541 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311224 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1480967
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108934

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-06
Instrument ID: LCMS1 Run Time: 18:09 Method: 6850
File ID: 1LM.LM00549 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311224 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1480967
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00108935

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-08
Instrument ID: LCMS1 Run Time: 19:55 Method: 6850
File ID: 1LM.LM00552 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311224 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1480967
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00108936

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-10

Instrument ID: LCMS1 Run Time: 21:50 Method: 6850

File ID: 1LM.LM00560 Analyst: WTD Units: ug/L

Workgroup (AAB#): WG311224 Cal ID: LCMS1 -

Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008

PDF File ID: 1480967

Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108937

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-02
Instrument ID: LCMS1 Run Time: 13:06 Method: 6850
File ID: 1LM.LM00528 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311224 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.04	ug/L	1.50	4.00	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1480965
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108938

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-03
Instrument ID: LCMS1 Run Time: 15:45 Method: 6850
File ID: 1LM.LM00539 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311224 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.10	ug/L	1.59	10.0	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1480965
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108939

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-05
Instrument ID: LCMS1 Run Time: 17:40 Method: 6850
File ID: 1LM.LM00547 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311224 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.09	ug/L	1.57	9.00	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1480965
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108940

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-07
Instrument ID: LCMS1 Run Time: 19:27 Method: 6850
File ID: 1LM.LM00550 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311224 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.07	ug/L	1.55	7.00	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1480965
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00108941

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311195-09
Instrument ID: LCMS1 Run Time: 21:21 Method: 6850
File ID: 1LM.LM00558 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311224 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.05	ug/L	1.51	5.00	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1480965
Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

QCMRL SAMPLE

00108942

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311224-05

Instrument ID: LCMS1 Run Time: 13:20 Prep Method: 6850

File ID: 1LM.LM00529 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311224 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: 1480964

Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

QCMRL SAMPLE

00108943

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311224-06

Instrument ID: LCMS1 Run Time: 16:00 Prep Method: 6850

File ID: 1LM.LM00540 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311224 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	2.40	120	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1480964

Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

QCMRL SAMPLE

00108944

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311224-07

Instrument ID: LCMS1 Run Time: 17:55 Prep Method: 6850

File ID: 1LM.LM00548 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311224 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	2.90	145	70 - 130	*

QCMRL - Modified 03/06/2007

PDF File ID: 1480964

Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

QCMRL SAMPLE

00108945

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311224-08

Instrument ID: LCMS1 Run Time: 19:41 Prep Method: 6850

File ID: 1LM.LM00551 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311224 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	2.25	113	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1480964

Report generated 09/03/2009 09:49

Microbac Laboratories Inc.

QCMRL SAMPLE

00108946

Login Number: L09090027 Run Date: 09/02/2009 Sample ID: WG311224-09

Instrument ID: LCMS1 Run Time: 21:36 Prep Method: 6850

File ID: 1LM.LM00559 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311224 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	2.15	108	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1480964

Report generated 09/03/2009 09:49

Login Number: L09090027
Instrument ID: LCMS1
Workgroup (AAB#): WG311224

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
L09090027-01	1000	DL01	247000
L09090027-02	1000	DL01	238000
L09090027-03	1000	DL01	235000
L09090027-04	1000	DL01	246000
L09090027-05	5000	DL01	237000
WG311224-02	1.00	01	292000
WG311224-03	1.00	01	296000
WG311224-04	1.00	01	292000

IS-1 - O18LP

Underline = Response outside limits

INTERNAL_STD_AVG_ICAL - Modified 08/11/2009
PDF File ID: 1480966
Report generated 09/03/2009 09:49

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090027

00108951

09/04/09 09:24

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04CSFL08(6)	L09090027-01	D2216-90	1	02-SEP-09
04CSFL11(11)	L09090027-02	D2216-90	1	02-SEP-09
04CSWFH(2)	L09090027-03	D2216-90	1	02-SEP-09
04CSFL12(11)	L09090027-04	D2216-90	1	02-SEP-09
04CSWHM	L09090027-05	D2216-90	1	02-SEP-09

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108952

Sample Number:	**L09090027-01**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04CSFL08(6)**	Prep Method:	**D2216-90**	Prep Date:	**09/03/2009 08:34**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311232**	Analyst:	**CPD**	Run Date:	**09/03/2009 08:34**
Collect Date:	**09/01/2009 15:25**	Dilution:	**1**	File ID:	**B1.311232-0101**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**68.3**		**1.00**	**1.00**

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108953

Sample Number:	**L09090027-02**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04CSFL11(11)**	Prep Method:	**D2216-90**	Prep Date:	**09/03/2009 08:34**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311232**	Analyst:	**CPD**	Run Date:	**09/03/2009 08:34**
Collect Date:	**09/01/2009 15:10**	Dilution:	**1**	File ID:	**B1.311232-0102**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**78.0**		**1.00**	**1.00**

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108954

Sample Number:	**L09090027-03**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04CSWFH(2)**	Prep Method:	**D2216-90**	Prep Date:	**09/03/2009 08:34**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311232**	Analyst:	**CPD**	Run Date:	**09/03/2009 08:34**
Collect Date:	**09/01/2009 15:20**	Dilution:	**1**	File ID:	**B1.311232-0103**
Sample Tag:	**01**	Units:	**weight %**		

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

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108955

Sample Number:	**L09090027-04**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04CSFL12(11)**	Prep Method:	**D2216-90**	Prep Date:	**09/03/2009 08:34**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311232**	Analyst:	**CPD**	Run Date:	**09/03/2009 08:34**
Collect Date:	**09/01/2009 15:05**	Dilution:	**1**	File ID:	**B1.311232-0104**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**75.4**		**1.00**	**1.00**

Report Number: **L09090027**
Report Date : **September 4, 2009**

00108956

Sample Number:	**L09090027-05**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04CSWHM**	Prep Method:	**D2216-90**	Prep Date:	**09/03/2009 08:34**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311232**	Analyst:	**CPD**	Run Date:	**09/03/2009 08:34**
Collect Date:	**09/01/2009 15:15**	Dilution:	**1**	File ID:	**B1.311232-0105**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**85.5**		**1.00**	**1.00**

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

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

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

% Moisture = 100 - % Solids from 1.0 calculation

PERCENT SOLIDS

00108958

Workgroup (AAB#): WG311232 Analyst: CPD ADT(on): 09/02/2009 11:42
Method: D2216-90 Instrument: BAL001 ADT(off): 09/03/2009 08:34
SOP: K0003 Rev: 9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080620-14	1.27	28.24	26.29			92.77	
L09090027-01	1.25	20.23	14.22			68.34	
L09090027-02	1.28	21.16	16.78			77.97	
L09090027-03	1.27	23.95	18.89			77.69	
L09090027-04	1.27	23.88	18.32			75.41	
L09090027-05	1.27	27.68	23.84			85.46	
WG311232-01	1.25	20.23	14.22			68.34	31.66
WG311232-02	1.28	25.15	17.23			66.82	33.18

Analyst: Kendrick Davis

PERCENT_SOLIDS - Modified 04/24/2008
PDF ID: 1480445
Report generated: 09/03/2009 08:36

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
September 4, 2009

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

Qualkey: STD_ND=U

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

COC NO. (DATE-01)

00108962

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 (713.996.4588)
Project Contact: Jennifer Hoang
Project Name: Pistol Range
Project #: 117591-0009B340

TAT:
Phone No: 713-996-4408
Site: Confirmation Sampling
Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713) 247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	TCLP VOCs (8260)	TCLP SVOCs (8270)	**RCI	Perchlorate						Comments
PRCSFL08	X	9/1/09	15:25	Soil	1				X						
PRCSFL11(11)	X	9/1/09	15:10	Soil	1				X						
PRCSWFH	X	9/1/09	15:20	Soil	1				X						
PRCSFL12(11)	X	9/1/09	15:05	Soil	1				X						
PRCSFLWHM	X	9/1/09	15:15	Soil	1				X						
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											

**RCI
Reactivity Cyanide-SW7.33
Reactivity Sulfide-SW7.34
Corrosivity pH-9045D
Ignitability-1010

Relinquished By: Date/Time 9/1/09

Received By: Date/Time

Relinquished By: Date/Time

Received for Laboratory By: Date/Time

Special Instructions

Remarks:

Microbac OVD
Received: 09/02/2009 09:35
By: ERIN PORTER
221000001477

1000001477

COOLER INSPECTION

00108963

Received: 09/02/2009 09:35
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09090027

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014006	G	1.0	A5606683275	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	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:

6	The sample on COC reads PRCSFL11 (11), the sample reads PRCSFL11 (12). Logged per the COC.	

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

Internal Chain of Custody Report

Login: L09090027
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 03-SEP-2009

Samplenum	Container ID	Products
L09090027-01	611683	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	02-SEP-2009 10:27	RLK	
2	ANALYZ	W1	SEM	02-SEP-2009 10:46	WTD	RLK
3	STORE	WET	A1	03-SEP-2009 08:48	RLK	CPD

Samplenum	Container ID	Products
L09090027-02	611684	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	02-SEP-2009 10:27	RLK	
2	ANALYZ	W1	SEM	02-SEP-2009 10:46	WTD	RLK
3	ANALYZ	SEM	WET	02-SEP-2009 11:14	CPD	WTD
4	STORE	WET	A1	03-SEP-2009 08:48	RLK	CPD

Samplenum	Container ID	Products
L09090027-03	611685	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	02-SEP-2009 10:27	RLK	
2	ANALYZ	W1	SEM	02-SEP-2009 10:46	WTD	RLK
3	ANALYZ	SEM	WET	02-SEP-2009 11:13	CPD	WTD
4	STORE	WET	A1	03-SEP-2009 08:48	RLK	CPD

Samplenum	Container ID	Products
L09090027-04	611686	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	02-SEP-2009 10:27	RLK	
2	ANALYZ	W1	SEM	02-SEP-2009 10:46	WTD	RLK
3	ANALYZ	SEM	WET	02-SEP-2009 11:13	CPD	WTD
4	STORE	WET	A1	03-SEP-2009 08:48	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: L09090027
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 03-SEP-2009

Samplenum	Container ID	Products
L09090027-05	611687	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	02-SEP-2009 10:27	RLK	
2	ANALYZ	W1	SEM	02-SEP-2009 10:46	WTD	RLK
3	ANALYZ	SEM	WET	02-SEP-2009 11:13	CPD	WTD
4	STORE	WET	A1	03-SEP-2009 08:48	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: L09090099

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

This report was reviewed on September 08, 2009.

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 September 08, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 66 pages.

Look closer. Go further. Do more.

Microbac

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

Phone: 800.373.4071
Fax: 740.373.4835

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

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

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Click on "Online Data Access"
User ID: jdoe@abc.com
Password: demo

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

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09090099
PREPARED FOR Shaw E I, Inc.
WORK ID:

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1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09090099

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:
Stephanie Moosburg

Laboratory Data Package Cover Page

00108971

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 laboratoy 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	Deanna Hesson	Conventional Lab Supervisor	September 7, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090099
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG311490
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 07, 2009

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

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

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

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09090099
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG311490
Reviewer Name:	DEANNA I. HESSON
LRC Date:	September 07, 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 GC/MS Data (6850)

2.1.1.1 Summary Data

Loginnum: L09090099

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 and 05 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: 2861

Approved By: 

LABORATORY REPORT

L09090099

00108981

09/08/09 13:07

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04BH01 (6-8)	L09090099-01	6850	50	04-SEP-09
04BH02 (6-8)	L09090099-02	6850	10	04-SEP-09
04BH03 (6-8)	L09090099-03	6850	1000	04-SEP-09
04CSFL05(7)RE(9)	L09090099-04	6850	2000	04-SEP-09
04VALVE-OUTFALL	L09090099-05	6850	1000	04-SEP-09

Report Number: **L09090099**
Report Date : **September 8, 2009**

00108982

Sample Number:	L09090099-01	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04BH01 (6-8)	Prep Method:	6850	Prep Date:	09/04/2009 13:52
Matrix:	Soil	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG311484	Analyst:	WTD	Run Date:	09/04/2009 17:27
Collect Date:	09/03/2009 14:10	Dilution:	50	File ID:	1LM.LM00610
Sample Tag:	DL01	Units:	ug/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	1440		98.6	49.3

Report Number: **L09090099**
Report Date : **September 8, 2009**

00108983

Sample Number:	L09090099-02	PrePrep Method:	NONE	Instrument:	LCMS1
Client ID:	04BH02 (6-8)	Prep Method:	6850	Prep Date:	09/04/2009 13:52
Matrix:	Soil	Analytical Method:	6850	Cal Date:	08/26/2009 12:56
Workgroup Number:	WG311484	Analyst:	WTD	Run Date:	09/04/2009 17:41
Collect Date:	09/03/2009 14:20	Dilution:	10	File ID:	1LM.LM00611
Sample Tag:	DL01	Units:	ug/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	14797-73-0	238		19.7	9.87

Report Number: **L09090099**
Report Date : **September 8, 2009**

00108984

Sample Number:	**L09090099-03**	PrePrep Method:	**NONE**	Instrument:	**LCMS1**
Client ID:	**04BH03 (6-8)**	Prep Method:	**6850**	Prep Date:	**09/04/2009 13:52**
Matrix:	**Soil**	Analytical Method:	**6850**	Cal Date:	**08/26/2009 12:56**
Workgroup Number:	**WG311484**	Analyst:	**WTD**	Run Date:	**09/04/2009 16:01**
Collect Date:	**09/03/2009 14:25**	Dilution:	**1000**	File ID:	**1LM.LM00604**
Sample Tag:	**DL01**	Units:	**ug/kg**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**4120**		**1950**	**976**

Report Number: **L09090099**
Report Date : **September 8, 2009**

00108985

Sample Number: **L09090099-04**
Client ID: **04CSFL05(7)RE(9)**
Matrix: **Soil**
Workgroup Number: **WG311484**
Collect Date: **09/03/2009 14:30**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **6850**
Analytical Method: **6850**
Analyst: **WTD**
Dilution: **2000**
Units: **ug/kg**

Instrument: **LCMS1**
Prep Date: **09/04/2009 13:52**
Cal Date: **08/26/2009 12:56**
Run Date: **09/04/2009 17:56**
File ID: **1LM.LM00612**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**123000**		**4020**	**2010**

Report Number: **L09090099**
Report Date : **September 8, 2009**

00108986

Sample Number:	**L09090099-05**	PrePrep Method:	**NONE**	Instrument:	**LCMS1**
Client ID:	**04VALVE-OUTFALL**	Prep Method:	**6850**	Prep Date:	**09/04/2009 13:52**
Matrix:	**Soil**	Analytical Method:	**6850**	Cal Date:	**08/26/2009 12:56**
Workgroup Number:	**WG311484**	Analyst:	**WTD**	Run Date:	**09/04/2009 16:30**
Collect Date:	**09/03/2009 14:35**	Dilution:	**1000**	File ID:	**1LM.LM00606**
Sample Tag:	**DL01**	Units:	**ug/kg**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Perchlorate	**14797-73-0**	**36300**		**1950**	**977**

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:	Example
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)]

where:	Example
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)]

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

Dry weight correction:

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

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

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

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

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

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

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

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 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

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (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

00108990

Microbac Laboratories Inc.

Instrument Run Log

Instrument: LCMS1 Dataset: 082609_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 29922

Column 1 ID: KP-RPPX250 Column 2 ID: NA

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

Microbac Laboratories Inc.

Instrument Run Log

00108991

Instrument: LCMS1 Dataset: 090409_WTD.TXT

Analyst1: WTD Analyst2: NA

Method: 6850 SOP: HPLC06 Rev: 0

Maintenance Log ID: 30046

Column 1 ID: KP-RPPX250 Column 2 ID: NA

Workgroups: 311484

Internal STD: COA14015 Surrogate STD: NA Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	1LM.LM00595	WG311496-01 CCB	1	1		09/04/09 13:52
2	1LM.LM00596	WG311484-01 MCT/ICS 2.0ug/kg	7	1		09/04/09 14:06
3	1LM.LM00597	WG311496-02 CCV 1.0ug/L	1	1	STD35105	09/04/09 14:20
4	1LM.LM00598	WG311484-05 QCMRL 0.2 ug/L	7	1	STD35105	09/04/09 14:35
5	1LM.LM00599	WG311484-02 MBLK	7	1		09/04/09 14:49
6	1LM.LM00600	WG311484-03 LCS 2.0ug/kg	7	1	STD35106	09/04/09 15:04
7	1LM.LM00601	WG311484-04 LCS 2.0ug/kg	7	1	STD35106	09/04/09 15:18
8	1LM.LM00602	L09090099-01 A 1000X	7	1000		09/04/09 15:32
9	1LM.LM00603	L09090099-02 A 1000X	7	1000		09/04/09 15:47
10	1LM.LM00604	L09090099-03 A 1000X	7	1000		09/04/09 16:01
11	1LM.LM00605	L09090099-04 A 1000X	7	1000		09/04/09 16:15
12	1LM.LM00606	L09090099-05 A 1000X	7	1000		09/04/09 16:30
13	1LM.LM00607	WG311496-03 CCV 1.0ug/L	1	1	STD35105	09/04/09 16:44
14	1LM.LM00608	WG311484-06 QCMRL 0.2 ug/L	7	1	STD35105	09/04/09 16:58
15	1LM.LM00609	WG311496-04 CCB	1	1		09/04/09 17:13
16	1LM.LM00610	L09090099-01 A 50X	7	50		09/04/09 17:27
17	1LM.LM00611	L09090099-02 A 10X	7	10		09/04/09 17:41
18	1LM.LM00612	L09090099-04 A 2000X	7	2000		09/04/09 17:56
19	1LM.LM00613	WG311496-05 CCV 1.0ug/L	1	1	STD35105	09/04/09 18:10
20	1LM.LM00614	WG311484-07 QCMRL 0.2 ug/L	7	1	STD35105	09/04/09 18:25
21	1LM.LM00615	WG311496-06 CCB	1	1		09/04/09 18:39

Comments

Seq.	Rerun	Dil.	Reason	Analytes
8	X	50	Analyzed too dilute	
9	X	10	Analyzed too dilute	
11	X	2000	Over Calibration Range	Perchlorate

Approved: 08-SEP-09



Microbac®

Microbac Laboratories Inc.

00108992

Data Checklist

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

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

Primary Reviewer:

Secondary Reviewer:
28-AUG-2009

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

Microbac Laboratories Inc.

00108993

Data Checklist

Date: 04-SEP-2009
Analyst: WTD
Analyst: NA
Method: 6850
Instrument: LCMS1
Curve Workgroup: NA
Runlog ID: 29986
Analytical Workgroups: 311484

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

Primary Reviewer:

Secondary Reviewer:
08-SEP-2009

CHECKLIST1 - Modified 03/05/2008
Generated: SEP-08-2009 08:45:03

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00108994

Analytical Method: 6850 AAB#: WG311484

Login Number: L09090099

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
04BH01 (6-8)	01	09/03/09					09/04/09	1	28		09/04/09	.1	28	
04BH02 (6-8)	02	09/03/09					09/04/09	1	28		09/04/09	.2	28	
04BH03 (6-8)	03	09/03/09					09/04/09	1	28		09/04/09	.1	28	
04CSFL05(7)RE(9)	04	09/03/09					09/04/09	1	28		09/04/09	.2	28	
04VALVE-OUTFALL	05	09/03/09					09/04/09	1	28		09/04/09	.1	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1483406
Report generated 09/08/2009 08:52

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

00108996

METHOD BLANK SUMMARY

Login Number: L09090099
Work Group: WG311484
Blank File ID: 1LM.LM00599
Blank Sample ID: WG311484-02
Prep Date: 09/04/09 13:52
Instrument ID: LCMS1
Analyzed Date: 09/04/09 14:49
Method: 6850
Analyst: WTD

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
MCT	WG311484-01	1LM.LM00596	09/04/09 14:06	01
QCMRL	WG311484-05	1LM.LM00598	09/04/09 14:35	01
LCS	WG311484-03	1LM.LM00600	09/04/09 15:04	01
LCS2	WG311484-04	1LM.LM00601	09/04/09 15:18	01
04BH03 (6-8)	L09090099-03	1LM.LM00604	09/04/09 16:01	DL01
04VALVE-OUTFALL	L09090099-05	1LM.LM00606	09/04/09 16:30	DL01
QCMRL	WG311484-06	1LM.LM00608	09/04/09 16:58	01
04BH01 (6-8)	L09090099-01	1LM.LM00610	09/04/09 17:27	DL01
04BH02 (6-8)	L09090099-02	1LM.LM00611	09/04/09 17:41	DL01
04CSFL05(7)RE(9)	L09090099-04	1LM.LM00612	09/04/09 17:56	DL01
QCMRL	WG311484-07	1LM.LM00614	09/04/09 18:25	01

Report Name: BLANK_SUMMARY
PDF File ID: 1483407
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.

METHOD BLANK REPORT

00108997

Login Number:L09090099 Prep Date:09/04/09 13:52 Sample ID:WG311484-02
Instrument ID:LCMS1 Run Date:09/04/09 14:49 Prep Method:6850
File ID:1LM.LM00599 Analyst:WTD Method:6850
Workgroup (AAB#):WG311484 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: LCMS1-26-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Perchlorate	0.993	1.99	0.993	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1483349
08-SEP-2009 08:52

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00108998

Login Number: L09090099 Analyst: WTD Prep Method: 6850
Instrument ID: LCMS1 Matrix: Soil Method: 6850
Workgroup (AAB#): WG311484 Units: ug/kg
QC Key: STD Lot #: STD35105

Sample ID: WG311484-03 LCS File ID: 1LM.LM00600 Run Date: 09/04/2009 15:04
Sample ID: WG311484-04 LCS2 File ID: 1LM.LM00601 Run Date: 09/04/2009 15:18

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Perchlorate	1.96	2.10	107	1.97	1.97	101	6.21	80 - 120	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1483350
Report generated: 09/08/2009 08:52

Conductivity Probe Calibration Check:
1421 /1410 µs/cm

Perchlorate Conductivity Check

Working MCT Level:
10,000 µs/cm

Sample	Conductivity (µs/cm)	Pretreatment or Dilution Needed
MG/ICS	10,160	
MBLK	7.7	
LCS	9.5	
LCSD	7.8	
L09090099-01 A	15.7	
-02 A	27.1	
-03 A	43.0	
-04 A	78.0	
-05 A	62.9	

Wade T. Doty
Analyst

9-4-09 / 16:00
Date/Time

DCN#80652

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00109000

Login Number: L09090099
Analytical Method: 6850
ICAL Workgroup: WG310580

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

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

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

INT_CAL - Modified 03/06/2008
PDF File ID: 1483408
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00109001

Login Number: L09090099
Analytical Method: 6850

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

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

INT_CAL - Modified 03/06/2008
PDF File ID: 1483408
Report generated 09/08/2009 08:52

Login Number: L09090099
Analytical Method: 6850
Instrument ID: LCMS1
Initial Calibration Date: 26-AUG-09 12:56
Column ID: F

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

INT_CAL - Modified 03/06/2008
PDF File ID: 1483408
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.
INITIAL CALIBRATION DATA

00109003

Login Number: L09090099
Analytical Method: 6850

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

Analyte	WG310580-08		
	CONC	RESP	RF
Perchlorate	10.0	716000.000	1.484

INT_CAL - Modified 03/06/2008
PDF File ID: 1483408
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00109004

Login Number: L09090099 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: 1483409
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00109005

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311496-04
Instrument ID: LCMS1 Run Time: 17:13 Method: 6850
File ID: 1LM.LM00609 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311484 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1483353
Report generated 09/08/2009 07:47

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00109006

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311496-06
Instrument ID: LCMS1 Run Time: 18:39 Method: 6850
File ID: 1LM.LM00615 Analyst: WTD Units: ug/L
Workgroup (AAB#): WG311484 Cal ID: LCMS1 -
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Perchlorate	0.100	0.200	0.100	U

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

CCB - Modified 03/05/2008
PDF File ID: 1483353
Report generated 09/08/2009 07:47

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00109007

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311496-02
Instrument ID: LCMS1 Run Time: 14:20 Method: 6850
File ID: 1LM.LM00597 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311484 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.00	ug/L	1.45	0	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1483352
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00109008

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311496-03
Instrument ID: LCMS1 Run Time: 16:44 Method: 6850
File ID: 1LM.LM00607 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311484 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	0.976	ug/L	1.41	2.40	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1483352
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00109009

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311496-05
Instrument ID: LCMS1 Run Time: 18:10 Method: 6850
File ID: 1LM.LM00613 Analyst: WTD QC Key: STD
Workgroup (AAB#): WG311484 Cal ID: LCMS1 - 26-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Perchlorate		1.00	1.05	ug/L	1.51	5.00	10	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 1483352
Report generated 09/08/2009 08:52

Microbac Laboratories Inc.

QCMRL SAMPLE

00109010

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311484-05

Instrument ID: LCMS1 Run Time: 14:35 Prep Method: 6850

File ID: 1LM.LM00598 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311484 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	2.24	112	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1483351

Report generated 09/08/2009 07:47

Microbac Laboratories Inc.

QCMRL SAMPLE

00109011

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311484-06

Instrument ID: LCMS1 Run Time: 16:58 Prep Method: 6850

File ID: 1LM.LM00608 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311484 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	2.12	106	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1483351

Report generated 09/08/2009 07:47

Microbac Laboratories Inc.

QCMRL SAMPLE

00109012

Login Number: L09090099 Run Date: 09/04/2009 Sample ID: WG311484-07

Instrument ID: LCMS1 Run Time: 18:25 Prep Method: 6850

File ID: 1LM.LM00614 Analyst: WTD Method: 6850

Workgroup (AAB#): WG311484 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	2.23	112	70 - 130	

QCMRL - Modified 03/06/2007

PDF File ID: 1483351

Report generated 09/08/2009 07:47

Login Number: L09090099
Instrument ID: LCMS1
Workgroup (AAB#): WG311484

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
L09090099-01	50.0	DL01	207000
L09090099-02	10.0	DL01	201000
L09090099-03	1000	DL01	208000
L09090099-04	2000	DL01	192000
L09090099-05	1000	DL01	201000
WG311484-02	1.00	01	211000
WG311484-03	1.00	01	215000
WG311484-04	1.00	01	216000

IS-1 - O18LP

Underline = Response outside limits

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

L09090099

00109017

09/08/09 13:07

Submitted By

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

For

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

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

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

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
04BH01 (6-8)	L09090099-01	D2216-90	1	04-SEP-09
04BH02 (6-8)	L09090099-02	D2216-90	1	04-SEP-09
04BH03 (6-8)	L09090099-03	D2216-90	1	04-SEP-09
04CSFL05(7)RE(9)	L09090099-04	D2216-90	1	04-SEP-09
04VALVE-OUTFALL	L09090099-05	D2216-90	1	04-SEP-09

Report Number: **L09090099**
Report Date : **September 8, 2009**

00109018

Sample Number: **L09090099-01**
Client ID: **04BH01 (6-8)**
Matrix: **Soil**
Workgroup Number: **WG311490**
Collect Date: **09/03/2009 14:10**
Sample Tag: **01**

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

Instrument: **BAL001**
Prep Date: **09/05/2009 12:04**
Cal Date:
Run Date: **09/05/2009 12:04**
File ID: **B1.311490-0101**

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

Report Number: **L09090099**
Report Date : **September 8, 2009**

00109019

Sample Number:	**L09090099-02**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04BH02 (6-8)**	Prep Method:	**D2216-90**	Prep Date:	**09/05/2009 12:04**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311490**	Analyst:	**CPD**	Run Date:	**09/05/2009 12:04**
Collect Date:	**09/03/2009 14:20**	Dilution:	**1**	File ID:	**B1.311490-0102**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**81.7**		**1.00**	**1.00**

Report Number: **L09090099**
Report Date : **September 8, 2009**

00109020

Sample Number:	**L09090099-03**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04BH03 (6-8)**	Prep Method:	**D2216-90**	Prep Date:	**09/05/2009 12:04**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311490**	Analyst:	**CPD**	Run Date:	**09/05/2009 12:04**
Collect Date:	**09/03/2009 14:25**	Dilution:	**1**	File ID:	**B1.311490-0103**
Sample Tag:	**01**	Units:	**weight %**		

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

Report Number: **L09090099**
Report Date : **September 8, 2009**

00109021

Sample Number:	**L09090099-04**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**04CSFL05(7)RE(9)**	Prep Method:	**D2216-90**	Prep Date:	**09/05/2009 12:04**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG311490**	Analyst:	**CPD**	Run Date:	**09/05/2009 12:04**
Collect Date:	**09/03/2009 14:30**	Dilution:	**1**	File ID:	**B1.311490-0104**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**83.5**		**1.00**	**1.00**

Report Number: **L09090099**
Report Date : **September 8, 2009**

00109022

Sample Number: **L09090099-05**
Client ID: **04VALVE-OUTFALL**
Matrix: **Soil**
Workgroup Number: **WG311490**
Collect Date: **09/03/2009 14:35**
Sample Tag: **01**

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

Instrument: **BAL001**
Prep Date: **09/05/2009 12:04**
Cal Date:
Run Date: **09/05/2009 12:04**
File ID: **B1.311490-0105**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**83.2**		**1.00**	**1.00**

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

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

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

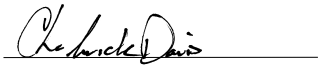
% Moisture = 100 - % Solids from 1.0 calculation

PERCENT SOLIDS

00109024

Workgroup (AAB#): WG311490 Analyst: CPD ADT(on): 09/04/2009 11:33
Method: D2216-90 Instrument: BAL001 ADT(off): 09/05/2009 12:04
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
L09090099-01	1.3	29.15	24.18			82.15	
L09090099-02	1.28	26.65	22			81.67	
L09090099-03	1.29	21.97	18.45			82.98	
L09090099-04	1.29	20.63	17.43			83.45	
L09090099-05	1.29	27.01	22.68			83.16	
WG311490-01	1.3	29.15	24.18			82.15	17.85
WG311490-02	1.29	30.9	25.53			81.86	18.14

Analyst: 

PERCENT_SOLIDS - Modified 04/24/2008
PDF ID: 1482668
Report generated: 09/05/2009 12:02

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
September 8, 2009

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

Qualkey: STD_ND=U

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

COC NO. 090309-01

00109028

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 (713.996.4588) TAT: 24 Hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: LHAAP-04 Site: Confirmation Sampling
Project #: 117591-0009B200 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713) 247-9292

Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Perchlorate (6850)									Comments
04BH01(6-8)	X	9/3/2009	14:10	Soil	1	X									
04BH02(6-8)	X	9/3/2009	14:20	Soil	1	X									
04BH03(6-8)	X	9/3/2009	14:25	Soil	1	X									
04CSFL05(7)RE(9)	X	9/3/2009	14:30	Soil	1	X									
04VALVE-OUTFALL	X	9/3/2009	14:35	Soil	1	X									

24 HOUR TAT

Relinquished By:
Date/Time 9/3/09 17:30

Received By:
Date/Time

Special Instructions

Microbac OVD
Received: 09/04/2009 09:48
By: ERIN PORTER
221000001538

Relinquished By:
Date/Time

Received for Laboratory By:
Date/Time

Remarks:

1000001538

COOLER INSPECTION

00109029

Received: 09/04/2009 09:48
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09090099

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0014013	G	0.0	1Z66V7250196993519	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?

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

Internal Chain of Custody Report

Login: L09090099
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 08-SEP-2009

Samplenum	Container ID	Products
L09090099-01	612823	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	04-SEP-2009 10:46	RLK	
2	ANALYZ	W1	SEM	04-SEP-2009 10:50	WTD	RLK
3	ANALYZ	SEM	WET	04-SEP-2009 11:15	CPD	WTD
4	STORE	WET	A1	08-SEP-2009 08:38	RLK	CPD

Samplenum	Container ID	Products
L09090099-02	612824	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	04-SEP-2009 10:46	RLK	
2	ANALYZ	W1	SEM	04-SEP-2009 10:50	WTD	RLK
3	ANALYZ	SEM	WET	04-SEP-2009 11:14	CPD	WTD
4	STORE	WET	A1	08-SEP-2009 08:38	RLK	CPD

Samplenum	Container ID	Products
L09090099-03	612825	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	04-SEP-2009 10:46	RLK	
2	ANALYZ	W1	SEM	04-SEP-2009 10:50	WTD	RLK
3	ANALYZ	SEM	WET	04-SEP-2009 11:14	CPD	WTD
4	STORE	WET	A1	08-SEP-2009 08:38	RLK	CPD

Samplenum	Container ID	Products
L09090099-04	612826	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	04-SEP-2009 10:46	RLK	
2	ANALYZ	W1	SEM	04-SEP-2009 10:50	WTD	RLK
3	ANALYZ	SEM	WET	04-SEP-2009 11:15	CPD	WTD
4	STORE	WET	A1	08-SEP-2009 08:39	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

00109031

Internal Chain of Custody Report

Login: L09090099
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 08-SEP-2009

Samplenum	Container ID	Products
L09090099-05	612827	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	04-SEP-2009 10:46	RLK	
2	ANALYZ	W1	SEM	04-SEP-2009 10:50	WTD	RLK
3	ANALYZ	SEM	WET	04-SEP-2009 11:14	CPD	WTD
4	STORE	WET	A1	08-SEP-2009 08:38	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