ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Subject: Data Validation for Lab Report L10110608
Radford Army Ammunition Plant

From: Jeanne Peterson
Project Manager, AQA

To: Mary Lou Rochotte
Kemron Environmental Services, Inc.

OVERVIEW

Microbac Laboratories Inc., Marietta, Ohio, received nine field samples associated with the project work described in the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010) on November 17, 2010. The field samples were assigned laboratory sample delivery group (SDG) number L10110608 and included three normal water samples, one field duplicate water sample, one matrix spike pair, one equipment blank, one field blank, and one trip blank. The samples were analyzed for volatile organic compounds (VOCs) using EPA method 8260B and metals using EPA method 6020 as detailed in *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (SW-846),* Third Edition, Final Update III.

SUMMARY

The samples were analyzed according to the quality control (QC) criteria of the applicable analytical method. The data for these samples were found to be compliant with the requirements of the project QAPP and/or EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable, and the results for all target analytes *except* 2-chloroethyl vinyl ether are considered usable. The 2-chloroethyl vinyl ether results for all samples *except* SWMU57GWMW3 were rejected due to 0% matrix spike recoveries on acidified sample aliquots.

MAJOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- The 2-chloroethyl vinyl ether results for all samples *except* SWMU57GWMW3 were rejected due to 0% matrix spike recoveries on acidified sample aliquots.

MINOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- SWMU57GWMW2: Vinyl chloride (R)
  Methylene chloride 0.419 (B)
  o-Xylene 0.562 (K)
  Total arsenic 0.00267 (J)
  Total chromium 0.00417 (B)
  Dissolved antimony 0.00253 (K)
  Dissolved chromium 0.00232 (B)
  Dissolved manganese 0.178 (L)

- SWMU57GW111610D1: Vinyl chloride (R)
  Methylene chloride 0.322 (B)
  Total arsenic 0.00255 (J)

Total chromium 0.0351 (B)
Total manganese 0.230 (K)
Dissolved antimony 0.00263 (K)
Dissolved chromium 0.00183 (B)
Dissolved manganese 0.171 (L)

- SWMU57111610EB: Vinyl chloride (R)
  Total arsenic (UL)
  Total manganese 0.00342 (K)
  Dissolved chromium 0.00104 (L)
  Dissolved manganese 0.00227 (L)

- SWMU57GWMW3: Methylene chloride 0.325 (B)
  Chloroform 38.5 (K)
  Total arsenic 0.168 (J)
  Dissolved chromium 0.00728 (L)
  Dissolved manganese 0.00255 (B)

- SWMU57111610FB: Vinyl chloride (R)
  Total arsenic (UL)
  Dissolved chromium (UL)
  Dissolved manganese (UL)

- SWMU57111610TB: Vinyl chloride (R)

NOTES

(Refer to Appendix D – Support Documentation)

Sample Chain of Custody (COC) Records

- The samples were listed on COC #2397. Data were reported for all required analyses.

- Sample SWMU57111710WC was analyzed for biological oxygen demand (BOD) and chemical oxygen demand (COD); however, because the BOD and COD data are not to be used for decision-making purposes, the BOD and COD data were not validated.

Preservation and Holding Times

- The pH was >2 at the time of analysis for sample SWMU57GWMW3. The sample was analyzed within the holding time for unpreserved samples and, therefore, no sample data were qualified.

Instrument Tune

- The instrument tunes for all applicable analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration (ICAL)

- The ICAL relative standard deviations (%RSDs) and/or correlation coefficients, as applicable, for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV)

- The ICV/CCV relative response factors (RRFs), percent differences (%Ds), and/or percent recoveries (%Rs), as applicable, for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Contract Required Detection Limit (CRDL)

- The end CRDL recovery associated with the analysis on November 22, 2010, was >110% for total manganese. The total manganese results for samples SWMU57GW111610D1 and SWMU57111610EB were detects and, therefore, were **qualified K**. The total manganese results for the remaining samples were not reported from this analytical run.

- The beginning CRDL recovery associated with the analysis on November 22, 2010, was <90% total arsenic, and the end CRDL recovery was >110%. The total arsenic results for all associated samples *except* SWMU57111610EB and SWMU57111610FB were detects and, therefore, were **qualified J** based on professional judgment. The total arsenic results for samples SWMU57111610EB and SWMU57111610FB were non-detects and, therefore, were **qualified UL** based on professional judgment.

- The beginning CRDL recovery associated with the analysis on November 29, 2010, was >110% for dissolved antimony. The dissolved antimony results for all samples *except* - SWMU57111610EB, SWMU57GWMW3, and SWMU57111610FB, were detects and, therefore, were **qualified K**. The dissolved antimony results for samples SWMU57111610EB, SWMU57GWMW3, and SWMU57111610FB were non-detects and, therefore, were not qualified.

- The end CRDL recovery associated with the analysis on November 29, 2010, was <90% for dissolved chromium. The dissolved chromium results for all samples *except* SWMU57111610FB, were detects and, therefore, were **qualified L**. The dissolved chromium results for sample SWMU57111610FB was a non-detect and, therefore, were **qualified UL**.

Inductively Coupled Plasma (ICP) Interference Check Sample

- ICP interference check sample recoveries were within the project QAPP- and Region III-specified control limits. The results of the ICS A and ICS AB analyses for method 6020 were not applicable to the field blank samples because the concentrations of the interferents in those samples were < those in the ICS solutions.

Field Blanks

- Acetone was detected in the equipment blank, and methylene chloride was detected in the equipment blank, field blank, and trip blank. The methylene chloride results for samples SWMU57GWMW2, SWMU57GW111610D1, and SWMU57GWMW3 were detects <10X the highest blank concentration and, therefore, were **qualified B**. The associated acetone results were non-detects and, therefore, were not qualified.

- Total chromium, total manganese, dissolved chromium, and dissolved manganese were detected in the equipment blank. The total and dissolved chromium results for samples SWMU57GWMW2 and SWMU57GW111610D and the dissolved manganese result for sample SWMU57GWMW3 were detects <5X the equipment blank concentration and, therefore, were **qualified B**. The remaining associated sample results were either detects >5X the equipment blank concentration or non-detects and, therefore, were not qualified.

Laboratory Method Blanks

- No target analytes were detected in the method blanks.

Laboratory Calibration Blanks

- No target analytes were detected in the calibration blanks.

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCSs/LCSDs)

- The LCS/LCSD recoveries met project QAPP- and Region III-specified QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

- One MS/MSD pair was analyzed on sample SWMU57GWMW2 for all analyses.

    - The MS/MSD recoveries were 0% for 2-chloroethyl vinyl ether. The MS and MSD were performed on an acidified sample aliquot; however, highly reactive VOC compounds such as 2-chloroethyl vinyl ether can be lost due to acidification. This was confirmed by the acceptable 2-chloroethyl vinyl ether recovery for the unacidified LCS. VOC analysis was performed on acidified sample aliquots for all samples *except* SWMU57GWMW3 and, therefore, the 2-chloroethyl vinyl ether results for those samples were **qualified R** based on professional judgment. The pH for sample SWMU57GWMW3 was 7 at the time of analysis, and therefore, the associated 2-chloroethyl vinyl ether result for that sample was not qualified based on professional judgment.

    - The MS recovery was <75% for dissolved manganese. The dissolved manganese result for sample SWMU57111610FB was a non-detect and, therefore, was **qualified UL**. The remaining associated sample results were detects and, therefore, were **qualified L**.

ICP Serial Dilution Analyses

- The serial dilution %Ds met project QAPP- and Region III-specified QC acceptance criteria.

Laboratory Sample Duplicate

- MSDs were analyzed as the laboratory duplicates for all analyses and met project QAPP- and Region III-specified QC acceptance criteria.

Field Sample Duplicate

- Soil sample SWMU57GWMW2 was collected and analyzed in duplicate (sample SWMU57GW111610D1) for all analyses. The RPDs between the sample and duplicate results were within the project QAPP-specified control limits.

Sample Surrogate Spikes

- Surrogate spikes added to all field samples analyzed for VOCs were within the project QAPP-specified control limits with the following exceptions.

  - The 1,2-dichloroethane-d4 recoveries were > the upper acceptance limit for samples SWMU57GWMW2, SWMU57GW111610MSD, and SWMU57GWMW3. Sample SWMU57GW111610MSD is a QC sample and, therefore, the associated results were not qualified. The methylene chloride and o-xylene results for sample SWMU57GWMW2 and the methylene chloride and chloroform results for sample SWMU57GWMW3 were detects and, therefore, were **qualified K**. The remaining associated sample results were non-detects and, therefore, were not qualified.

Sample Internal Standard Recoveries

- The internal standard recoveries for VOCs were within the project QAPP- and Region III-specified control limits.

- The internal standard recoveries for metals by method 6020 were within the 60-125% limits provided in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (NFG) (October 2004).

Sample Results

- 2-Chloroethyl vinyl ether was analyzed for on acidified aliquots for all samples *except* SWMU57GWMW3. Highly reactive VOC compounds such as 2-chloroethyl vinyl ether can be lost due to acidification as illustrated by the MS/MSD recoveries. The associated sample results for the acidified samples were non-detects and, therefore, were **qualified R**.

- The samples were analyzed for the methods requested on the COC. Method detection limits and reporting limits were reported for all analyses; however, the MDLs for total

and dissolved antimony, arsenic, chromium, and manganese were > the MDLs specified in the project QAPP. The reported RLs met project-specified RLs with the following exceptions.

- Samples SWMU57GWMW2, SWMU57GW111610MS, and SWMU57GW111610 MSD were diluted 50X for total manganese, and sample SWMU57GWMW3 was diluted 50x for total manganese and total chromium. The associated RLs were adjusted accordingly and, therefore, did not meet project-specified RLs.

Action Level Notification

- No results were above the action levels specified in the Region III NFG.

Usability Statement

- There were 444 field sample data points associated with the data package for SDG L10110608. Of these field sample data points, 413 (93.02% of the total) were assessed and left unqualified, 5 (1.13% of the total) were assessed and qualified R, 7 (1.58% of the total) were assessed and qualified B, 3 (0.68% of the total) were assessed and qualified J, 4 (0.90% of the total) were assessed and qualified L, 6 (1.35% of the total) were assessed and qualified UL, and 6 (1.35% of the total) were assessed and qualified K.

- *The field sample data points that were qualified R must be categorized as unusable data.*

- The field sample data points that were qualified B can be categorized as definitive data with a potentially falsely identified analyte whose concentration is only an estimate due to QC deficiencies, the field sample data points that were qualified J can be categorized as definitive data with positively identified analyte concentrations that are only estimates due to QC deficiencies, the field sample data points that were qualified L can be categorized as definitive data with positively identified analyte concentrations that are only estimates and may be qualified low due to QC deficiencies, the field sample data points that were assessed and qualified UL can be categorized as definitive data with nondetectable analyte concentrations that are only estimates and may be biased low due to QC deficiencies, and the field sample data points that were qualified K can be categorized as definitive data with positively identified analyte concentrations that are only estimates and area biased high due to QC deficiencies.

- The unqualified field sample data points can be categorized as definitive data with no associated QC deficiencies.

Report Content Statement

This report has been formatted for consistency with Appendix B, Region III Standard Operating Procedures for Data Validation Reports, contained in the guidance *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). The laboratory data were reviewed in accordance with the EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable; the *Quality Assurance Project Plan for the Performance Based Contract, Revision 04, Fort Meade, Maryland* (May 2010) (project QAPP); and the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010); and the applicable SW-846 methods. This report only addresses those problems and issues that may affect data usability.

Attachments

Appendix A – Glossary of Data Qualifiers

Appendix B – Data Qualifier Summary

Appendix C – Laboratory Report Results/Data Summary

Appendix D – Support Documentation

Appendix A – Glossary of Data Qualifiers

Data Qualifier Codes

Codes Related to Identification

U Not detected. The associated number indicates the approximate sample concentration necessary to be detected.

B Not detected substantially above the level reported in laboratory or field blanks.

R Unusable result. Analyte may or may not be present in the sample.

Codes Related to Quantitation

J Analyte present. Reported value may or may not be accurate or precise.

K Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ Not detected. Quantitation limit may be inaccurate or imprecise.

UL The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Appendix B – Data Qualifier Summary

Data Qualifier Summary

Note: The results listed in this table are detects and qualified non-detects only. Unqualified non-detects are not listed.

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU57GWMW2 L10110608-01, -02	Vinyl chloride	R	U	Matrix spike 0%R; acidified sample
	Methylene chloride	B	J	Blank contamination; high surrogate recovery
	o-Xylene	K	J	High surrogate recovery
	Total arsenic	J		CRDL %R >UAL and <LAL
	Total chromium	B		Blank contamination
	Dissolved antimony	K		CRDL %R >UAL
	Dissolved chromium	B		Blank contamination; CRDL %R <LAL
	Dissolved manganese	L		Matrix spike %R <LAL
SWMU57GW111610D1 L10110608-07, -08	Vinyl chloride	R	U	Matrix spike 0%R; acidified sample
	Methylene chloride	B	J	Blank contamination
	o-Xylene	J	J	>MDL, <RL
	Total arsenic	J		CRDL %R >UAL and <LAL
	Total chromium	B		Blank contamination
	Total manganese	K		CRDL %R >UAL
	Dissolved antimony	K		CRDL %R >UAL
	Dissolved chromium	B	J	Blank contamination; CRDL %R <LAL
	Dissolved manganese	L		Matrix spike %R <LAL

Data Qualifier Summary (Cont.)

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU57111610EB L10110608-09, -10	Vinyl chloride	R	U	Matrix spike 0%R; acidified sample
	Acetone	J	J	>MDL, <RL
	Methylene chloride	J	J	>MDL, <RL
	Total arsenic	UL	U	CRDL %R <LAL
	Total manganese	K		CRDL %R >UAL
	Dissolved chromium	L	J	CRDL %R <LAL
	Dissolved manganese	L		Matrix spike %R <LAL
SWMU57GWMW3 L10110608-11, -12	Methylene chloride	B	J	Blank contamination; high surrogate recovery
	Chloroform	K		High surrogate recovery
	Total arsenic	J		CRDL %R >UAL and <LAL
	Dissolved chromium	L		CRDL %R <LAL
	Dissolved manganese	B		Blank contamination; matrix spike %R <LAL
SWMU57111610FB L10110608-13, -14	Vinyl chloride	R	U	Matrix spike 0%R; acidified sample
	Methylene chloride	J	J	>MDL, <RL
	Total arsenic	UL		CRDL %R <LAL
	Dissolved chromium	UL		CRDL %R <LAL
	Dissolved manganese	UL		Matrix spike %R <LAL
SWMU57111610TB L10110608-15	Vinyl chloride	R	U	Matrix spike 0%R; acidified sample
	Methylene chloride	J	J	>MDL, <RL

Appendix C – Laboratory Report Results/Data Summary

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-01**
Client ID: **SWMU57GWMW2**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 14:45**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 14:45**
File ID: **8M366012**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		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
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,3-Dichloropropane	142-28-9		U	1.00	0.200
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	10.0	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	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
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
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500
Methylene chloride	75-09-2	0.419	J	5.00	0.250
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
o-Xylene	95-47-6	0.562	J	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-01**
Client ID: **SWMU57GWMW2**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 14:45**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 14:45**
File ID: **8M366012**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		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

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	116	70	120	
4-Bromofluorobenzene	106	75	120	
Dibromofluoromethane	110	85	115	
Toluene-d8	103	85	120	

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-03**
Client ID: **SWMU57GW111610MS**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 15:17**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 15:17**
File ID: **8M366013**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6	20.7		1.00	0.250
1,1,1-Trichloroethane	71-55-6	23.3		1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5	17.6		1.00	0.200
1,1,2-Trichloroethane	79-00-5	19.1		1.00	0.250
1,1-Dichloroethane	75-34-3	21.0		1.00	0.125
1,1-Dichloroethene	75-35-4	20.8		1.00	0.500
1,1-Dichloropropene	563-58-6	20.6		1.00	0.250
1,2,3-Trichlorobenzene	87-61-6	17.8		1.00	0.150
1,2,3-Trichloropropane	96-18-4	19.4		1.00	0.500
1,2,4-Trichlorobenzene	120-82-1	17.6		1.00	0.200
1,2,4-Trimethylbenzene	95-63-6	20.3		1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8	20.0		5.00	1.00
1,2-Dibromoethane	106-93-4	19.5		1.00	0.250
1,2-Dichlorobenzene	95-50-1	19.2		1.00	0.125
1,2-Dichloroethane	107-06-2	23.2		1.00	0.250
1,2-Dichloropropane	78-87-5	20.0		1.00	0.200
1,3,5-Trimethylbenzene	108-67-8	20.5		1.00	0.250
1,3-Dichlorobenzene	541-73-1	19.0		1.00	0.250
1,3-Dichloropropane	142-28-9	19.0		1.00	0.200
1,4-Dichlorobenzene	106-46-7	18.3		1.00	0.125
2,2-Dichloropropane	594-20-7	20.6		1.00	0.250
2-Butanone	78-93-3	18.2		10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8	20.1		1.00	0.125
2-Hexanone	591-78-6	16.8		10.0	2.50
4-Chlorotoluene	106-43-4	19.5		1.00	0.250
4-Methyl-2-pentanone	108-10-1	16.7		10.0	2.50
Acetone	67-64-1	20.8		10.0	2.50
Benzene	71-43-2	19.0		1.00	0.125
Bromobenzene	108-86-1	19.2		1.00	0.125
Bromochloromethane	74-97-5	20.3		1.00	0.200
Bromodichloromethane	75-27-4	23.1		1.00	0.250
Bromoform	75-25-2	19.9		1.00	0.500
Bromomethane	74-83-9	21.2		1.00	0.500
Carbon disulfide	75-15-0	14.5		1.00	0.500
Carbon tetrachloride	56-23-5	23.6		1.00	0.250
Chlorobenzene	108-90-7	19.1		1.00	0.125
Chlorodibromomethane	124-48-1	21.1		1.00	0.250
Chloroethane	75-00-3	20.2		1.00	0.500
Chloroform	67-66-3	21.7		1.00	0.125
Chloromethane	74-87-3	21.6		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	20.0		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5	20.0		1.00	0.250
Dibromomethane	74-95-3	21.4		1.00	0.250
Dichlorodifluoromethane	75-71-8	20.5		1.00	0.250
Ethylbenzene	100-41-4	19.8		1.00	0.250
Hexachlorobutadiene	87-68-3	18.5		1.00	0.250
Isopropylbenzene	98-82-8	18.2		1.00	0.250
m-,p-Xylene	179601-23-1	39.1		1.00	0.500
Methylene chloride	75-09-2	18.2		5.00	0.250
n-Butylbenzene	104-51-8	19.7		1.00	0.250
n-Propylbenzene	103-65-1	19.7		1.00	0.125
Naphthalene	91-20-3	17.6		1.00	0.200
o-Xylene	95-47-6	19.4		1.00	0.250
p-Isopropyltoluene	99-87-6	19.8		1.00	0.250
sec-Butylbenzene	135-98-8	20.0		1.00	0.250
Styrene	100-42-5	19.6		1.00	0.125
tert-Butylbenzene	98-06-6	19.8		1.00	0.250
Tetrachloroethene	127-18-4	19.0		1.00	0.250

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-03**
Client ID: **SWMU57GW111610MS**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 15:17**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 15:17**
File ID: **8M366013**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3	19.5		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	20.4		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6	18.6		1.00	0.500
Trichloroethene	79-01-6	20.3		1.00	0.250
Trichlorofluoromethane	75-69-4	22.7		1.00	0.250
Vinyl acetate	108-05-4	12.5		10.0	2.50
Vinyl chloride	75-01-4	22.4		1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	112	70	120	
4-Bromofluorobenzene	105	75	120	
Dibromofluoromethane	110	85	115	
Toluene-d8	100	85	120	

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-05**
Client ID: **SWMU57GW111610MSD**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 15:48**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 15:48**
File ID: **8M366014**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6	21.1		1.00	0.250
1,1,1-Trichloroethane	71-55-6	23.0		1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5	18.3		1.00	0.200
1,1,2-Trichloroethane	79-00-5	19.3		1.00	0.250
1,1-Dichloroethane	75-34-3	21.2		1.00	0.125
1,1-Dichloroethene	75-35-4	21.4		1.00	0.500
1,1-Dichloropropene	563-58-6	20.6		1.00	0.250
1,2,3-Trichlorobenzene	87-61-6	18.4		1.00	0.150
1,2,3-Trichloropropane	96-18-4	19.5		1.00	0.500
1,2,4-Trichlorobenzene	120-82-1	18.1		1.00	0.200
1,2,4-Trimethylbenzene	95-63-6	20.8		1.00	0.250
1,2-Dibromo-3-chloropropane	96-12-8	20.2		5.00	1.00
1,2-Dibromoethane	106-93-4	19.6		1.00	0.250
1,2-Dichlorobenzene	95-50-1	19.6		1.00	0.125
1,2-Dichloroethane	107-06-2	23.5		1.00	0.250
1,2-Dichloropropane	78-87-5	20.3		1.00	0.200
1,3,5-Trimethylbenzene	108-67-8	20.9		1.00	0.250
1,3-Dichlorobenzene	541-73-1	19.8		1.00	0.250
1,3-Dichloropropane	142-28-9	19.8		1.00	0.200
1,4-Dichlorobenzene	106-46-7	18.5		1.00	0.125
2,2-Dichloropropane	594-20-7	20.5		1.00	0.250
2-Butanone	78-93-3	18.6		10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8	21.8		1.00	0.125
2-Hexanone	591-78-6	18.1		10.0	2.50
4-Chlorotoluene	106-43-4	19.1		1.00	0.250
4-Methyl-2-pentanone	108-10-1	17.4		10.0	2.50
Acetone	67-64-1	21.0		10.0	2.50
Benzene	71-43-2	19.3		1.00	0.125
Bromobenzene	108-86-1	19.5		1.00	0.125
Bromochloromethane	74-97-5	20.7		1.00	0.200
Bromodichloromethane	75-27-4	23.4		1.00	0.250
Bromoform	75-25-2	20.1		1.00	0.500
Bromomethane	74-83-9	23.0		1.00	0.500
Carbon disulfide	75-15-0	14.5		1.00	0.500
Carbon tetrachloride	56-23-5	23.4		1.00	0.250
Chlorobenzene	108-90-7	19.4		1.00	0.125
Chlorodibromomethane	124-48-1	21.2		1.00	0.250
Chloroethane	75-00-3	20.0		1.00	0.500
Chloroform	67-66-3	21.8		1.00	0.125
Chloromethane	74-87-3	22.3		1.00	0.500
cis-1,2-Dichloroethene	156-59-2	20.3		1.00	0.250
cis-1,3-Dichloropropene	10061-01-5	20.4		1.00	0.250
Dibromomethane	74-95-3	21.8		1.00	0.250
Dichlorodifluoromethane	75-71-8	20.5		1.00	0.250
Ethylbenzene	100-41-4	20.0		1.00	0.250
Hexachlorobutadiene	87-68-3	18.5		1.00	0.250
Isopropylbenzene	98-82-8	18.3		1.00	0.250
m-,p-Xylene	179601-23-1	39.9		1.00	0.500
Methylene chloride	75-09-2	18.9		5.00	0.250
n-Butylbenzene	104-51-8	20.3		1.00	0.250
n-Propylbenzene	103-65-1	20.0		1.00	0.125
Naphthalene	91-20-3	18.1		1.00	0.200
o-Xylene	95-47-6	19.9		1.00	0.250
p-Isopropyltoluene	99-87-6	20.3		1.00	0.250
sec-Butylbenzene	135-98-8	20.3		1.00	0.250
Styrene	100-42-5	20.0		1.00	0.125
tert-Butylbenzene	98-06-6	19.8		1.00	0.250
Tetrachloroethene	127-18-4	19.0		1.00	0.250

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-05**
Client ID: **SWMU57GW111610MSD**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 15:48**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 15:48**
File ID: **8M366014**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3	19.6		1.00	0.250
trans-1,2-Dichloroethene	156-60-5	20.9		1.00	0.250
trans-1,3-Dichloropropene	10061-02-6	18.8		1.00	0.500
Trichloroethene	79-01-6	20.0		1.00	0.250
Trichlorofluoromethane	75-69-4	22.8		1.00	0.250
Vinyl acetate	108-05-4	12.3		10.0	2.50
Vinyl chloride	75-01-4	22.9		1.00	0.250

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	115	70	120	
4-Bromofluorobenzene	105	75	120	
Dibromofluoromethane	111	85	115	
Toluene-d8	99.7	85	120	

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-07**
Client ID: **SWMU57GW111610D1**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 12:40**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 12:40**
File ID: **8M366008**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		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
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,3-Dichloropropane	142-28-9		U	1.00	0.200
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	10.0	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	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
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
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500
Methylene chloride	75-09-2	0.322	J	5.00	0.250
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
o-Xylene	95-47-6	0.549	J	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-07	PrePrep Method:	NONE	Instrument:	HPMS8
Client ID:	SWMU57GW111610D1	Prep Method:	5030B/5030C/5035	Prep Date:	11/22/2010 12:40
Matrix:	Water	Analytical Method:	8260B	Cal Date:	11/08/2010 15:03
Workgroup Number:	WG349416	Analyst:	MES	Run Date:	11/22/2010 12:40
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	8M366008
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		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

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	113	70	120	
4-Bromofluorobenzene	108	75	120	
Dibromofluoromethane	107	85	115	
Toluene-d8	102	85	120	

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-09**
Client ID: **SWMU57111610EB**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 16:00**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 13:11**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 13:11**
File ID: **8M366009**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		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
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,3-Dichloropropane	142-28-9		U	1.00	0.200
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	10.0	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1	2.59	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
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
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500
Methylene chloride	75-09-2	0.315	J	5.00	0.250
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
o-Xylene	95-47-6		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number:	L10110608-09	PrePrep Method:	NONE	Instrument:	HPMS8
Client ID:	SWMU57111610EB	Prep Method:	5030B/5030C/5035	Prep Date:	11/22/2010 13:11
Matrix:	Water	Analytical Method:	8260B	Cal Date:	11/08/2010 15:03
Workgroup Number:	WG349416	Analyst:	MES	Run Date:	11/22/2010 13:11
Collect Date:	11/16/2010 16:00	Dilution:	1	File ID:	8M366009
Sample Tag:	01	Units:	ug/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		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

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	114	70	120	
4-Bromofluorobenzene	104	75	120	
Dibromofluoromethane	106	85	115	
Toluene-d8	102	85	120	

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-11**
Client ID: **SWMU57GWMW3**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 18:22**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 13:42**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 13:42**
File ID: **8M366010**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		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
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,3-Dichloropropane	142-28-9		U	1.00	0.200
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	10.0	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	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
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
Chloroform	67-66-3	38.5		1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500
Methylene chloride	75-09-2	0.325	J	5.00	0.250
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
o-Xylene	95-47-6		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-11**
Client ID: **SWMU57GWMW3**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 18:22**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 13:42**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 13:42**
File ID: **8M366010**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		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

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	117	70	120	
4-Bromofluorobenzene	106	75	120	
Dibromofluoromethane	109	85	115	
Toluene-d8	101	85	120	

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number: **L10110608-13**
Client ID: **SWMU57111610FB**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 19:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 14:14**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 14:14**
File ID: **8M366011**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		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
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,3-Dichloropropane	142-28-9		U	1.00	0.200
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	10.0	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	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
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
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500
Methylene chloride	75-09-2	0.352	J	5.00	0.250
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
o-Xylene	95-47-6		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-13**
Client ID: **SWMU57111610FB**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 19:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 14:14**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 14:14**
File ID: **8M366011**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		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

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	114	70	120	
4-Bromofluorobenzene	106	75	120	
Dibromofluoromethane	109	85	115	
Toluene-d8	101	85	120	

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number: **L10110608-15**
Client ID: **SWMU57111610TB**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 12:08**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 12:08**
File ID: **8M366007**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
1,1,1,2-Tetrachloroethane	630-20-6		U	1.00	0.250
1,1,1-Trichloroethane	71-55-6		U	1.00	0.250
1,1,2,2-Tetrachloroethane	79-34-5		U	1.00	0.200
1,1,2-Trichloroethane	79-00-5		U	1.00	0.250
1,1-Dichloroethane	75-34-3		U	1.00	0.125
1,1-Dichloroethene	75-35-4		U	1.00	0.500
1,1-Dichloropropene	563-58-6		U	1.00	0.250
1,2,3-Trichlorobenzene	87-61-6		U	1.00	0.150
1,2,3-Trichloropropane	96-18-4		U	1.00	0.500
1,2,4-Trichlorobenzene	120-82-1		U	1.00	0.200
1,2,4-Trimethylbenzene	95-63-6		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
1,2-Dichlorobenzene	95-50-1		U	1.00	0.125
1,2-Dichloroethane	107-06-2		U	1.00	0.250
1,2-Dichloropropane	78-87-5		U	1.00	0.200
1,3,5-Trimethylbenzene	108-67-8		U	1.00	0.250
1,3-Dichlorobenzene	541-73-1		U	1.00	0.250
1,3-Dichloropropane	142-28-9		U	1.00	0.200
1,4-Dichlorobenzene	106-46-7		U	1.00	0.125
2,2-Dichloropropane	594-20-7		U	1.00	0.250
2-Butanone	78-93-3		U	10.0	2.50
2-Chloroethyl vinyl ether	110-75-8		U	10.0	2.00
2-Chlorotoluene	95-49-8		U	1.00	0.125
2-Hexanone	591-78-6		U	10.0	2.50
4-Chlorotoluene	106-43-4		U	1.00	0.250
4-Methyl-2-pentanone	108-10-1		U	10.0	2.50
Acetone	67-64-1		U	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
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
Chloroform	67-66-3		U	1.00	0.125
Chloromethane	74-87-3		U	1.00	0.500
cis-1,2-Dichloroethene	156-59-2		U	1.00	0.250
cis-1,3-Dichloropropene	10061-01-5		U	1.00	0.250
Dibromomethane	74-95-3		U	1.00	0.250
Dichlorodifluoromethane	75-71-8		U	1.00	0.250
Ethylbenzene	100-41-4		U	1.00	0.250
Hexachlorobutadiene	87-68-3		U	1.00	0.250
Isopropylbenzene	98-82-8		U	1.00	0.250
m-,p-Xylene	179601-23-1		U	1.00	0.500
Methylene chloride	75-09-2	0.684	J	5.00	0.250
n-Butylbenzene	104-51-8		U	1.00	0.250
n-Propylbenzene	103-65-1		U	1.00	0.125
Naphthalene	91-20-3		U	1.00	0.200
o-Xylene	95-47-6		U	1.00	0.250
p-Isopropyltoluene	99-87-6		U	1.00	0.250
sec-Butylbenzene	135-98-8		U	1.00	0.250
Styrene	100-42-5		U	1.00	0.125
tert-Butylbenzene	98-06-6		U	1.00	0.250
Tetrachloroethene	127-18-4		U	1.00	0.250

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number: **L10110608-15**
Client ID: **SWMU57111610TB**
Matrix: **Water**
Workgroup Number: **WG349416**
Collect Date: **11/16/2010 00:01**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030B/5030C/5035**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **1**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **11/22/2010 12:08**
Cal Date: **11/08/2010 15:03**
Run Date: **11/22/2010 12:08**
File ID: **8M366007**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Toluene	108-88-3		U	1.00	0.250
trans-1,2-Dichloroethene	156-60-5		U	1.00	0.250
trans-1,3-Dichloropropene	10061-02-6		U	1.00	0.500
Trichloroethene	79-01-6		U	1.00	0.250
Trichlorofluoromethane	75-69-4		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

Surrogate	% Recovery	Lower	Upper	Qual
1,2-Dichloroethane-d4	112	70	120	
4-Bromofluorobenzene	105	75	120	
Dibromofluoromethane	108	85	115	
Toluene-d8	101	85	120	

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GWMW2	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/22/2010 10:47
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/22/2010 16:52
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	EL.112210.165258
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	0.00278		0.00100	0.000500
Arsenic, Total	7440-38-2	0.00267		0.00100	0.000500
Chromium, Total	7440-47-3	0.00417		0.00200	0.00100

Microbac Laboratories Inc.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GWMW2	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/23/2010 15:32
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/23/2010 18:41
Collect Date:	11/16/2010 15:30	Dilution:	50	File ID:	EL.112310.184139
Sample Tag:	DL01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Manganese, Total	7439-96-5	0.215		0.100	0.0500

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number: **L10110608-02**
Client ID: **SWMU57GWMW2**
Matrix: **Water**
Workgroup Number: **WG349857**
Collect Date: **11/16/2010 15:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3015**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **1**
Units: **mg/L**

Instrument: **ELAN-ICP**
Prep Date: **11/19/2010 06:46**
Cal Date: **11/29/2010 09:36**
Run Date: **11/29/2010 14:39**
File ID: **EL.112910.143925**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Dissolved	7440-36-0	0.00253		0.00100	0.000500
Arsenic, Dissolved	7440-38-2	0.00239		0.00100	0.000500
Chromium, Dissolved	7440-47-3	0.00232		0.00200	0.00100
Manganese, Dissolved	7439-96-5	0.178		0.00200	0.00100

Microbac Laboratories Inc.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610MS	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/22/2010 10:47
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/22/2010 16:59
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	EL.112210.165946
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	0.0616		0.00100	0.000500
Arsenic, Total	7440-38-2	0.0607		0.00100	0.000500
Chromium, Total	7440-47-3	0.0718		0.00200	0.00100

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610MS	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/23/2010 15:32
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/23/2010 18:48
Collect Date:	11/16/2010 15:30	Dilution:	50	File ID:	EL.112310.184826
Sample Tag:	DL01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Manganese, Total	7439-96-5	0.274		0.100	0.0500

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-04	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610MS	Prep Method:	3015	Prep Date:	11/19/2010 06:46
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/29/2010 09:36
Workgroup Number:	WG349857	Analyst:	JYH	Run Date:	11/29/2010 14:46
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	EL.112910.144609
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Dissolved	7440-36-0	0.0597		0.00100	0.000500
Arsenic, Dissolved	7440-38-2	0.0616		0.00100	0.000500
Chromium, Dissolved	7440-47-3	0.0706		0.00200	0.00100
Manganese, Dissolved	7439-96-5	0.209		0.00200	0.00100

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-05	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610MSD	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/22/2010 10:47
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/22/2010 17:06
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	EL.112210.170633
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	0.0625		0.00100	0.000500
Arsenic, Total	7440-38-2	0.0619		0.00100	0.000500
Chromium, Total	7440-47-3	0.0702		0.00200	0.00100

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-05	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610MSD	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/23/2010 15:32
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/23/2010 18:55
Collect Date:	11/16/2010 15:30	Dilution:	50	File ID:	EL.112310.185512
Sample Tag:	DL01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Manganese, Total	7439-96-5	0.285		0.100	0.0500

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-06	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610MSD	Prep Method:	3015	Prep Date:	11/19/2010 06:46
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/29/2010 09:36
Workgroup Number:	WG349857	Analyst:	JYH	Run Date:	11/29/2010 14:52
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	EL.112910.145253
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Dissolved	7440-36-0	0.0611		0.00100	0.000500
Arsenic, Dissolved	7440-38-2	0.0612		0.00100	0.000500
Chromium, Dissolved	7440-47-3	0.0706		0.00200	0.00100
Manganese, Dissolved	7439-96-5	0.238		0.00200	0.00100

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-07	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610D1	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/22/2010 10:47
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/22/2010 17:13
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	EL.112210.171320
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	0.00269		0.00100	0.000500
Arsenic, Total	7440-38-2	0.00255		0.00100	0.000500
Chromium, Total	7440-47-3	0.00351		0.00200	0.00100
Manganese, Total	7439-96-5	0.230		0.00200	0.00100

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-08	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GW111610D1	Prep Method:	3015	Prep Date:	11/19/2010 06:46
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/29/2010 09:36
Workgroup Number:	WG349857	Analyst:	JYH	Run Date:	11/29/2010 14:59
Collect Date:	11/16/2010 15:30	Dilution:	1	File ID:	EL.112910.145938
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Dissolved	7440-36-0	0.00263		0.00100	0.000500
Arsenic, Dissolved	7440-38-2	0.00238		0.00100	0.000500
Chromium, Dissolved	7440-47-3	0.00183	J	0.00200	0.00100
Manganese, Dissolved	7439-96-5	0.171		0.00200	0.00100

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L10110608**
Report Date : **December 6, 2010**

Sample Number:	L10110608-09	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57111610EB	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/22/2010 10:47
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/22/2010 17:20
Collect Date:	11/16/2010 16:00	Dilution:	1	File ID:	EL.112210.172005
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.00100	0.000500
Arsenic, Total	7440-38-2		U	0.00100	0.000500
Chromium, Total	7440-47-3	0.00271		0.00200	0.00100
Manganese, Total	7439-96-5	0.00342		0.00200	0.00100

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-10	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57111610EB	Prep Method:	3015	Prep Date:	11/19/2010 06:46
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/29/2010 09:36
Workgroup Number:	WG349857	Analyst:	JYH	Run Date:	11/29/2010 15:06
Collect Date:	11/16/2010 16:00	Dilution:	1	File ID:	EL.112910.150623
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Dissolved	7440-36-0		U	0.00100	0.000500
Arsenic, Dissolved	7440-38-2		U	0.00100	0.000500
Chromium, Dissolved	7440-47-3	0.00104	J	0.00200	0.00100
Manganese, Dissolved	7439-96-5	0.00227		0.00200	0.00100

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-11	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GWMW3	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/22/2010 10:47
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/22/2010 17:26
Collect Date:	11/16/2010 18:22	Dilution:	1	File ID:	EL.112210.172651
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	0.00646		0.00100	0.000500
Arsenic, Total	7440-38-2	0.168		0.00100	0.000500

Microbac Laboratories Inc.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-11	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GWMW3	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/24/2010 10:38
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/24/2010 13:13
Collect Date:	11/16/2010 18:22	Dilution:	50	File ID:	EL.112410.131343
Sample Tag:	DL01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Chromium, Total	7440-47-3	0.626		0.100	0.0500
Manganese, Total	7439-96-5	5.22		0.100	0.0500

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-12	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57GWMW3	Prep Method:	3015	Prep Date:	11/19/2010 06:46
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/29/2010 09:36
Workgroup Number:	WG349857	Analyst:	JYH	Run Date:	11/29/2010 14:25
Collect Date:	11/16/2010 18:22	Dilution:	1	File ID:	EL.112910.142554
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Dissolved	7440-36-0		U	0.00100	0.000500
Arsenic, Dissolved	7440-38-2	0.00134		0.00100	0.000500
Chromium, Dissolved	7440-47-3	0.00728		0.00200	0.00100
Manganese, Dissolved	7439-96-5	0.00255		0.00200	0.00100

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-13	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57111610FB	Prep Method:	3015	Prep Date:	11/19/2010 06:02
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/22/2010 10:47
Workgroup Number:	WG349360	Analyst:	JYH	Run Date:	11/22/2010 17:33
Collect Date:	11/16/2010 19:30	Dilution:	1	File ID:	EL.112210.173336
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.00100	0.000500
Arsenic, Total	7440-38-2		U	0.00100	0.000500
Chromium, Total	7440-47-3		U	0.00200	0.00100
Manganese, Total	7439-96-5		U	0.00200	0.00100

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L10110608**

Report Date : **December 6, 2010**

Sample Number:	L10110608-14	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57111610FB	Prep Method:	3015	Prep Date:	11/19/2010 06:46
Matrix:	Water	Analytical Method:	6020	Cal Date:	11/29/2010 09:36
Workgroup Number:	WG349857	Analyst:	JYH	Run Date:	11/29/2010 14:32
Collect Date:	11/16/2010 19:30	Dilution:	1	File ID:	EL.112910.143240
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Dissolved	7440-36-0		U	0.00100	0.000500
Arsenic, Dissolved	7440-38-2		U	0.00100	0.000500
Chromium, Dissolved	7440-47-3		U	0.00200	0.00100
Manganese, Dissolved	7439-96-5		U	0.00200	0.00100

U Analyte was not detected. The concentration is below the reported LOD.

Appendix D – Support Documentation

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

Laboratory Report Number: L10110608

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on December 06, 2010.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on December 06, 2010.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 2037 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L10110608

12/06/10 11:10

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU57GWMW2	L10110608-01	11/16/2010 15:30	11/17/2010
SWMU57GWMW2	L10110608-02	11/16/2010 15:30	11/17/2010
SWMU57GW111610MS	L10110608-03	11/16/2010 15:30	11/17/2010
SWMU57GW111610MS	L10110608-04	11/16/2010 15:30	11/17/2010
SWMU57GW111610MSD	L10110608-05	11/16/2010 15:30	11/17/2010
SWMU57GW111610MSD	L10110608-06	11/16/2010 15:30	11/17/2010
SWMU57GW111610D1	L10110608-07	11/16/2010 15:30	11/17/2010
SWMU57GW111610D1	L10110608-08	11/16/2010 15:30	11/17/2010
SWMU57111610EB	L10110608-09	11/16/2010 16:00	11/17/2010
SWMU57111610EB	L10110608-10	11/16/2010 16:00	11/17/2010
SWMU57GWMW3	L10110608-11	11/16/2010 18:22	11/17/2010
SWMU57GWMW3	L10110608-12	11/16/2010 18:22	11/17/2010
SWMU57111610FB	L10110608-13	11/16/2010 19:30	11/17/2010
SWMU57111610FB	L10110608-14	11/16/2010 19:30	11/17/2010
SWMU57111610TB	L10110608-15	11/16/2010	11/17/2010
SWMU57111710WC	L10110608-16	11/17/2010 10:30	11/17/2010

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1853894
Report generated: 12/06/2010 11:10

Login Number: L10110608

Department: Login

Analyst: N/A
Analyst #2: N/A

Chain of Custody:

Shipment Conditions

COC #	Cooler #	Temperature
COC2397	0015127	3.0

Sample Management: All samples were received intact.

Sample Identification

Lab ID	Client ID
L10110608-01	SWMU57GWMW2
L10110608-02	SWMU57GWMW2
L10110608-03	SWMU57GW111610MS
L10110608-04	SWMU57GW111610MS
L10110608-05	SWMU57GW111610MSD
L10110608-06	SWMU57GW111610MSD
L10110608-07	SWMU57GW111610D1
L10110608-08	SWMU57GW111610D1
L10110608-09	SWMU57111610EB
L10110608-10	SWMU57111610EB
L10110608-11	SWMU57GWMW3
L10110608-12	SWMU57GWMW3
L10110608-13	SWMU57111610FB
L10110608-14	SWMU57111610FB
L10110608-15	SWMU57111610TB
L10110608-16	SWMU57111710WC

Narrative ID: 15619
Approved By: Stephanie Mossburg
Stephanie Mossburg

Login Number: L10110608

Department: Volatiles

Analyst: Mary Schilling
Analyst #2: N/A

METHOD

Preparation SW-846 5030C/5035A

Analysis SW-846 8260B

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: Recoveries out of range were observed for the following analytes: Naphthalene. Please see the applicable QC report for a detailed presentation of the failures.

BATCH QA/QC All acceptance criteria were met.

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: Recoveries out of range were observed for the following analytes: 2-Chloroethyl vinyl ether. Please see the applicable QC report for a detailed presentation of the failures.

SAMPLES All acceptance criteria were met.

Internal Standards: All acceptance criteria were met.

Surrogates: All acceptance criteria were met.

Other: None.

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.

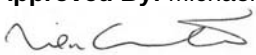
Reason #3: Improperly Integrated Isomers and/or coeluting compounds. This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene 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 Managing Director or the QAO 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.

Narrative ID: 16484
Approved By: Michael Albertson



COC No. A 2397

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB - KEMRON

Project Contact: MARY LOU ROCHOTTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 10 DAY | Location: RFAAP, RADFORD, VA

Project ID: MR0669-400-002

Sampler (print): SARAH ANDERSON | Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	TCL-VOC	METALS		BOD	CBOD												TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
SWMU57GW MW2		X	11-16-10	1530	W	5		3	2																* METALS - TOTAL & DISSOLVED (ANTIMONY, ARSENIC, MANGANESE, CHROMIUM) FILTERED & UNFILTERED
SWMU57GW11610MS		X	11-16-10	1530	W	5		3	2																
SWMU57GW11610MSD		X	11-16-10	1530	W	5		3	2																
SWMU57GW11610D1		X	11-16-10	1530	W	5		3	2																
SWMU57111610EB		X	11-16-10	1600	W	5		3	2																
SWMU57GWMW3		X	11-16-10	1822	W	5		3	2																
SWMU57111610FB		X	11-16-10	1930	W	5		3	2																
SWMU57111610TB		X	11-16-10	—	W	3		3	—																
SWMU57111710WC	X		11-17-10	1030	W	2					1	1													* PER QAPP *

Microbac OVD 221000010427
Received: 11/17/2010 16:42
By: BRENDA GREENWALT

Brenda Greenwalt

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	11-17-10	1630	

Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks:
			Brenda Greenwalt	11/17/10	1640	

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L10110608 | Work Group: WG349416
Blank File ID: 8M366004 | Blank Sample ID: WG349416-01
Prep Date: 11/22/10 10:34 | Instrument ID: HPMS8
Analyzed Date: 11/22/10 10:34 | Method: 8260B
Analyst: MES

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG349416-02	8M366005	11/22/10 11:05	01
SWMU57111610TB	L10110608-15	8M366007	11/22/10 12:08	01
SWMU57GW111610D1	L10110608-07	8M366008	11/22/10 12:40	01
SWMU57111610EB	L10110608-09	8M366009	11/22/10 13:11	01
SWMU57GWMW3	L10110608-11	8M366010	11/22/10 13:42	01
SWMU57111610FB	L10110608-13	8M366011	11/22/10 14:14	01
SWMU57GWMW2	L10110608-01	8M366012	11/22/10 14:45	01
SWMU57GW111610MS	L10110608-03	8M366013	11/22/10 15:17	01
SWMU57GW111610MSD	L10110608-05	8M366014	11/22/10 15:48	01

Report Name: BLANK_SUMMARY
PDF File ID: 1853886
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L10110608 Prep Date:11/22/10 10:34 Sample ID:WG349416-01
Instrument ID:HPMS8 Run Date:11/22/10 10:34 Prep Method:5030B/5030C/503
File ID:8M366004 Analyst:MES Method:8260B
Workgroup (AAB#):WG349416 Matrix:Water Units:ug/L
Contract #: Cal ID: HPMS8-08-NOV-10

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
1,1,1,2-Tetrachloroethane	0.250	1.00	0.250	1	U
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2,2-Tetrachloroethane	0.200	1.00	0.200	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	1.00	0.125	1	U
1,1-Dichloroethene	0.500	1.00	0.500	1	U
1,1-Dichloropropene	0.250	1.00	0.250	1	U
1,2,3-Trichlorobenzene	0.150	1.00	0.150	1	U
1,2,3-Trichloropropane	0.500	1.00	0.500	1	U
1,2,4-Trichlorobenzene	0.200	1.00	0.200	1	U
1,2,4-Trimethylbenzene	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
1,2-Dichlorobenzene	0.125	1.00	0.125	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
1,2-Dichloropropane	0.200	1.00	0.200	1	U
1,3,5-Trimethylbenzene	0.250	1.00	0.250	1	U
1,3-Dichlorobenzene	0.250	1.00	0.250	1	U
1,3-Dichloropropane	0.200	1.00	0.200	1	U
1,4-Dichlorobenzene	0.125	1.00	0.125	1	U
2,2-Dichloropropane	0.250	1.00	0.250	1	U
2-Butanone	2.50	10.0	2.50	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
2-Chlorotoluene	0.125	1.00	0.125	1	U
2-Hexanone	2.50	10.0	2.50	1	U
4-Chlorotoluene	0.250	1.00	0.250	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
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
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
Chloroform	0.125	1.00	0.125	1	U
Chloromethane	0.500	1.00	0.500	1	U
cis-1,2-Dichloroethene	0.250	1.00	0.250	1	U

Report Name:BLANK
PDF ID: 1853887
01-DEC-2010 14:04

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L10110608 Prep Date:11/22/10 10:34 Sample ID:WG349416-01
Instrument ID:HPMS8 Run Date:11/22/10 10:34 Prep Method:5030B/5030C/503
File ID:8M366004 Analyst:MES Method:8260B
Workgroup (AAB#):WG349416 Matrix:Water Units:ug/L
Contract #: Cal ID: HPMS8-08-NOV-10

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
cis-1,3-Dichloropropene	0.250	1.00	0.250	1	U
Dibromomethane	0.250	1.00	0.250	1	U
Dichlorodifluoromethane	0.250	1.00	0.250	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Hexachlorobutadiene	0.250	1.00	0.250	1	U
Isopropylbenzene	0.250	1.00	0.250	1	U
m-,p-Xylene	0.500	1.00	0.500	1	U
Methylene chloride	0.250	5.00	0.250	1	U
n-Butylbenzene	0.250	1.00	0.250	1	U
n-Propylbenzene	0.125	1.00	0.125	1	U
Naphthalene	0.200	1.00	0.200	1	U
o-Xylene	0.250	1.00	0.250	1	U
p-Isopropyltoluene	0.250	1.00	0.250	1	U
sec-Butylbenzene	0.250	1.00	0.250	1	U
Styrene	0.125	1.00	0.125	1	U
tert-Butylbenzene	0.250	1.00	0.250	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
trans-1,2-Dichloroethene	0.250	1.00	0.250	1	U
trans-1,3-Dichloropropene	0.500	1.00	0.500	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Trichlorofluoromethane	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

Surrogates	% Recovery	Surrogate Limits			Qualifier
1,2-Dichloroethane-d4	114	70	-	120	PASS
4-Bromofluorobenzene	104	75	-	120	PASS
Dibromofluoromethane	107	85	-	115	PASS
Toluene-d8	102	85	-	120	PASS

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1853887
01-DEC-2010 14:04

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349416-02
Instrument ID: HPMS8 Run Time: 11:05 Prep Method: 5030B/5030C/503
File ID: 8M366005 Analyst: MES Method: 8260B
Workgroup (AAB#): WG349416 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD42467 Cal ID: HPMS8-08-NOV-10

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1,2-Tetrachloroethane	20.0	21.1	106	80 - 130	
1,1,1-Trichloroethane	20.0	23.2	116	65 - 130	
1,1,2,2-Tetrachloroethane	20.0	17.7	88.3	65 - 130	
1,1,2-Trichloroethane	20.0	19.6	98.1	75 - 125	
1,1-Dichloroethane	20.0	21.2	106	70 - 135	
1,1-Dichloroethene 61-145	20.0	22.0	110	70 - 130	
1,1-Dichloropropene	20.0	21.1	105	75 - 130	
1,2,3-Trichlorobenzene	20.0	17.6	88.1	55 - 140	
1,2,3-Trichloropropane	20.0	19.0	94.8	75 - 125	
1,2,4-Trichlorobenzene	20.0	17.5	87.5	65 - 135	
1,2,4-Trimethylbenzene	20.0	20.6	103	75 - 130	
1,2-Dibromo-3-chloropropane	20.0	19.8	99.1	50 - 130	
1,2-Dibromoethane	20.0	19.7	98.4	80 - 120	
1,2-Dichlorobenzene	20.0	18.9	94.7	70 - 120	
1,2-Dichloroethane	20.0	22.5	113	70 - 130	
1,2-Dichloropropane	20.0	19.8	99.2	75 - 125	
1,3,5-Trimethylbenzene	20.0	20.6	103	75 - 130	
1,3-Dichlorobenzene	20.0	19.5	97.4	75 - 125	
1,3-Dichloropropane	20.0	19.6	98.2	75 - 125	
1,4-Dichlorobenzene	20.0	18.7	93.7	75 - 125	
2,2-Dichloropropane	20.0	21.5	107	70 - 135	
2-Butanone	20.0	19.0	94.9	30 - 150	
2-Chloroethyl vinyl ether	20.0	18.9	94.4	45 - 160	
2-Chlorotoluene	20.0	20.6	103	75 - 125	
2-Hexanone	20.0	17.9	89.6	55 - 130	
4-Chlorotoluene	20.0	20.0	100	75 - 130	
4-Methyl-2-pentanone	20.0	17.9	89.6	60 - 135	
Acetone	20.0	20.8	104	40 - 140	
Benzene 76-127	20.0	19.2	96.0	80 - 120	
Bromobenzene	20.0	19.4	96.8	75 - 125	
Bromochloromethane	20.0	19.9	99.6	65 - 130	
Bromodichloromethane	20.0	22.6	113	75 - 120	
Bromoform	20.0	19.6	97.9	70 - 130	
Bromomethane	20.0	21.2	106	30 - 145	
Carbon disulfide	20.0	20.1	100	35 - 160	
Carbon tetrachloride	20.0	23.7	119	65 - 140	
Chlorobenzene 75-130	20.0	19.5	97.5	80 - 120	
Chlorodibromomethane	20.0	21.5	108	60 - 135	
Chloroethane	20.0	21.0	105	60 - 135	
Chloroform	20.0	21.1	105	65 - 135	
Chloromethane	20.0	22.4	112	40 - 125	

LCS - Modified 03/06/2008
PDF File ID: 1852459
Report generated: 12/01/2010 14:04

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349416-02
Instrument ID: HPMS8 Run Time: 11:05 Prep Method: 5030B/5030C/503
File ID: 8M366005 Analyst: MES Method: 8260B
Workgroup (AAB#): WG349416 Matrix: Water Units: ug/L
QC Key: DOD4 Lot#: STD42467 Cal ID: HPMS8-08-NOV-10

Analytes	Expected	Found	% Rec	LCS Limits	Q
cis-1,2-Dichloroethene	20.0	19.7	98.4	70 - 125	
cis-1,3-Dichloropropene	20.0	20.1	100	70 - 130	
Dibromomethane	20.0	21.3	107	75 - 125	
Dichlorodifluoromethane	20.0	22.4	112	30 - 155	
Ethylbenzene	20.0	20.3	102	75 - 125	
Hexachlorobutadiene	20.0	19.2	95.9	50 - 140	
Isopropylbenzene	20.0	18.6	93.1	75 - 125	
m-,p-Xylene	40.0	40.2	101	75 - 130	
Methylene chloride	20.0	18.2	91.2	55 - 140	
n-Butylbenzene	20.0	20.7	103	70 - 135	
n-Propylbenzene	20.0	20.5	102	70 - 130	
Naphthalene	20.0	17.7	88.4	55 - 140	
o-Xylene	20.0	19.7	98.4	80 - 120	
p-Isopropyltoluene	20.0	20.4	102	75 - 130	
sec-Butylbenzene	20.0	20.7	104	70 - 125	
Styrene	20.0	20.1	101	65 - 135	
tert-Butylbenzene	20.0	20.1	100	70 - 130	
Tetrachloroethene	20.0	20.6	103	45 - 150	
Toluene 76-125	20.0	20.2	101	75 - 120	
trans-1,2-Dichloroethene	20.0	20.9	105	60 - 140	
trans-1,3-Dichloropropene	20.0	19.2	95.9	55 - 140	
Trichloroethene 71-120	20.0	20.6	103	70 - 125	
Trichlorofluoromethane	20.0	23.6	118	60 - 145	
Vinyl acetate	20.0	13.1	65.6	10 - 190	
Vinyl chloride	20.0	23.5	117	50 - 145	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	112	70 - 120	PASS
4-Bromofluorobenzene	105	75 - 120	PASS
Dibromofluoromethane	108	85 - 115	PASS
Toluene-d8	101	85 - 120	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
PDF File ID: 1852459
Report generated: 12/01/2010 14:04

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L10110608 Cal ID: HPMS8- 08-NOV-10 Worknum: WG349416

Instrument ID: HPMS8 Contract #: Prep Method: 5030B/5030C/

Parent ID: L10110608-01 File ID: 8M366012 Dil: 1 Method: 5035A

Sample ID: L10110608-03 MS File ID: 8M366013 Dil: 1 Matrix: 8260B

Sample ID: L10110608-05 MSD File ID: 8M366014 Dil: 1 Units: Water

ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
1,1,1,2-Tetrachloroethane	U	20.0	20.7	104	20.0	21.1	105	1.82	80 - 130	30	
1,1,1-Trichloroethane	U	20.0	23.3	117	20.0	23.0	115	1.33	65 - 130	30	
1,1,2,2-Tetrachloroethane	U	20.0	17.6	88	20.0	18.3	91.7	4.13	65 - 130	30	
1,1,2-Trichloroethane	U	20.0	19.1	95.5	20.0	19.3	96.4	0.868	75 - 125	30	
1,1-Dichloroethane	U	20.0	21.0	105	20.0	21.2	106	0.961	70 - 135	30	
1,1-Dichloroethene 61-145 14	U	20.0	20.8	104	20.0	21.4	107	2.92	70 - 130	30	
1,1-Dichloropropene	U	20.0	20.6	103	20.0	20.6	103	0.129	75 - 130	30	
1,2,3-Trichlorobenzene	U	20.0	17.8	89.1	20.0	18.4	91.9	3.09	55 - 140	30	
1,2,3-Trichloropropane	U	20.0	19.4	97	20.0	19.5	97.4	0.372	75 - 125	30	
1,2,4-Trichlorobenzene	U	20.0	17.6	87.8	20.0	18.1	90.7	3.30	65 - 135	30	
1,2,4-Trimethylbenzene	U	20.0	20.3	101	20.0	20.8	104	2.53	75 - 130	30	
1,2-Dibromo-3-chloropropane	U	20.0	20.0	99.9	20.0	20.2	101	1.18	50 - 130	30	
1,2-Dibromoethane	U	20.0	19.5	97.4	20.0	19.6	98.2	0.874	80 - 120	30	
1,2-Dichlorobenzene	U	20.0	19.2	96.1	20.0	19.6	98.1	2.07	70 - 120	30	
1,2-Dichloroethane	U	20.0	23.2	116	20.0	23.5	118	1.17	70 - 130	30	
1,2-Dichloropropane	U	20.0	20.0	100	20.0	20.3	101	1.29	75 - 125	30	
1,3,5-Trimethylbenzene	U	20.0	20.5	103	20.0	20.9	104	1.75	75 - 130	30	
1,3-Dichlorobenzene	U	20.0	19.0	95	20.0	19.8	98.9	3.99	75 - 125	30	
1,3-Dichloropropane	U	20.0	19.0	95.2	20.0	19.8	99.1	3.98	75 - 125	30	
1,4-Dichlorobenzene	U	20.0	18.3	91.6	20.0	18.5	92.3	0.799	75 - 125	30	
2,2-Dichloropropane	U	20.0	20.6	103	20.0	20.5	103	0.146	70 - 135	30	
2-Butanone	U	20.0	18.2	91	20.0	18.6	93	2.14	30 - 150	30	
2-Chloroethyl vinyl ether	U	20.0	0	0	20.0	0	0	NA	58 - 160	20	*#
2-Chlorotoluene	U	20.0	20.1	101	20.0	21.8	109	8.04	75 - 125	30	
2-Hexanone	U	20.0	16.8	83.8	20.0	18.1	90.7	7.93	55 - 130	30	
4-Chlorotoluene	U	20.0	19.5	97.7	20.0	19.1	95.7	2.07	75 - 130	30	
4-Methyl-2-pentanone	U	20.0	16.7	83.4	20.0	17.4	86.9	4.15	60 - 135	30	
Acetone	U	20.0	20.8	104	20.0	21.0	105	0.670	40 - 140	30	
Benzene 76-127 11	U	20.0	19.0	95.2	20.0	19.3	96.3	1.15	80 - 120	30	
Bromobenzene	U	20.0	19.2	96.2	20.0	19.5	97.3	1.09	75 - 125	30	
Bromochloromethane	U	20.0	20.3	102	20.0	20.7	103	1.79	65 - 130	30	
Bromodichloromethane	U	20.0	23.1	116	20.0	23.4	117	1.19	75 - 120	30	
Bromoform	U	20.0	19.9	99.6	20.0	20.1	100	0.721	70 - 130	30	
Bromomethane	U	20.0	21.2	106	20.0	23.0	115	7.85	30 - 145	30	
Carbon disulfide	U	20.0	14.5	72.7	20.0	14.5	72.6	0.141	35 - 160	30	
Carbon tetrachloride	U	20.0	23.6	118	20.0	23.4	117	0.853	65 - 140	30	
Chlorobenzene 75-130 13	U	20.0	19.1	95.7	20.0	19.4	97	1.30	80 - 120	30	
Chlorodibromomethane	U	20.0	21.1	105	20.0	21.2	106	0.667	60 - 135	30	
Chloroethane	U	20.0	20.2	101	20.0	20.0	100	0.784	60 - 135	30	
Chloroform	U	20.0	21.7	108	20.0	21.8	109	0.598	65 - 135	30	
Chloromethane	U	20.0	21.6	108	20.0	22.3	112	3.45	40 - 125	30	

MS_MSD - Modified 03/06/2008

PDF File ID: 1852460

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum: L10110608 Cal ID: HPMS8 08-NOV-10 Worknum: WG349416

Instrument ID: HPMS8 Contract #: Prep Method: 5030B/5030C/

Parent ID: L10110608-01 File ID: 8M366012 Dil: 1 Method: 5035A

Sample ID: L10110608-03 MS File ID: 8M366013 Dil: 1 Matrix: 8260B

Sample ID: L10110608-05 MSD File ID: 8M366014 Dil: 1 Units: Water

ug/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
cis-1,2-Dichloroethene	U	20.0	20.0	100	20.0	20.3	102	1.58	70 - 125	30	
cis-1,3-Dichloropropene	U	20.0	20.0	100	20.0	20.4	102	2.01	70 - 130	30	
Dibromomethane	U	20.0	21.4	107	20.0	21.8	109	1.90	75 - 125	30	
Dichlorodifluoromethane	U	20.0	20.5	102	20.0	20.5	102	0.105	30 - 155	30	
Ethylbenzene	0.311	20.0	19.8	97.5	20.0	20.0	98.6	1.08	75 - 125	30	
Hexachlorobutadiene	U	20.0	18.5	92.5	20.0	18.5	92.7	0.175	50 - 140	30	
Isopropylbenzene	U	20.0	18.2	91	20.0	18.3	91.3	0.342	75 - 125	30	
m-,p-Xylene	U	40.0	39.1	97.8	40.0	39.9	99.8	1.97	75 - 130	30	
Methylene chloride	0.419	20.0	18.2	88.9	20.0	18.9	92.6	3.97	55 - 140	30	
n-Butylbenzene	U	20.0	19.7	98.7	20.0	20.3	101	2.74	70 - 135	30	
n-Propylbenzene	U	20.0	19.7	98.5	20.0	20.0	99.9	1.37	70 - 130	30	
Naphthalene	U	20.0	17.6	87.9	20.0	18.1	90.4	2.80	55 - 140	30	
o-Xylene	0.562	20.0	19.4	94.3	20.0	19.9	96.6	2.33	80 - 120	30	
p-Isopropyltoluene	U	20.0	19.8	99	20.0	20.3	102	2.57	75 - 130	30	
sec-Butylbenzene	U	20.0	20.0	100	20.0	20.3	101	1.50	70 - 125	30	
Styrene	U	20.0	19.6	98.2	20.0	20.0	99.9	1.72	65 - 135	30	
tert-Butylbenzene	U	20.0	19.8	99	20.0	19.8	99	0.0320	70 - 130	30	
Tetrachloroethene	U	20.0	19.0	95	20.0	19.0	95.1	0.114	45 - 150	30	
Toluene 76-125 13	U	20.0	19.5	97.5	20.0	19.6	98.1	0.569	75 - 120	30	
trans-1,2-Dichloroethene	U	20.0	20.4	102	20.0	20.9	105	2.48	60 - 140	30	
trans-1,3-Dichloropropene	U	20.0	18.6	93	20.0	18.8	94.1	1.15	55 - 140	30	
Trichloroethene 71-120 14	U	20.0	20.3	101	20.0	20.0	100	1.13	70 - 125	30	
Trichlorofluoromethane	U	20.0	22.7	114	20.0	22.8	114	0.529	60 - 145	30	
Vinyl acetate	U	20.0	12.5	62.7	20.0	12.3	61.3	2.16	10 - 190	20	
Vinyl chloride	U	20.0	22.4	112	20.0	22.9	114	2.07	50 - 145	30	

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008

PDF File ID: 1852460

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L10110608 Tune ID: WG347960-01
Instrument: HPMS8 Run Date: 11/08/2010
Analyst: MES Run Time: 09:55
Workgroup: WG347960 File ID: 8M365588
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	31.2	13201	PASS
75.0	95.0	30.0	60.0	56.5	23870	PASS
95.0	95.0	100	100	100	42282	PASS
96.0	95.0	5.00	9.00	7.01	2964	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	84.8	35864	PASS
175	174	5.00	9.00	6.80	2438	PASS
176	174	95.0	101	95.3	34181	PASS
177	176	5.00	9.00	6.48	2214	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG347960-02	STD	01	11/08/2010 10:20	
WG347960-03	STD	01	11/08/2010 10:52	
WG347960-04	STD	01	11/08/2010 11:23	
WG347960-05	STD	01	11/08/2010 11:55	
WG347960-06	STD	01	11/08/2010 12:26	
WG347960-07	STD	01	11/08/2010 12:57	
WG347960-08	STD-CCV	01	11/08/2010 13:29	
WG347960-09	STD	01	11/08/2010 14:00	
WG347960-10	STD	01	11/08/2010 14:31	
WG347960-11	STD	01	11/08/2010 15:03	
WG347960-12	SSCV	01	11/08/2010 16:37	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1853889
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.
ORGANIC INSTRUMENT CHECK

BFB

Login Number: L10110608 Tune ID: WG349415-01
Instrument: HPMS8 Run Date: 11/22/2010
Analyst: MES Run Time: 09:05
Workgroup: WG349415 File ID: 8M366000
Cal ID: HPMS8-08-NOV-10

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	34.4	9651	PASS
75.0	95.0	30.0	60.0	59.0	16546	PASS
95.0	95.0	100	100	100	28045	PASS
96.0	95.0	5.00	9.00	6.84	1917	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	82.8	23226	PASS
175	174	5.00	9.00	7.79	1809	PASS
176	174	95.0	101	98.5	22866	PASS
177	176	5.00	9.00	7.21	1648	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG349415-02	CCV	01	11/22/2010 09:30	
WG349416-01	BLANK	01	11/22/2010 10:34	
WG349416-02	LCS	01	11/22/2010 11:05	
L10110608-15	SWMU57111610TB	01	11/22/2010 12:08	
L10110608-07	SWMU57GW111610D1	01	11/22/2010 12:40	
L10110608-09	SWMU57111610EB	01	11/22/2010 13:11	
L10110608-11	SWMU57GWMW3	01	11/22/2010 13:42	
L10110608-13	SWMU57111610FB	01	11/22/2010 14:14	
L10110608-01	SWMU57GWMW2	01	11/22/2010 14:45	
WG349416-03	REF	01	11/22/2010 14:45	
L10110608-03	SWMU57GW111610MS	01	11/22/2010 15:17	
WG349416-04	MS	01	11/22/2010 15:17	
L10110608-05	SWMU57GW111610MSD	01	11/22/2010 15:48	
WG349416-05	MSD	01	11/22/2010 15:48	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1853889
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

ICAL Workgroup:WG347960 Column ID:F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
1,1-Dichloroethene	CCC	0.5781	11.1		
1,2-Dichloropropane	CCC	0.3100	3.03		
Chloroform	CCC	0.5798	3.77		
Ethylbenzene	CCC	0.5324	4.04		
Toluene	CCC	1.382	4.81		
Vinyl Chloride	CCC	0.3784	17.9	1.00000	
1,1,2,2-Tetrachloroethane	SPCC	0.5098	8.64		
1,1-Dichloroethane	SPCC	0.6083	3.59		
Bromoform	SPCC	0.2633	3.90		
Chlorobenzene	SPCC	1.031	6.43		
Chloromethane	SPCC	0.6197	8.17		
1,1,1,2-Tetrachloroethane		0.4144	7.39		
1,1,1-Trichloroethane		0.5446	6.50		
1,1,2-Trichloroethane		0.2565	5.64		
1,1-Dichloropropene		0.4111	8.65		
1,2,3-Trichlorobenzene		0.9442	12.2		
1,2,3-Trichloropropane		0.1741	8.45		
1,2,4-Trichlorobenzene		1.082	8.67		
1,2,4-Trimethylbenzene		2.615	7.20		
1,2-Dibromo-3-Chloropropane		0.1238	4.00		
1,2-Dibromoethane		0.2911	3.12		
1,2-Dichlorobenzene		1.439	6.87		
1,2-Dichloroethane		0.5484	3.13		
1,3,5-Trimethylbenzene		2.476	4.54		
1,3-Dichlorobenzene		1.526	5.42		
1,3-Dichloropropane		0.4773	4.53		
1,4-Dichlorobenzene		1.601	8.28		
2,2-Dichloropropane		0.5641	5.04		
2-Butanone		0.1483	4.58		
2-Chloroethyl Vinyl Ether		0.1601	4.79		
2-Chlorotoluene		2.097	5.45		
2-Hexanone		0.1052	3.28		
4-Chlorotoluene		2.156	5.66		
4-Methyl-2-Pentanone		0.09013	3.16		
Acetone		0.1000	7.03		
Benzene		1.081	4.84		
Bromobenzene		0.7982	8.04		
Bromochloromethane		0.1919	5.15		
Bromodichloromethane		0.4321	3.59		
Bromomethane		0.1519	18.1	0.99900	
Carbon Disulfide		0.7913	4.19		
Carbon Tetrachloride		0.5135	13.0		
Chloroethane		0.2207	5.15		
Dibromochloromethane		0.3992	2.96		
Dibromomethane		0.1611	8.29		

INT_CAL - Modified 03/06/2008

PDF File ID: 1853888

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

Login Number: L10110608 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 08-NOV-10 15:03

ICAL Workgroup: WG347960 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R^2)
Dichlorodifluoromethane		0.4263	7.86		
Hexachlorobutadiene		0.3693	10.8		
Isopropylbenzene		1.689	5.97		
Methylene Chloride		0.3006	12.9		
Naphthalene		2.047	11.6		
Styrene		1.100	3.24		
Tetrachloroethene		0.3147	10.4		
Trichloroethene		0.3107	4.70		
Trichlorofluoromethane		0.5601	27.5	0.99900	
Vinyl Acetate		0.6259	5.23		
cis-1,2-Dichloroethene		0.2941	4.82		
cis-1,3-Dichloropropene		0.4717	5.79		
m-,p-Xylene		0.6605	4.76		
n-Butylbenzene		2.145	5.23		
n-Propylbenzene		3.244	6.32		
o-Xylene		0.6765	3.33		
p-Isopropyltoluene		2.479	6.98		
sec-Butylbenzene		2.764	6.22		
tert-Butylbenzene		0.4842	5.75		
trans-1,2-Dichloroethene		0.5330	3.62		
trans-1,3-Dichloropropene		0.5699	5.60		

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: 1853888
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

Column ID:F

Analyte	WG347960-02			WG347960-03			WG347960-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	4878.00000	0.4267	1.00	16769.0000	0.5856
1,2-Dichloropropane	NA	NA	NA	0.400	3399.00000	0.2973	1.00	8639.00000	0.3017
Chloroform	0.300	5559.00000	0.6231	0.400	6404.00000	0.5602	1.00	16416.0000	0.5733
Ethylbenzene	NA	NA	NA	0.400	4781.00000	0.5265	1.00	11519.0000	0.5041
Toluene	NA	NA	NA	0.400	11735.0000	1.292	1.00	32231.0000	1.410
Vinyl Chloride	NA	NA	NA	0.400	2486.00000	0.2175	1.00	10366.0000	0.3620
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	3114.00000	0.5682	1.00	6724.00000	0.4933
1,1-Dichloroethane	NA	NA	NA	0.400	6699.00000	0.5860	1.00	16589.0000	0.5794
Bromoform	NA	NA	NA	NA	NA	NA	1.00	5541.00000	0.2425
Chlorobenzene	NA	NA	NA	0.400	10402.0000	1.146	1.00	23058.0000	1.009
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	20378.0000	0.7117
1,1,1,2-Tetrachloroethane	NA	NA	NA	0.400	3122.00000	0.3438	1.00	9307.00000	0.4073
1,1,1-Trichloroethane	NA	NA	NA	0.400	5413.00000	0.4735	1.00	14892.0000	0.5201
1,1,2-Trichloroethane	NA	NA	NA	0.400	2463.00000	0.2713	1.00	5216.00000	0.2283
1,1-Dichloropropene	NA	NA	NA	0.400	3907.00000	0.3418	1.00	11451.0000	0.3999
1,2,3-Trichlorobenzene	0.300	3297.00000	0.7943	0.400	6527.00000	1.191	1.00	13089.0000	0.9603
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	1.00	2180.00000	0.1599
1,2,4-Trichlorobenzene	NA	NA	NA	0.400	6792.00000	1.239	1.00	13168.0000	0.9661
1,2,4-Trimethylbenzene	NA	NA	NA	0.400	15893.0000	2.900	1.00	33698.0000	2.472
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	0.400	2634.00000	0.2901	1.00	6290.00000	0.2753
1,2-Dichlorobenzene	0.300	5907.00000	1.423	0.400	8694.00000	1.586	1.00	19408.0000	1.424
1,2-Dichloroethane	NA	NA	NA	0.400	6045.00000	0.5288	1.00	15981.0000	0.5581
1,3,5-Trimethylbenzene	NA	NA	NA	0.400	13225.0000	2.413	1.00	33039.0000	2.424
1,3-Dichlorobenzene	NA	NA	NA	0.400	8872.00000	1.619	1.00	20848.0000	1.530
1,3-Dichloropropane	NA	NA	NA	0.400	4089.00000	0.4503	1.00	10615.0000	0.4645
1,4-Dichlorobenzene	0.300	7278.00000	1.754	0.400	9984.00000	1.822	1.00	21542.0000	1.581
2,2-Dichloropropane	NA	NA	NA	0.400	5907.00000	0.5167	1.00	15571.0000	0.5438
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	1.00	4373.00000	0.1527
2-Chlorotoluene	NA	NA	NA	0.400	11677.0000	2.131	1.00	28680.0000	2.104
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	0.400	12729.0000	2.323	1.00	27963.0000	2.052
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	12709.0000	1.112	1.00	33228.0000	1.160
Bromobenzene	0.300	2836.00000	0.6833	0.400	4853.00000	0.8855	1.00	11042.0000	0.8101
Bromochloromethane	NA	NA	NA	0.400	1990.00000	0.1741	1.00	5915.00000	0.2066
Bromodichloromethane	NA	NA	NA	0.400	5046.00000	0.4414	1.00	11674.0000	0.4077
Bromomethane	NA	NA	NA	NA	NA	NA	1.00	3031.00000	0.1059
Carbon Disulfide	NA	NA	NA	NA	NA	NA	1.00	21895.0000	0.7647
Carbon Tetrachloride	NA	NA	NA	0.400	4167.00000	0.3645	1.00	14559.0000	0.5085

INT_CAL - Modified 03/06/2008
PDF File ID: 1853888
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

Column ID:F

Analyte	WG347960-05			WG347960-06			WG347960-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	31474.0000	0.5606	5.00	87561.0000	0.6153	20.0	356995.000	0.6268
1,2-Dichloropropane	2.00	16837.0000	0.2999	5.00	44848.0000	0.3151	20.0	182665.000	0.3207
Chloroform	2.00	32385.0000	0.5769	5.00	84945.0000	0.5969	20.0	337760.000	0.5930
Ethylbenzene	2.00	23120.0000	0.5162	5.00	65058.0000	0.5683	20.0	255709.000	0.5528
Toluene	2.00	63240.0000	1.412	5.00	167120.000	1.460	20.0	665128.000	1.438
Vinyl Chloride	2.00	23807.0000	0.4241	5.00	58901.0000	0.4139	20.0	233594.000	0.4101
1,1,2,2-Tetrachloroethane	2.00	15755.0000	0.5728	5.00	36858.0000	0.5383	20.0	138592.000	0.4945
1,1-Dichloroethane	2.00	33070.0000	0.5891	5.00	90018.0000	0.6325	20.0	361079.000	0.6340
Bromoform	2.00	12100.0000	0.2702	5.00	29758.0000	0.2599	20.0	122449.000	0.2647
Chlorobenzene	2.00	47962.0000	1.071	5.00	122427.000	1.069	20.0	481095.000	1.040
Chloromethane	2.00	36042.0000	0.6420	5.00	90516.0000	0.6360	20.0	353341.000	0.6204
1,1,1,2-Tetrachloroethane	2.00	19469.0000	0.4347	5.00	49792.0000	0.4349	20.0	200224.000	0.4328
1,1,1-Trichloroethane	2.00	30269.0000	0.5392	5.00	82295.0000	0.5783	20.0	329261.000	0.5781
1,1,2-Trichloroethane	2.00	12304.0000	0.2747	5.00	29807.0000	0.2604	20.0	120082.000	0.2596
1,1-Dichloropropene	2.00	21287.0000	0.3792	5.00	62969.0000	0.4425	20.0	252167.000	0.4427
1,2,3-Trichlorobenzene	2.00	27915.0000	1.015	5.00	67714.0000	0.9889	20.0	257354.000	0.9183
1,2,3-Trichloropropane	2.00	5649.00000	0.2054	5.00	11944.0000	0.1744	20.0	48957.0000	0.1747
1,2,4-Trichlorobenzene	2.00	32263.0000	1.173	5.00	77470.0000	1.131	20.0	301012.000	1.074
1,2,4-Trimethylbenzene	2.00	75372.0000	2.741	5.00	186635.000	2.726	20.0	757246.000	2.702
1,2-Dibromo-3-Chloropropane	2.00	3608.00000	0.1312	5.00	8808.00000	0.1286	20.0	33614.0000	0.1199
1,2-Dibromoethane	2.00	13547.0000	0.3025	5.00	34321.0000	0.2998	20.0	137291.000	0.2968
1,2-Dichlorobenzene	2.00	42833.0000	1.557	5.00	103382.000	1.510	20.0	400327.000	1.429
1,2-Dichloroethane	2.00	30822.0000	0.5490	5.00	81721.0000	0.5742	20.0	320563.000	0.5628
1,3,5-Trimethylbenzene	2.00	70170.0000	2.551	5.00	178705.000	2.610	20.0	728270.000	2.599
1,3-Dichlorobenzene	2.00	44143.0000	1.605	5.00	108754.000	1.588	20.0	432383.000	1.543
1,3-Dichloropropane	2.00	22945.0000	0.5123	5.00	57299.0000	0.5005	20.0	226254.000	0.4891
1,4-Dichlorobenzene	2.00	45814.0000	1.666	5.00	110759.000	1.618	20.0	441867.000	1.577
2,2-Dichloropropane	2.00	30477.0000	0.5429	5.00	85045.0000	0.5976	20.0	340319.000	0.5975
2-Butanone	NA	NA	NA	5.00	22562.0000	0.1585	20.0	85363.0000	0.1499
2-Chloroethyl Vinyl Ether	2.00	8457.00000	0.1506	5.00	22532.0000	0.1583	20.0	88117.0000	0.1547
2-Chlorotoluene	2.00	58745.0000	2.136	5.00	152586.000	2.228	20.0	614780.000	2.194
2-Hexanone	NA	NA	NA	5.00	12258.0000	0.1071	20.0	49387.0000	0.1068
4-Chlorotoluene	2.00	62957.0000	2.289	5.00	154766.000	2.260	20.0	604129.000	2.156
4-Methyl-2-Pentanone	NA	NA	NA	5.00	12378.0000	0.08700	20.0	52692.0000	0.09250
Acetone	NA	NA	NA	5.00	15920.0000	0.1119	20.0	58043.0000	0.1019
Benzene	2.00	59967.0000	1.068	5.00	158505.000	1.114	20.0	627096.000	1.101
Bromobenzene	2.00	24311.0000	0.8839	5.00	55549.0000	0.8112	20.0	227924.000	0.8133
Bromochloromethane	2.00	10691.0000	0.1904	5.00	28778.0000	0.2022	20.0	110931.000	0.1948
Bromodichloromethane	2.00	23203.0000	0.4133	5.00	64248.0000	0.4515	20.0	253506.000	0.4451
Bromomethane	2.00	7410.00000	0.1320	5.00	20021.0000	0.1407	20.0	88349.0000	0.1551
Carbon Disulfide	2.00	47575.0000	0.8474	5.00	115736.000	0.8133	20.0	458984.000	0.8058
Carbon Tetrachloride	2.00	27439.0000	0.4888	5.00	81669.0000	0.5739	20.0	322280.000	0.5658

INT_CAL - Modified 03/06/2008

PDF File ID: 1853888

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

Column ID:F

Analyte	WG347960-08			WG347960-09			WG347960-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	887635.000	0.6114	100	1786971.00	0.5994	200	3447188.00	0.5988
1,2-Dichloropropane	50.0	467039.000	0.3217	100	927034.000	0.3110	200	1800247.00	0.3127
Chloroform	50.0	842251.000	0.5802	100	1668709.00	0.5597	200	3192666.00	0.5546
Ethylbenzene	50.0	643425.000	0.5457	100	1269464.00	0.5294	200	2442542.00	0.5165
Toluene	50.0	1666862.00	1.414	100	3235309.00	1.349	200	6062872.00	1.282
Vinyl Chloride	50.0	595224.000	0.4100	100	1179386.00	0.3956	200	2269955.00	0.3943
1,1,2,2-Tetrachloroethane	50.0	340498.000	0.4721	100	718414.000	0.4787	200	1325289.00	0.4601
1,1-Dichloroethane	50.0	908473.000	0.6258	100	1800374.00	0.6039	200	3545301.00	0.6158
Bromoform	50.0	315291.000	0.2674	100	657816.000	0.2743	200	1249300.00	0.2642
Chlorobenzene	50.0	1193604.00	1.012	100	2341167.00	0.9763	200	4386379.00	0.9276
Chloromethane	50.0	844885.000	0.5820	100	1669964.00	0.5602	200	3370634.00	0.5855
1,1,1,2-Tetrachloroethane	50.0	508053.000	0.4309	100	1011742.00	0.4219	200	1932280.00	0.4086
1,1,1-Trichloroethane	50.0	831577.000	0.5728	100	1636667.00	0.5490	200	3141897.00	0.5457
1,1,2-Trichloroethane	50.0	301520.000	0.2557	100	610459.000	0.2546	200	1168937.00	0.2472
1,1-Dichloropropene	50.0	631514.000	0.4350	100	1270261.00	0.4261	200	2428411.00	0.4218
1,2,3-Trichlorobenzene	50.0	649609.000	0.9006	100	1322336.00	0.8811	200	2444666.00	0.8486
1,2,3-Trichloropropane	50.0	121878.000	0.1690	100	253451.000	0.1689	200	478673.000	0.1662
1,2,4-Trichlorobenzene	50.0	765200.000	1.061	100	1532370.00	1.021	200	2851046.00	0.9897
1,2,4-Trimethylbenzene	50.0	1877717.00	2.603	100	3666955.00	2.443	200	6710165.00	2.329
1,2-Dibromo-3-Chloropropane	50.0	88555.0000	0.1228	100	182662.000	0.1217	200	342300.000	0.1188
1,2-Dibromoethane	50.0	341709.000	0.2898	100	701943.000	0.2927	200	1333536.00	0.2820
1,2-Dichlorobenzene	50.0	1010843.00	1.402	100	1998220.00	1.331	200	3701249.00	1.285
1,2-Dichloroethane	50.0	801667.000	0.5522	100	1601454.00	0.5372	200	3020111.00	0.5246
1,3,5-Trimethylbenzene	50.0	1823639.00	2.528	100	3579554.00	2.385	200	6617274.00	2.297
1,3-Dichlorobenzene	50.0	1086303.00	1.506	100	2145781.00	1.430	200	3996573.00	1.387
1,3-Dichloropropane	50.0	556287.000	0.4718	100	1136008.00	0.4737	200	2157834.00	0.4563
1,4-Dichlorobenzene	50.0	1107649.00	1.536	100	2180134.00	1.453	200	4059342.00	1.409
2,2-Dichloropropane	50.0	842569.000	0.5804	100	1702755.00	0.5712	200	3238768.00	0.5626
2-Butanone	50.0	211967.000	0.1460	100	454384.000	0.1524	200	804801.000	0.1398
2-Chloroethyl Vinyl Ether	50.0	242194.000	0.1668	100	502131.000	0.1684	200	984280.000	0.1710
2-Chlorotoluene	50.0	1538858.00	2.134	100	2949849.00	1.966	200	5439003.00	1.888
2-Hexanone	50.0	120624.000	0.1023	100	261050.000	0.1089	200	471307.000	0.09970
4-Chlorotoluene	50.0	1530084.00	2.121	100	3082673.00	2.054	200	5752189.00	1.997
4-Methyl-2-Pentanone	50.0	131218.000	0.09040	100	279466.000	0.09370	200	499217.000	0.08670
Acetone	50.0	144816.000	0.09980	100	298941.000	0.1003	200	547066.000	0.09500
Benzene	50.0	1553357.00	1.070	100	3048128.00	1.022	200	5752289.00	0.9991
Bromobenzene	50.0	570347.000	0.7907	100	1135154.00	0.7564	200	2157964.00	0.7491
Bromochloromethane	50.0	278133.000	0.1916	100	559206.000	0.1876	200	1082073.00	0.1880
Bromodichloromethane	50.0	640025.000	0.4409	100	1275910.00	0.4280	200	2468667.00	0.4288
Bromomethane	50.0	249094.000	0.1716	100	523034.000	0.1754	200	1050536.00	0.1825
Carbon Disulfide	50.0	1145024.00	0.7887	100	2266829.00	0.7604	200	4367551.00	0.7586
Carbon Tetrachloride	50.0	806897.000	0.5558	100	1566151.00	0.5253	200	3025935.00	0.5256

INT_CAL - Modified 03/06/2008

PDF File ID: 1853888

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

Column ID:F

Analyte	WG347960-11		
	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	1294600.00	0.1429
2-Chloroethyl Vinyl Ether	300	1435072.00	0.1584
2-Chlorotoluene	NA	NA	NA
2-Hexanone	300	772794.000	0.1062
4-Chlorotoluene	NA	NA	NA
4-Methyl-2-Pentanone	300	820018.000	0.09050
Acetone	300	826026.000	0.09120
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

INT_CAL - Modified 03/06/2008

PDF File ID: 1853888

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number: L10110608 **Instrument ID:** HPMS8

Analytical Method: 8260B **Initial Calibration Date:** 08-NOV-10 15:03

Column ID: F

Analyte	WG347960-02			WG347960-03			WG347960-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	1.00	5672.00000	0.1981
Dibromochloromethane	NA	NA	NA	0.400	3529.00000	0.3887	1.00	8574.00000	0.3752
Dibromomethane	NA	NA	NA	0.400	1492.00000	0.1305	1.00	4517.00000	0.1578
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	1.00	10199.0000	0.3562
Hexachlorobutadiene	NA	NA	NA	0.400	2392.00000	0.4364	1.00	3962.00000	0.2907
Isopropylbenzene	NA	NA	NA	0.400	14110.0000	1.554	1.00	37434.0000	1.638
Methylene Chloride	NA	NA	NA	NA	NA	NA	1.00	10847.0000	0.3788
Naphthalene	NA	NA	NA	0.400	12845.0000	2.344	1.00	26603.0000	1.952
Styrene	NA	NA	NA	0.400	9844.00000	1.084	1.00	24129.0000	1.056
Tetrachloroethene	NA	NA	NA	0.400	2225.00000	0.2450	1.00	7580.00000	0.3317
Trichloroethene	NA	NA	NA	0.400	3337.00000	0.2919	1.00	8336.00000	0.2911
Trichlorofluoromethane	NA	NA	NA	0.400	2246.00000	0.1965	1.00	14473.0000	0.5055
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	0.400	3008.00000	0.2631	1.00	8663.00000	0.3025
cis-1,3-Dichloropropene	NA	NA	NA	0.400	5081.00000	0.4445	1.00	12009.0000	0.4194
m-,p-Xylene	NA	NA	NA	0.800	11456.0000	0.6308	2.00	30953.0000	0.6773
n-Butylbenzene	NA	NA	NA	0.400	11090.0000	2.024	1.00	28516.0000	2.092
n-Propylbenzene	NA	NA	NA	0.400	17300.0000	3.157	1.00	45034.0000	3.304
o-Xylene	NA	NA	NA	0.400	6431.00000	0.7083	1.00	15712.0000	0.6876
p-Isopropyltoluene	NA	NA	NA	0.400	12382.0000	2.259	1.00	31892.0000	2.340
sec-Butylbenzene	NA	NA	NA	0.400	13652.0000	2.491	1.00	37513.0000	2.752
tert-Butylbenzene	NA	NA	NA	0.400	2485.00000	0.4534	1.00	6268.00000	0.4599
trans-1,2-Dichloroethene	NA	NA	NA	0.400	5656.00000	0.4948	1.00	15021.0000	0.5246
trans-1,3-Dichloropropene	NA	NA	NA	0.400	4583.00000	0.5047	1.00	12463.0000	0.5454

INT_CAL - Modified 03/06/2008
PDF File ID: 1853888
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

Column ID:F

Analyte	WG347960-05			WG347960-06			WG347960-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	2.00	12401.0000	0.2209	5.00	33228.0000	0.2335	20.0	129193.000	0.2268
Dibromochloromethane	2.00	18188.0000	0.4061	5.00	46099.0000	0.4027	20.0	187710.000	0.4058
Dibromomethane	2.00	9383.00000	0.1671	5.00	24387.0000	0.1714	20.0	98044.0000	0.1721
Dichlorodifluoromethane	2.00	24797.0000	0.4417	5.00	64743.0000	0.4549	20.0	254427.000	0.4467
Hexachlorobutadiene	2.00	9771.00000	0.3553	5.00	25848.0000	0.3775	20.0	104759.000	0.3738
Isopropylbenzene	2.00	75337.0000	1.682	5.00	208139.000	1.818	20.0	837262.000	1.810
Methylene Chloride	2.00	17855.0000	0.3180	5.00	42928.0000	0.3016	20.0	164784.000	0.2893
Naphthalene	2.00	65865.0000	2.395	5.00	147824.000	2.159	20.0	568239.000	2.028
Styrene	2.00	49835.0000	1.113	5.00	130600.000	1.141	20.0	526409.000	1.138
Tetrachloroethene	2.00	13140.0000	0.2934	5.00	40333.0000	0.3523	20.0	153834.000	0.3325
Trichloroethene	2.00	17524.0000	0.3121	5.00	47350.0000	0.3327	20.0	183598.000	0.3223
Trichlorofluoromethane	2.00	34902.0000	0.6217	5.00	92397.0000	0.6493	20.0	370544.000	0.6506
Vinyl Acetate	NA	NA	NA	5.00	91430.0000	0.6425	20.0	370591.000	0.6507
cis-1,2-Dichloroethene	2.00	16109.0000	0.2869	5.00	43274.0000	0.3041	20.0	174619.000	0.3066
cis-1,3-Dichloropropene	2.00	26633.0000	0.4744	5.00	69659.0000	0.4895	20.0	287431.000	0.5046
m-,p-Xylene	4.00	60284.0000	0.6730	10.0	160381.000	0.7005	40.0	634825.000	0.6862
n-Butylbenzene	2.00	58157.0000	2.115	5.00	156158.000	2.280	20.0	645218.000	2.302
n-Propylbenzene	2.00	90388.0000	3.286	5.00	242294.000	3.538	20.0	957900.000	3.418
o-Xylene	2.00	30320.0000	0.6770	5.00	78495.0000	0.6857	20.0	317480.000	0.6863
p-Isopropyltoluene	2.00	67460.0000	2.453	5.00	187349.000	2.736	20.0	749022.000	2.673
sec-Butylbenzene	2.00	76554.0000	2.783	5.00	203187.000	2.967	20.0	829312.000	2.959
tert-Butylbenzene	2.00	12350.0000	0.4490	5.00	35508.0000	0.5185	20.0	144814.000	0.5167
trans-1,2-Dichloroethene	2.00	29896.0000	0.5325	5.00	78011.0000	0.5482	20.0	317357.000	0.5572
trans-1,3-Dichloropropene	2.00	26510.0000	0.5919	5.00	68525.0000	0.5986	20.0	274644.000	0.5937

INT_CAL - Modified 03/06/2008
PDF File ID: 1853888
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

Column ID:F

Analyte	WG347960-08			WG347960-09			WG347960-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	50.0	331073.000	0.2281	100	654913.000	0.2197	200	1253720.00	0.2178
Dibromochloromethane	50.0	479670.000	0.4068	100	984339.000	0.4105	200	1878929.00	0.3974
Dibromomethane	50.0	242780.000	0.1672	100	482398.000	0.1618	200	925676.000	0.1608
Dichlorodifluoromethane	50.0	642802.000	0.4428	100	1260698.00	0.4229	200	2411586.00	0.4189
Hexachlorobutadiene	50.0	266030.000	0.3688	100	560210.000	0.3733	200	1090872.00	0.3787
Isopropylbenzene	50.0	2067014.00	1.753	100	4052907.00	1.690	200	7408880.00	1.567
Methylene Chloride	50.0	401360.000	0.2765	100	806047.000	0.2704	200	1553225.00	0.2698
Naphthalene	50.0	1388383.00	1.925	100	2797834.00	1.864	200	4922410.00	1.709
Styrene	50.0	1326750.00	1.125	100	2630493.00	1.097	200	4951757.00	1.047
Tetrachloroethene	50.0	384060.000	0.3257	100	770117.000	0.3212	200	1491893.00	0.3155
Trichloroethene	50.0	465877.000	0.3209	100	918693.000	0.3082	200	1762818.00	0.3062
Trichlorofluoromethane	50.0	926226.000	0.6380	100	1816713.00	0.6094	200	3509387.00	0.6096
Vinyl Acetate	50.0	918668.000	0.6328	100	1911733.00	0.6413	200	3609589.00	0.6270
cis-1,2-Dichloroethene	50.0	438634.000	0.3021	100	873059.000	0.2929	200	1696749.00	0.2947
cis-1,3-Dichloropropene	50.0	709536.000	0.4888	100	1424286.00	0.4778	200	2734339.00	0.4749
m-,p-Xylene	100	1575132.00	0.6679	200	3077484.00	0.6417	400	5733927.00	0.6063
n-Butylbenzene	50.0	1610578.00	2.233	100	3155394.00	2.103	200	5805397.00	2.015
n-Propylbenzene	50.0	2375925.00	3.294	100	4611367.00	3.073	200	8297774.00	2.880
o-Xylene	50.0	795084.000	0.6743	100	1583695.00	0.6604	200	2988921.00	0.6321
p-Isopropyltoluene	50.0	1871122.00	2.594	100	3674392.00	2.448	200	6698750.00	2.325
sec-Butylbenzene	50.0	2075850.00	2.878	100	4057818.00	2.704	200	7416836.00	2.575
tert-Butylbenzene	50.0	363651.000	0.5042	100	726456.000	0.4840	200	1405761.00	0.4880
trans-1,2-Dichloroethene	50.0	795168.000	0.5477	100	1572971.00	0.5276	200	3057605.00	0.5311
trans-1,3-Dichloropropene	50.0	688698.000	0.5841	100	1392347.00	0.5806	200	2648829.00	0.5602

INT_CAL - Modified 03/06/2008
PDF File ID: 1853888
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

Login Number:L10110608 Instrument ID:HPMS8

Analytical Method:8260B Initial Calibration Date:08-NOV-10 15:03

Column ID:F

Analyte	WG347960-11		
	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	5083500.00	0.5612
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

PDF File ID: 1853888

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L10110608 Run Date: 11/08/2010 Sample ID: WG347960-12

Instrument ID: HPMS8 Run Time: 16:37 Method: 8260B

File ID: 8M365601 Analyst: MES QC Key: DOD4

ICal Workgroup: WG347960 Cal ID: HPMS8 - 08-NOV-10

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	51.8	ug/L	0.599	3.60	25	
1,2-Dichloropropane	CCC	50.0	51.8	ug/L	0.321	3.60	25	
Chloroform	CCC	50.0	48.9	ug/L	0.568	2.10	25	
Ethylbenzene	CCC	50.0	50.9	ug/L	0.542	1.80	25	
Toluene	CCC	50.0	50.1	ug/L	1.38	0.200	25	
Vinyl Chloride	CCC	50.0	53.6	ug/L	0.426	7.20	25	
1,1,2,2-Tetrachloroethane	SPCC	50.0	46.8	ug/L	0.477	6.40	25	
1,1-Dichloroethane	SPCC	50.0	51.6	ug/L	0.628	3.20	25	
Bromoform	SPCC	50.0	49.9	ug/L	0.263	0.200	25	
Chlorobenzene	SPCC	50.0	48.3	ug/L	0.996	3.40	25	
Chloromethane	SPCC	50.0	50.5	ug/L	0.626	1.10	25	
1,1,1,2-Tetrachloroethane		50.0	50.7	ug/L	0.421	1.50	25	
1,1,1-Trichloroethane		50.0	51.5	ug/L	0.561	3.00	25	
1,1,2-Trichloroethane		50.0	50.2	ug/L	0.258	0.400	25	
1,1-Dichloropropene		50.0	51.3	ug/L	0.422	2.70	25	
1,2,3-Trichlorobenzene		50.0	47.8	ug/L	0.903	4.30	25	
1,2,3-Trichloropropane		50.0	47.7	ug/L	0.166	4.60	25	
1,2,4-Trichlorobenzene		50.0	47.1	ug/L	1.02	5.80	25	
1,2,4-Trimethylbenzene		50.0	50.0	ug/L	2.62	0.100	25	
1,2-Dibromo-3-Chloropropane		50.0	46.6	ug/L	0.116	6.70	25	
1,2-Dibromoethane		50.0	49.1	ug/L	0.286	1.70	25	
1,2-Dichlorobenzene		50.0	48.8	ug/L	1.40	2.40	25	
1,2-Dichloroethane		50.0	49.1	ug/L	0.539	1.80	25	
1,3,5-Trimethylbenzene		50.0	50.8	ug/L	2.51	1.50	25	
1,3-Dichlorobenzene		50.0	48.8	ug/L	1.49	2.40	25	
1,3-Dichloropropane		50.0	49.5	ug/L	0.472	1.00	25	
1,4-Dichlorobenzene		50.0	46.6	ug/L	1.49	6.70	25	
2,2-Dichloropropane		50.0	49.8	ug/L	0.561	0.500	25	
2-Butanone		50.0	51.0	ug/L	0.151	1.90	25	
2-Chloroethyl Vinyl Ether		50.0	52.9	ug/L	0.169	5.70	30	
2-Chlorotoluene		50.0	51.7	ug/L	2.17	3.50	25	
2-Hexanone		50.0	50.8	ug/L	0.107	1.50	25	
4-Chlorotoluene		50.0	47.7	ug/L	2.06	4.60	25	
4-Methyl-2-Pentanone		50.0	51.6	ug/L	0.0929	3.10	25	
Acetone		50.0	51.5	ug/L	0.103	2.90	25	
Benzene		50.0	49.0	ug/L	1.06	1.90	25	
Bromobenzene		50.0	49.2	ug/L	0.785	1.60	25	
Bromochloromethane		50.0	50.3	ug/L	0.193	0.600	25	
Bromodichloromethane		50.0	52.8	ug/L	0.457	5.70	25	
Bromomethane		50.0	48.2	ug/L	0.170	3.60	25	
Carbon Disulfide		50.0	54.6	ug/L	0.863	9.10	25	
Carbon Tetrachloride		50.0	51.6	ug/L	0.530	3.30	25	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1852461
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L10110608 Run Date: 11/08/2010 Sample ID: WG347960-12

Instrument ID: HPMS8 Run Time: 16:37 Method: 8260B

File ID: 8M365601 Analyst: MES QC Key: DOD4

ICal Workgroup: WG347960 Cal ID: HPMS8 - 08-NOV-10

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Dibromochloromethane		50.0	51.3	ug/L	0.409	2.50	25	
Chloroethane		50.0	55.6	ug/L	0.246	11.2	25	
cis-1,2-Dichloroethene		50.0	50.8	ug/L	0.299	1.60	25	
cis-1,3-Dichloropropene		50.0	51.1	ug/L	0.482	2.30	25	
Dibromomethane		50.0	50.3	ug/L	0.162	0.600	25	
Dichlorodifluoromethane		50.0	52.9	ug/L	0.451	5.80	25	
Hexachlorobutadiene		50.0	48.0	ug/L	0.355	4.00	25	
Isopropylbenzene		50.0	45.9	ug/L	1.55	8.10	25	
m-,p-Xylene		100	99.2	ug/L	0.655	0.800	25	
Methylene Chloride		50.0	45.9	ug/L	0.276	8.20	25	
n-Butylbenzene		50.0	51.1	ug/L	2.19	2.20	25	
n-Propylbenzene		50.0	49.7	ug/L	3.23	0.500	25	
Naphthalene		50.0	46.6	ug/L	1.91	6.80	25	
o-Xylene		50.0	49.1	ug/L	0.665	1.70	25	
p-Isopropyltoluene		50.0	50.0	ug/L	2.48	0.100	25	
sec-Butylbenzene		50.0	51.3	ug/L	2.83	2.50	25	
Styrene		50.0	51.1	ug/L	1.12	2.20	25	
tert-Butylbenzene		50.0	51.6	ug/L	0.500	3.20	25	
Tetrachloroethene		50.0	51.1	ug/L	0.321	2.20	25	
trans-1,2-Dichloroethene		50.0	50.5	ug/L	0.538	1.00	25	
trans-1,3-Dichloropropene		50.0	45.8	ug/L	0.522	8.40	25	
Trichloroethene		50.0	50.8	ug/L	0.315	1.50	25	
Trichlorofluoromethane		50.0	52.1	ug/L	0.642	4.30	25	
Vinyl Acetate		50.0	38.0	ug/L	0.476	24.0	40	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1852461
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349415-02

Instrument ID: HPMS8 Run Time: 09:30 Method: 8260B

File ID: 8M366001 Analyst: MES QC Key: DOD4

Workgroup (AAB#): WG349416 Cal ID: HPMS8 - 08-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	57.2	ug/L	0.661	14.3	20	
1,2-Dichloropropane	CCC	50.0	50.3	ug/L	0.312	0.516	20	
Chloroform	CCC	50.0	52.6	ug/L	0.610	5.17	20	
Ethylbenzene	CCC	50.0	49.0	ug/L	0.521	2.10	20	
Toluene	CCC	50.0	48.9	ug/L	1.35	2.29	20	
Vinyl Chloride	CCC	50.0	56.2	ug/L	0.447	12.4	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	40.5	ug/L	0.413	19.1	20	
1,1-Dichloroethane	SPCC	50.0	52.4	ug/L	0.637	4.79	20	
Bromoform	SPCC	50.0	47.1	ug/L	0.248	5.88	20	
Chlorobenzene	SPCC	50.0	47.2	ug/L	0.973	5.70	20	
Chloromethane	SPCC	50.0	50.5	ug/L	0.626	1.02	20	
1,1,1,2-Tetrachloroethane		50.0	51.2	ug/L	0.424	2.42	20	
1,1,1-Trichloroethane		50.0	58.7	ug/L	0.639	17.4	20	
1,1,2-Trichloroethane		50.0	45.5	ug/L	0.234	8.92	20	
1,1-Dichloropropene		50.0	54.3	ug/L	0.447	8.63	20	
1,2,3-Trichlorobenzene		50.0	42.3	ug/L	0.799	15.4	20	
1,2,3-Trichloropropane		50.0	44.8	ug/L	0.156	10.4	20	
1,2,4-Trichlorobenzene		50.0	45.3	ug/L	0.980	9.46	20	
1,2,4-Trimethylbenzene		50.0	50.7	ug/L	2.65	1.50	20	
1,2-Dibromo-3-Chloropropane		50.0	46.5	ug/L	0.115	6.94	20	
1,2-Dibromoethane		50.0	45.6	ug/L	0.266	8.76	20	
1,2-Dichlorobenzene		50.0	47.0	ug/L	1.35	5.93	20	
1,2-Dichloroethane		50.0	54.2	ug/L	0.595	8.44	20	
1,3,5-Trimethylbenzene		50.0	52.3	ug/L	2.59	4.52	20	
1,3-Dichlorobenzene		50.0	49.1	ug/L	1.50	1.72	20	
1,3-Dichloropropane		50.0	45.5	ug/L	0.435	8.92	20	
1,4-Dichlorobenzene		50.0	46.9	ug/L	1.50	6.26	20	
2,2-Dichloropropane		50.0	56.8	ug/L	0.641	13.6	20	
2-Butanone		50.0	42.8	ug/L	0.127	14.4	20	
2-Chloroethyl Vinyl Ether		50.0	46.7	ug/L	0.150	6.62	40	
2-Chlorotoluene		50.0	53.0	ug/L	2.23	6.08	20	
2-Hexanone		50.0	41.4	ug/L	0.0871	17.2	20	
4-Chlorotoluene		50.0	49.2	ug/L	2.12	1.65	20	
4-Methyl-2-Pentanone		50.0	42.8	ug/L	0.0772	14.3	20	
Acetone		50.0	47.3	ug/L	0.0946	5.42	20	
Benzene		50.0	47.9	ug/L	1.04	4.22	20	
Bromobenzene		50.0	47.3	ug/L	0.755	5.43	20	
Bromochloromethane		50.0	47.3	ug/L	0.182	5.40	20	
Bromodichloromethane		50.0	55.5	ug/L	0.480	11.0	20	
Bromomethane		50.0	53.6	ug/L	0.190	7.28	20	
Carbon Disulfide		50.0	47.4	ug/L	0.750	5.19	20	
Carbon Tetrachloride		50.0	59.9	ug/L	0.615	19.8	20	

CCV - Modified 03/05/2008

PDF File ID: 1852462

Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349415-02

Instrument ID: HPMS8 Run Time: 09:30 Method: 8260B

File ID: 8M366001 Analyst: MES QC Key: DOD4

Workgroup (AAB#): WG349416 Cal ID: HPMS8 - 08-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Dibromochloromethane		50.0	51.7	ug/L	0.413	3.49	20	
Chloroethane		50.0	49.8	ug/L	0.220	0.417	20	
cis-1,2-Dichloroethene		50.0	50.5	ug/L	0.297	1.10	20	
cis-1,3-Dichloropropene		50.0	51.0	ug/L	0.481	2.04	20	
Dibromomethane		50.0	49.1	ug/L	0.158	1.74	20	
Dichlorodifluoromethane		50.0	50.5	ug/L	0.431	1.08	20	
Hexachlorobutadiene		50.0	53.1	ug/L	0.392	6.13	20	
Isopropylbenzene		50.0	51.3	ug/L	1.73	2.59	20	
m-,p-Xylene		100	98.4	ug/L	0.650	1.55	20	
Methylene Chloride		50.0	43.7	ug/L	0.263	12.6	20	
n-Butylbenzene		50.0	52.8	ug/L	2.27	5.61	20	
n-Propylbenzene		50.0	51.3	ug/L	3.33	2.60	20	
Naphthalene		50.0	40.0	ug/L	1.64	20.1	20	*
o-Xylene		50.0	48.0	ug/L	0.649	4.02	20	
p-Isopropyltoluene		50.0	53.5	ug/L	2.65	7.00	20	
sec-Butylbenzene		50.0	52.4	ug/L	2.90	4.82	20	
Styrene		50.0	49.1	ug/L	1.08	1.83	20	
tert-Butylbenzene		50.0	51.8	ug/L	0.502	3.60	20	
Tetrachloroethene		50.0	51.4	ug/L	0.324	2.82	20	
trans-1,2-Dichloroethene		50.0	53.3	ug/L	0.568	6.64	20	
trans-1,3-Dichloropropene		50.0	50.5	ug/L	0.576	1.07	20	
Trichloroethene		50.0	52.3	ug/L	0.325	4.69	20	
Trichlorofluoromethane		50.0	58.3	ug/L	0.718	16.5	20	
Vinyl Acetate		50.0	48.9	ug/L	0.613	2.14	40	
1,2-Dichloroethene		100	104	ug/L	0.433	3.87	40	
Xylenes		150	146	ug/L	0.650	2.38	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1852462
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

Login Number:L10110608
Instrument ID:HPMS8
Workgroup (AAB#):WG349416

ICAL CCV Number:WG347960-08
CAL ID: HPMS8-08-NOV-10
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG347960-08	NA	NA	360638	589586	725868
Upper Limit	NA	NA	721276	1179172	1451736
Lower Limit	NA	NA	180319	294793	362934
L10110608-01	1.00	01	239993	394139	487560
L10110608-03	1.00	01	252025	413606	497155
L10110608-05	1.00	01	251156	416118	498913
L10110608-07	1.00	01	250671	423463	523332
L10110608-09	1.00	01	247934	407424	503599
L10110608-11	1.00	01	241021	403502	486374
L10110608-13	1.00	01	237963	395258	483039
L10110608-15	1.00	01	257212	424215	526328
WG349416-01	1.00	01	263727	428667	527562
WG349416-02	1.00	01	264242	432317	531645

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

Underline = Response outside limits

INTERNAL_STD_ICAL - Modified 03/06/2008
PDF File ID: 1853890
Report generated 12/01/2010 14:04

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

Login Number:L10110608
Instrument ID:HPMS8
Workgroup (AAB#):WG349416

ICAL CCV Number:WG347960-08
CAL ID: HPMS8-08-NOV-10
Matrix:WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG347960-08	NA	NA	17.25	14.25	10.39
Upper Limit	NA	NA	17.75	14.75	10.89
Lower Limit	NA	NA	16.75	13.75	9.89
L10110608-01	1.00	01	17.25	14.24	10.39
L10110608-03	1.00	01	17.25	14.25	10.39
L10110608-05	1.00	01	17.25	14.24	10.39
L10110608-07	1.00	01	17.25	14.24	10.39
L10110608-09	1.00	01	17.25	14.24	10.39
L10110608-11	1.00	01	17.24	14.25	10.39
L10110608-13	1.00	01	17.25	14.24	10.39
L10110608-15	1.00	01	17.24	14.24	10.39
WG349416-01	1.00	01	17.25	14.25	10.39
WG349416-02	1.00	01	17.24	14.25	10.39

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

Underline = Response outside limits

INTERNAL_STD_RT_ICAL - Modified 03/06/2008
PDF File ID: 1853891
Report generated: 12/01/2010 14:04

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L10110608 | Work Group: WG349360
Blank File ID: EL.112210.153820 | Blank Sample ID: WG349181-02
Prep Date: 11/19/10 06:02 | Instrument ID: ELAN-ICP
Analyzed Date: 11/22/10 15:38 | Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG349181-03	EL.112210.155150	11/22/10 15:51	01
SWMU57GWMW2	L10110608-01	EL.112210.165258	11/22/10 16:52	01
SWMU57GW111610MS	L10110608-03	EL.112210.165946	11/22/10 16:59	01
SWMU57GW111610MSD	L10110608-05	EL.112210.170633	11/22/10 17:06	01
SWMU57GW111610D1	L10110608-07	EL.112210.171320	11/22/10 17:13	01
SWMU57111610EB	L10110608-09	EL.112210.172005	11/22/10 17:20	01
SWMU57GWMW3	L10110608-11	EL.112210.172651	11/22/10 17:26	01
SWMU57111610FB	L10110608-13	EL.112210.173336	11/22/10 17:33	01
SWMU57GWMW2	L10110608-01	EL.112310.184139	11/23/10 18:41	DL01
SWMU57GW111610MS	L10110608-03	EL.112310.184826	11/23/10 18:48	DL01
SWMU57GW111610MSD	L10110608-05	EL.112310.185512	11/23/10 18:55	DL01
SWMU57GWMW3	L10110608-11	EL.112410.131343	11/24/10 13:13	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1847789
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L10110608
Blank File ID: EL.112910.134844
Prep Date: 11/19/10 06:46
Analyzed Date: 11/29/10 13:48
Analyst: JYH

Work Group: WG349857
Blank Sample ID: WG349188-02
Instrument ID: ELAN-ICP
Method: 6020

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG349188-03	EL.112910.140326	11/29/10 14:03	01
SWMU57GWMW3	L10110608-12	EL.112910.142554	11/29/10 14:25	01
SWMU57111610FB	L10110608-14	EL.112910.143240	11/29/10 14:32	01
SWMU57GWMW2	L10110608-02	EL.112910.143925	11/29/10 14:39	01
SWMU57GW111610MS	L10110608-04	EL.112910.144609	11/29/10 14:46	01
SWMU57GW111610MSD	L10110608-06	EL.112910.145253	11/29/10 14:52	01
SWMU57GW111610D1	L10110608-08	EL.112910.145938	11/29/10 14:59	01
SWMU57111610EB	L10110608-10	EL.112910.150623	11/29/10 15:06	01

Report Name: BLANK_SUMMARY
PDF File ID: 1847789
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L10110608 Prep Date:11/19/10 06:02 Sample ID:WG349181-02
Instrument ID:ELAN-ICP Run Date:11/22/10 15:38 Prep Method:3015
File ID:EL.112210.153820 Analyst:JYH Method:6020
Workgroup (AAB#):WG349360 Matrix:Water Units:mg/L
Contract #: Cal ID:ELAN-I-22-NOV-10

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Antimony, Total	0.000500	0.00100	0.000500	1	U
Arsenic, Total	0.000500	0.00100	0.000500	1	U
Chromium, Total	0.00100	0.00200	0.00100	1	U
Manganese, Total	0.00100	0.00200	0.00100	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1847790
30-NOV-2010 09:24

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L10110608 Prep Date:11/19/10 06:46 Sample ID:WG349188-02
Instrument ID:ELAN-ICP Run Date:11/29/10 13:48 Prep Method:3015
File ID:EL.112910.134844 Analyst:JYH Method:6020
Workgroup (AAB#):WG349857 Matrix:Water Units:mg/L
Contract #: Cal ID:ELAN-I-29-NOV-10

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Antimony, Dissolved	0.000500	0.00100	0.000500	1	U
Arsenic, Dissolved	0.000500	0.00100	0.000500	1	U
Chromium, Dissolved	0.00100	0.00200	0.00100	1	U
Manganese, Dissolved	0.00100	0.00200	0.00100	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1847790
30-NOV-2010 09:24

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349181-03
Instrument ID: ELAN-ICP Run Time: 15:51 Prep Method: 3015
File ID: EL.112210.155150 Analyst: JYH Method: 6020
Workgroup (AAB#): WG349360 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-22-NOV-10

Analytes	Expected	Found	% Rec	LCS Limits	Q
Antimony, Total	0.0625	0.0629	101	80 - 120	
Arsenic, Total	0.0625	0.0614	98.2	80 - 120	
Chromium, Total	0.0625	0.0680	109	80 - 120	
Manganese, Total	0.0625	0.0671	107	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1847791
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349188-03
Instrument ID: ELAN-ICP Run Time: 14:03 Prep Method: 3015
File ID: EL.112910.140326 Analyst: JYH Method: 6020
Workgroup (AAB#): WG349857 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-29-NOV-10

Analytes	Expected	Found	% Rec	LCS Limits	Q
Antimony, Dissolved	0.0625	0.0595	95.1	80 - 120	
Arsenic, Dissolved	0.0625	0.0607	97.2	80 - 120	
Chromium, Dissolved	0.0625	0.0663	106	80 - 120	
Manganese, Dissolved	0.0625	0.0683	109	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1847791
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L10110608 Cal ID: ELAN-ICP- 22-NOV-10 Worknum:WG349360

Instrument ID:ELAN-ICP Contract #: Prep Method:3015

Parent ID:L10110608-01 File ID:EL.112210.165258 Dil:1 Method:6020

Sample ID:L10110608-03 MS File ID:EL.112210.165946 Dil:1 Matrix:Water

Sample ID:L10110608-05 MSD File ID:EL.112210.170633 Dil:1 Units:mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Antimony, Total	0.00278	0.0625	0.0616	94	0.0625	0.0625	95.6	1.59	80 - 120	20	
Arsenic, Total	0.00267	0.0625	0.0607	92.9	0.0625	0.0619	94.7	1.86	80 - 120	20	
Chromium, Total	0.00417	0.0625	0.0718	108	0.0625	0.0702	106	2.38	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1847792
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L10110608 Cal ID: ELAN-ICP- 23-NOV-10 Worknum:WG349360

Instrument ID:ELAN-ICP Contract #: Prep Method:3015

Parent ID:L10110608-01 File ID:EL.112310.184139 Dil:50 Method:6020

Sample ID:L10110608-03 MS File ID:EL.112310.184826 Dil:50 Matrix:Water

Sample ID:L10110608-05 MSD File ID:EL.112310.185512 Dil:50 Units:mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Manganese, Total	0.215	0.0625	0.274	95.1	0.0625	0.285	112	3.82	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1847792
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L10110608 Cal ID: ELAN-ICP- 29-NOV-10 Worknum:WG349857

Instrument ID:ELAN-ICP Contract #: Prep Method:3015

Parent ID:L10110608-02 File ID:EL.112910.143925 Dil:1 Method:6020

Sample ID:L10110608-04 MS File ID:EL.112910.144609 Dil:1 Matrix:Water

Sample ID:L10110608-06 MSD File ID:EL.112910.145253 Dil:1 Units:mg/L

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Antimony, Dissolved	0.00253	0.0625	0.0597	91.5	0.0625	0.0611	93.7	2.28	80 - 120	20	
Arsenic, Dissolved	0.00239	0.0625	0.0616	94.7	0.0625	0.0612	94.1	0.632	80 - 120	20	
Chromium, Dissolved	0.00232	0.0625	0.0706	109	0.0625	0.0706	109	0.0209	80 - 120	20	
Manganese, Dissolved	0.178	0.0625	0.209	49.6	0.0625	0.238	95.7	12.9	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1847792
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
Serial Dilution Report

Login: L10110608 **Worknum:** WG349360
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG349360-02 **File ID:** EL.112210.163242 **Dil:** 5 **Units:** ug/L
Sample: L10110544-01 **File ID:** EL.112210.161909 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Antimony	ND	U	ND	U		
Arsenic	ND	U	ND	U		
Chromium	.646	F	ND	U		
Manganese	21.3	X	21.7	X	1.88	

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: 1847786
11/30/2010 09:24

Microbac Laboratories Inc.
Serial Dilution Report

Login: L10110608 **Worknum:** WG349857
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG349857-02 **File ID:** EL.112910.152154 **Dil:** 5 **Units:** ug/L
Sample: L10110608-08 **File ID:** EL.112910.145938 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Antimony	1.05	X	1.415	F	34.80	
Arsenic	.951	X	1.07	F	12.50	
Chromium	.73	F	ND	U		
Manganese	68.3		68.5		0.29	

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: 1847786
11/30/2010 09:24

Microbac Laboratories Inc.

POST SPIKE REPORT

Sample Login ID: L10110608 **Worknum:** WG349360

Instrument ID: ELAN-ICP **Method:** 6020

Post Spike ID: WG349360-01 **File ID:** EL.112210.162555 **Dil:** 1 **Units:** ug/L

Sample ID: L10110544-01 **File ID:** EL.112210.161909 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ANTIMONY	51.2		0	U	50	102.5	75 - 125	
ARSENIC	48.6		0	U	50	97.2	75 - 125	
CHROMIUM	58.4		0.646	F	50	115.4	75 - 125	
MANGANESE	80.0		21.3		50	117.5	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: 1847787
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.

POST SPIKE REPORT

Sample Login ID: L10110608 **Worknum:** WG349857

Instrument ID: ELAN-ICP **Method:** 6020

Post Spike ID: WG349857-01 **File ID:** EL.112910.151424 **Dil:** 1 **Units:** ug/L

Sample ID: L10110608-08 **File ID:** EL.112910.145938 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ANTIMONY	44.9		1.05		50	87.7	75 - 125	
ARSENIC	44.7		0.951		50	87.5	75 - 125	
CHROMIUM	53.9		0.730	F	50	106.3	75 - 125	
MANGANESE	129		68.3		50	121.5	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: 1847787
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L10110608	Workgroup (AAB#):	WG349360
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG349512	Initial Calibration Date:	22-NOV-2010 10:47

	WG349512-01		WG349512-02		WG349512-03		WG349512-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	18.2	.4	1070	50	136000	100	258000	.99991	
ARSENIC	0	-174	.4	135	50	36700	100	70100	.999929	
CHROMIUM	0	8870	.4	11800	50	363000	100	694000	.999991	
MANGANESE	0	286	.4	5100	50	573000	100	1110000	.999997	

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: 1847797
Report generated: 30-NOV-2010 09:24

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L10110608	Workgroup (AAB#):	WG349360
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG349700	Initial Calibration Date:	23-NOV-2010 15:32

	WG349700-01		WG349700-02		WG349700-03		WG349700-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	50.1	.4	1040	50	130000	100	238000	.999744	
ARSENIC	0	-110	.4	170	50	33100	100	62200	.999978	
CHROMIUM	0	8830	.4	12000	50	388000	100	738000	.999982	
MANGANESE	0	304	.4	5400	50	617000	100	1170000	.999997	

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: 1847797
Report generated: 30-NOV-2010 09:24

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L10110608	Workgroup (AAB#):	WG349360
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG349781	Initial Calibration Date:	24-NOV-2010 10:38

	WG349781-01		WG349781-02		WG349781-03		WG349781-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	60.8	.4	1300	50	163000	100	303000	.999761	
ARSENIC	0	-130	.4	166	50	47100	100	91800	.999979	
CHROMIUM	0	8880	.4	12400	50	447000	100	854000	.99995	
MANGANESE	0	295	.4	5990	50	676000	100	1300000	.999947	

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: 1847797
Report generated: 30-NOV-2010 09:24

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L10110608	Workgroup (AAB#):	WG349857
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG349895	Initial Calibration Date:	29-NOV-2010 09:36

	WG349895-01		WG349895-02		WG349895-03		WG349895-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	24.7	.4	1260	50	168000	100	320000	.999791	
ARSENIC	0	-206	.4	210	50	47500	100	90800	.999811	
CHROMIUM	0	9220	.4	12800	50	451000	100	872000	.999974	
MANGANESE	0	395	.4	6190	50	705000	100	1370000	.999942	

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: 1847797
Report generated: 30-NOV-2010 09:24

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-06
Instrument ID: ELAN-ICP Run Time: 11:01 Method: 6020
File ID: EL.112210.110117 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-ICP - 22-NOV-10
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.2	.4	.2	U
CHROMIUM	.4	.8	.4	U
MANGANESE	.4	.8	.4	U
ANTIMONY	.2	.4	.2	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1847799
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-06
Instrument ID: ELAN-ICP Run Time: 15:46 Method: 6020
File ID: EL.112310.154603 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-ICP - 23-NOV-10
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.2	.4	.2	U
CHROMIUM	.4	.8	.4	U
MANGANESE	.4	.8	.4	U
ANTIMONY	.2	.4	.2	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1847799
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-06
Instrument ID: ELAN-ICP Run Time: 10:51 Method: 6020
File ID: EL.112410.105151 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-ICP - 24-NOV-10
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.2	.4	.2	U
CHROMIUM	.4	.8	.4	U
MANGANESE	.4	.8	.4	U
ANTIMONY	.2	.4	.2	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1847799
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-06
Instrument ID: ELAN-ICP Run Time: 09:50 Method: 6020
File ID: EL.112910.095020 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349857 Cal ID: ELAN-ICP - 29-NOV-10
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.2	.4	.2	U
CHROMIUM	.4	.8	.4	U
MANGANESE	.4	.8	.4	U
ANTIMONY	.2	.4	.2	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1847799
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-11

Instrument ID: ELAN-ICP Run Time: 11:35 Method: 6020

File ID: EL.112210.113508 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-17
Instrument ID: ELAN-ICP Run Time: 15:23 Method: 6020
File ID: EL.112210.152337 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-19

Instrument ID: ELAN-ICP Run Time: 16:46 Method: 6020

File ID: EL.112210.164613 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-21
Instrument ID: ELAN-ICP Run Time: 17:47 Method: 6020
File ID: EL.112210.174707 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-11

Instrument ID: ELAN-ICP Run Time: 16:19 Method: 6020

File ID: EL.112310.161954 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 23-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-15

Instrument ID: ELAN-ICP Run Time: 18:14 Method: 6020

File ID: EL.112310.181436 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 23-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-19

Instrument ID: ELAN-ICP Run Time: 19:22 Method: 6020

File ID: EL.112310.192215 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 23-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-11

Instrument ID: ELAN-ICP Run Time: 11:25 Method: 6020

File ID: EL.112410.112542 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 24-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-13

Instrument ID: ELAN-ICP Run Time: 12:33 Method: 6020

File ID: EL.112410.123310 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 24-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-17

Instrument ID: ELAN-ICP Run Time: 13:40 Method: 6020

File ID: EL.112410.134047 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 24-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-11

Instrument ID: ELAN-ICP Run Time: 10:24 Method: 6020

File ID: EL.112910.102411 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-15

Instrument ID: ELAN-ICP Run Time: 13:08 Method: 6020

File ID: EL.112910.130806 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-17
Instrument ID: ELAN-ICP Run Time: 14:16 Method: 6020
File ID: EL.112910.141655 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-19

Instrument ID: ELAN-ICP Run Time: 15:35 Method: 6020

File ID: EL.112910.153525 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Arsenic	0.200	0.400	0.200	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1847802
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-05
Instrument ID: ELAN-ICP Run Time: 10:54 Method: 6020
File ID: EL.112210.105434 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Antimony		50	51.5	103	90 - 110	
Arsenic		50	50.0	100	90 - 110	
Chromium		50	50.6	101	90 - 110	
Manganese		50	50.3	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1847798
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-05
Instrument ID: ELAN-ICP Run Time: 15:39 Method: 6020
File ID: EL.112310.153920 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 23-NOV-10
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Antimony		50	50.7	101	90 - 110	
Arsenic		50	50.7	101	90 - 110	
Chromium		50	51.0	102	90 - 110	
Manganese		50	50.5	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1847798
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-05
Instrument ID: ELAN-ICP Run Time: 10:45 Method: 6020
File ID: EL.112410.104508 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 24-NOV-10
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Antimony		50	51.1	102	90 - 110	
Arsenic		50	49.5	98.9	90 - 110	
Chromium		50	49.2	98.4	90 - 110	
Manganese		50	50.1	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1847798
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-05
Instrument ID: ELAN-ICP Run Time: 09:43 Method: 6020
File ID: EL.112910.094337 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Antimony		50	50.9	102	90 - 110	
Arsenic		50	50.2	100	90 - 110	
Chromium		50	49.9	99.8	90 - 110	
Manganese		50	49.9	99.9	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1847798
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-10

Instrument ID: ELAN-ICP Run Time: 11:28 Method: 6020

File ID: EL.112210.112824 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	51.9	ug/L	104	90 - 110		
Arsenic		50.0	50.5	ug/L	101	90 - 110		
Chromium		50.0	49.2	ug/L	98.4	90 - 110		
Manganese		50.0	50.0	ug/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-16

Instrument ID: ELAN-ICP Run Time: 15:16 Method: 6020

File ID: EL.112210.151653 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	49.5	ug/L	99.0	90 - 110		
Arsenic		50.0	49.3	ug/L	98.5	90 - 110		
Chromium		50.0	51.5	ug/L	103	90 - 110		
Manganese		50.0	52.0	ug/L	104	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-18

Instrument ID: ELAN-ICP Run Time: 16:39 Method: 6020

File ID: EL.112210.163928 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	49.6	ug/L	99.1	90 - 110		
Arsenic		50.0	48.3	ug/L	96.7	90 - 110		
Chromium		50.0	51.6	ug/L	103	90 - 110		
Manganese		50.0	51.8	ug/L	104	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1847801
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/22/2010 Sample ID: WG349512-20

Instrument ID: ELAN-ICP Run Time: 17:40 Method: 6020

File ID: EL.112210.174022 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 22-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	50.0	ug/L	100	90 - 110		
Arsenic		50.0	50.3	ug/L	101	90 - 110		
Chromium		50.0	53.1	ug/L	106	90 - 110		
Manganese		50.0	53.7	ug/L	107	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1847801
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-10

Instrument ID: ELAN-ICP Run Time: 16:13 Method: 6020

File ID: EL.112310.161310 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 23-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	50.9	ug/L	102	90 - 110		
Arsenic		50.0	49.5	ug/L	99.1	90 - 110		
Chromium		50.0	48.6	ug/L	97.3	90 - 110		
Manganese		50.0	48.5	ug/L	97.0	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1847801
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-14

Instrument ID: ELAN-ICP Run Time: 18:07 Method: 6020

File ID: EL.112310.180752 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 23-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	50.8	ug/L	102	90 - 110		
Arsenic		50.0	50.7	ug/L	101	90 - 110		
Chromium		50.0	50.7	ug/L	101	90 - 110		
Manganese		50.0	49.8	ug/L	99.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1847801
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/23/2010 Sample ID: WG349700-18

Instrument ID: ELAN-ICP Run Time: 19:15 Method: 6020

File ID: EL.112310.191530 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 23-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	50.7	ug/L	101	90 - 110		
Arsenic		50.0	49.5	ug/L	99.0	90 - 110		
Chromium		50.0	46.8	ug/L	93.6	90 - 110		
Manganese		50.0	46.3	ug/L	92.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-10

Instrument ID: ELAN-ICP Run Time: 11:18 Method: 6020

File ID: EL.112410.111858 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 24-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	51.3	ug/L	103	90 - 110		
Arsenic		50.0	50.1	ug/L	100	90 - 110		
Chromium		50.0	50.0	ug/L	100	90 - 110		
Manganese		50.0	50.8	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-12

Instrument ID: ELAN-ICP Run Time: 12:26 Method: 6020

File ID: EL.112410.122625 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 24-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	50.7	ug/L	101	90 - 110		
Arsenic		50.0	49.4	ug/L	98.9	90 - 110		
Chromium		50.0	51.0	ug/L	102	90 - 110		
Manganese		50.0	51.2	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/24/2010 Sample ID: WG349781-16

Instrument ID: ELAN-ICP Run Time: 13:34 Method: 6020

File ID: EL.112410.133403 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349360 Cal ID: ELAN-I - 24-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	51.2	ug/L	102	90 - 110		
Arsenic		50.0	49.8	ug/L	99.6	90 - 110		
Chromium		50.0	49.9	ug/L	99.8	90 - 110		
Manganese		50.0	51.9	ug/L	104	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1847801
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-10

Instrument ID: ELAN-ICP Run Time: 10:17 Method: 6020

File ID: EL.112910.101726 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	51.3	ug/L	103	90 - 110		
Arsenic		50.0	50.4	ug/L	101	90 - 110		
Chromium		50.0	50.1	ug/L	100	90 - 110		
Manganese		50.0	49.6	ug/L	99.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-14

Instrument ID: ELAN-ICP Run Time: 13:01 Method: 6020

File ID: EL.112910.130122 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	48.6	ug/L	97.1	90 - 110		
Arsenic		50.0	49.2	ug/L	98.4	90 - 110		
Chromium		50.0	51.7	ug/L	103	90 - 110		
Manganese		50.0	52.9	ug/L	106	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-16

Instrument ID: ELAN-ICP Run Time: 14:10 Method: 6020

File ID: EL.112910.141011 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	48.7	ug/L	97.3	90 - 110		
Arsenic		50.0	49.8	ug/L	99.5	90 - 110		
Chromium		50.0	53.2	ug/L	106	90 - 110		
Manganese		50.0	54.8	ug/L	110	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1847801

Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L10110608 Run Date: 11/29/2010 Sample ID: WG349895-18

Instrument ID: ELAN-ICP Run Time: 15:28 Method: 6020

File ID: EL.112910.152840 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG349857 Cal ID: ELAN-I - 29-NOV-10

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	47.9	ug/L	95.8	90 - 110		
Arsenic		50.0	49.6	ug/L	99.2	90 - 110		
Chromium		50.0	52.0	ug/L	104	90 - 110		
Manganese		50.0	52.9	ug/L	106	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1847801
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L10110608 **Workgroup (AAB#):** WG349360
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG349512-08 **File ID:** EL.112210.111451 **Units:** ug/L
Sol. AB : WG349512-09 **File ID:** EL.112210.112137 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0680	NS	100	101	101	
Arsenic	NS	0.0291	NS	100	97.8	97.8	
Chromium	NS	0.0131	NS	100	94.9	94.9	
Manganese	NS	0.197	NS	100	94.7	94.7	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1847800
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L10110608 **Workgroup (AAB#):** WG349360
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG349700-08 **File ID:** EL.112310.155936 **Units:** ug/L
Sol. AB : WG349700-09 **File ID:** EL.112310.160623 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0617	NS	100	102	102	
Arsenic	NS	0.0502	NS	100	96.9	96.9	
Chromium	NS	0.0185	NS	100	93.4	93.4	
Manganese	NS	0.222	NS	100	95.2	95.2	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1847800
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L10110608 **Workgroup (AAB#):** WG349360
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG349700-16 **File ID:** EL.112310.190157 **Units:** ug/L
Sol. AB : WG349700-17 **File ID:** EL.112310.190843 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0411	NS	100	101	101	
Arsenic	NS	-0.000800	NS	100	99.1	99.1	
Chromium	NS	-0.0219	NS	100	91.0	91.0	
Manganese	NS	0.213	NS	100	92.7	92.7	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1847800
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L10110608 **Workgroup (AAB#):** WG349360
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG349781-08 **File ID:** EL.112410.110525 **Units:** ug/L
Sol. AB : WG349781-09 **File ID:** EL.112410.111211 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0689	NS	100	103	103	
Arsenic	NS	0.142	NS	100	98.6	98.6	
Chromium	NS	0.104	NS	100	96.9	96.9	
Manganese	NS	0.226	NS	100	100	100	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1847800
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L10110608 **Workgroup (AAB#):** WG349360
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG349781-14 **File ID:** EL.112410.132029 **Units:** ug/L
Sol. AB : WG349781-15 **File ID:** EL.112410.132716 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0509	NS	100	102	102	
Arsenic	NS	0.0844	NS	100	98.6	98.6	
Chromium	NS	0.0809	NS	100	99.0	99.0	
Manganese	NS	0.222	NS	100	103	103	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1847800
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L10110608 **Workgroup (AAB#):** WG349857
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG349895-08 **File ID:** EL.112910.100353 **Units:** ug/L
Sol. AB : WG349895-09 **File ID:** EL.112910.101040 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0888	NS	100	111	111	
Arsenic	NS	0.0182	NS	100	105	105	
Chromium	NS	0.0306	NS	100	106	106	
Manganese	NS	0.251	NS	100	108	108	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1847800
Report generated 11/30/2010 09:24

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L10110608 **Analytical Method:** 6020
Analytical Workgroup: WG349360 **Matrix:** 1
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 22-NOV-2010 10:27

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L10110608-01	SAMP	22-NOV-2010 16:52	112.514	99.319	112.132	116.343
L10110608-03	SAMP	22-NOV-2010 16:59	111.599	98.673	110.774	113.707
L10110608-05	SAMP	22-NOV-2010 17:06	108.444	95.884	108.496	111.412
L10110608-07	SAMP	22-NOV-2010 17:13	109.07	95.341	105.778	110.324
L10110608-09	SAMP	22-NOV-2010 17:20	111.831	95.992	108.499	112.005
L10110608-11	SAMP	22-NOV-2010 17:26	55.252	78.356	69.986	83.217
L10110608-13	SAMP	22-NOV-2010 17:33	108.337	98.536	106.883	108.249
WG349144-01	FBLK	22-NOV-2010 15:45	113.469	102.601	108.511	110.75
WG349181-01	REF	22-NOV-2010 16:52	112.514	99.319	112.132	116.343
WG349181-02	BLANK	22-NOV-2010 15:38	114.496	101.252	108.5	111.589
WG349181-03	LCS	22-NOV-2010 15:51	113.463	102.139	109.182	110.879
WG349181-04	MS	22-NOV-2010 16:59	111.599	98.673	110.774	113.707
WG349181-05	MSD	22-NOV-2010 17:06	108.444	95.884	108.496	111.412
WG349181-06	REF	22-NOV-2010 15:58	106.329	99.376	106.862	110.861
WG349181-07	MS	22-NOV-2010 16:05	106.056	98.084	106.162	110.879
WG349181-08	MSD	22-NOV-2010 16:12	107.037	96.878	105.971	108.898
WG349360-01	PSPK	22-NOV-2010 16:25	103.584	95.195	104.983	109.714
WG349360-02	SERIAL	22-NOV-2010 16:32	112.534	96.836	107.192	112.262
WG349360-03	QCMRL	22-NOV-2010 15:31	114.545	101.577	109.466	111.073
WG349512-05	ICV	22-NOV-2010 10:54	98.275	91.69	94.437	97.696
WG349512-06	ICB	22-NOV-2010 11:01	101.32	92.933	96.66	99.351
WG349512-07	LLICV	22-NOV-2010 11:08	100.971	93.038	96.616	98.747
WG349512-08	ICS	22-NOV-2010 11:14	97.141	92.273	93.669	97.801
WG349512-09	ICS	22-NOV-2010 11:21	94.473	92.03	92.582	96.412
WG349512-10	CCV	22-NOV-2010 11:28	97.386	90.946	92.939	97.34
WG349512-11	CCB	22-NOV-2010 11:35	101.235	92.058	96.322	97.769
WG349512-16	CCV	22-NOV-2010 15:16	111.296	101.372	107.405	112.791
WG349512-17	CCB	22-NOV-2010 15:23	115.613	101.702	109.787	113.124
WG349512-18	CCV	22-NOV-2010 16:39	109.115	95.684	103.637	108.255
WG349512-19	CCB	22-NOV-2010 16:46	115.107	98.471	108.407	111.984
WG349512-20	CCV	22-NOV-2010 17:40	103.473	95.157	102.148	104.239
WG349512-21	CCB	22-NOV-2010 17:47	109.412	95.893	104.767	104.675
WG349512-36	LLCCV	23-NOV-2010 02:34	103.653	89.103	99.966	99.848

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1847796
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L10110608 **Analytical Method:** 6020
Analytical Workgroup: WG349360 **Matrix:** 18
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 22-NOV-2010 10:27

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L10110544-01	SAMP	22-NOV-2010 16:19	106.54	98.311	107.265	112.133

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1847796
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L10110608 **Analytical Method:** 6020
Analytical Workgroup: WG349360 **Matrix:** 1
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 23-NOV-2010 15:12

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L10110608-01	SAMP	23-NOV-2010 18:41	98.524	99.222	102.764	99.361
L10110608-03	SAMP	23-NOV-2010 18:48	97.836	99.728	102.296	99.609
L10110608-05	SAMP	23-NOV-2010 18:55	96.978	98.502	100.288	99.416
WG349181-01	REF	23-NOV-2010 18:41	98.524	99.222	102.764	99.361
WG349181-04	MS	23-NOV-2010 18:48	97.836	99.728	102.296	99.609
WG349181-05	MSD	23-NOV-2010 18:55	96.978	98.502	100.288	99.416
WG349700-05	ICV	23-NOV-2010 15:39	95.342	91.079	94.134	95.251
WG349700-06	ICB	23-NOV-2010 15:46	98.434	94.373	97.364	98.014
WG349700-07	LLICV	23-NOV-2010 15:52	99.836	94.452	96.82	96.734
WG349700-08	ICS	23-NOV-2010 15:59	97.342	95.094	94.595	96.874
WG349700-09	ICS	23-NOV-2010 16:06	97.922	96.862	94.891	97.119
WG349700-10	CCV	23-NOV-2010 16:13	99.067	96.331	96.616	98.032
WG349700-11	CCB	23-NOV-2010 16:19	103.135	98.299	99.536	100.168
WG349700-14	CCV	23-NOV-2010 18:07	95.359	93.183	96.03	97.026
WG349700-15	CCB	23-NOV-2010 18:14	100.062	97.243	100.477	100.333
WG349700-16	ICS	23-NOV-2010 19:01	100.002	102.919	101.621	101.427
WG349700-17	ICS	23-NOV-2010 19:08	99.687	104.687	101.802	101.299
WG349700-18	CCV	23-NOV-2010 19:15	100.385	105.041	103.571	102.351
WG349700-19	CCB	23-NOV-2010 19:22	104.018	107.713	106.918	105.613
WG349700-22	CCV	23-NOV-2010 21:50	98.277	102.311	101.846	100.689
WG349700-23	CCB	23-NOV-2010 21:57	101.663	103.64	105.755	102.792
WG349700-24	ICS	23-NOV-2010 22:51	99.405	105.742	104.62	102.628
WG349700-25	ICS	23-NOV-2010 22:58	100.352	108.345	104.624	102.064
WG349700-26	CCV	23-NOV-2010 23:05	101.578	109.461	106.919	104.725
WG349700-27	CCB	23-NOV-2010 23:12	104.386	110.494	107.308	106.078
WG349700-30	CCV	24-NOV-2010 01:41	98.186	105.979	105.43	102.984
WG349700-31	CCB	24-NOV-2010 01:47	101.57	105.608	105.501	103.055
WG349700-32	ICS	24-NOV-2010 02:41	99.768	106.224	104.455	102.092
WG349700-33	ICS	24-NOV-2010 02:48	99.02	107.724	103.237	100.893
WG349700-34	CCV	24-NOV-2010 02:55	100.591	107.483	104.62	102.524
WG349700-35	CCB	24-NOV-2010 03:02	101.737	108.087	106.833	102.944

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1847796
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L10110608 **Analytical Method:** 6020
Analytical Workgroup: WG349360 **Matrix:** 1
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 24-NOV-2010 10:18

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L10110608-11	SAMP	24-NOV-2010 13:13	99.795	96.176	99.424	104.733
WG349781-05	ICV	24-NOV-2010 10:45	96.241	96.223	95.913	100.738
WG349781-06	ICB	24-NOV-2010 10:51	98.214	97.115	98.3	101.461
WG349781-07	LLICV	24-NOV-2010 10:58	98.168	96.665	99.143	100.081
WG349781-08	ICS	24-NOV-2010 11:05	90.165	92.211	92.649	97.593
WG349781-09	ICS	24-NOV-2010 11:12	88.812	93.496	92.812	97.359
WG349781-10	CCV	24-NOV-2010 11:18	94.539	93.812	95.704	101.278
WG349781-11	CCB	24-NOV-2010 11:25	95.875	94.389	97.795	100.079
WG349781-12	CCV	24-NOV-2010 12:26	95.703	93.259	95.598	100.219
WG349781-13	CCB	24-NOV-2010 12:33	99.121	95.456	97.043	100.328
WG349781-14	ICS	24-NOV-2010 13:20	94.751	92.623	96.361	102.659
WG349781-15	ICS	24-NOV-2010 13:27	90.894	92.209	94.351	101.381
WG349781-16	CCV	24-NOV-2010 13:34	93.504	91.151	93.773	100.103
WG349781-17	CCB	24-NOV-2010 13:40	96.559	93.384	97.019	100.474
WG349781-18	LLCCV	24-NOV-2010 13:47	96.476	94.043	96.146	98.763

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1847796
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L10110608 **Analytical Method:** 6020
Analytical Workgroup: WG349857 **Matrix:** 1
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 29-NOV-2010 09:16

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L10110608-02	SAMP	29-NOV-2010 14:39	90.428	86.35	99.328	103.876
L10110608-04	SAMP	29-NOV-2010 14:46	90.263	85.989	99.062	103.541
L10110608-06	SAMP	29-NOV-2010 14:52	89.581	85.924	97.271	101.919
L10110608-08	SAMP	29-NOV-2010 14:59	89.905	86.025	99.352	101.909
L10110608-10	SAMP	29-NOV-2010 15:06	94.009	88.289	102.902	106.528
L10110608-12	SAMP	29-NOV-2010 14:25	92.813	88.817	101.687	104.865
L10110608-14	SAMP	29-NOV-2010 14:32	95.717	89.551	101.754	105.14
WG349188-01	REF	29-NOV-2010 14:39	90.428	86.35	99.328	103.876
WG349188-02	BLANK	29-NOV-2010 13:48	98.232	90.037	102.9	105.186
WG349188-03	LCS	29-NOV-2010 14:03	98.78	90.412	101.887	104.189
WG349188-04	MS	29-NOV-2010 14:46	90.263	85.989	99.062	103.541
WG349188-05	MSD	29-NOV-2010 14:52	89.581	85.924	97.271	101.919
WG349857-01	PSPK	29-NOV-2010 15:14	89.453	85.451	99.671	103.54
WG349857-02	SERIAL	29-NOV-2010 15:21	95.468	88.095	99.384	102.612
WG349895-05	ICV	29-NOV-2010 09:43	90.954	94.579	93.575	94.815
WG349895-06	ICB	29-NOV-2010 09:50	90.738	92.81	92.929	93.111
WG349895-07	LLICV	29-NOV-2010 09:57	90.477	93.433	91.781	93.204
WG349895-08	ICS	29-NOV-2010 10:03	83.874	89.054	88.618	90.508
WG349895-09	ICS	29-NOV-2010 10:10	82.189	88.318	86.54	90.369
WG349895-10	CCV	29-NOV-2010 10:17	87.444	89.413	90.151	93.57
WG349895-11	CCB	29-NOV-2010 10:24	90.085	89.666	91.966	93.286
WG349895-14	CCV	29-NOV-2010 13:01	98.316	93.348	102.073	107.803
WG349895-15	CCB	29-NOV-2010 13:08	100.179	92.767	101.603	105.574
WG349895-16	CCV	29-NOV-2010 14:10	97.25	91.194	99.62	102.84
WG349895-17	CCB	29-NOV-2010 14:16	99.903	90.876	101.58	104.815
WG349895-18	CCV	29-NOV-2010 15:28	93.662	88.553	97.163	100.162
WG349895-19	CCB	29-NOV-2010 15:35	96.18	88.775	96.717	101.28
WG349895-28	LLCCV	29-NOV-2010 20:19	102.685	95.44	102.295	103.911

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1847796
Report generated: 11/30/2010 09:24

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L10110608 **Date:** 09/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1847794
Report generated: 11/30/2010 09:23

Kemron–Radford Army Ammunition Plant Data Validation Summary Worksheet

SDG#: L10110608	Laboratory: Microbac	Validator: Jeanne Peterson	Validation Date: 12/28/2010
Site: Radford	AR/COC#: 2397		Validation Level: ☐ III ☒ IV
Matrix: Water	# of Samples: 7	Tracking docs present: See sample receipt and log-in documentation	
COCs present: yes	COCs signed: yes	COCs dated: yes	Sample Container Integrity: OK

Analyses:
☒ VOCs ☐ SVOCs ☐ PAHs ☐ GRO ☐ DRO ☐ Pests ☐ PCBs ☒ Metals ☒ Gen Chem
☐ Other:

Requested Analyses Not Reported

Client Sample ID	Lab Sample ID	Analysis	Comments
None			

Hold Time/Preservation Outliers

Client Sample ID	Lab Sample ID	Analysis	Pres.	Collection Date	Preparation Date	Analysis Date	Analysis <2X HT	Analysis ≥2X HT
SWMU57GWMW3	L10110608-11	8260B	4°C*	11/17/2010	11/22/2010	11/22/2010	Yes	No

Comments: Sampled 11/16, 11/17

*Sample pH >2; analyzed within HT for unpreserved samples; no data qualified.

Kemron–Radford Army Ammunition Plant Organic Worksheet (GCMS)

SDG: L10110608	Method: 8260	Matrix: Water	Level III Lab Sample IDs: NA
Batch #s: WG349416			Level IV Lab Sample IDs: L10110608-01, -03 (MS), -05 (MSD), -07, -09, -11, -13, -15

Tuning: ☒ Pass ☐ Fail TICs Required? ☐ Yes ☒ No (*EPA Region III Limits*[1])

Analyte (outliers)	Calibration				Method Blank	5X (10X) Method Blank	LCS %R	MS %R (-01)	MSD %R (-01)	MS/D RPD (-01)	EB (-09)	FB (-13)	TB (-15)	
	RF *≥0.05*	RSD/r *≤30% ≥0.995*	ICV %D *±25%*	CCV %D *±25%*										
2-Chloroethyl vinyl ether	✓	✓	✓	✓	✓	NA	✓	0	0	✓	✓	✓	✓	
Acetone	✓	✓	✓	✓	✓	NA	✓	✓	✓	✓	2.59	✓	✓	
MeCl2	✓	✓	✓	✓	✓	NA	✓	✓	✓	✓	0.315	0.352	0.684	

(*Limits*[1]*: 1,2-DCA-d4 76-114%*) **Surrogate Recovery Outliers** (*BFB 86-115% Tol-d8 88-110%*)

Sample ID	1,2-DCA-d4	DBFM	BFB	Tol-d8	Sample ID	1,2-DCA-d4	DBFM	BFB	Tol-d8
-01	116	✓	✓	✓					
-05	115	✓	✓	✓					
-11	117	✓	✓	✓					

IS Outliers (*-50% to +100%*)

Sample ID	Area	RT	Area	RT	Area	RT	Area	RT	Area	RT	Area	RT
None												

Comments: Sample -11 pH = 7; analyzed within HT for unpreserved samples; HTs OK.
1,2-DCA-d4 > QAPP UAL but meets lab limits.
-09 acetone 58 ion low due to low level; accepted.

[1]Derived laboratory limits used for compounds not listed.

Revised 12/2010

Kemron–Radford Army Ammunition Plant Inorganic Metals Worksheet

SDG: L10110608	Matrix: Water	Level III Lab Sample IDs: NA
Method/Batch #s: 6020/WG349360 (total) and WG349857 (dissolved)		Level IV Lab Sample IDs: L10110608-01 thru -014

ICPMS Mass Cal: ☒ Pass ☐ Fail ☐ NA ICPMS Resolution: ☒ Pass ☐ Fail ☐ NA ICPMS %RSD: ☒ Pass ☐ Fail ☐ NA

Analyte (outliers)	Calibration						ICP CRDL *±10%*	Method Blank *(<MDL)*	5X MB	ICS A *<IDL*	ICS AB *±20%*	LCS %R *(80-120%)*	MS %R *(75-125%)*	MSD %R *(75-125%)*	MS/D RPD *(≤20%)*	Serial Dil. %D *(±10%)*	PS *(75-125%)*	EB mg/L
	r *≥0.995*	ICV *±10%*[1]	CCV *±10%*[1]	ICB ug/L	CCB *(<IDL)*	5X CB												
11/22																		
Sb	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
As	✓	✓	✓	✓	✓	NA	80 &120	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	.00271
Mn	✓	✓	✓	✓	✓	NA	111	✓	NA	✓	✓	✓	NA	NA	NA	✓	✓	.00342
11/23																		
Mn	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	NA	✓	✓	✓	NA	NA	NA
11/24																		
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	NA	NA	NA	NA	NA	NA	NA
Mn	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	NA	NA	NA	NA	NA	NA	NA
11/29																		
Sb	✓	✓	✓	✓	✓	NA	112	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
As	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cr	✓	✓	✓	✓	✓	NA	88.5	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	.00104
Mn	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	49.6	✓	✓	✓	✓	.00227

IS Outliers[3] *(60-120%)*				IS Outliers[3] *(60-120%)*			
Sample ID	**%Recovery**	**%Recovery**	**%Recovery**	**CCV/CCB ID**	**%Recovery**	**%Recovery**	**%Recovery**
None				None			

Comments: HTs OK
For 11/22 and 11/29, ICS A/AB only at beginning of run. Samples 01, -07, and -11 one or more interferents > ICS concentration. All others, <.
For 11/23, CRDL only at beginning of run. CRDL for Mn just above IDL; all others at IDL; none >RL even though RL is greater.
11/22, 11/23: MS/D on -01; 11/29: MS/D on -02; PS not on same samples as MS/D. 11/22 PS and SD not on project sample.
EB (-09/-10): T Cr = 0.00271; T Mn = 0.00342; D Cr = 0.00104; D Mn = 0.00227
FB (-13/-14): ND

[1]20% for Hg [2]For sample results <5X RL, ±RL [3]Standard CLP NFG criteria used; no criteria specified in QAPP or Region III NFG

VOCs Calibration Verification

Calibration: WG347960 HPMS8 11/08/10

Average RF

				19		64		97	
				MeCl2		PCE		Hexachlorobutadiene	
Conc.	Internal Area #1	Internal Area #2	Internal Area #3	Area	RRF	Area	RRF	Area	RRF
0.3									
0.4	714491	567501	342546	5126	0.448	2225	0.245	2392	0.436
1	715843	571294	340757	10847	0.379	7580	0.332	3962	0.291
2	701747	559829	343793	17855	0.318	13140	0.293	9771	0.355
5	711563	572401	342386	42928	0.302	40333	0.352	25848	0.377
20	711957	578247	350304	164784	0.289	153834	0.333	104759	0.374
50	725868	589586	360638	401360	0.276	384060	0.326	266030	0.369
100	745304	599483	375203	806047	0.270	770117	0.321	560210	0.373
200	719649	591076	360092	1553225	0.270	1491893	0.316	1090872	0.379
300									
Multiplier				1		1		1	
AveRF				**0.30064**		**0.31467**		**0.36931**	
RSD				**12.88**		**10.40**		**10.77**	

Average RF

				Surr							
				Dibromofluoromethane		1,2-DCA-d4		Toluene-d8		4-BFB	
Conc.	Internal Area #1	Internal Area #2	Internal Area #3	Area	RRF	Area	RRF	Area	RRF	Area	RRF
0.5	715843	571294	340757	5255	0.367	7042	0.492	17391	1.522	7345	1.078
1	701747	559829	343793	9582	0.341	13395	0.477	30533	1.363	12271	0.892
2.5	711563	572401	342386	22739	0.320	31474	0.442	71471	1.249	31075	0.908
10	711957	578247	350304	93333	0.328	122472	0.430	289675	1.252	123815	0.884
25	725868	589586	360638	230211	0.317	300895	0.415	724650	1.229	323832	0.898
50	745304	599483	375203	460403	0.309	607367	0.407	1420735	1.185	640615	0.854
100	719649	591076	360092	907465	0.315	1152212	0.400	2762241	1.168	1234443	0.857
Multiplier				1		1		1		1	
AveRF				**0.32814**		**0.43767**		**1.28128**		**0.91000**	
RSD				**6.12**		**8.04**		**9.63**		**8.43**	

Weighted Linear Regression Calculator for SDG L10110608 HPMS8 WG347960 Bromomethane

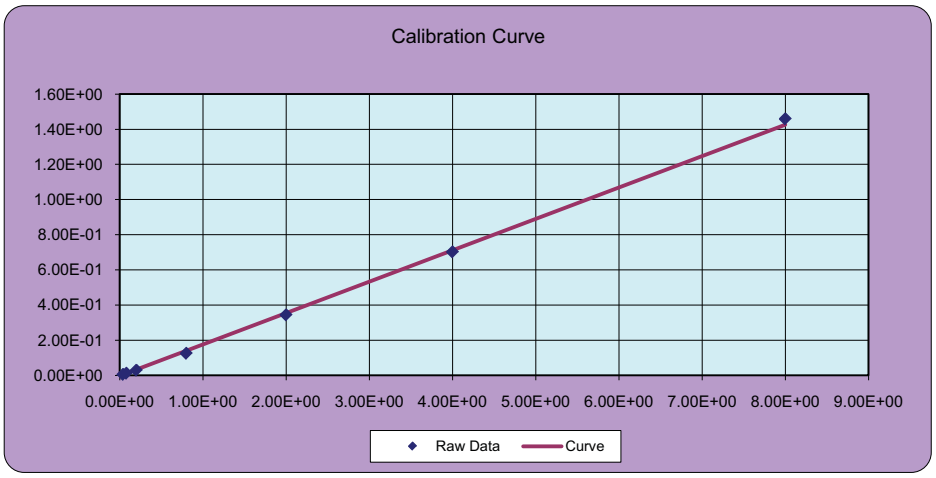
Conc. Analyte	1	2	5	20	50	100	200
Conc. IS	25	25	25	25	25	25	25
Resp. Analyte	3031	7410	20021	88349	249049	523034	1050536
Resp. IS	715843	701747	711563	711957	725868	745304	719649
X Values	4.000E-02	8.000E-02	2.000E-01	8.000E-01	2.000E+00	4.000E+00	8.000E+00
Y Values	4.234E-03	1.056E-02	2.814E-02	1.241E-01	3.431E-01	7.018E-01	1.460E+00
Weighting Factor	2.500E+01	1.250E+01	5.000E+00	1.250E+00	5.000E-01	2.500E-01	1.250E-01

1/x

None	1	1	1	1	1	1	1
1/y	2.362E+02	9.470E+01	3.554E+01	8.058E+00	2.915E+00	1.425E+00	6.850E-01
$1/y^2$	5.578E+04	8.969E+03	1.263E+03	6.494E+01	8.495E+00	2.031E+00	4.693E-01
1/x	2.500E+01	1.250E+01	5.000E+00	1.250E+00	5.000E-01	2.500E-01	1.250E-01
$1/x^2$	6.250E+02	1.563E+02	2.500E+01	1.563E+00	2.500E-01	6.250E-02	1.563E-02

Regression Coefficients

Slope	1.7864E-01
Intercept	-4.1991E-03
r2	0.99869



CCV Verification Worksheet Average RF HPMS8

$$CCRF = \frac{(Analyte\,Response)(IS\,Conc.)}{(IS\,Response)(Analyte\,Conc)}$$

VOC ICV # WG347960-12 11/08/10

	13	68	99	Surr
	Acetone	**Chlorobenzene**	**1,2,3-TCB**	**Dibromofluoromethane**
Int. Std. Response	737819	599385	365425	737819
Analyte Response	151909	1193986	660153	233423
Analyte Concentration	50	50	50	25
Int. Std. Concentration	25	25	25	25
CCRF	0.1029	0.9960	0.9033	0.3164
Ave RF	0.1000	1.031	0.9442	0.32814
Calc'd Concentration	51.5	48.3	47.8	24.1
CCV %D	2.94	-3.39	-4.34	-3.6

VOC CCV # WG349415-02 11/22/10

	33	72	98	Surr
	Chloroform	**o-Xylene**	**Naphthalene**	**1,4-DCA-d4**
Int. Std. Response	555188	456357	268794	555488
Analyte Response	677041	592611	879506	267473
Analyte Concentration	50	50	50	25
Int. Std. Concentration	25	25	25	25
CCRF	0.6097	0.6493	1.6360	0.4815
Ave RF	0.5798	0.6765	2.047	0.43767
Calc'd Concentration	52.6	48.0	40.0	27.5
CCV %D	5.16	-4.02	-20.08	10.0

SDG #L10110608
CALCULATION WORKSHEET FOR VOC RESULTS

AVG RF:

$$\text{Result (ng/mL)} = \left(\frac{\text{Sample Area Response x Int. Std. Conc.}}{\text{Int. Std. Area Response x Calibratio n R.F.}}\right)$$

#	Surrogate
1	Dibromofluoromethane
2	1,2-Dichloroethane-d4
3	Toluene-d8
4	4-Bromofluorobenzene

Water Samples

$$\frac{\text{ug}}{\text{L}} = \left(\frac{\text{x ng}}{\text{mL}}\right)\left(\frac{\text{1 ug}}{\text{1000 ng}}\right)\left(\frac{\text{1000 mL}}{\text{1 L}}\right)\left(\frac{\text{Final Volume (mL)}}{\text{Sample Aliquot (mL)}}\right) \qquad \text{Surr \%REC} = \left(\frac{\text{Result}}{\text{Spike Conc.}}\right)\text{x100}$$

		MB	LCS	-01	-03 MS	-05 MSD
	Dilution/DF	1	1	1	1	1
	Final Volume (mL)	5	5	5	5	5
	Sample Aliquot (mL)	5	5	5	5	5
Surrogate (Surr) (Avg. RF)	Internal STD Response	527562	531645	394139	252025	498913
	Surr Response	185093	260742	522159	240922	180986
	Surrogate #	1	2	3	4	1
	Calibration R.F.	0.32814	0.43767	1.28128	0.91000	0.32814
	Surr spike Conc. (ug/L)	25	25	25	25	25
	Surr spike Conc. (ug/L)	25	25	25	25	25
	Surr Conc. (ug/L)	26.7	28.0	25.8	26.3	27.6
	Surr %REC	107	112	103	105	111
		TC	***Benzene***	***o-Xylene***	***TCE***	***TCE***
Target Compound (TC) (Avg. RF)	Internal STD Response		531645	394139	497155	498913
	TC Response		441336	5992	125220	124251
	Calibration R.F.		1.081	0.06765	0.3107	0.3107
	TC Conc. (ug/L)		19.20	5.618	20.267	20.039
	%Rec		95.99		101.33	100.19
	RPD				1.13	

		-07	-09	11	-13	-15
	Dilution/DF	1	1	1	1	1
	Final Volume (mL)	5	5	5	5	5
	Sample Aliquot (mL)	5	5	5	5	5
Surrogate (Surr) (Avg. RF)	Internal STD Response	523332	503599	403502	237963	526328
	Surr Response	183960	252359	523689	229800	187350
	Surrogate #	1	2	3	4	1
	Calibration R.F.	0.32814	0.43767	1.28128	0.91000	0.32814
	Surr spike Conc. (ug/L)	25	25	25	25	25
	Surr spike Conc. (ug/L)	25	25	25	25	25
	Surr Conc. (ug/L)	26.8	28.6	25.3	26.5	27.1
	Surr %REC	107	114	101	106	108
		o-Xylene	***Acetone***	***Chloroform***	***MeCl2***	***MeCl2***
Target Compound (TC) (Avg. RF)	Internal STD Response	423463	503599	486374	483039	526328
	TC Response	6293	5208	434153	2046	4327
	Calibration R.F.	0.6765	0.1000	0.5798	0.3006	0.3006
	TC Conc. (ug/L)	0.549	2.585	38.489	0.352	0.684

6020 TOTAL METALS CALIBRATION VERIFICATION FOR L10110608

Date: WG349512 11/22/10

Analyte: Sb

Concentration	Mean Response
0	18.245
0.4	1073.982
50	136445.42
100	258170.822

Corr. Coef. = 0.999574

Date: WG349700 11/23/10

Analyte: Mn

Concentration	Mean Response
0	304.008
0.4	5398.511
50	616562.503
100	1167228.385

Corr. Coef. = 0.999587

Date: WG349781 11/24/10

Analyte: Cr

Concentration	Mean Response
0	8877.028
0.4	12379.783
50	446630.263
100	854123.196

Corr. Coef. = 0.999832

11/22/2010	True Value	Reported	
	ICV		%Rec
Sb	50.00	51.49	103.0
	ICSAB		%Rec
Cr	100.00	94.94	94.9
	CCV1		%Rec
Sb	50.00	51.89	103.8
	CCV4		%Rec
As	50.00	49.26	98.5
	CCV5		%Rec
Mn	50.00	51.79	103.6
	CCV6		%Rec
Cr	50.00	53.15	106.3

11/23/2010	True Value	Reported	
	ICV		%Rec
Mn	50.00	50.46	100.9
	ICSAB		%Rec
Mn	100.00	95.21	95.2
	CCV1		%Rec
Mn	50.00	48.48	97.0
	CCV3		%Rec
Mn	50.00	49.77	99.5
	ICSAB		%Rec
Mn	100.00	92.74	92.7
	CCV4		%Rec
Mn	50.00	46.26	92.5

11/24/2010	True Value	Reported	
	ICV		%Rec
Cr	50.00	49.18	98.4
	ICSAB		%Rec
Cr	100.00	96.95	96.9
	CCV1		%Rec
Mn	50.00	50.77	101.5
	CCV2		%Rec
Cr	50.00	51.00	102.0
	ICSAB		%Rec
Mn	100.00	102.93	102.9
	CCV3		%Rec
Cr	50.00	49.89	99.8

6020 DISSOLVED METALS CALIBRATION VERIFICATION FOR L10110608

Date: WG349895 11/29/10

Analyte: As

Concentration	Mean Response
0	-205.859
0.4	209.647
50	47526.515
100	90787.824

Correlation Coef. = 0.999686

11/29/2010	True Value	Reported	
	ICV		%Rec
As	50.00	50.18	100.4
	ICSAB		%Rec
Mn	100.00	107.65	107.6
	CCV1		%Rec
Sb	50.00	51.25	102.5
	CCV3		%Rec
As	50.00	49.22	98.4
	CCV4		%Rec
Cr	50.00	53.22	106.4
	CCV5		%Rec
Mn	50.00	52.87	105.7

6020 METALS ICS AND CRDL CALCULATIONS FOR L10110608

ICSA Check

Total Metals

11/22	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Sb	0.200	1.000	0.0680	
As	0.200	1.000	0.0291	
Cr	0.400	2.000	0.0131	
Mn	0.400	2.000	0.1968	

11/23	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Mn	0.400	2.000	0.2222	

11/23	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Mn	0.400	2.000	0.2133	

11/24	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Cr	0.400	2.000	0.1041	
Mn	0.400	2.000	0.2255	

11/24	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Cr	0.400	2.000	0.0809	
Mn	0.400	2.000	0.2220	

Dissolved Metals

11/29	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Sb	0.200	1.000	0.0888	
As	0.200	1.000	0.0182	
Cr	0.400	2.000	0.0306	
Mn	0.400	2.000	0.2506	

CRDL Check

Total Metals

11/22	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb	0.4000	0.4342	108.6	
As	0.4000	0.3208	80.2	L/UL
Cr	0.8000	0.7776	97.2	
Mn	0.5000	0.5058	101.2	

11/22	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb	0.4000	0.4004	100.1	
As	0.4000	0.4783	119.6	K
Cr	0.8000	0.8300	103.8	
Mn	0.5000	0.5557	111.1	K

11/23	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Mn	0.5000	0.5041	100.8	

11/24	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cr	0.8000	0.8177	102.2	
Mn	0.5000	0.4881	97.6	

11/24	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cr	0.8000	0.8557	107.0	
Mn	0.5000	0.5508	110.2	K

OK; rounds to 110

Dissolved Metals

11/29	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb	0.4000	0.4466	111.7	K
As	0.4000	0.4215	105.4	
Cr	0.8000	0.7204	90.1	
Mn	0.5000	0.4758	95.2	

11/29	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb	0.4000	0.4239	106.0	
As	0.4000	0.4193	104.8	
Cr	0.8000	0.7083	88.5	L/UL
Mn	0.5000	0.5207	104.1	

6020 TOTAL METALS SAMPLE CALCULATION WORKSHEET FOR SDG L10110608

Water Sample Calculations:

	MDL (mg/L)	CRQL (mg/L)			MB		LCS		-01		-03 MSD		-05 MSD	
Final Volume (ml)						100		100		100		100		100
Sample Aliquot (ml)						40		40		40		40		40
					ug/L	mg/L	ug/L	mg/L	ug/L	mg/L	ug/L	mg/L	ug/L	mg/L
					DF	1	DF	1	DF	1	DF	1	DF	1
Sb	0.00050	0.00100			0.0300	U	25.1437	0.0629	1.1104	0.00278	24.6228	0.0616	25.0173	0.0625
As	0.00050	0.00100			0.0482	U	24.5615	0.0614	1.0689	0.00267	24.2975	0.0607	24.7526	0.0619
Cr (52)	0.00100	0.00200			-0.0036	U	27.1904	0.0680	1.666	0.00417	28.7363	0.0718	28.06	0.0702
Mn	0.00100	0.00200			0.0017	U	26.8522	0.0671						

	MDL (mg/L)	CRQL (mg/L)			-07		-09		-11		-13	
Final Volume (ml)						100		100		100		100
Sample Aliquot (ml)						40		40		40		40
					ug/L	mg/L	ug/L	mg/L	ug/L	mg/L	ug/L	mg/L
					DF	1	DF	1	DF	1	DF	1
Sb	0.00050	0.00100			1.0762	0.0027	0.0339	U	2.5859	0.0065	0.0329	U
As	0.00050	0.00100			1.0194	0.0025	0.1223	U	67.2056	0.1680	0.0232	U
Cr	0.00100	0.00200			1.4024	0.0035	1.0836	0.0027			0.1727	U
Mn	0.00100	0.00200			91.8467	0.2296	1.3683	0.0034			0.1865	U

	MDL (mg/L)	CRQL (mg/L)			-01 DL01		-03 MSD DL01		-05 MSD DL01	
Final Volume (ml)						100		100		100
Sample Aliquot (ml)						40		40		40
					ug/L	mg/L	ug/L	mg/L	ug/L	mg/L
					DF	50	DF	50	DF	50
Mn	0.00100	0.00200			1.7189	0.215	2.1946	0.274	2.2800	0.285

	MDL (mg/L)	CRQL (mg/L)			-11 DL01	
Final Volume (ml)						100
Sample Aliquot (ml)						40
					ug/L	mg/L
					DF	50
Sb	0.00050	0.00100				
As	0.00050	0.00100				
Cr	0.00100	0.00200			5.0073	0.6259
Mn	0.00100	0.00200			41.7833	5.2229

Parent		PS		SD	
	100		100		100
	40		40		40
ug/L	mg/L	ug/L	mg/L	ug/L	mg/L
DF	1	DF	1	DF	5
0.1814	U	51.2325	0.1281	0.111	U
0.1112	U	48.5966	0.1215	0.0827	U
0.646	0.0016	58.3521	0.1459	0.1786	U
21.2822	0.0532	80.034	0.2001	4.3396	0.0542

6020 DISSOLVED METALS SAMPLE CALCULATION WORKSHEET FOR SDG L10110608

Water Sample Calculations:

	MDL (mg/L)	CRQL (mg/L)			MB		LCS		-02		-04 MSD		-06 MSD	
				Final Volume (ml)	100		100		100		100		100	
				Sample Aliquot (ml)	40		40		40		40		40	
					ug/L	mg/L	ug/L	mg/L	ug/L	mg/L	ug/L	mg/L	ug/L	mg/L
					DF	1	DF	1	DF	1	DF	1	DF	1
Sb	0.00050	0.00100			0.0316	U	23.7874	0.0595	1.0104	0.00253	23.8747	0.0597	24.4249	0.0611
As	0.00050	0.00100			-0.0115	U	24.2933	0.0607	0.9576	0.00239	24.633	0.0616	24.4778	0.0612
Cr	0.00100	0.00200			-0.0626	U	26.5201	0.0663	0.9285	0.00232	28.243	0.0706	28.2489	0.0706
Mn	0.00100	0.00200			-0.0145	U	27.3265	0.0683	71.0797	0.1777	83.4883	0.2087	95.0007	0.2375

	MDL (mg/L)	CRQL (mg/L)			-08		-10		-12		-14	
				Final Volume (ml)	100		100		100		100	
				Sample Aliquot (ml)	40		40		40		40	
					ug/L	mg/L	ug/L	mg/L	ug/L	mg/L	ug/L	mg/L
					DF	1	DF	1	DF	1	DF	1
Sb	0.00050	0.00100			1.0503	0.0026	0.0592	U	0.1622	U	0.0467	U
As	0.00050	0.00100			0.9509	0.0024	-0.0108	U	0.5355	0.0013	-0.0545	U
Cr	0.00100	0.00200			0.7302	0.0018	0.4157	0.0010	2.9118	0.0073	0.2082	U
Mn	0.00100	0.00200			68.2675	0.1707	0.9069	0.0023	1.0192	0.0025	0.0464	U

	MDL (mg/L)	CRQL (mg/L)			-08 PS		-8 SD	
				Final Volume (ml)	100		100	
				Sample Aliquot (ml)	40		40	
					ug/L	mg/L	ug/L	mg/L
					DF	1	DF	5
Sb	0.00050	0.00100			44.9110	0.1123	0.283	0.0035
As	0.00050	0.00100			44.7006	0.1118	0.2136	0.0027
Cr	0.00100	0.00200			53.8607	0.1347	0.0782	U
Mn	0.00100	0.00200			129.0104	0.3225	13.6639	0.1708

6020 METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDG L10110608

Total Metals:

	LCS	-03 MS	-05 MSD	PS
Analyte	**Sb**	**As**	**As**	**Cr**
True Conc	0.0625	0.0625	0.0625	50.0000
Reported Conc	0.0629	0.0607	0.0619	58.3521
Sample Conc	0.0000	0.0027	0.0027	0.6460
%R	100.64	92.85	94.77	115.41
RPD		1.96		

	LCS	-03 MS	-05 MSD	PS
Analyte	**Mn**	**Mn**	**Mn**	**Mn**
True Conc		0.0625	0.0625	
Reported Conc		0.274	0.285	
Sample Conc		0.215	0.215	
%R		95.04	112.16	
RPD		3.83		

Dissolved Metals:

	LCS	-04 MS	-06 MSD	-08 PS	-04 MS	-06 MSD
Analyte	**As**	**Cr**	**Cr**	**Mn**	**Mn**	**Mn**
True Conc	0.0625	0.0625	0.0625	50.0000	0.0625	0.0625
Reported Conc	0.0607	0.0706	0.0706	129.0104	0.2087	0.2375
Sample Conc	0.0000	0.0023	0.0027	68.2675	0.1777	0.1777
%R	97.12	109.25	108.69	121.49	49.60	95.68
RPD		0.00			12.91	

6020 METALS SERIAL DILUTION CALCULATIONS FOR SDG L10110608

Total Metals:

Analyte	Parent	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	> %D Limit?
	ug/L	ug/L	ug/L	ug/L	ug/L				
Sb	0.1814	0.111	0.555	0.200	10.0				
As	0.1112	0.0827	0.4135	0.200	10.0				
Cr	0.646	0.1786	0.893	0.400	20.0				
Mn	21.2822	4.3396	21.698	0.400	20.0	Y	10	2	

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

Dissolved Metals:

Analyte	-08	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	> %D Limit?
	ug/L	ug/L	ug/L	ug/L	ug/L				
Sb	1.0503	0.283	1.415	0.200	10.0				
As	0.9509	0.2136	1.068	0.200	10.0				
Cr	0.7302	0.0782	0.391	0.400	20.0				
Mn	68.2675	13.6639	68.3195	0.400	20.0	Y	10	0	

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Subject: Data Validation for Lab Report L11020571
Radford Army Ammunition Plant

From: Charissa Lewis
Data Validator, AQA

To: Mary Lou Rochotte
Kemron Environmental Services, Inc.

OVERVIEW

Microbac Laboratories Inc., Marietta, Ohio, received 13 field samples associated with the project work described in the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010) on February 19, 2011. The field samples were assigned laboratory sample delivery group (SDG) number L11020571 and included eight normal soil samples, one field duplicate soil sample, one matrix spike pair, one equipment blank, and one field blank. The samples were analyzed for metals using EPA methods 6010B and 6020 as detailed in *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (SW-846)*, Third Edition, Final Update III.

SUMMARY

The samples were analyzed according to the quality control (QC) criteria of the applicable analytical method. The data for these samples were found to be compliant with the requirements of the project QAPP and/or EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable, and the results for all target analytes are considered usable.

MAJOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- None

MINOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- CRDL standards were not analyzed with the samples analyzed by method 6010.
- SWMU-57-21711-EB: Total manganese 0.00168(L)
- SWMU-57-21711-FB: Total manganese (UL)
- SWMU-57-21711-DUP: Total manganese 178 (J)
Total antimony 1.10 (J)
Total iron 34600 (J)
Total chromium 15.5 (J)
- SWMU-57-21711-B-5-SS-1-2′: Total manganese 655 (J)
Total antimony 1.15 (J)
Total iron 33800 (J)
Total chromium 20.2 (J)

- SWMU-57-21711-B-2-SS-2.5′: Total manganese 343 (J)
  Total iron 27000 (J)
  Total chromium 22.8 (J)

- SWMU-57-21711-B-2-SS-5′: Total manganese 431 (J)
  Total iron 24200 (J)
  Total chromium 17.4 (J)

- SWMU-57-21711-B-1-SS-2.5′: Total manganese 154 (J)
  Total iron 27900 (J)
  Total chromium 13.9 (J)

- SWMU-57-21711-B-6-SS-2.5′: Total manganese 229 (J)
  Total iron 26900 (J)
  Total chromium 13.9 (J)

- SWMU-57-21811-B3-SS-2′: Total manganese 1240 (J)
  Total iron 63500 (J)
  Total chromium 49.3 (J)

- SWMU-57-21811-B4-SS-2.5′: Total manganese 119 (J)
  Total iron 34700 (J)
  Total chromium 31.0 (J)

- SWMU-57-21811-B7-SS-2′: Total manganese 517 (J)
  Total antimony 0.640 (J)
  Total iron 31500 (J)
  Total chromium 25.3 (J)

NOTES

(Refer to Appendix D – Support Documentation)

Sample Chain of Custody (COC) Records

- The samples were listed on COC #2399. Data were reported for all required analyses.

- The matrix spike and matrix spike duplicate samples had different collection times than the parent sample and field duplicate on the COC. The laboratory logged in the samples using the parent sample and field duplicate time of 10:10.

- The samples were logged in by the laboratory without the apostrophe at the end of the sample ID indicating the depth of the sample in feet. The actual sample IDs from the COC were used for this validation report.

Preservation and Holding Times

- The samples were properly preserved and analyzed within the specified holding time.

Instrument Tune

- The instrument tunes for all applicable analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration (ICAL)

- The ICAL correlation coefficients for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV)

- The ICV/CCV percent recoveries (%Rs) for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Contract Required Detection Limit (CRDL)

- CRDL standards were not analyzed with the water samples analyzed by method 6010; however, the concentration of lowest initial calibration (ICAL) standard was <2X the RL. The %Rs were calculated for this standard and met CRDL acceptance criteria. Therefore, no sample data were qualified.

- CRDL standards were not analyzed with the soil samples analyzed by method 6010, and there was insufficient information in the data package to calculate the %Rs for the lowest concentration ICAL standard. The total antimony results for samples SWMU-57-21711-DUP, SWMU-57-21711-B-5-SS-1-2′ and SWMU-57-21811-B7-SS-2′ and the total manganese result for sample SWMU-57-21811-B4-SS-2.5′ were detects <2X the CRDL and, therefore, were **qualified J** for the lack of a CRDL analysis. The remaining associated sample results were detects >2X the CRDL and, therefore, were not qualified based on professional judgment.

- CRDL standards were analyzed for method 6020; however, they were only analyzed at the beginning of the daily analyses and not every 10 samples or two per every eight hours as required by the project QAPP. The Region III NFG only requires that the CRDL be analyzed and meet recovery limits with no frequency criteria; therefore no sample data were qualified.

- The CRDL recovery associated with the water samples analyzed by method 6020 on February 25, 2011, was <90% for total manganese. The total manganese result for sample SWMU-57-21711-EB was a detect <2X the CRDL and, therefore was **qualified L**. The total manganese result for sample SWMU-57-21711- FB was a non-detect and, therefore, was **qualified UL** based on professional judgment.

- The CRDL recovery associated with the water samples analyzed by method 6020 on February 24, 2011, was <110% for total antimony. The associated samples were QC samples and, therefore, no sample data were qualified.

- The CRDL recoveries associated with the soil samples analyzed by method 6020 were within the criteria specified in the project QAPP and the Region III NFG.

Inductively Coupled Plasma (ICP) Interference Check Sample

- ICP interference check sample recoveries were within the project QAPP- and Region III-specified control limits, and all non-spiked ICS A results were < the MDL.

- The results of the ICS A and ICS AB analyses were applicable to the undiluted soil sample results because the concentrations of one or more of the interferents in those samples were ≥ those in the ICS solutions.

- The results of the ICS A and ICS AB analyses were not applicable to the diluted soil sample results or to the water sample results because the concentrations of the interferents in those samples were < those in the ICS solutions.

Field Blanks

- Total chromium was detected in the equipment blank. The associated sample results were detects >5X the equipment blank concentration and, therefore, were not qualified.

Laboratory Method Blanks

- No target analytes were detected in the method blanks.

Laboratory Calibration Blanks

- No target analytes were detected in the calibration blanks.

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCSs/LCSDs)

- The LCS/LCSD recoveries met project QAPP- and Region III-specified QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

- One MS/MSD pair was analyzed on sample SWMU-57-21711-B-5-SS-1-2′ for all analyses.

    - The soil MS recovery was <75% for total chromium. The associated sample results were detects and, therefore, were **qualified L**.

- The soil MS/MSD recoveries were <75% for total aluminum, iron, and manganese. The parent sample results were >4X the spike amount and, therefore, no data were qualified.

- The soil post spike recoveries were calculated incorrectly for aluminum, iron, and manganese. When calculated correctly, the post spike recoveries were <75%; however, the parent sample results were >4X the spike amount and, therefore, no data were qualified.

- MS/MSD analyses associated with the water samples were performed on non-project samples from other SDGs.

ICP Serial Dilution Analyses

- The serial dilution %Ds met project QAPP- and Region III-specified QC acceptance criteria with the following exceptions.

  - The serial dilution associated with the soil samples analyzed by method 6010 was performed on sample SWMU-57-21711-DUP. The %D was >10% for total iron, and the parent sample result was >50X the MDL. The associated sample results were detects and, therefore, was **qualified J**.

  - The serial dilution associated with the soil samples analyzed by method 6020 was performed on a non-project sample from another SDG. The %D was >10% for iron, and the parent sample result was >50X the MDL. The total chromium result for sample SWMU-57-21811-B3-SS-2 was a detect >50X the MDL and, therefore, was **qualified J** for lack of serial dilution precision data. The remaining associated sample results were either detects <50X the MDL or non-detects and, therefore, were not qualified based on professional judgment.

  - The serial dilution associated with water samples was performed on a sample from a non-project SDG. The associated sample results were <50X the MDL and, therefore, no sample data were qualified.

Laboratory Sample Duplicate

- MSDs were analyzed as the laboratory duplicates for all analyses and met project QAPP- and Region III-specified QC acceptance criteria.

  - The soil MS/MSD RPD was >35% for total manganese. The associated sample results were detects and, therefore, were **qualified J**.

Field Sample Duplicate

- Soil sample SWMU-57-21711-B-5-SS-1-2′ was collected and analyzed in duplicate (sample SWMU-57-21711-DUP) for all analyses. The RPDs between the sample and duplicate results were within the project QAPP-specified control limits with the following exception.

- The sample/sample duplicate RPD for total manganese was >35%. The associated sample results were detects and, therefore, were **qualified J**.

	SWMU-57-21711-DUP		SWMU-57-21711-B-5-SS-1-2			
Analyte	**Result**	**RL**	**Result**	**RL**	**RPD**	**>35%**
Sb	1.1	0.758	1.15	0.759	4.44	
Al	18200	3030	18100	3040	0.55	
Fe	34600	455	33800	456	2.34	
Mn	178	75.8	655	75.9	114.53	J/UJ
Cd	0	0.5	0	0.5	<RL	
Cr	15.5	1.94	20.2	2	26.33	

Sample Internal Standard Recoveries

- The internal standard recoveries for metals analyzed by method 6020 were within the 60-125% limits provided in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (NFG) (October 2004).

Sample Results

- The samples were analyzed for the methods requested on the COC. Method detection limits and reporting limits were reported for all analyses; however, the water and soil MDLs for total iron; soil MDLs for total manganese, total cadmium and total chromium; and water MDL for total antimony, were > the MDLs specified in the project QAPP. The reported RLs met project-specified RLs with the following exceptions.

  - All soil samples were diluted 200X for total aluminum, and total manganese. Sample SWMU-57-21811-B3-SS-2 was diluted 400X for total iron and the remaining soil samples were diluted 200X for total iron. The associated RLs were adjusted accordingly and, therefore, did not meet project-specified RLs.

  - All soil samples were diluted 5X for the analysis of total chromium and total cadmium. The associated RLs were adjusted accordingly and, therefore, did not meet project-specified RLs.

Other

- The 6010 QC limits for water shown in the project QAPP did not match the QC limits reported by the laboratory.

Action Level Notification

- No results were above the action levels specified in the Region III NFG.

Usability Statement

- There were 66 field sample data points associated with the data package for SDG L11020571. Of these field sample data points, 33 (50.00% of the total) were assessed and left unqualified, 22 (33.33% of the total) were assessed and qualified J, 10 (15.15% of the total) were assessed and qualified L, and 1 (1.52% of the total) was assessed and qualified UL.

- The field sample data points that were qualified J can be categorized as definitive data with positively identified analyte concentrations that are only estimates due to QC deficiencies, the field sample data points that were qualified L can be categorized as definitive data with positively identified analyte concentrations that are only estimates and may be qualified low due to QC deficiencies, and the field sample data points that were assessed and qualified UL can be categorized as definitive data with nondetectable analyte concentrations that are only estimates and may be biased low due to QC deficiencies.

- The unqualified field sample data points can be categorized as definitive data with no associated QC deficiencies.

Reviewed by: JMP Level: 1 Date: 05/11/2011

Report Content Statement

This report has been formatted for consistency with Appendix B, Region III Standard Operating Procedures for Data Validation Reports, contained in the guidance *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). The laboratory data were reviewed in accordance with the EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable; the *Quality Assurance Project Plan for the Performance Based Contract, Revision 04, Fort Meade, Maryland* (May 2010) (project QAPP); and the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010); and the applicable SW-846 methods. This report only addresses those problems and issues that may affect data usability.

Attachments

Appendix A – Glossary of Data Qualifiers

Appendix B – Data Qualifier Summary

Appendix C – Laboratory Report Results/Data Summary

Appendix D – Support Documentation

Appendix A – Glossary of Data Qualifiers

Data Qualifier Codes

Codes Related to Identification

U Not detected. The associated number indicates the approximate sample concentration necessary to be detected.

B Not detected substantially above the level reported in laboratory or field blanks.

R Unusable result. Analyte may or may not be present in the sample.

Codes Related to Quantitation

J Analyte present. Reported value may or may not be accurate or precise.

K Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ Not detected. Quantitation limit may be inaccurate or imprecise.

UL The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Appendix B – Data Qualifier Summary

Data Qualifier Summary

Note: The results listed in this table are detects and qualified non-detects only. Unqualified non-detects are not listed.

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU-57-21711-EB L11020571-01	Total manganese	L	J	CRDL %R <LAL; >MDL, <RL
	Total chromium	J	J	>MDL, <RL
SWMU-57-21711-FB L11020571-02	Total manganese	UL	U	CRDL %R <LAL
SWMU-57-21711-DUP L11020571-05	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL
	Total antimony	J		No CRDL standard
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL
SWMU-57-21711-B-5-SS-1-2′ L11020571-06	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL
	Total antimony	J		No CRDL standard
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL
SWMU-57-21711-B-2-SS-2.5′ L11020571-07	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL
SWMU-57-21711-B-2-SS-5′ L11020571-08	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL
SWMU-57-21711-B-1-SS-2.5′ L11020571-09	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL

Data Qualifier Summary (Cont.)

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU-57-21711-B-6-SS-2.5′ L11020571-10	Total manganese	J		MS/MSD RPD >UA; FD RPD >UAL
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL
SWMU-57-21811-B3-SS-2′ L11020571-11	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL
	Total iron	J		SD %D >UAL
	Total chromium	L		No CRDL standard; MS %R <LAL
SWMU-57-21811-B4-SS-2.5′ L11020571-12	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL; >MDL, <RL
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL
SWMU-57-21811-B7-SS-2′ L11020571-13	Total manganese	J		MS/MSD RPD >UAL; FD RPD >UAL
	Total antimony	J	J	No CRDL standard; >MDL, <RL
	Total iron	J		SD %D >UAL
	Total chromium	L		MS %R <LAL

Appendix C – Laboratory Report Results/Data Summary

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-01	PrePrep Method:	NONE	Instrument:	PE-ICP2
Client ID:	SWMU-57-21711-EB	Prep Method:	3005A	Prep Date:	02/23/2011 07:36
Matrix:	Water	Analytical Method:	6010B	Cal Date:	02/23/2011 09:44
Workgroup Number:	WG357407	Analyst:	PDM	Run Date:	02/23/2011 17:36
Collect Date:	02/17/2011 09:00	Dilution:	1	File ID:	P2.022311.173640
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5		U	0.100	0.0500
Iron, Total	7439-89-6		U	0.100	0.0500

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-02	PrePrep Method:	NONE	Instrument:	PE-ICP2
Client ID:	SWMU-57-21711-FB	Prep Method:	3005A	Prep Date:	02/23/2011 07:36
Matrix:	Water	Analytical Method:	6010B	Cal Date:	02/23/2011 09:44
Workgroup Number:	WG357407	Analyst:	PDM	Run Date:	02/23/2011 17:43
Collect Date:	02/17/2011 09:05	Dilution:	1	File ID:	P2.022311.174319
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5		U	0.100	0.0500
Iron, Total	7439-89-6		U	0.100	0.0500

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-MS	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 15:29
Collect Date:	02/17/2011 10:10	Dilution:	1	File ID:	T2.022311.152951
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	21.1		0.759	0.380

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-MS	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 10:42
Collect Date:	02/17/2011 10:10	Dilution:	200	File ID:	T2.022511.104257
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	16800		3040	1520
Iron, Total	7439-89-6	33600		456	228
Manganese, Total	7439-96-5	352		75.9	38.0

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-MSD	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 15:33
Collect Date:	02/17/2011 10:10	Dilution:	1	File ID:	T2.022311.153331
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	20.0		0.759	0.380

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-MSD	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 09:59
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 10:46
Collect Date:	02/17/2011 10:10	Dilution:	200	File ID:	T2.022511.104646
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	18100		3040	1520
Iron, Total	7439-89-6	32300		456	228
Manganese, Total	7439-96-5	175		75.9	38.0

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-DUP	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 15:40
Collect Date:	02/17/2011 10:10	Dilution:	1	File ID:	T2.022311.154049
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	1.10		0.758	0.379

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-DUP	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 10:54
Collect Date:	02/17/2011 10:10	Dilution:	200	File ID:	T2.022511.105424
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	18200		3030	1520
Iron, Total	7439-89-6	34600		455	227
Manganese, Total	7439-96-5	178		75.8	37.9

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-06	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-5-SS-1-2	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 15:37
Collect Date:	02/17/2011 10:10	Dilution:	1	File ID:	T2.022311.153710
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	1.15		0.759	0.380

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-06	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-5-SS-1-2	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 09:59
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 10:50
Collect Date:	02/17/2011 10:10	Dilution:	200	File ID:	T2.022511.105035
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	18100		3040	1520
Iron, Total	7439-89-6	33800		456	228
Manganese, Total	7439-96-5	655		75.9	38.0

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-07	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-2-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 16:02
Collect Date:	02/17/2011 10:55	Dilution:	1	File ID:	T2.022311.160240
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	10.5		0.737	0.368

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-07	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-2-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 11:09
Collect Date:	02/17/2011 10:55	Dilution:	200	File ID:	T2.022511.110925
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	17400		2950	1470
Iron, Total	7439-89-6	27000		442	221
Manganese, Total	7439-96-5	343		73.7	36.8

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-08	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-2-SS-5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 16:06
Collect Date:	02/17/2011 11:35	Dilution:	1	File ID:	T2.022311.160622
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	3.70		0.754	0.377

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number: **L11020571-08**
Client ID: **SWMU-57-21711-B-2-SS-5**
Matrix: **Soil**
Workgroup Number: **WG357401**
Collect Date: **02/17/2011 11:35**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3051A**
Analytical Method: **6010B**
Analyst: **JYH**
Dilution: **200**
Units: **mg/kg**

Instrument: **ICP-THERMO2**
Prep Date: **02/23/2011 12:17**
Cal Date: **02/25/2011 10:02**
Run Date: **02/25/2011 11:13**
File ID: **T2.022511.111314**
Percent Solid: **100**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	13200		3010	1510
Iron, Total	7439-89-6	24200		452	226
Manganese, Total	7439-96-5	431		75.4	37.7

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-09	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-1-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 16:10
Collect Date:	02/17/2011 12:05	Dilution:	1	File ID:	T2.022311.161002
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	3.12		0.726	0.363

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-09	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-1-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 11:17
Collect Date:	02/17/2011 12:05	Dilution:	200	File ID:	T2.022511.111703
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	15200		2900	1450
Iron, Total	7439-89-6	27900		436	218
Manganese, Total	7439-96-5	154		72.6	36.3

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-10	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-6-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 16:13
Collect Date:	02/17/2011 13:35	Dilution:	1	File ID:	T2.022311.161345
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	9.20		0.708	0.354

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-10	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21711-B-6-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 11:28
Collect Date:	02/17/2011 13:35	Dilution:	200	File ID:	T2.022511.112822
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	14900		2830	1420
Iron, Total	7439-89-6	26900		425	212
Manganese, Total	7439-96-5	229		70.8	35.4

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-11	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21811-B3-SS-2	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 16:17
Collect Date:	02/17/2011 08:55	Dilution:	1	File ID:	T2.022311.161728
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	3.42		0.667	0.334

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-11	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21811-B3-SS-2	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 12:28
Collect Date:	02/17/2011 08:55	Dilution:	400	File ID:	T2.022511.122813
Sample Tag:	DL02	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Iron, Total	7439-89-6	63500		801	400

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-11	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21811-B3-SS-2	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 11:32
Collect Date:	02/17/2011 08:55	Dilution:	200	File ID:	T2.022511.113211
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	10300		2670	1330
Manganese, Total	7439-96-5	1240		66.7	33.4

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-12	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21811-B4-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 16:21
Collect Date:	02/17/2011 09:45	Dilution:	1	File ID:	T2.022311.162110
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	2.13		0.684	0.342

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-12	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21811-B4-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 11:35
Collect Date:	02/17/2011 09:45	Dilution:	200	File ID:	T2.022511.113559
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	20000		2740	1370
Iron, Total	7439-89-6	34700		411	205
Manganese, Total	7439-96-5	119		68.4	34.2

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-13	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21811-B7-SS-2	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/23/2011 09:57
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/23/2011 16:24
Collect Date:	02/17/2011 11:05	Dilution:	1	File ID:	T2.022311.162450
Sample Tag:	01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	0.640	J	0.742	0.371

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-13	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-21811-B7-SS-2	Prep Method:	3051A	Prep Date:	02/23/2011 12:17
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	02/25/2011 10:02
Workgroup Number:	WG357401	Analyst:	JYH	Run Date:	02/25/2011 11:39
Collect Date:	02/17/2011 11:05	Dilution:	200	File ID:	T2.022511.113947
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	15400		2970	1480
Iron, Total	7439-89-6	31500		445	223
Manganese, Total	7439-96-5	517		74.2	37.1

Microbac Laboratories Inc.

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-EB	Prep Method:	3015	Prep Date:	02/23/2011 08:10
Matrix:	Water	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357403	Analyst:	JYH	Run Date:	02/25/2011 13:52
Collect Date:	02/17/2011 09:00	Dilution:	1	File ID:	EL.022511.135249
Sample Tag:	01	Units:	mg/L		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.00100	0.000500
Cadmium, Total	7440-43-9		U	0.000600	0.000300
Chromium, Total	7440-47-3	0.00118	J	0.00200	0.00100
Manganese, Total	7439-96-5	0.00168	J	0.00200	0.00100

J Estimated value ; the analyte concentration was less than the low standard (LOQ)
U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-MS	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 18:34
Collect Date:	02/17/2011 10:10	Dilution:	5	File ID:	EL.022511.183407
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	10.6		0.500	0.250
Chromium, Total	7440-47-3	27.4		2.00	1.00

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-MS	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 18:34
Collect Date:	02/17/2011 10:10	Dilution:	5	File ID:	EL.022511.183407
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	10.6		0.500	0.250
Chromium, Total	7440-47-3	27.4		2.00	1.00

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number: **L11020571-04**
Client ID: **SWMU-57-21711-MSD**
Matrix: **Soil**
Workgroup Number: **WG357404**
Collect Date: **02/17/2011 10:10**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3051A**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **5**
Units: **mg/kg**

Instrument: **ELAN-ICP**
Prep Date: **02/23/2011 06:37**
Cal Date: **02/25/2011 10:03**
Run Date: **02/25/2011 18:40**
File ID: **EL.022511.184054**
Percent Solid: **100**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	10.5		0.500	0.250
Chromium, Total	7440-47-3	31.4		2.00	1.00

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-05	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-DUP	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 18:47
Collect Date:	02/17/2011 10:10	Dilution:	5	File ID:	EL.022511.184742
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.485	0.243
Chromium, Total	7440-47-3	15.5		1.94	0.971

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-06	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-B-5-SS-1-2	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 18:54
Collect Date:	02/17/2011 10:10	Dilution:	5	File ID:	EL.022511.185430
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.500	0.250
Chromium, Total	7440-47-3	20.2		2.00	1.00

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-07	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-B-2-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 19:01
Collect Date:	02/17/2011 10:55	Dilution:	5	File ID:	EL.022511.190118
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	2.53		0.466	0.233
Chromium, Total	7440-47-3	22.8		1.87	0.933

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-08	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-B-2-SS-5	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 19:08
Collect Date:	02/17/2011 11:35	Dilution:	5	File ID:	EL.022511.190805
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.395	J	0.487	0.244
Chromium, Total	7440-47-3	17.4		1.95	0.975

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-09	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-B-1-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 19:28
Collect Date:	02/17/2011 12:05	Dilution:	5	File ID:	EL.022511.192852
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.498	0.249
Chromium, Total	7440-47-3	13.9		1.99	0.996

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-10	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21711-B-6-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 19:35
Collect Date:	02/17/2011 13:35	Dilution:	5	File ID:	EL.022511.193538
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.424	J	0.483	0.241
Chromium, Total	7440-47-3	13.9		1.93	0.965

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Microbac Laboratories Inc.

Report Number: **L11020571**

Report Date : **March 4, 2011**

Sample Number:	L11020571-11	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21811-B3-SS-2	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 19:42
Collect Date:	02/17/2011 08:55	Dilution:	5	File ID:	EL.022511.194224
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	1.71		0.470	0.235
Chromium, Total	7440-47-3	49.3		1.88	0.940

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-12	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21811-B4-SS-2.5	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 19:49
Collect Date:	02/17/2011 09:45	Dilution:	5	File ID:	EL.022511.194911
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	2.23		0.461	0.231
Chromium, Total	7440-47-3	31.0		1.85	0.923

Report Number: **L11020571**
Report Date : **March 4, 2011**

Sample Number:	L11020571-13	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-21811-B7-SS-2	Prep Method:	3051A	Prep Date:	02/23/2011 06:37
Matrix:	Soil	Analytical Method:	6020	Cal Date:	02/25/2011 10:03
Workgroup Number:	WG357404	Analyst:	JYH	Run Date:	02/25/2011 19:55
Collect Date:	02/17/2011 11:05	Dilution:	5	File ID:	EL.022511.195557
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	100

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.479	0.239
Chromium, Total	7440-47-3	25.3		1.92	0.958

U Analyte was not detected. The concentration is below the reported LOD.

Appendix D – Support Documentation

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

Laboratory Report Number: L11020571

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on March 04, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on March 04, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 1493 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11020571

03/04/11 16:17

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-21711-EB	L11020571-01	02/17/2011 09:00	02/19/2011
SWMU-57-21711-FB	L11020571-02	02/17/2011 09:05	02/19/2011
SWMU-57-21711-MS	L11020571-03	02/17/2011 10:10	02/19/2011
SWMU-57-21711-MSD	L11020571-04	02/17/2011 10:10	02/19/2011
SWMU-57-21711-DUP	L11020571-05	02/17/2011 10:10	02/19/2011
SWMU-57-21711-B-5-SS-1-2	L11020571-06	02/17/2011 10:10	02/19/2011
SWMU-57-21711-B-2-SS-2.5	L11020571-07	02/17/2011 10:55	02/19/2011
SWMU-57-21711-B-2-SS-5	L11020571-08	02/17/2011 11:35	02/19/2011
SWMU-57-21711-B-1-SS-2.5	L11020571-09	02/17/2011 12:05	02/19/2011
SWMU-57-21711-B-6-SS-2.5	L11020571-10	02/17/2011 13:35	02/19/2011
SWMU-57-21811-B3-SS-2	L11020571-11	02/17/2011 08:55	02/19/2011
SWMU-57-21811-B4-SS-2.5	L11020571-12	02/17/2011 09:45	02/19/2011
SWMU-57-21811-B7-SS-2	L11020571-13	02/17/2011 11:05	02/19/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1936836
Report generated: 03/04/2011 16:17

Login Number: L11020571

Department: Login

Chain of Custody:

Shipment Conditions

COC #	Cooler #	Temperature
2399	5474	1.0

Sample Management: The RS, MS, SD samples have different collect times. Logged for the RS time of 1010.

Sample Identification

Lab ID	Client ID
L11020571-01	SWMU-57-21711-EB
L11020571-02	SWMU-57-21711-FB
L11020571-03	SWMU-57-21711-MS
L11020571-04	SWMU-57-21711-MSD
L11020571-05	SWMU-57-21711-DUP
L11020571-06	SWMU-57-21711-B-5-SS-1-2
L11020571-07	SWMU-57-21711-B-2-SS-2.5
L11020571-08	SWMU-57-21711-B-2-SS-5
L11020571-09	SWMU-57-21711-B-1-SS-2.5
L11020571-10	SWMU-57-21711-B-6-SS-2.5
L11020571-11	SWMU-57-21811-B3-SS-2
L11020571-12	SWMU-57-21811-B4-SS-2.5
L11020571-13	SWMU-57-21811-B7-SS-2

Narrative ID: 21928
Approved By: Stephanie Mossburg
Stephanie Mossburg

Login Number: L11020571

Department: Metals

Analyst: Pierce Morris
Analyst #2: Ji Hu

METHOD

Preparation: SW-846 3005/3051

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG357407 - All acceptance criteria were met.

WG357401 - Aluminum, iron, and manganese for client sample 01 was reported from the two hundred fold dilution where the two hundred fold post digestion spike dilution was compliant

Matrix Spikes: WG357401 - Sample 06 was chosen by the client for MS/MSD analysis. Samples 03(MS) and 04(MSD) yielded noncompliant recoveries for three analytes and a noncompliant RPD for manganese.

SAMPLES

Samples: WG357401 - Client samples 03 through 13 required dilution analyses in order to obtain results for aluminum, iron and manganese within the calibration range.

Narrative ID: 22071
Approved By: Sheri Pfalzgraf

Login Number: L11020571

Department: Metals

Analyst: Ji Hu
Analyst #2: Erin Long

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG357403 - All acceptance criteria were met.

WG357404 - All acceptance criteria were met.

Matrix Spikes: WG357404 - Sample 06 was chosen by the client for MS/MSD analysis. Samples 03(MS) and 04(MSD) yielded a noncompliant recovery for chromium.

SAMPLES

Samples: WG357404 - Due to the high levels of nontarget analytes, client samples 03 through 13 were analyzed initially at dilutions for all analytes.

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.

Narrative ID: 22270
Approved By: Sheri Pfalzgraf

COC No. A 2399

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB - KEMRON

Project Contact: MARY LOU ROCHOTTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 5-DAY | Location: RFAAP SWMU-57

Project ID: MR0669-400-002 (STEAM LINE SAMPLES)

Sampler (print): JONAH ANDERSON | Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	METALS (SEE LIST)	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
SWMU-57-21711-EB		X	2-17-11	0900	W	1		1		* IN ACCORDANCE W/ QAPP - RFAAP
SWMU-57-21711-FB		X	2-17-11	0905	W	1		1		
SWMU-57-21711-MS		X	2-17-11	1000	S	1		1		NOTE: STEAM LINE SAMPLES
SWMU-57-21711-MSD		X	2-17-11	1005	S	1		1		
SWMU-57-21711-DUP		X	2-17-11	1010	S	1		1		* METALS:
SWMU-57-21711-B-55-1-2'		X	2-17-11	1010	S	1		1		Aluminum,
SWMU-57-21711-B-255-2.5'		X	2-17-11	1055	S	1		1		Antimony,
SWMU-57-21711-B-255-5'		X	2-17-11	1135	S	1		1		Cadmium,
SWMU-57-21711-B-1-55-2.5'		X	2-17-11	1205	S	1		1		Chromium,
SWMU-57-21711-B-6-55-2.5'		X	2-17-11	1335	S	1		1		Iron, Manganese
SWMU-57-21811-B-55-2'		X	2-18-11	0855	S	1		1		
SWMU-57-21811-B-55-2.5'		X	2-18-11	0945	S	1		1		
SWMU-57-21811-B-55-2'		X	2-18-11	1105	S	1		1		

Microbac OVD 221000012527
Received: 02/19/2011 15:23
By: ROBIN KLINGER

Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks:
	2-19-11	1325				
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks:
				2-19-11	1325	

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11020571
Work Group: WG357407
Blank File ID: P2.022311.164259
Blank Sample ID: WG357312-03
Prep Date: 02/23/11 07:36
Instrument ID: PE-ICP2
Analyzed Date: 02/23/11 16:42
Method: 6010B
Analyst: PDM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG357312-04	P2.022311.164940	02/23/11 16:49	01
SWMU-57-21711-EB	L11020571-01	P2.022311.173640	02/23/11 17:36	01
SWMU-57-21711-FB	L11020571-02	P2.022311.174319	02/23/11 17:43	01

Report Name: BLANK_SUMMARY
PDF File ID: 1928260
Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11020571 Work Group: WG357401
Blank File ID: T2.022311.151851 Blank Sample ID: WG357371-03
Prep Date: 02/23/11 12:17 Instrument ID: ICP-THERMO2
Analyzed Date: 02/23/11 15:18 Method: 6010B
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG357371-04	T2.022311.152235	02/23/11 15:22	01
SWMU-57-21711-MS	L11020571-03	T2.022311.152951	02/23/11 15:29	01
SWMU-57-21711-MSD	L11020571-04	T2.022311.153331	02/23/11 15:33	01
SWMU-57-21711-B-5-SS-1-2	L11020571-06	T2.022311.153710	02/23/11 15:37	01
SWMU-57-21711-DUP	L11020571-05	T2.022311.154049	02/23/11 15:40	01
SWMU-57-21711-B-2-SS-2.5	L11020571-07	T2.022311.160240	02/23/11 16:02	01
SWMU-57-21711-B-2-SS-5	L11020571-08	T2.022311.160622	02/23/11 16:06	01
SWMU-57-21711-B-1-SS-2.5	L11020571-09	T2.022311.161002	02/23/11 16:10	01
SWMU-57-21711-B-6-SS-2.5	L11020571-10	T2.022311.161345	02/23/11 16:13	01
SWMU-57-21811-B3-SS-2	L11020571-11	T2.022311.161728	02/23/11 16:17	01
SWMU-57-21811-B4-SS-2.5	L11020571-12	T2.022311.162110	02/23/11 16:21	01
SWMU-57-21811-B7-SS-2	L11020571-13	T2.022311.162450	02/23/11 16:24	01
SWMU-57-21711-MS	L11020571-03	T2.022511.104257	02/25/11 10:42	DL02
SWMU-57-21711-MSD	L11020571-04	T2.022511.104646	02/25/11 10:46	DL01
SWMU-57-21711-B-5-SS-1-2	L11020571-06	T2.022511.105035	02/25/11 10:50	DL01
SWMU-57-21711-DUP	L11020571-05	T2.022511.105424	02/25/11 10:54	DL01
SWMU-57-21711-B-2-SS-2.5	L11020571-07	T2.022511.110925	02/25/11 11:09	DL01
SWMU-57-21711-B-2-SS-5	L11020571-08	T2.022511.111314	02/25/11 11:13	DL01
SWMU-57-21711-B-1-SS-2.5	L11020571-09	T2.022511.111703	02/25/11 11:17	DL01
SWMU-57-21711-B-6-SS-2.5	L11020571-10	T2.022511.112822	02/25/11 11:28	DL01
SWMU-57-21811-B3-SS-2	L11020571-11	T2.022511.113211	02/25/11 11:32	DL01
SWMU-57-21811-B4-SS-2.5	L11020571-12	T2.022511.113559	02/25/11 11:35	DL01
SWMU-57-21811-B7-SS-2	L11020571-13	T2.022511.113947	02/25/11 11:39	DL01
SWMU-57-21811-B3-SS-2	L11020571-11	T2.022511.122813	02/25/11 12:28	DL02

Report Name: BLANK_SUMMARY
PDF File ID: 1927976
Report generated 02/25/2011 13:45

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11020571 Prep Date:02/23/11 07:36 Sample ID:WG357312-03
Instrument ID:PE-ICP2 Run Date:02/23/11 16:42 Prep Method:3005A
File ID:P2.022311.164259 Analyst:PDM Method:6010B
Workgroup (AAB#):WG357407 Matrix:Water Units:mg/L
Contract #: Cal ID:PE-ICP-23-FEB-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	0.0500	0.100	0.0500	1	U
Iron, Total	0.0500	0.100	0.0500	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1928261
24-FEB-2011 09:06

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11020571 Prep Date:02/23/11 12:17 Sample ID:WG357371-03
Instrument ID:ICP-THERMO2 Run Date:02/23/11 15:18 Prep Method:3051A
File ID:T2.022311.151851 Analyst:JYH Method:6010B
Workgroup (AAB#):WG357401 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-23-FEB-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Iron, Total	1.50	3.00	1.50	1	U
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1927977
25-FEB-2011 13:44

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357312-04
Instrument ID: PE-ICP2 Run Time: 16:49 Prep Method: 3005A
File ID: P2.022311.164940 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG357407 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD39933 Cal ID: PE-ICP-23-FEB-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	5.00	4.94	98.9	80 - 120	
Iron, Total	2.00	1.92	95.8	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1928262
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357371-04
Instrument ID: ICP-THERMO2 Run Time: 15:22 Prep Method: 3051A
File ID: T2.022311.152235 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG357401 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-23-FEB-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	238	95.1	80 - 120	
Antimony, Total	30.0	28.2	94.0	80 - 120	
Iron, Total	100	93.3	93.3	80 - 120	
Manganese, Total	12.5	11.8	94.5	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1927978
Report generated: 02/25/2011 13:44

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11020571 Cal ID:PE-ICP2- Worknum:WG357407

Instrument ID:PE-ICP2 Contract #: Method:6010B

Parent ID:WG357312-01 File ID:P2.022311.165621 Dil:1 Matrix:WATER

Sample ID:WG357312-05 MSD File ID:P2.022311.170300 Dil:1 Units:mg/L

Sample ID:WG357312-06 MS File ID:P2.022311.170944 Dil:1

Analyte	Parent	MSD Spiked	MSD Found	MSD %Rec	MS Spiked	MS Found	MS %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum	0.0700	5.00	4.90	96.6	5.00	4.87	96.1	0.551	80 - 120	20	
Iron	0.624	2.00	2.49	93.3	2.00	2.52	94.6	1.01	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:1928263

Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11020571 Cal ID:PE-ICP2- Worknum:WG357407

Instrument ID:PE-ICP2 Contract #: Method:6010B

Parent ID:WG357312-02 File ID:P2.022311.171633 Dil:1 Matrix:WATER

Sample ID:WG357312-07 MSD File ID:P2.022311.172312 Dil:1 Units:mg/L

Sample ID:WG357312-08 MS File ID:P2.022311.172955 Dil:1

Analyte	Parent	MSD Spiked	MSD Found	MSD %Rec	MS Spiked	MS Found	MS %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum	ND	5.00	4.84	96.9	5.00	4.74	94.8	2.11	80 - 120	20	
Iron	0.221	2.00	2.18	98.2	2.00	2.09	93.5	4.42	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:1928263

Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11020571 Cal ID: ICP-THERMO2- 23-FEB-11 Worknum:WG357401

Instrument ID:ICP-THERMO2 Contract #: Prep Method:3051A

Parent ID:L11020571-06 File ID:T2.022311.153710 Dil:1 Method:6010B

Sample ID:L11020571-03 MS File ID:T2.022311.152951 Dil:1 Matrix:Soil

Sample ID:L11020571-04 MSD File ID:T2.022311.153331 Dil:1 Units:mg/kg

Percent Solid:100

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Antimony, Total	1.15	22.8	21.1	87.5	22.8	20.0	82.9	5.14	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1927979
Report generated 02/25/2011 13:47

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11020571 Cal ID: ICP-THERMO2- 25-FEB-11 Worknum:WG357401
Instrument ID:ICP-THERMO2 Contract #: Prep Method:3051A
Parent ID:L11020571-06 File ID:T2.022511.105035 Dil:200 Method:6010B
Sample ID:L11020571-03 MS File ID:T2.022511.104257 Dil:200 Matrix:Soil
Sample ID:L11020571-04 MSD File ID:T2.022511.104646 Dil:200 Units:mg/kg
Percent Solid:100

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	18100	190	16800	-730	190	18100	-34	7.59	80 - 120	20	*
Iron, Total	33800	75.9	33600	-339	75.9	32300	-2070	3.99	80 - 120	20	*
Manganese, Total	655	9.49	352	-3190	9.49	175	-5060	67.2	80 - 120	20	*#

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1927979
Report generated 02/25/2011 13:47

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11020571 **Worknum:** WG357407
Instrument: PE-ICP2 **Method:** 6010B
Serial Dil: WG357407-02 **File ID:** P2.022311.181457 **Dil:** 5 **Units:** mg/L
Sample: L11020574-01 **File ID:** P2.022311.180322 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	13.4		13.4		0.00	
Iron	10.3		10.5		1.94	

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: 1928257
02/24/2011 09:06

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11020571 **Worknum:** WG357401
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG357401-02 **File ID:** T2.022311.154807 **Dil:** 5 **Units:** mg/L
Sample: L11020571-05 **File ID:** T2.022311.154049 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	330		419.5		27.10	E
Antimony	.029	X	ND	U		
Iron	809		850		5.07	
Manganese	4.16		4.245		2.04	

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: 1927973
02/25/2011 13:45

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11020571 **Worknum:** WG357401
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG357401-02 **File ID:** T2.022511.110149 **Dil:** 1000 **Units:** mg/L
Sample: L11020571-05 **File ID:** T2.022511.105424 **Dil:** 200

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	480	X	502	X	4.58	
Antimony	ND	U	ND	U		
Iron	914		816		10.70	E
Manganese	4.7	X	5.56	F	18.30	

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: 1927973
02/25/2011 13:45

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11020571 **Worknum:** WG357407
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG357407-01 **File ID:** P2.022311.180908 **Dil:** 1 **Units:** mg/L
Sample ID: L11020574-01 **File ID:** P2.022311.180322 **Dil:** 1 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	17.4		13.4		5	106.8	75 - 125	
IRON	11.5		10.3		2	111.1	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: 1928258
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11020571 **Worknum:** WG357401
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG357401-01 **File ID:** T2.022311.154428 **Dil:** 1 **Units:** mg/L
Sample ID: L11020571-05 **File ID:** T2.022311.154049 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	299		330		5	42.5	75 - 125	N
ANTIMONY	0.593		0.0290		.6	94.5	75 - 125	
IRON	736		809		2	392.0	75 - 125	N
MANGANESE	3.98		4.16		.25	95.0	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: 1927974
Report generated: 02/25/2011 13:45

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11020571 **Worknum:** WG357401
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG357401-01 **File ID:** T2.022511.105811 **Dil:** 200 **Units:** mg/L
Sample ID: L11020571-05 **File ID:** T2.022511.105424 **Dil:** 200 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	8.05		2.40		5	113.1	75 - 125	
ANTIMONY	0.640		0	U	.6	106.7	75 - 125	
IRON	6.67		4.57		2	105.2	75 - 125	
MANGANESE	0.271		0.0235		.25	98.9	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: 1927974
Report generated: 02/25/2011 13:45

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11020571	Workgroup (AAB#):	WG357407
Analytical Method:	6010B	Instrument ID:	PE-ICP2
ICAL Worknum:	WG357414	Initial Calibration Date:	23-FEB-2011 09:44

	WG357414-01		WG357414-02		WG357414-03		WG357414-04		WG357414-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	-201	.1	526	.2	990	10	47600	20	92900	.999923	
IRON	0	1.34	.04	17.7	.08	34.9	4	1680	8	3410	.999961	

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 1928266
Report generated: 24-FEB-2011 09:06

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11020571	Workgroup (AAB#):	WG357401
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG357413	Initial Calibration Date:	23-FEB-2011 09:57

	WG357413-01		WG357413-02		WG357413-03		WG357413-04		WG357413-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.00834	.1	0.0136	.2	0.0186	10	0.465	20	0.934	.999907	
ANTIMONY	0	0.0000700	.012	0.000160	.024	0.000240	1.2	0.00890	2.4	0.0177	.999999	
IRON	0	0.0000200	.04	0.000280	.08	0.000550	4	0.0258	8	0.0517	.999997	
MANGANESE	0	0.0000300	.005	0.000380	.01	0.000670	.5	0.0326	1	0.0649	.999983	

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 1927983
Report generated: 25-FEB-2011 13:45

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11020571	Workgroup (AAB#):	WG357401
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG357631	Initial Calibration Date:	25-FEB-2011 10:02

	WG357631-01		WG357631-02		WG357631-03		WG357631-04		WG357631-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.0112	.1	0.0163	.2	0.0208	10	0.475	20	0.968	.999879	
ANTIMONY	0	0.0000500	.012	0.000150	.024	0.000240	1.2	0.00848	2.4	0.0167	.999816	
IRON	0	0.0000300	.04	0.000190	.08	0.000360	4	0.0173	8	0.0346	.999977	
MANGANESE	0	-0.0000300	.005	0.000200	.01	0.000400	.5	0.0184	1	0.0369	.999839	

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 1927983
Report generated: 25-FEB-2011 13:45

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number:L11020571 Run Date:02/23/2011 Sample ID: WG357414-07
Instrument ID:PE-ICP2 Run Time:09:57 Method: 6010B
File ID:P2.022311.095752 Analyst:PDM Units: mg/L
Workgroup (AAB#):WG357407 Cal ID:PE-ICP2 - 23-FEB-11
Matrix:WATER

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.05	.1	.05	U
IRON	.05	.1	.05	U

U = Result is less than 2 x MDL

F = Result is between MDL and 2 x MDL

* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1928268
Report generated 02/24/2011 09:06

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-07
Instrument ID: ICP-THERMO2 Run Time: 10:05 Method: 6010B
File ID: T2.022311.100500 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG357401 Cal ID: ICP-THERI - 23-FEB-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1927985
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-07
Instrument ID: ICP-THERMO2 Run Time: 10:10 Method: 6010B
File ID: T2.022511.101003 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG357401 Cal ID: ICP-THERI - 25-FEB-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1927985
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357414-11

Instrument ID: PE-ICP2 Run Time: 10:22 Method: 6010B

File ID: P2.022311.102234 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG357407 Cal ID: PE-ICP - 23-FEB-11

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0500	0.100	0.0500	U
Iron	0.0500	0.100	0.0500	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: 1928271
Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11020571 Run Date:02/23/2011 Sample ID:WG357414-21
Instrument ID:PE-ICP2 Run Time:16:36 Method:6010B
File ID:P2.022311.163616 Analyst:PDM Units:mg/L
Workgroup (AAB#):WG357407 Cal ID:PE-ICP - 23-FEB-11
Matrix:WATER QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0500	0.100	0.0500	U
Iron	0.0500	0.100	0.0500	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: 1928271
Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11020571 Run Date:02/23/2011 Sample ID:WG357414-23
Instrument ID:PE-ICP2 Run Time:17:56 Method:6010B
File ID:P2.022311.175639 Analyst:PDM Units:mg/L
Workgroup (AAB#):WG357407 Cal ID:PE-ICP - 23-FEB-11
Matrix:WATER QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0500	0.100	0.0500	U
Iron	0.0500	0.100	0.0500	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: 1928271
Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11020571 Run Date:02/23/2011 Sample ID:WG357414-25
Instrument ID:PE-ICP2 Run Time:18:41 Method:6010B
File ID:P2.022311.184151 Analyst:PDM Units:mg/L
Workgroup (AAB#):WG357407 Cal ID:PE-ICP - 23-FEB-11
Matrix:WATER QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0500	0.100	0.0500	U
Iron	0.0500	0.100	0.0500	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: 1928271
Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-11

Instrument ID: ICP-THERMO2 Run Time: 10:19 Method: 6010B

File ID: T2.022311.101940 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-25

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

File ID: T2.022311.151508 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-27

Instrument ID: ICP-THERMO2 Run Time: 15:58 Method: 6010B

File ID: T2.022311.155858 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-29

Instrument ID: ICP-THERMO2 Run Time: 16:43 Method: 6010B

File ID: T2.022311.164337 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-32

Instrument ID: ICP-THERMO2 Run Time: 17:25 Method: 6010B

File ID: T2.022311.172504 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-11

Instrument ID: ICP-THERMO2 Run Time: 10:39 Method: 6010B

File ID: T2.022511.103907 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-13

Instrument ID: ICP-THERMO2 Run Time: 11:24 Method: 6010B

File ID: T2.022511.112431 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11020571 Run Date:02/25/2011 Sample ID:WG357631-15
Instrument ID:ICP-THERMO2 Run Time:12:09 Method:6010B
File ID:T2.022511.120929 Analyst:JYH Units:mg/L
Workgroup (AAB#):WG357401 Cal ID:ICP-TH - 25-FEB-11
Matrix:SOIL QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-17

Instrument ID: ICP-THERMO2 Run Time: 12:39 Method: 6010B

File ID: T2.022511.123935 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1927988
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357414-06

Instrument ID: PE-ICP2 Run Time: 09:51 Method: 6010B

File ID: P2.022311.095111 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG357407 Cal ID: PE-ICP - 23-FEB-11

QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.1	101	90 - 110	
Iron		4	3.93	98.2	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1928267

Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11020571 Run Date:02/23/2011 Sample ID:WG357413-06

Instrument ID:ICP-THERMO2 Run Time:10:01 Method:6010B

File ID:T2.022311.100127 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG357401 Cal ID:ICP-TH - 23-FEB-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.2	102	90 - 110	
Antimony		1.2	1.18	98.5	90 - 110	
Iron		4	3.96	98.9	90 - 110	
Manganese		.5	0.491	98.2	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1927984

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11020571 Run Date:02/25/2011 Sample ID:WG357631-06

Instrument ID:ICP-THERMO2 Run Time:10:06 Method:6010B

File ID:T2.022511.100625 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG357401 Cal ID:ICP-TH - 25-FEB-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.1	101	90 - 110	
Antimony		1.2	1.20	99.8	90 - 110	
Iron		4	3.97	99.1	90 - 110	
Manganese		.5	0.489	97.9	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1927984

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357414-10

Instrument ID: PE-ICP2 Run Time: 10:15 Method: 6010B

File ID: P2.022311.101555 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG357407 Cal ID: PE-ICP - 23-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Iron		4.00	3.97	mg/L	99.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1928270

Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357414-20

Instrument ID: PE-ICP2 Run Time: 16:29 Method: 6010B

File ID: P2.022311.162910 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG357407 Cal ID: PE-ICP - 23-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.87	mg/L	98.7	90 - 110		
Iron		4.00	3.81	mg/L	95.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1928270

Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357414-22

Instrument ID: PE-ICP2 Run Time: 17:49 Method: 6010B

File ID: P2.022311.174959 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG357407 Cal ID: PE-ICP - 23-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.78	mg/L	97.8	90 - 110		
Iron		4.00	3.75	mg/L	93.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1928270

Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357414-24

Instrument ID: PE-ICP2 Run Time: 18:35 Method: 6010B

File ID: P2.022311.183512 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG357407 Cal ID: PE-ICP - 23-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.91	mg/L	99.1	90 - 110		
Iron		4.00	3.83	mg/L	95.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1928270

Report generated 02/24/2011 09:06

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-10

Instrument ID: ICP-THERMO2 Run Time: 10:16 Method: 6010B

File ID: T2.022311.101608 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Antimony		1.20	1.20	mg/L	99.7	90 - 110		
Iron		4.00	3.98	mg/L	99.5	90 - 110		
Manganese		0.500	0.497	mg/L	99.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1927987

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-24

Instrument ID: ICP-THERMO2 Run Time: 15:11 Method: 6010B

File ID: T2.022311.151136 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Antimony		1.20	1.20	mg/L	100	90 - 110		
Iron		4.00	3.86	mg/L	96.6	90 - 110		
Manganese		0.500	0.477	mg/L	95.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1927987

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-26

Instrument ID: ICP-THERMO2 Run Time: 15:55 Method: 6010B

File ID: T2.022311.155527 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.20	mg/L	99.8	90 - 110		
Iron		4.00	3.82	mg/L	95.4	90 - 110		
Manganese		0.500	0.467	mg/L	93.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1927987
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-28

Instrument ID: ICP-THERMO2 Run Time: 16:40 Method: 6010B

File ID: T2.022311.164007 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Antimony		1.20	1.19	mg/L	99.5	90 - 110		
Iron		4.00	3.72	mg/L	92.9	90 - 110		
Manganese		0.500	0.463	mg/L	92.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1927987
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/23/2011 Sample ID: WG357413-31

Instrument ID: ICP-THERMO2 Run Time: 17:21 Method: 6010B

File ID: T2.022311.172135 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 23-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Antimony		1.20	1.20	mg/L	99.6	90 - 110		
Iron		4.00	3.79	mg/L	94.7	90 - 110		
Manganese		0.500	0.460	mg/L	92.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1927987

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-10

Instrument ID: ICP-THERMO2 Run Time: 10:35 Method: 6010B

File ID: T2.022511.103531 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.4	mg/L	104	90 - 110		
Antimony		1.20	1.22	mg/L	101	90 - 110		
Iron		4.00	3.97	mg/L	99.3	90 - 110		
Manganese		0.500	0.488	mg/L	97.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1927987

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-12

Instrument ID: ICP-THERMO2 Run Time: 11:20 Method: 6010B

File ID: T2.022511.112054 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.5	mg/L	105	90 - 110		
Antimony		1.20	1.23	mg/L	102	90 - 110		
Iron		4.00	3.98	mg/L	99.6	90 - 110		
Manganese		0.500	0.481	mg/L	96.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1927987

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-14

Instrument ID: ICP-THERMO2 Run Time: 12:05 Method: 6010B

File ID: T2.022511.120551 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.9	mg/L	109	90 - 110		
Antimony		1.20	1.21	mg/L	101	90 - 110		
Iron		4.00	4.02	mg/L	101	90 - 110		
Manganese		0.500	0.479	mg/L	95.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1927987

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357631-16

Instrument ID: ICP-THERMO2 Run Time: 12:35 Method: 6010B

File ID: T2.022511.123557 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357401 Cal ID: ICP-TH - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.5	mg/L	105	90 - 110		
Antimony		1.20	1.22	mg/L	102	90 - 110		
Iron		4.00	3.98	mg/L	99.4	90 - 110		
Manganese		0.500	0.475	mg/L	95.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1927987

Report generated 02/25/2011 13:44

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11020571 **Workgroup (AAB#):** WG357407
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG357414-08 **File ID:** P2.022311.100429 **Units:** mg/L
Sol. AB : WG357414-09 **File ID:** P2.022311.101011 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	235	94.0	250	248	99.2	
Iron	100	93.8	93.8	100	97.7	97.7	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1928269
Report generated 02/24/2011 09:06

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11020571 **Workgroup (AAB#):** WG357401
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG357413-08 **File ID:** T2.022311.100843 **Units:** mg/L
Sol. AB : WG357413-09 **File ID:** T2.022311.101228 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	226	90.4	250	231	92.4	
Antimony	NS	0.00460	NS	0.500	0.498	99.6	
Iron	100	96.8	96.8	100	97.5	97.5	
Manganese	NS	-0.00155	NS	0.250	0.242	96.8	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1927986
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11020571 **Workgroup (AAB#):** WG357401
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG357631-08 **File ID:** T2.022511.101354 **Units:** mg/L
Sol. AB : WG357631-09 **File ID:** T2.022511.101745 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	219	87.6	250	224	89.6	
Antimony	NS	0.00620	NS	0.500	0.503	101	
Iron	100	95.9	95.9	100	96.2	96.2	
Manganese	NS	-0.00161	NS	0.250	0.236	94.4	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1927986
Report generated 02/25/2011 13:44

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 02/14/2011
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	0.0893	0	0	0
BARIUM	233.53	0	0.00932	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	1.12	0	0	0
CADMIUM	228.80	0	0	6.68	0	0
CALCIUM	227.55	0	0.195	10.0	0	0
CHROMIUM	267.72	0	0.0250	0	0	0
COBALT	228.62	0	0	0	0	0.337
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.0210	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	0.111	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	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1928265
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 02/14/2011
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	0	6.33
ARSENIC	188.98	0	0.0200	-0.0875	0	-5.90
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	-0.0733
BORON	249.68	0	0	24.1	5.90	1.50
CADMIUM	228.80	0	0	0	-10.7	0
CALCIUM	227.55	0	0	0	300	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-0.244
COPPER	327.39	0	0	0	0.380	-0.0400
IRON	239.56	0	0	0	1.91	0
LEAD	220.35	0	-0.0480	0	0.116	-0.0700
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-1.04	0	-0.755	-0.0418	-0.110
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	-0.566	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	-0.250	0	-1.52	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	0.0900	0	3.48	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	-0.0100	0	0	0.297
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	0	0	0	0	-3.64

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1928265
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 02/14/2011
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	396.15	0	-0.0800	0	0	0
ANTIMONY	206.84	0	0	0	0	0
ARSENIC	188.98	0	-0.139	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0.195	0	0	0
BORON	249.68	0	-4.66	0	0	0
CADMIUM	228.80	0	0.00130	0	0	0
CALCIUM	227.55	-2.00	-5.00	0	0	0.104
CHROMIUM	267.72	0	-0.000800	0	0	0
COBALT	228.62	0	0.0262	0	0	0
COPPER	327.39	0	-0.115	0	0.154	0
IRON	239.56	0	0	0	0	0.0276
LEAD	220.35	0.740	0.0440	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.540	0	0	0
MANGANESE	257.61	-0.0457	-0.0453	-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	0	0	0
SELENIUM	196.03	0	-0.369	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0.0717	0.0498	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0.120	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	0.134	0	0	0
ZINC	206.20	-0.200	0.0230	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1928265
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 02/14/2011
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	13.5	0	0	0
ANTIMONY	206.84	0	-7.69	0	0	0
ARSENIC	188.98	0	6.00	0	0	0
BARIUM	233.53	0	-0.548	0	0	0
BERYLLIUM	234.86	-0.131	-1.50	0	-0.00974	0
BORON	249.68	0	-2.20	0	0	0
CADMIUM	228.80	0	-0.00900	0	-0.398	0
CALCIUM	227.55	0	-8.00	0	-900	0
CHROMIUM	267.72	0.434	-0.00100	0	0	0
COBALT	228.62	0	-0.125	0	0.129	0
COPPER	327.39	0	-0.0774	0	0.150	0.257
IRON	239.56	0.480	0	0	0	0.407
LEAD	220.35	0.100	-5.00	0	0.100	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.00	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	0.300	0	0.0940	0
SILICON	251.61	0	15.0	0	0	0
SILVER	328.07	0.130	0.100	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-1.50	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: 1928265
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 02/14/2011
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	0	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: 1928265
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 02/14/2011
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	0.000100	0
ARSENIC	188.98	0	0	0.0930	0
BARIUM	233.53	0	0	-2.29	0
BERYLLIUM	234.86	0	0	0	0
BORON	249.68	0	0	0	0
CADMIUM	228.80	0	0	0.0800	0
CALCIUM	227.55	0	0	60.0	0
CHROMIUM	267.72	0	0	-0.567	-0.0400
COBALT	228.62	2.21	0	0	0
COPPER	327.39	-1.05	0	-0.700	-0.0613
IRON	239.56	0	0	0	0
LEAD	220.35	0	0	0.0560	0
LITHIUM	670.78	0	0	0	0
MAGNESIUM	279.08	0	0	0	0
MANGANESE	257.61	-0.00931	-0.0414	-0.0601	-0.0552
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	-0.126	0
SILICON	251.61	0	0	0	0
SILVER	328.07	0	0	-1.67	0
SODIUM	589.59	0	0	0	0
STRONTIUM	407.77	0	0	0	0
THALLIUM	190.80	-12.0	0.617	-1.41	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: 1928265
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 01/25/2011
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	0.00190	0	-0.000140	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	0.000335	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
PHOSPHORUS	214.90	-0.000750	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1927982
Report generated: 02/25/2011 13:44

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 01/25/2011
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	-0.00200	0	0	-0.00000800
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000530
COBALT	228.60	0	0	0.000108	0	0
COPPER	224.70	0	0.0000770	0	0	0.000196
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
PHOSPHORUS	214.90	0	0	0	0.00200	0.00120
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	0.0000570	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	-0.00000200
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.20	0	0	0	0	-0.0000300

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1927982
Report generated: 02/25/2011 13:44

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 01/25/2011
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	0.00000900	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	0.00800	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1927982
Report generated: 02/25/2011 13:44

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 01/25/2011
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
PHOSPHORUS	214.90	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1927982
Report generated: 02/25/2011 13:44

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11020571 **Date:** 01/25/2011
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	V	ZN	ZR
ALUMINUM	308.20	0.00300	0	0
ANTIMONY	206.80	-0.00438	0	0
ARSENIC	189.00	0.000107	0	0
BARIUM	455.40	0	0	0
BERYLLIUM	313.00	0	0	0
BORON	249.70	0	0	0
CADMIUM	228.80	0.0000820	0	0
CALCIUM	422.70	0	0	0
CHROMIUM	267.70	0	0	
COBALT	228.60	0.0000200	0	0
COPPER	224.70	0	0	
IRON	261.20	0	0	0
LEAD	220.30	-0.000126	0	0
LITHIUM	670.80	0	0	0
MAGNESIUM	279.10	0	0	0
MANGANESE	257.60	0	0	0
MOLYBDENUM	202.03	-0.000110	0	0
NICKEL	231.60	0	0	0
PHOSPHORUS	214.90	-0.00500	0	0.00200
POTASSIUM	766.40	0	0	0
SELENIUM	196.00	0	0	0
SILICON	212.40	0	0	0
SILVER	328.00	-0.00617	0	0
SODIUM	589.50	0	0	0
STRONTIUM	407.80	0	0	0
THALLIUM	190.80	-0.0282	0	0
TIN	189.90	0	0	0
TITANIUM	337.30	0	0	0
VANADIUM	292.40	0	0	
ZINC	206.20	0	0	0
ZIRCONIUM	339.20	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1927982
Report generated: 02/25/2011 13:44

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11020571 **Date:** 01/12/2011
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	0.9
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	72.0
Selenium	10.00	45.0
Silicon	10.00	36.0
Silver	10.00	9.0
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: 1928264
Report generated: 02/24/2011 09:06

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11020571 **Date:** 12/13/2010
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	810.0
Antimony	10.00	90.0
Arsenic	10.00	90.0
Barium	10.00	90.0
Beryllium	15.00	4.5
Boron	10.00	90.0
Cadmium	10.00	16.2
Calcium	10.00	900.0
Chromium	10.00	81.0
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	9.0
Nickel	10.00	90.0
Phosphorus	10.00	900.0
Potassium	10.00	315.0
Selenium	10.00	90.0
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
Zirconium	10.00	45.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1927981
Report generated: 02/25/2011 13:44

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11020571 | Work Group: WG357403
Blank File ID: EL.022411.150319 | Blank Sample ID: WG357315-02
Prep Date: 02/23/11 08:10 | Instrument ID: ELAN-ICP
Analyzed Date: 02/24/11 15:03 | Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG357315-03	EL.022411.151003	02/24/11 15:10	01
SWMU-57-21711-EB	L11020571-01	EL.022511.135249	02/25/11 13:52	01
SWMU-57-21711-FB	L11020571-02	EL.022511.135933	02/25/11 13:59	01

Report Name: BLANK_SUMMARY
PDF File ID: 1930331
Report generated 02/28/2011 08:54

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11020571
Work Group: WG357404
Blank File ID: EL.022511.164513
Blank Sample ID: WG357299-03
Prep Date: 02/23/11 06:37
Instrument ID: ELAN-ICP
Analyzed Date: 02/25/11 16:45
Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG357299-04	EL.022511.165200	02/25/11 16:52	01
SWMU-57-21711-MS	L11020571-03	EL.022511.183407	02/25/11 18:34	DL01
SWMU-57-21711-MSD	L11020571-04	EL.022511.184054	02/25/11 18:40	DL01
SWMU-57-21711-DUP	L11020571-05	EL.022511.184742	02/25/11 18:47	DL01
SWMU-57-21711-B-5-SS-1-2	L11020571-06	EL.022511.185430	02/25/11 18:54	DL01
SWMU-57-21711-B-2-SS-2.5	L11020571-07	EL.022511.190118	02/25/11 19:01	DL01
SWMU-57-21711-B-2-SS-5	L11020571-08	EL.022511.190805	02/25/11 19:08	DL01
SWMU-57-21711-B-1-SS-2.5	L11020571-09	EL.022511.192852	02/25/11 19:28	DL01
SWMU-57-21711-B-6-SS-2.5	L11020571-10	EL.022511.193538	02/25/11 19:35	DL01
SWMU-57-21811-B3-SS-2	L11020571-11	EL.022511.194224	02/25/11 19:42	DL01
SWMU-57-21811-B4-SS-2.5	L11020571-12	EL.022511.194911	02/25/11 19:49	DL01
SWMU-57-21811-B7-SS-2	L11020571-13	EL.022511.195557	02/25/11 19:55	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1930331
Report generated 02/28/2011 08:54

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11020571 Prep Date:02/23/11 08:10 Sample ID:WG357315-02
Instrument ID:ELAN-ICP Run Date:02/24/11 15:03 Prep Method:3015
File ID:EL.022411.150319 Analyst:JYH Method:6020
Workgroup (AAB#):WG357403 Matrix:Water Units:mg/L
Contract #: Cal ID:ELAN-I-24-FEB-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Antimony, Total	0.000500	0.00100	0.000500	1	U
Cadmium, Total	0.000300	0.000600	0.000300	1	U
Chromium, Total	0.00100	0.00200	0.00100	1	U
Manganese, Total	0.00100	0.00200	0.00100	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1930332
28-FEB-2011 08:54

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11020571 Prep Date:02/23/11 06:37 Sample ID:WG357299-03
Instrument ID:ELAN-ICP Run Date:02/25/11 16:45 Prep Method:3051A
File ID:EL.022511.164513 Analyst:JYH Method:6020
Workgroup (AAB#):WG357404 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-25-FEB-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1930332
28-FEB-2011 08:54

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357315-03
Instrument ID: ELAN-ICP Run Time: 15:10 Prep Method: 3015
File ID: EL.022411.151003 Analyst: JYH Method: 6020
Workgroup (AAB#): WG357403 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-24-FEB-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Antimony, Total	0.0625	0.0589	94.3	80 - 120	
Cadmium, Total	0.0625	0.0582	93.2	80 - 120	
Chromium, Total	0.0625	0.0661	106	80 - 120	
Manganese, Total	0.0625	0.0676	108	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1930333
Report generated: 02/28/2011 08:54

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357299-04
Instrument ID: ELAN-ICP Run Time: 16:52 Prep Method: 3051A
File ID: EL.022511.165200 Analyst: JYH Method: 6020
Workgroup (AAB#): WG357404 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-25-FEB-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	10.0	100	80 - 120	
Chromium, Total	10.0	11.0	110	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1930333
Report generated: 02/28/2011 08:54

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11020571 Cal ID: ELAN-ICP- Worknum:WG357403

Instrument ID:ELAN-ICP Contract #: Method:6020

Parent ID:WG357315-01 File ID:EL.022411.153020 Dil:5 Matrix:WATER

Sample ID:WG357315-04 MS File ID:EL.022411.153706 Dil:5 Units:mg/L

Sample ID:WG357315-05 MSD File ID:EL.022411.154353 Dil:5

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Antimony	ND	0.0625	0.0675	108	0.0625	0.0678	108	0.488	80 - 120	20	
Cadmium	ND	0.0625	0.0687	110	0.0625	0.0667	107	2.94	80 - 120	20	
Chromium	0.00316	0.0625	0.0692	106	0.0625	0.0691	106	0.0814	80 - 120	20	
Manganese	0.0145	0.0625	0.0786	103	0.0625	0.0780	102	0.800	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:1930334

Report generated 02/28/2011 08:54

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11020571 Cal ID: ELAN-ICP- 25-FEB-11 Worknum:WG357404

Instrument ID:ELAN-ICP Contract #: Prep Method:3051A

Parent ID:L11020571-06 File ID:EL.022511.185430 Dil:5 Method:6020

Sample ID:L11020571-03 MS File ID:EL.022511.183407 Dil:5 Matrix:Soil

Sample ID:L11020571-04 MSD File ID:EL.022511.184054 Dil:5 Units:mg/kg

Percent Solid:100

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	0.183	10.0	10.6	104	10.0	10.5	103	1.30	80 - 120	20	
Chromium, Total	20.2	10.0	27.4	71.6	10.0	31.4	112	13.6	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1930496
Report generated 02/28/2011 08:54

Microbac Laboratories Inc.

Serial Dilution Report

Login: L11020571 **Worknum:** WG357403

Instrument: ELAN-ICP **Method:** 6020

Serial Dil: WG357403-02 **File ID:** EL.022411.155727 **Dil:** 25 **Units:** ug/L

Sample: L11020579-02 **File ID:** EL.022411.153020 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Antimony	ND	U	ND	U		
Cadmium	ND	U	ND	U		
Chromium	ND	U	ND	U		
Manganese	5.8	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 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: 1930328

02/28/2011 08:54

Microbac Laboratories Inc.

Serial Dilution Report

Login: L11020571 **Worknum:** WG357404

Instrument: ELAN-ICP **Method:** 6020

Serial Dil: WG357404-02 **File ID:** EL.022511.174614 **Dil:** 25 **Units:** ug/L

Sample: L11020318-06 **File ID:** EL.022511.173243 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Antimony	.0015		ND			
Cadmium	ND	U	ND	U		
Chromium	178	X	170.75	X	4.07	
Manganese	3990		ND			

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: 1930328

02/28/2011 08:54

Microbac Laboratories Inc.

POST SPIKE REPORT

Sample Login ID: L11020571 **Worknum:** WG357403

Instrument ID: ELAN-ICP **Method:** 6020

Post Spike ID: WG357403-01 **File ID:** EL.022411.155040 **Dil:** 5 **Units:** ug/L

Sample ID: L11020579-02 **File ID:** EL.022411.153020 **Dil:** 5 **Matrix:** Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ANTIMONY	40.9		0	U	50	81.7	75 - 125	
CADMIUM	41.7		0	U	50	83.5	75 - 125	
CHROMIUM	40.6		0	U	50	81.3	75 - 125	
MANGANESE	42.2		1.16		50	82.2	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: 1930329
Report generated: 02/28/2011 08:54

Microbac Laboratories Inc.

POST SPIKE REPORT

Sample Login ID: L11020571 **Worknum:** WG357404

Instrument ID: ELAN-ICP **Method:** 6020

Post Spike ID: WG357404-01 **File ID:** EL.022511.173928 **Dil:** 5 **Units:** ug/L

Sample ID: L11020318-06 **File ID:** EL.022511.173243 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	52.9		0	U	50	105.7	75 - 125	
CHROMIUM	87.5		35.6		50	103.8	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: 1930329
Report generated: 02/28/2011 08:54

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11020571	Workgroup (AAB#):	WG357403
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG357545	Initial Calibration Date:	24-FEB-2011 14:01

	WG357545-01		WG357545-02		WG357545-03		WG357545-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	110	.4	1520	50	187000	100	363000	1	
CADMIUM	0	-1.29	.4	444	50	56300	100	110000	.999997	
CHROMIUM	0	8300	.4	11300	50	425000	100	825000	.999974	
MANGANESE	0	398	.4	5570	50	640000	100	1240000	.999921	

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: 1930338
Report generated: 28-FEB-2011 08:55

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11020571	Workgroup (AAB#):	WG357403
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG357624	Initial Calibration Date:	25-FEB-2011 10:03

	WG357624-01		WG357624-02		WG357624-03		WG357624-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	35.1	.4	1360	50	162000	100	314000	.99997	
CADMIUM	0	2.14	.4	368	50	47300	100	91000	.999922	
CHROMIUM	0	8090	.4	11000	50	366000	100	709000	.999994	
MANGANESE	0	448	.4	5970	50	562000	100	1070000	.999829	

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: 1930338
Report generated: 28-FEB-2011 08:55

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11020571	Workgroup (AAB#):	WG357404
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG357624	Initial Calibration Date:	25-FEB-2011 10:03

	WG357624-01		WG357624-02		WG357624-03		WG357624-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ANTIMONY	0	35.1	.4	1360	50	162000	100	314000	.99997	
CADMIUM	0	2.14	.4	368	50	47300	100	91000	.999922	
CHROMIUM	0	8090	.4	11000	50	366000	100	709000	.999994	
MANGANESE	0	448	.4	5970	50	562000	100	1070000	.999829	

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: 1930338
Report generated: 28-FEB-2011 08:55

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357545-06
Instrument ID: ELAN-ICP Run Time: 14:15 Method: 6020
File ID: EL.022411.141523 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG357403 Cal ID: ELAN-ICP - 24-FEB-11
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.12	.24	.12	U
CHROMIUM	.4	.8	.4	U
MANGANESE	.4	.8	.4	U
ANTIMONY	.2	.4	.2	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1930340
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.

INITIAL CALIBRATION BLANK (ICB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-06

Instrument ID: ELAN-ICP Run Time: 10:17 Method: 6020

File ID: EL.022511.101722 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357403 Cal ID: ELAN-ICP - 25-FEB-11

Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.12	.24	.12	U
CHROMIUM	.4	.8	.4	U
MANGANESE	.4	.8	.4	U
ANTIMONY	.2	.4	.2	U

U = Result is less than 2 x MDL

F = Result is between MDL and 2 x MDL

* = Result is above 2 x MDL

ICB - Modified 07/14/2009

PDF File ID: 1930340

Report generated 02/28/2011 08:55

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-06
Instrument ID: ELAN-ICP Run Time: 10:17 Method: 6020
File ID: EL.022511.101722 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG357404 Cal ID: ELAN-ICP - 25-FEB-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1930340
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357545-11

Instrument ID: ELAN-ICP Run Time: 14:49 Method: 6020

File ID: EL.022411.144950 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 24-FEB-11

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Cadmium	0.120	0.240	0.120	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357545-13

Instrument ID: ELAN-ICP Run Time: 16:11 Method: 6020

File ID: EL.022411.161130 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 24-FEB-11

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Cadmium	0.120	0.240	0.120	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-11

Instrument ID: ELAN-ICP Run Time: 10:51 Method: 6020

File ID: EL.022511.105149 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Cadmium	0.120	0.240	0.120	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-15

Instrument ID: ELAN-ICP Run Time: 13:32 Method: 6020

File ID: EL.022511.133247 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Cadmium	0.120	0.240	0.120	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-17

Instrument ID: ELAN-ICP Run Time: 14:55 Method: 6020

File ID: EL.022511.145551 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11

Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Antimony	0.200	0.400	0.200	U
Cadmium	0.120	0.240	0.120	U
Chromium	0.400	0.800	0.400	U
Manganese	0.400	0.800	0.400	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-11

Instrument ID: ELAN-ICP Run Time: 10:51 Method: 6020

File ID: EL.022511.105149 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-21

Instrument ID: ELAN-ICP Run Time: 16:38 Method: 6020

File ID: EL.022511.163828 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-23

Instrument ID: ELAN-ICP Run Time: 18:00 Method: 6020

File ID: EL.022511.180016 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-25

Instrument ID: ELAN-ICP Run Time: 19:22 Method: 6020

File ID: EL.022511.192207 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-27

Instrument ID: ELAN-ICP Run Time: 20:16 Method: 6020

File ID: EL.022511.201646 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1930352
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357545-05
Instrument ID: ELAN-ICP Run Time: 14:07 Method: 6020
File ID: EL.022411.140759 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 24-FEB-11
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Antimony		50	48.6	97.2	90 - 110	
Cadmium		50	47.9	95.8	90 - 110	
Chromium		50	49.8	99.6	90 - 110	
Manganese		50	50.3	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1930339
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-05
Instrument ID: ELAN-ICP Run Time: 10:09 Method: 6020
File ID: EL.022511.100958 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Antimony		50	49.0	98.0	90 - 110	
Cadmium		50	47.7	95.3	90 - 110	
Chromium		50	50.9	102	90 - 110	
Manganese		50	50.0	99.9	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1930339
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-05
Instrument ID: ELAN-ICP Run Time: 10:09 Method: 6020
File ID: EL.022511.100958 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	47.7	95.3	90 - 110	
Chromium		50	50.9	102	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1930339
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357545-10

Instrument ID: ELAN-ICP Run Time: 14:42 Method: 6020

File ID: EL.022411.144234 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 24-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	50.2	ug/L	100	90 - 110		
Cadmium		50.0	50.7	ug/L	101	90 - 110		
Chromium		50.0	49.0	ug/L	98.0	90 - 110		
Manganese		50.0	48.8	ug/L	97.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1930351
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357545-12

Instrument ID: ELAN-ICP Run Time: 16:04 Method: 6020

File ID: EL.022411.160414 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 24-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	48.5	ug/L	97.0	90 - 110		
Cadmium		50.0	49.0	ug/L	98.1	90 - 110		
Chromium		50.0	48.4	ug/L	96.9	90 - 110		
Manganese		50.0	49.2	ug/L	98.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1930351
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-10

Instrument ID: ELAN-ICP Run Time: 10:44 Method: 6020

File ID: EL.022511.104433 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	49.6	ug/L	99.2	90 - 110		
Cadmium		50.0	48.8	ug/L	97.7	90 - 110		
Chromium		50.0	50.6	ug/L	101	90 - 110		
Manganese		50.0	50.6	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1930351
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-14

Instrument ID: ELAN-ICP Run Time: 13:25 Method: 6020

File ID: EL.022511.132531 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	50.2	ug/L	100	90 - 110		
Cadmium		50.0	48.5	ug/L	97.0	90 - 110		
Chromium		50.0	49.6	ug/L	99.2	90 - 110		
Manganese		50.0	49.4	ug/L	98.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1930351

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-16

Instrument ID: ELAN-ICP Run Time: 14:48 Method: 6020

File ID: EL.022511.144835 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		50.0	51.9	ug/L	104	90 - 110		
Cadmium		50.0	51.4	ug/L	103	90 - 110		
Chromium		50.0	50.8	ug/L	102	90 - 110		
Manganese		50.0	50.5	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1930351
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-10

Instrument ID: ELAN-ICP Run Time: 10:44 Method: 6020

File ID: EL.022511.104433 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	48.8	ug/L	97.7	90 - 110		
Chromium		50.0	50.6	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1930351

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-20

Instrument ID: ELAN-ICP Run Time: 16:31 Method: 6020

File ID: EL.022511.163112 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.9	ug/L	99.8	90 - 110		
Chromium		50.0	50.8	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1930351

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-22

Instrument ID: ELAN-ICP Run Time: 17:53 Method: 6020

File ID: EL.022511.175300 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.5	ug/L	101	90 - 110		
Chromium		50.0	51.8	ug/L	104	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1930351

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-24

Instrument ID: ELAN-ICP Run Time: 19:14 Method: 6020

File ID: EL.022511.191451 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	51.3	ug/L	103	90 - 110		
Chromium		50.0	51.1	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1930351

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-26

Instrument ID: ELAN-ICP Run Time: 20:09 Method: 6020

File ID: EL.022511.200930 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.4	ug/L	98.8	90 - 110		
Chromium		50.0	51.0	ug/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1930351

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11020571 Run Date: 02/24/2011 Sample ID: WG357545-07

Instrument ID: ELAN-ICP Run Time: 14:22 Method: 6020

File ID: EL.022411.142210 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 24-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		0.400	0.444	ug/L	111	80 - 120		
Cadmium		0.200	0.202	ug/L	101	80 - 120		
Chromium		0.800	0.850	ug/L	106	80 - 120		
Manganese		0.500	0.508	ug/L	102	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1930353

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-07

Instrument ID: ELAN-ICP Run Time: 10:24 Method: 6020

File ID: EL.022511.102409 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG357403 Cal ID: ELAN-I - 25-FEB-11

Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Antimony		0.400	0.415	ug/L	104	80 - 120		
Cadmium		0.200	0.202	ug/L	101	80 - 120		
Chromium		0.800	0.812	ug/L	101	80 - 120		
Manganese		0.500	0.420	ug/L	84.0	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1930353

Report generated 02/28/2011 08:56

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11020571 Run Date: 02/25/2011 Sample ID: WG357624-07
Instrument ID: ELAN-ICP Run Time: 10:24 Method: 6020
File ID: EL.022511.102409 Analyst: JYH QC Key: DOD4
Workgroup (AAB#): WG357404 Cal ID: ELAN-I - 25-FEB-11
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.202	ug/L	101	80 - 120		
Chromium		0.800	0.812	ug/L	101	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 1930353
Report generated 02/28/2011 08:56

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11020571 **Workgroup (AAB#):** WG357403
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG357545-08 **File ID:** EL.022411.142859 **Units:** ug/L
Sol. AB : WG357545-09 **File ID:** EL.022411.143546 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0541	NS	100	104	104	
Cadmium	NS	0.0607	NS	100	102	102	
Chromium	NS	0.108	NS	100	95.9	95.9	
Manganese	NS	0.275	NS	100	98.3	98.3	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1930349
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11020571 **Workgroup (AAB#):** WG357403
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG357624-08 **File ID:** EL.022511.103058 **Units:** ug/L
Sol. AB : WG357624-09 **File ID:** EL.022511.103746 **Matrix:** Water

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Antimony	NS	0.0521	NS	100	101	101	
Cadmium	NS	0.0877	NS	100	105	105	
Chromium	NS	0.0419	NS	100	102	102	
Manganese	NS	0.190	NS	100	103	103	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1930349
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11020571 **Workgroup (AAB#):** WG357404
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG357624-08 **File ID:** EL.022511.103058 **Units:** ug/L
Sol. AB : WG357624-09 **File ID:** EL.022511.103746 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0877	NS	100	105	105	
Chromium	NS	0.0419	NS	100	102	102	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1930349
Report generated 02/28/2011 08:55

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11020571 **Analytical Method:** 6020
Analytical Workgroup: WG357403 **Matrix:** 1
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 24-FEB-2011 13:40

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11020579-02	SAMP	24-FEB-2011 15:30	90.624	94.18	92.081	92.671
WG357258-01	FBLK	24-FEB-2011 15:16	100.264	94.464	97.343	101.254
WG357315-01	REF	24-FEB-2011 15:30	90.624	94.18	92.081	92.671
WG357315-02	BLANK	24-FEB-2011 15:03	98.59	94.768	96.442	98.818
WG357315-03	LCS	24-FEB-2011 15:10	98.877	94.043	97.133	99.335
WG357315-04	MS	24-FEB-2011 15:37	101.099	97.163	95.957	98.615
WG357315-05	MSD	24-FEB-2011 15:43	88.538	92.673	88.65	92.98
WG357403-01	PSPK	24-FEB-2011 15:50	98.426	98.055	96.737	98.62
WG357403-02	SERIAL	24-FEB-2011 15:57	100.29	98.622	98.879	99.159
WG357403-03	QCMRL	24-FEB-2011 14:56	96.425	94.117	91.73	93.411
WG357545-05	ICV	24-FEB-2011 14:07	103.362	97.392	98.723	99.955
WG357545-06	ICB	24-FEB-2011 14:15	102.481	98.465	97.979	98.873
WG357545-07	LLICV	24-FEB-2011 14:22	89.676	92.273	87.727	91.561
WG357545-08	ICS	24-FEB-2011 14:28	89.76	91.112	89.901	89.398
WG357545-09	ICS	24-FEB-2011 14:35	88.297	90.58	85.936	86.148
WG357545-10	CCV	24-FEB-2011 14:42	88.923	90.873	87.979	88.357
WG357545-11	CCB	24-FEB-2011 14:49	94.77	94.45	92.5	94.345
WG357545-12	CCV	24-FEB-2011 16:04	106.924	101.68	101.114	100.877
WG357545-13	CCB	24-FEB-2011 16:11	102.71	100.075	99.452	102.592

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1930337
Report generated: 02/28/2011 08:55

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11020571 **Analytical Method:** 6020
Analytical Workgroup: WG357403 **Matrix:** 1
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 25-FEB-2011 09:42

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11020571-01	SAMP	25-FEB-2011 13:52	99.377	94.963	99.904	99.025
L11020571-02	SAMP	25-FEB-2011 13:59	94.881	93.94	95.214	96.899
WG357403-03	QCMRL	25-FEB-2011 13:46	99.502	97.479	98.693	96.497
WG357624-05	ICV	25-FEB-2011 10:09	96.837	96.841	97.744	98.965
WG357624-06	ICB	25-FEB-2011 10:17	94.749	96.872	97.555	97.298
WG357624-07	LLICV	25-FEB-2011 10:24	93.397	96.734	98.865	98.139
WG357624-08	ICS	25-FEB-2011 10:30	90.127	94.197	95.065	94.777
WG357624-09	ICS	25-FEB-2011 10:37	87.049	87.514	90.298	92.23
WG357624-10	CCV	25-FEB-2011 10:44	91.135	91.32	94.396	97.254
WG357624-11	CCB	25-FEB-2011 10:51	92.766	91.237	93.604	95.948
WG357624-14	CCV	25-FEB-2011 13:25	90.387	92.921	92.618	92.447
WG357624-15	CCB	25-FEB-2011 13:32	94.219	94.121	96.705	95.857
WG357624-16	CCV	25-FEB-2011 14:48	87.123	89.809	89.49	88.254
WG357624-17	CCB	25-FEB-2011 14:55	91.905	92.785	92.495	92.77

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1930337
Report generated: 02/28/2011 08:55

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11020571 **Analytical Method:** 6020
Analytical Workgroup: WG357404 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 25-FEB-2011 09:42

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11020318-06	SAMP	25-FEB-2011 17:32	99.57	102.279	100.213	98.92
L11020571-03	SAMP	25-FEB-2011 18:34	101.798	104.438	101.625	98.506
L11020571-04	SAMP	25-FEB-2011 18:40	102.695	105.128	101.719	99.134
L11020571-05	SAMP	25-FEB-2011 18:47	101.253	105.726	100.144	99.498
L11020571-06	SAMP	25-FEB-2011 18:54	100.004	106.412	102.513	98.727
L11020571-07	SAMP	25-FEB-2011 19:01	100.255	104.051	100.258	97.721
L11020571-08	SAMP	25-FEB-2011 19:08	97.092	103.745	98.902	96.38
L11020571-09	SAMP	25-FEB-2011 19:28	97.746	103.926	98.894	96.808
L11020571-10	SAMP	25-FEB-2011 19:35	98.676	103.738	98.656	96.458
L11020571-11	SAMP	25-FEB-2011 19:42	97.919	102.118	99.015	97.432
L11020571-12	SAMP	25-FEB-2011 19:49	98.987	104.962	99.811	96.302
L11020571-13	SAMP	25-FEB-2011 19:55	98.112	105.182	99.067	97.341
WG357299-01	REF	25-FEB-2011 18:13	96.904	98.991	95.596	95.868
WG357299-02	REF	25-FEB-2011 18:54	100.004	106.412	102.513	98.727
WG357299-03	BLANK	25-FEB-2011 16:45	99.07	98.807	99.717	101.187
WG357299-04	LCS	25-FEB-2011 16:52	98.936	98.373	102.078	101.424
WG357299-05	MS	25-FEB-2011 18:20	98.112	98.84	97.241	97.264
WG357299-06	MSD	25-FEB-2011 18:27	97.73	98.921	96.737	97.157
WG357299-07	MS	25-FEB-2011 18:34	101.798	104.438	101.625	98.506
WG357299-08	MSD	25-FEB-2011 18:40	102.695	105.128	101.719	99.134
WG357404-01	PSPK	25-FEB-2011 17:39	98.082	102.832	100.717	98.023
WG357404-02	SERIAL	25-FEB-2011 17:46	98.302	102.866	100.021	97.031
WG357624-05	ICV	25-FEB-2011 10:09	96.837	96.841	97.744	98.965
WG357624-06	ICB	25-FEB-2011 10:17	94.749	96.872	97.555	97.298
WG357624-07	LLICV	25-FEB-2011 10:24	93.397	96.734	98.865	98.139
WG357624-08	ICS	25-FEB-2011 10:30	90.127	94.197	95.065	94.777
WG357624-09	ICS	25-FEB-2011 10:37	87.049	87.514	90.298	92.23
WG357624-10	CCV	25-FEB-2011 10:44	91.135	91.32	94.396	97.254
WG357624-11	CCB	25-FEB-2011 10:51	92.766	91.237	93.604	95.948
WG357624-20	CCV	25-FEB-2011 16:31	99.026	101.116	101.665	100.748
WG357624-21	CCB	25-FEB-2011 16:38	97.489	98.199	98.696	98.396
WG357624-22	CCV	25-FEB-2011 17:53	95.978	98.741	95.882	96.163
WG357624-23	CCB	25-FEB-2011 18:00	100.397	101.763	99.784	98.868
WG357624-24	CCV	25-FEB-2011 19:14	96.111	101.229	98.178	97.845
WG357624-25	CCB	25-FEB-2011 19:22	100.852	106.025	102.015	100.113
WG357624-26	CCV	25-FEB-2011 20:09	86.985	93.603	90.883	89.286
WG357624-27	CCB	25-FEB-2011 20:16	85.488	93.989	89.032	86.848

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1930337
Report generated: 02/28/2011 08:55

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11020571 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1930335
Report generated: 02/28/2011 08:55

Kemron–Radford Army Ammunition Plant Data Validation Summary Worksheet

SDG#: L11020571	Laboratory: Microbac	Validator: Charissa Lewis	Validation Date: 5/4/2011
Site: Radford	AR/COC#: 2399		Validation Level: ☐ III ☒ IV
Matrix: Water and Soil	# of Samples: 2/9	Tracking docs present: See sample receipt and log-in documentation	
COCs present: yes	COCs signed: yes	COCs dated: yes	Sample Container Integrity: OK

Analyses:
☐ VOCs ☐ SVOCs ☐ PAHs ☐ GRO ☐ DRO ☐ Pests ☐ PCBs ☒ Metals ☐ Gen Chem
☐ Other:

Requested Analyses Not Reported

Client Sample ID	Lab Sample ID	Analysis	Comments
None			

Hold Time/Preservation Outliers

Client Sample ID	Lab Sample ID	Analysis	Pres.	Collection Date	Preparation Date	Analysis Date	Analysis <2X HT	Analysis ≥2X HT
None								

Comments: Sampled 2/17, 2/18/11

Revised 12/2010

Kemron–Radford Army Ammunition Plant Inorganic Metals Worksheet

SDG: L11020571	Matrix: Water	Level III Lab Sample IDs: NA
Method/Batch #s: 6010/WG357407 (2/23); 6020/WG357403		Level IV Lab Sample IDs: L11020571-01 and -02

ICPMS Mass Cal: ☒ Pass ☐ Fail ☐ NA ICPMS Resolution: ☒ Pass ☐ Fail ☐ NA ICPMS %RSD: ☒ Pass ☐ Fail ☐ NA

Analyte (outliers)	Calibration						ICP CRDL ±10%	Method Blank (<MDL)	5X MB	ICS A <IDL	ICS AB ±20%	LCS %R (80-120%)	MS %R (75-125%)	MSD %R (75-125%)	MS/D RPD (≤20%)	Serial Dil. %D (±10%)	PS (75-125%)	EB mg/L
	r ≥0.995	ICV ±10%[1]	CCV ±10%[1]	ICB ug/L	CCB (<IDL)	5X CB												
2/23 (6010)																		
Al	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fe	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
2/25 (6020)																		
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	0.00118
Mn	✓	✓	✓	✓	✓	NA	84	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	0.00168
2/24 (6020)																		
Sb	✓	✓	✓	✓	✓	NA	111	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓

IS Outliers[3] (60-120%)				IS Outliers[3] (60-120%)			
Sample ID	**%Recovery**	**%Recovery**	**%Recovery**	**CCV/CCB ID**	**%Recovery**	**%Recovery**	**%Recovery**
None				None			

Comments: HTs OK. Al and Fe by 6010. Sb, Cd, Cr and Mn by 6020. Sb and Mn results by 6020 were not applied to soil results because samples analyzed by 6010.
*CRDL(CRI) not analyzed for 6010; ICAL. low standard ≤RL met CRI %R criteria.
ICS A/AB only at beginning of run. 6010 and 6020 all interferents <. ICS concentration.
For 6020, CRDL (low level ICV) only at beginning of run. CRDL concentration ≤2XLOD.
6010: MS/D two on non-project samples PS and SD on a different non-project sample. 6020: MS/D, SD and PS on non-project samples.
EB (-01): Cr and Mn detected by 6020.
FB (-02): ND

[1]20% for Hg [2]For sample results <5X RL, ±RL [3]Standard CLP NFG criteria used; no criteria specified in QAPP or Region III NFG

Kemron–Radford Army Ammunition Plant Inorganic Metals Worksheet

SDG: L11020571	Matrix: Soil	Level III Lab Sample IDs: NA
Method/Batch #s: 6010/WG357401 (2/25 and 2/23); 6020/WG357404		Level IV Lab Sample IDs: L111020571-03 through -13

ICPMS Mass Cal: ☒ Pass ☐ Fail ☐ NA ICPMS Resolution: ☒ Pass ☐ Fail ☐ NA ICPMS %RSD: ☒ Pass ☐ Fail ☐ NA

Analyte (outliers)	**Calibration**						**ICP CRDL** *±10%*	**Method Blank** *(<MDL)*	**5X MB**	**ICS A** *<IDL*	**ICS AB** *±20%*	**LCS %R** *(80-120%)*	**MS %R** *(75-125%)*	**MSD %R** *(75-125%)*	**MS/D RPD** *(≤20%)*	**Serial Dil. %D** *(±10%)*	**PS** *(75-125%)*	**DUP RPD** (-05/-06)
	r *≥0.995*	**ICV** *±10%*[1]	**CCV** *±10%*[1]	**ICB** ug/L	**CCB** *(<IDL)*	**5X CB**												
2/25																		
Al	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-730**	-34**	✓	✓	NA	✓
Fe	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-339**	-2070**	✓	10.7	NA	✓
Mn	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-3190**	-5060**	67.2	NA	NA	115
2/23																		
Sb	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	NA	✓	✓	✓	NA	NA	NA
2/25 6020																		
Cd	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	71.6	✓	✓	✓	✓	✓

IS Outliers[3] *(60-120%)*				**IS Outliers**[3] *(60-120%)*			
Sample ID	**%Recovery**	**%Recovery**	**%Recovery**	**CCV/CCB ID**	**%Recovery**	**%Recovery**	**%Recovery**
None				None			

Comments: HTs OK

*CRI not analyzed. 6010 ICAL low standard <RL but can't re-calculate %R, not enough information.

For 2/25 and 2/23, ICS A/AB only at beginning of run. Samples -06 through -13 2/23 analysis for Sb one or more interferents > ICS concentration. Al, Fe, Mn run at dilution interferents < ICS. 6020 all samples interferents >ICS.

2/25, 2/23: MS/D on -06. **parent >4X spike concentration; PS not applicable. .

EB (-01): ND

FB (-02): ND Note: EB and FB had Al and Fe only for 6010; results from 6020 not applied to 6010 results for samples.

[1]20% for Hg [2]For sample results <5X RL, ±RL [3]Standard CLP NFG criteria used; no criteria specified in QAPP or Region III NFG

6010 METALS CALIBRATION VERIFICATION FOR L11020571

Date: WG357414 2/23/11
PE-ICP2
Analyte: Al

Concentration	Mean Response
0	-201.2
0.1	525.9
0.2	990.4
10	47629.4
20	92876.9
Corr. Coef. =	0.999918

Date: WG357401 2/23/11
ICP-THERMO2
Analyte: Sb

Concentration	Mean Response
0	0.00007
0.012	0.0016
0.024	0.00024
1.2	0.0089
2.4	0.01771
Corr. Coef. =	0.996920

Date: WG357401 2/25/11
ICP-THERMO2
Analyte: Mn

Concentration	Mean Response
0	-0.00003
0.005	0.0002
0.01	0.0004
0.5	0.01836
1	0.03688
Corr. Coef. =	0.999997

2/23/11 PE-ICF	True Value	Reported	
	ICV		%Rec
Al	10.00	10.10	101.0
	ICSAB		%Rec
Fe	100.00	97.70	97.7
-10	CCV6		%Rec
Al	10.00	10.00	100.0
-20	CCV7		%Rec
Fe	4.00	3.81	95.3
-22	CCV8		%Rec
Al	10.00	9.78	97.8
-24	CCV9		%Rec
Fe	4.00	3.83	95.8

2/23/2011	True Value	Reported	
	ICV		%Rec
Sb	1.20	1.18	98.5
	ICSAB		%Rec
Sb	0.50	0.50	99.6
-10	CCV1		%Rec
Sb	1.20	1.20	99.7
-24	CCV8		%Rec
Sb	1.20	1.20	100.1
-26	CCV9		%Rec
Sb	1.20	1.20	99.8
-28	CCV10		%Rec
Sb	1.20	1.19	99.5

2/25/2011	True Value	Reported	
	ICV		%Rec
Al	10.00	10.11	101.1
	ICSAB		%Rec
Fe	100.00	96.18	96.2
-10	CCV1		%Rec
Mn	0.50	0.49	97.6
-12	CCV3		%Rec
Al	10.00	10.53	105.3
-14	CCV4		%Rec
Fe	4.00	4.02	100.6
-16	CCV4		%Rec
Mn	0.50	0.48	95.1

6010 METALS ICS AND CRDL CALCULATIONS FOR L11020571

ICSA Check

Total Metals

2/25	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Mn	5.000	10.000	-1.5500	

2/23	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Sb	10.00000	20.00000	4.6000	
Mn	5.00000	10.00000	-1.5500	

not reported from this run

CRDL Check

CRDL sample not analyzed for soil samples

2/23	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Al				
Sb				
Fe				
Mn				

2/25	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Al				
Sb				
Fe				
Mn				

Water

2/23	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Al	0.1000	0.1002	100.2	
Fe	0.0400	0.0397	99.3	

(Low ICAL standards re-calculated; CRI not analyzed)

6010 TOTAL METALS SAMPLE CALCULATION WORKSHEET FOR SDG L11020571

Water Sample Calculations:

	MDL (mg/L)	CRQL (mg/L)			MB		LCS		-01		-02	
				Final Volume (ml)	50		50		50		50	
				Sample Aliquot (ml)	50		50		50		50	
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
					DF	1	DF	1	DF	1	DF	1
Al	0.05000	0.10000			-0.0083	U	4.94	4.9400	-0.002	U	-0.00035	U
Fe	0.05000	0.10000			0.00033	U	1.92	1.9200	0.00967	U	0.00177	U

CALCULATION WORKSHEET FOR 6010 METALS SOIL RESULTS FOR SDG L11020571

Soil Sample Calculations:

	MDL (mg/kg)	CRQL (mg/kg)			MB		LCS		-03MS		-04MSD		-05		-06	
Final Volume (ml)					50		50		50		50		50		50	
Sample Aliquot (g)					1		1		1.317		1.317		1.319		1.317	
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100	%S	100	%S	100	%S	100	%S	100
					DF	1	DF	1	DF	200	DF	200	DF	200	DF	200
Al	10.0	20.0							2.2072	16759	2.3813	18081	2.3955	18161	2.3898	18146
Fe	1.500	3.000							4.4212	33570.235	4.2483	32257	4.5676	34629.265	4.4551	33827.6
Mn	0.25	0.5							0.04642	352	0.02306	175	0.02345	178	0.08632	655

	MDL (mg/kg)	CRQL (mg/kg)			-07		-08		-09		-10		-11		-11	
Final Volume (ml)					50		50		50		50		50		50	
Sample Aliquot (g)					1.357		1.327		1.377		1.413		1.499		1.499	
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100	%S	100	%S	100	%S	100	%S	100
					DF	200	DF	200	DF	200	DF	200	DF	200	DF	400
Al	10.0	20.0			2.3552	17356	1.7575	13244	2.0891	15171	2.1042	14892	1.542	10287		
Fe	1.500	3.000			3.6613	26981	3.2066	24164	3.8462	27932	3.8074	26946			4.7627	63545
Mn	0.25	0.5			0.04656	343	0.05724	431	0.02121	154	0.03237	229	0.18657	1245		

	MDL (mg/kg)	CRQL (mg/kg)			-12		-13				-05PS		-05SD		-05SD	
Final Volume (ml)					50		50				50		50		50	
Sample Aliquot (g)					1.461		1.348				1.319		1.319		1.319	
					mg/L	mg/kg	mg/L	mg/kg			mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100			%S	100	%S	100	%S	100
					DF	200	DF	200			DF	200	DF	1000	DF	5000
Al	10.0	20.0			2.9178	19971	2.0812	15439			8.0507	61036	0.50189	19025	0.10398	U
Fe	1.500	3.000			5.0723	34718	4.2522	31545			6.6722	50585	0.81618	30939	0.06559	12432
Mn	0.25	0.5			0.01741	119	0.06964	517			0.27062	2052	0.00556	U	0.00137	U

	MDL (mg/kg)	CRQL (mg/kg)			MB		LCS		-03MS		-04MSD		-05		-05PS	
Final Volume (ml)					50		50		50		50		50		50	
Sample Aliquot (g)					1		1		1.317		1.317		1.319		1.319	
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100	%S	100	%S	100	%S	100	%S	100
					DF	1	DF	1	DF	1	DF	1	DF	1	DF	1
Sb	0.5	1.0			0.00194	U	0.56381	28	0.55526	21.1	0.52743	20.0	0.02897	1	0.59284	22
Al	10.0	20.0														
Fe	1.500	3.000														
Mn	0.25	0.5														

	MDL (mg/kg)	CRQL (mg/kg)			-06		-07		-08		-09		-10		-11	
Final Volume (ml)					50		50		50		50		50		50	
Sample Aliquot (g)					1.317		1.357		1.327		1.377		1.413		1.499	
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100	%S	100	%S	100	%S	100	%S	100
					DF	1	DF	1	DF	1	DF	1	DF	1	DF	1
Sb	0.5	1.0			0.03017	1	0.28415	10	0.09814	4	0.08589	3	0.26002	9	0.10251	3

	MDL (mg/kg)	CRQL (mg/kg)			-12		-13
Final Volume (ml)					50		50
Sample Aliquot (g)					1.461		1.348
					mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100
					DF	1	DF	1
Sb	0.5	1.0			0.06222	2	0	1

-05SD		-05SD	
50		50	
1.319		1.319	
mg/L	mg/kg	mg/L	mg/kg
%S	100	%S	100
DF	5	DF	25
0.00749	U	-0.00157	U

6010 METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDG L11020571

23-Feb	LCS	-03 MS	-04 MSD	PS	PS	PS	PS
Analyte	Sb	Sb	Sb	Sb	Al	Fe	Mn
True Conc	30.0000	22.8000	22.8000	0.6000	5	2	0.25
Reported Conc	28.2000	21.1000	20.0000	0.5930	299.00	736	3.98
Sample Conc	0.0000	1.1500	1.1500	0.0290	330.00	809	4.16
%R	94.00	87.50	82.68	94.00	-620.00	-3650.00	-72.00
RPD		5.35			Sample result >4X spike ; lab calculation does not match		

25-Feb	LCS	-03 MS	-04 MSD	PS	PS	PS
Analyte	Mn	Mn	Mn	Mn	Al	Fe
True Conc	12.5	9.4900	9.4900	0.3	5	2
Reported Conc	11.8	352.000	175.000	0.3	8.05	6.67
Sample Conc	0.0	655.000	655.000	0.0	2.40	4.57
%R	94.40	-3192.83	-5057.96	99.00	113.00	105.00
RPD		67.17				

Water

2/23 Water	LCS					
Analyte	Al					
True Conc	5.0000					
Reported Conc	4.9400					
Sample Conc	0.0000					
%R	98.80					
RPD						

MS/MSD and PS on non-project SDG.

SERIAL DILUTION ANALYSIS for SDG L11020571

6010 Soil:

Analyte	-05	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	>Limit ?
	mg/L	mg/L	mg/L	ug/kg	mg/L				
Sb	0.02897	0.00749	0.03745	0.5	0.50		10		

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

Analyte	-05 200X	Serial Dilution 1000x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	>Limit ?
	mg/L	mg/L	mg/L	ug/kg	mg/L				
Al	2.3955	0.50189	2.50945	10.0	10.00		10		
Mn	0.02345	0.00556	0.0278	0.250	0.250		10		
Fe	4.5676	0.81618	4.0809	1.50	1.50	Y	10	11	*

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

6020 TOTAL METALS CALIBRATION VERIFICATION FOR L11020571

Date: WG357624 2/25/11

Analyte: Cd

Concentration	Mean Response
0	2.14
0.4	368.065
50	47250.869
100	91012.25

Corr. Coef. = 0.999806

Water

2/25/2011	True Value	Reported	
	ICV		%Rec
Cd	50.00	47.66	95.3
	ICSAB		%Rec
Cr	100.00	104.51	104.5
	CCV3		%Rec
Cd	50.00	48.52	97.0
	CCV4		%Rec
Cr	50.00	50.82	101.6

Soil

2/25/2011	True Value	Reported	
	ICV		%Rec
Cd	50.00	47.66	95.3
	ICSAB		%Rec
Cr	100.00	104.51	104.5
-22	CCV7		%Rec
Cd	50.00	50.53	101.1
-24	CCV6		%Rec
Cr	50.00	51.07	102.1

6020 TOTAL METALS CALIBRATION VERIFICATION FOR L11020571

Date: WG357545 2/24/11

Analyte: Cd

Concentration	Mean Response
0	-1.286
0.4	443.805
50	56294.826
100	109790.22

Corr. Coef. = 0.999914

Water (QC only)

2/24/2011	**True Value**	**Reported**	
	ICV		**%Rec**
Cd	50.00	47.90	95.8
	ICSAB		**%Rec**
Cr	100.00	95.89	95.9
	CCV		**%Rec**
Cd	50.00	50.65	101.3
	CCV		**%Rec**
Cr	50.00	48.44	96.9

Soil

2/25/2011	**True Value**	**Reported**	
	ICV		**%Rec**
Cd	50.00	47.66	95.3
	ICSAB		**%Rec**
Cr	100.00	104.51	104.5
-22	**CCV7**		**%Rec**
Cd	50.00	50.53	101.1
-24	**CCV6**		**%Rec**
Cr	50.00	51.07	102.1

6020 METALS ICS AND CRDL CALCULATIONS FOR L11020571

ICSA Check

2/25	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Sb	0.500	1.000	0.0521	
Cd	0.300	0.600	0.0877	
Cr	1.000	2.000	0.0419	
Mn	1.000	2.000	0.1904	

CRDL Check

Water (QC only)

2/24	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb	0.4000	0.4440	111.0	K
Cd	0.2000	0.2020	101.0	
Cr	0.8000	0.8500	106.3	
Mn	0.5000	0.5080	101.6	

Water

2/25	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb	0.4000	0.4150	103.8	
Cd	0.2000	0.2020	101.0	
Cr	0.8000	0.8120	101.5	
Mn	0.5000	0.4200	84.0	L/UL

Soil

	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cd	0.2000	0.2020	101.0	
Cr	0.8000	0.8120	101.5	

6020 DISSOLVED METALS SAMPLE CALCULATION WORKSHEET FOR SDG L11020571

Water Sample Calculations:

					WG357315-02		WG357315-03					
	MDL (mg/L)	CRQL (mg/L)			MB		LCS		-01		-02	
				Final Volume (ml)	100		100		100		100	
				Sample Aliquot (ml)	40		40		40		40	
					ug/L	mg/L	ug/L	mg/L	ug/L	mg/L	ug/L	mg/L
					DF	1	DF	1	DF	1	DF	1
Sb	0.00050	0.00100			0.0460	U	23.5773	0.0589	0.0109	U	0.0021	U
As	0.00050	0.00100			-0.0072	U	23.8652	0.0597	0.0488	U	0.046	U
Cr	0.00100	0.00200			0.2839	U	26.4585	0.0661	0.4728	0.00118	0.2007	U
Mn	0.00100	0.00200			0.1003	U	27.0318	0.0676	0.673	0.0017	0.0097	U

CALCULATION WORKSHEET FOR 6020 METALS SOIL RESULTS FOR SDG L11020571

Soil Sample Calculations:

WG357299-03 WG357299-04

	MDL (mg/kg)	CRQL (mg/kg)			MB		LCS		-03MS		-04MSD		-05		-06	
Final Volume (ml)					200		200		200		200		200		200	
Sample Aliquot (g)					0.5		0.5		0.5		0.5		0.515		0.5	
					ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
					%S	100	%S	100	%S	100	%S	100	%S	100	%S	100
					DF	1	DF	1	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100			0.0233	U	25.0671	10.027	5.3146	10.629	5.2461	10.492	0.0778	U	0.0914	U
Cr	0.200	0.400			0.1177	U	27.5376	11.015	13.688	27.376	15.6858	31.372	7.9615	15.459	10.1079	20.216

	MDL (mg/kg)	CRQL (mg/kg)			-7		-08		-09		-10		-11		-12	
Final Volume (ml)					200		200		200		200		200		200	
Sample Aliquot (g)					0.536		0.513		0.502		0.518		0.532		0.542	
					ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
					%S	100	%S	100	%S	100	%S	100	%S	100	%S	100
					DF	5	DF	5	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100			1.3564	2.5306	0.2027	0.3951	0.1219	U	0.2197	0.4241	0.9084	1.7075	1.2064	2.2258
Cr	0.200	0.400			12.1949	22.7517	8.9364	17.4199	6.9709	13.8863	7.2051	13.9095	26.2114	49.2695	16.7757	30.9515

	MDL (mg/kg)	CRQL (mg/kg)			-13	
Final Volume (ml)					200	
Sample Aliquot (g)					0.522	
					ug/L	mg/kg
					%S	100
					DF	5
Cd	0.050	0.100			0.0429	U
Cr	0.200	0.400			13.2264	25.3379

6020 METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDG L11020571

Soil

	LCS	-03 MS	-04 MSD	
Analyte	**Cr**	**Cd**	**Cd**	
True Conc	10.0000	10.0000	10.0000	
Reported Conc	11.0000	10.6000	10.5000	
Sample Conc	0.0000	0.1830	0.1830	
%R	110.00	104.17	103.17	
RPD		0.95		

		-03 MS	-05 MSD	
Analyte		**Cr**	**Cr**	
True Conc		10.0000	10.0000	
Reported Conc		27.400	31.400	
Sample Conc		20.200	20.200	
%R		72.00	112.00	
RPD		13.61		

Water

	LCS			
Analyte	**Cd**			
True Conc	0.0625			
Reported Conc	0.0582			
Sample Conc	0.0000			
%R	93.12			
RPD				

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Subject: Data Validation for Lab Reports L11030925 and L11030926
Radford Army Ammunition Plant

From: Charissa Lewis
Data Validator, AQA

To: Mary Lou Rochotte
Kemron Environmental Services, Inc.

OVERVIEW

Microbac Laboratories Inc., Marietta, Ohio, received twelve field samples associated with the project work described in the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010) on March 28, 2011. The field samples were assigned laboratory sample delivery group (SDG) numbers L11030925 and L11030926 and included nine normal soil samples, one matrix spike pair, and one field duplicate. The samples were analyzed for metals using EPA methods 6010B and 6020 as detailed in *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (SW-846),* Third Edition, Final Update III.

SUMMARY

The samples were analyzed according to the quality control (QC) criteria of the applicable analytical method. The data for these samples were found to be compliant with the requirements of the project QAPP and/or EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable, and the results for all target analytes are considered usable.

MAJOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- None

MINOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- The CRDL standards were not reported for method 6010B, and there was insufficient information in the data package to calculate the recoveries

- SWMU-57-32511-SS-FC-8′-NUM2: Total chromium (UJ)
Total antimony (UJ)

- SWMU-57-32511-SS-4′ SW-1: Total chromium 14.2 (J)
Total antimony (UJ)

- SWMU-57-32511-SS-7.5′ SW2: Total chromium 29.0 (J)
Total antimony (UJ)

- SWMU-57-32511-SS-7′ SW-3: Total chromium 13.1 (J)
Total antimony (UJ)

- SWMU-57-32611-FC-15′-NUM3: Total chromium 4.76 (J)
Total antimony (UJ)

- SWMU-57-32611-FC-13′-NUM4: Total chromium 17.6 (J)
  Total antimony (UJ)
- SWMU-57-32511-SS-FC-2′-NUM1: Total chromium 15.6 (J)
- SWMU-57-32511-SS-DUP: Total chromium 27.0 (J)
- SWMU-57-32511-SS-FC-B3-2.5′: Total chromium 30.7 (J)
- SWMU-57-32611-SS-2.5′ SW-4: Total chromium 17.6 (J)
  Total antimony (UJ)

NOTES

(Refer to Appendix D – Support Documentation)

Sample Chain of Custody (COC) Records

- The samples were listed on COC #2163 and 2164. Data were reported for all required analyses.

Preservation and Holding Times

- The samples were properly preserved and analyzed within the specified holding time.

Instrument Tune

- The instrument tunes for all applicable analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration (ICAL)

- The ICAL correlation coefficients for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV)

- The ICV/CCV percent recoveries (%Rs) for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Contract Required Detection Limit (CRDL)

- CRDL standards were analyzed for methods 6010B and 6020; however, they were only analyzed at the beginning of the daily analyses and not every 10 samples or two per every eight hours as required by the project QAPP. The Region III NFG only requires that the CRDL be analyzed and meet recovery limits with no frequency criteria; therefore no sample data were qualified.

- The CRDL standards were not reported for method 6010B, and there was insufficient information in the data package to calculate the recoveries; therefore, the results could not be evaluated. The Sb results for samples SWMU-57-32511-SS-FC-8′-NUM2, SWMU-57-32511-SS-4′ SW-1, SWMU-57-32511-SS-7.5′ SW2, SWMU-57-32511-SS-7′ SW3, SWMU-57-32611- FC-15′-NUM3, SWMU-57-32611-FC-13′-NUM4, and SWMU-57-32611-SS-2.5′ SW-4 were non-detects and, therefore, were **qualified UJ** due to the lack of CRDL analysis. The remaining associated sample results were detects >2X the CRDL and, therefore, were not qualified.

- The CRDL %Rs associated with the 6020 analyses were within the criteria specified in the project QAPP and the Region III NFG.

Inductively Coupled Plasma (ICP) Interference Check Sample

- ICP interference check sample recoveries were within the project QAPP- and Region III-specified control limits, and all non-spiked ICS A results were < the MDL.

- The results of the ICS A and ICS AB analyses were applicable to the undiluted sample results because the concentrations of one or more of the interferents in those samples were ≥ those in the ICS solutions.

- The results of the ICS A and ICS AB analyses were not applicable to the diluted sample results or to the water sample results because the concentrations of the interferents in those samples were < those in the ICS solutions.

Field Blanks

- A field blank was not collected with the samples in this SDG.

Laboratory Method Blanks

- No target analytes were detected in the method blanks.

Laboratory Calibration Blanks

- No target analytes were detected in the calibration blanks.

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCSs/LCSDs)

- The LCS/LCSD recoveries met project QAPP- and Region III-specified QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

- One MS/MSD pair was analyzed on sample SWMU-57-32511-SS-FC-2′-NUM1 for all analyses.

- The MS and MSD %Rs were >125% for total chromium. The total chromium result for sample SWMU-57-32511-SS-FC-8′-NUM2 was a non-detect and, therefore, was not qualified. The remaining associated sample results were detects and, therefore, were **qualified K**.

- The MS/MSD %Rs were <75% for total iron and manganese, and the MS/MSD %Rs were >125% for total aluminum. The parent sample results were >4X the spike amount and, therefore, no data were qualified.

ICP Serial Dilution Analyses

- The serial dilution %Ds met project QAPP- and Region III-specified QC acceptance criteria.

Laboratory Sample Duplicate

- MSDs were analyzed as the laboratory duplicates for all analyses and met project QAPP- and Region III-specified QC acceptance criteria.

Field Sample Duplicate

- Soil sample SWMU-57-32511-SS-FC-2′-NUM1 was collected and analyzed in duplicate (sample SWMU-57-32511-SS-DUP) for all analyses. The RPDs between the sample and duplicate results were within the project QAPP-specified control limits with the following exception.

  - The sample/sample duplicate RPD was >35% for total chromium. The total chromium result for sample SWMU-57-32511-SS-FC-8′-NUM2 was a non-detect and, therefore, was **qualified UJ**. The total chromium results for the remaining samples were detects and, therefore, were **qualified J**.

	SWMU-57-32511-SS-DUP		SWMU-57-32511-SS-FC-2′-NUM1			
Analyte	**Result**	**RL**	**Result**	**RL**	**RPD**	**>35%**
Sb	3.38	0.974	4.44	1.01	27.11	
Al	31200	97.4	26500	20.3	16.29	
Fe	45900	14.6	40900	3.04	11.52	
Mn	124	0.487	138	0.507	10.69	
Cd	0.603	0.642	0.563	0.657	<RL	
Cr	27	2.57	15.6	2.63	53.52	J/UJ

Sample Internal Standard Recoveries

- The internal standard recoveries for metals analyzed by method 6020 were within the 60-125% limits provided in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (NFG) (October 2004).

Sample Results

- The samples were analyzed for the methods requested on the COC. MDLs and RLs were reported for all analyses; however, the MDLs for total iron, total manganese, total cadmium and total chromium were > the MDLs specified in the project QAPP. The reported RLs met project-specified RLs with the following exceptions.

  - Sample SWMU-57-32611-FC-15′-NUM3 was diluted 5X for the analysis of total antimony and 500X for the analysis of total iron. Sample SWMU-57-32511-SS-DUP was diluted 5X for the analysis of total aluminum and total iron. Samples SWMU-57-32511-SS-FC-B3-2.5′ and SWMU-57-32611-SS-2.5′ SW-4 were diluted 100X for total aluminum and total manganese and 200X for total iron. The associated RLs were adjusted accordingly and, therefore, did not meet project-specified RLs.

  - All samples were diluted 5X for the analysis of total chromium and total cadmium. The associated RLs were adjusted accordingly and, therefore, did not meet project-specified RLs.

Action Level Notification

- No results were above the action levels specified in the Region III NFG.

Usability Statement

- There were 60 field sample data points associated with the data package for SDGs L11030925 and L11030926. Of these field sample data points, 43 (71.67% of the total) were assessed and left unqualified, and 9 (15.00% of the total) were assessed and qualified J, and 8 (13.33% of the total) were assessed and qualified UJ.

- The field sample data points that were qualified J can be categorized as definitive data with positively identified analyte concentrations that are only estimates due to QC deficiencies, the field sample data points that were qualified UJ can be categorized as definitive data with nondetectable analyte concentrations that are only estimates due to QC deficiencies.

- The unqualified field sample data points can be categorized as definitive data with no associated QC deficiencies.

Reviewed by: JMP Level: 1 Date: 05/11/2011

Report Content Statement

This report has been formatted for consistency with Appendix B, Region III Standard Operating Procedures for Data Validation Reports, contained in the guidance *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). The laboratory data were reviewed in accordance with the EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable; the *Quality Assurance Project Plan for the Performance Based Contract, Revision 04, Fort Meade, Maryland* (May 2010) (project QAPP); and the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010); and the applicable SW-846 methods. This report only addresses those problems and issues that may affect data usability.

Attachments

Appendix A – Glossary of Data Qualifiers

Appendix B – Data Qualifier Summary

Appendix C – Laboratory Report Results/Data Summary

Appendix D – Support Documentation

Appendix A – Glossary of Data Qualifiers

Data Qualifier Codes

Codes Related to Identification

U Not detected. The associated number indicates the approximate sample concentration necessary to be detected.

B Not detected substantially above the level reported in laboratory or field blanks.

R Unusable result. Analyte may or may not be present in the sample.

Codes Related to Quantitation

J Analyte present. Reported value may or may not be accurate or precise.

K Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ Not detected. Quantitation limit may be inaccurate or imprecise.

UL The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Appendix B – Data Qualifier Summary

Data Qualifier Summary

Note: The results listed in this table are detects and qualified non-detects only. Unqualified non-detects are not listed.

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU-57-32511-SS-FC-8′-NUM2 L11030925-01	Total chromium Total antimony	UJ UJ	U U	FD RPD >UAL No CRDL standard
SWMU-57-32511-SS-4′ SW-1 L11030925-02	Total chromium Total antimony	J UJ	 U	MS/MSD %R >UAL; FD RPD >UAL No CRDL standard
SWMU-57-32511-SS-7.5′ SW2 L11030925-03	Total chromium Total antimony	J UJ	 U	MS/MSD %R >UAL; FD RPD >UAL No CRDL standard
SWMU-57-32511-SS-7′ SW-3 L11030925-04	Total chromium Total antimony	J UJ	 U	MS/MSD %R >UAL; FD RPD >UAL No CRDL standard
SWMU-57-32611-FC-15′-NUM3 L11030925-05	Total chromium Total antimony	J UJ	 U	MS/MSD %R >UAL; FD RPD >UAL No CRDL standard
SWMU-57-32611-FC-13′-NUM4 L11030925-06	Total chromium Total antimony	J UJ	 U	MS/MSD %R >UAL; FD RPD >UAL No CRDL standard
SWMU-57-32511-SS-FC-2′-NUM1 L11030926-01	Total chromium Total cadmium	J J	 J	MS/MSD %R >UAL; FD RPD >UAL >MDL, <RL
SWMU-57-32511-SS-DUP L11030926-02	Total chromium Total cadmium	J J	 J	MS/MSD %R >UAL; FD RPD >UAL >MDL, <RL
SWMU-57-32511-SS-FC-B3-2.5′ L11030926-05	Total chromium Total cadmium	J J	 J	MS/MSD %R >UAL; FD RPD >UAL >MDL, <RL
SWMU-57-32611-SS-2.5′ SW-4 L11030926-06	Total chromium Total antimony	J UJ	 U	MS/MSD %R >UAL; FD RPD >UAL No CRDL standard

Appendix C – Laboratory Report Results/Data Summary

Microbac Laboratories Inc.

Report Number: **L11030925**

Report Date : **April 11, 2011**

Sample Number:	L11030925-01	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-FC-8'-NUI	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 16:05
Collect Date:	03/25/2011 13:55	Dilution:	1	File ID:	T2.032811.160530
Sample Tag:	01	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	18700		19.1	9.56
Antimony, Total	7440-36-0		U	0.956	0.478
Iron, Total	7439-89-6	28300		2.87	1.43
Manganese, Total	7439-96-5	211		0.478	0.239

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-4'SW-1	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 16:09
Collect Date:	03/25/2011 14:00	Dilution:	1	File ID:	T2.032811.160909
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	27600		20.2	10.1
Antimony, Total	7440-36-0		U	1.01	0.506
Iron, Total	7439-89-6	34200		3.04	1.52
Manganese, Total	7439-96-5	110		0.506	0.253

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-7.5'SW2	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 16:12
Collect Date:	03/25/2011 14:45	Dilution:	1	File ID:	T2.032811.161247
Sample Tag:	01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	22300		19.1	9.55
Antimony, Total	7440-36-0		U	0.955	0.478
Iron, Total	7439-89-6	39100		2.87	1.43
Manganese, Total	7439-96-5	332		0.478	0.239

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-7'SW-3	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 16:16
Collect Date:	03/25/2011 16:25	Dilution:	1	File ID:	T2.032811.161624
Sample Tag:	01	Units:	mg/kg	Percent Solid:	79.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	21300		17.2	8.59
Antimony, Total	7440-36-0		U	0.859	0.429
Iron, Total	7439-89-6	27400		2.58	1.29
Manganese, Total	7439-96-5	223		0.429	0.215

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32611-FC-15'-NUM3	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 11:45
Collect Date:	03/26/2011 08:45	Dilution:	5	File ID:	T2.032911.114524
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	4.86	2.43

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32611-FC-15'-NUM3	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 11:48
Collect Date:	03/26/2011 08:45	Dilution:	500	File ID:	T2.032911.114855
Sample Tag:	DL02	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Iron, Total	7439-89-6	91900		1460	729

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32611-FC-15'-NUM3	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 16:20
Collect Date:	03/26/2011 08:45	Dilution:	1	File ID:	T2.032811.162002
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	12300		19.4	9.72
Manganese, Total	7439-96-5	444		0.486	0.243

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-06	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32611-FC-13'-NUM4	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 16:23
Collect Date:	03/26/2011 09:20	Dilution:	1	File ID:	T2.032811.162340
Sample Tag:	01	Units:	mg/kg	Percent Solid:	77.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	13300		17.6	8.81
Antimony, Total	7440-36-0		U	0.881	0.441
Iron, Total	7439-89-6	22800		2.64	1.32
Manganese, Total	7439-96-5	259		0.441	0.220

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-01	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-FC-2'-NUI	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 15:25
Collect Date:	03/25/2011 08:15	Dilution:	1	File ID:	T2.032811.152545
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	26500		20.3	10.1
Antimony, Total	7440-36-0	4.44		1.01	0.507
Iron, Total	7439-89-6	40900		3.04	1.52
Manganese, Total	7439-96-5	138		0.507	0.253

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-DUP	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 15:36
Collect Date:	03/25/2011 08:15	Dilution:	1	File ID:	T2.032811.153635
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.1

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	3.38		0.974	0.487
Manganese, Total	7439-96-5	124		0.487	0.243

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-DUP	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 15:54
Collect Date:	03/25/2011 08:15	Dilution:	5	File ID:	T2.032811.155442
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.1

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	31200		97.4	48.7
Iron, Total	7439-89-6	45900		14.6	7.30

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-MS	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 15:29
Collect Date:	03/25/2011 08:15	Dilution:	1	File ID:	T2.032811.152922
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	31000		20.3	10.1
Antimony, Total	7440-36-0	28.8		1.01	0.507
Iron, Total	7439-89-6	40300		3.04	1.52
Manganese, Total	7439-96-5	134		0.507	0.253

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-MSD	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/28/2011 12:50
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/28/2011 15:32
Collect Date:	03/25/2011 08:15	Dilution:	1	File ID:	T2.032811.153258
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	28900		20.3	10.1
Antimony, Total	7440-36-0	29.0		1.01	0.507
Iron, Total	7439-89-6	39200		3.04	1.52
Manganese, Total	7439-96-5	130		0.507	0.253

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-FC-B3-2.!	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 14:10
Collect Date:	03/25/2011 11:00	Dilution:	1	File ID:	T2.032911.141049
Sample Tag:	01	Units:	mg/kg	Percent Solid:	74.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0	3.44		1.01	0.503

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-FC-B3-2.!	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 14:18
Collect Date:	03/25/2011 11:00	Dilution:	100	File ID:	T2.032911.141805
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	74.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	24900		2010	1010
Manganese, Total	7439-96-5	264		50.3	25.1

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32511-SS-FC-B3-2.!	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 15:16
Collect Date:	03/25/2011 11:00	Dilution:	200	File ID:	T2.032911.151610
Sample Tag:	DL02	Units:	mg/kg	Percent Solid:	74.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Iron, Total	7439-89-6	44100		604	302

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-06	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32611-SS-2.5' SW-4	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 14:21
Collect Date:	03/26/2011 08:15	Dilution:	100	File ID:	T2.032911.142143
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	30300		1800	901
Manganese, Total	7439-96-5	182		45.1	22.5

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-06	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32611-SS-2.5' SW-4	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 14:14
Collect Date:	03/26/2011 08:15	Dilution:	1	File ID:	T2.032911.141428
Sample Tag:	01	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.901	0.451

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-06	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32611-SS-2.5' SW-4	Prep Method:	3051A	Prep Date:	03/28/2011 11:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/29/2011 11:14
Workgroup Number:	WG360132	Analyst:	JYH	Run Date:	03/29/2011 15:19
Collect Date:	03/26/2011 08:15	Dilution:	200	File ID:	T2.032911.151949
Sample Tag:	DL02	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Iron, Total	7439-89-6	40600		541	270

Microbac Laboratories Inc.

Report Number: **L11030925**

Report Date : **April 11, 2011**

Sample Number:	L11030925-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-FC-8'-NUI	Prep Method:	3051A	Prep Date:	03/28/2011 12:06
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 15:53
Collect Date:	03/25/2011 13:55	Dilution:	5	File ID:	EL.032811.155324
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.627	0.314
Chromium, Total	7440-47-3		U	2.51	1.25

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-4'SW-1	Prep Method:	3051A	Prep Date:	03/28/2011 12:07
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 16:00
Collect Date:	03/25/2011 14:00	Dilution:	5	File ID:	EL.032811.160010
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.649	0.324
Chromium, Total	7440-47-3	14.2		2.59	1.30

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-7.5'SW2	Prep Method:	3051A	Prep Date:	03/28/2011 12:07
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 16:09
Collect Date:	03/25/2011 14:45	Dilution:	5	File ID:	EL.032811.160907
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.634	0.317
Chromium, Total	7440-47-3	29.0		2.54	1.27

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-04	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-7'SW-3	Prep Method:	3051A	Prep Date:	03/28/2011 12:08
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 16:15
Collect Date:	03/25/2011 16:25	Dilution:	5	File ID:	EL.032811.161552
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	79.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.625	0.312
Chromium, Total	7440-47-3	13.1		2.50	1.25

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-05	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32611-FC-15'-NUM3	Prep Method:	3051A	Prep Date:	03/28/2011 12:09
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/29/2011 09:14
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/29/2011 14:56
Collect Date:	03/26/2011 08:45	Dilution:	5	File ID:	EL.032911.145614
Sample Tag:	DL02	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.657	0.329
Chromium, Total	7440-47-3	4.76		2.63	1.31

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030925**
Report Date : **April 11, 2011**

Sample Number:	L11030925-06	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32611-FC-13'-NUM4	Prep Method:	3051A	Prep Date:	03/28/2011 12:09
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 16:30
Collect Date:	03/26/2011 09:20	Dilution:	5	File ID:	EL.032811.163009
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	77.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.636	0.318
Chromium, Total	7440-47-3	17.6		2.54	1.27

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-FC-2'-NUI	Prep Method:	3051A	Prep Date:	03/28/2011 12:10
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 17:04
Collect Date:	03/25/2011 08:15	Dilution:	5	File ID:	EL.032811.170431
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.563	J	0.657	0.329
Chromium, Total	7440-47-3	15.6		2.63	1.31

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-DUP	Prep Method:	3051A	Prep Date:	03/28/2011 12:11
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 17:11
Collect Date:	03/25/2011 08:15	Dilution:	5	File ID:	EL.032811.171119
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.1

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.603	J	0.642	0.321
Chromium, Total	7440-47-3	27.0		2.57	1.28

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-MS	Prep Method:	3051A	Prep Date:	03/28/2011 12:05
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 17:18
Collect Date:	03/25/2011 08:15	Dilution:	5	File ID:	EL.032811.171807
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	15.8		0.657	0.329
Chromium, Total	7440-47-3	37.1		2.63	1.31

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-04	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-MSD	Prep Method:	3051A	Prep Date:	03/28/2011 12:05
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 17:24
Collect Date:	03/25/2011 08:15	Dilution:	5	File ID:	EL.032811.172455
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	15.0		0.657	0.329
Chromium, Total	7440-47-3	35.6		2.63	1.31

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-05	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32511-SS-FC-B3-2.!	Prep Method:	3051A	Prep Date:	03/28/2011 12:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 17:31
Collect Date:	03/25/2011 11:00	Dilution:	5	File ID:	EL.032811.173144
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	74.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.460	J	0.645	0.323
Chromium, Total	7440-47-3	30.7		2.58	1.29

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11030926**
Report Date : **April 6, 2011**

Sample Number:	L11030926-06	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32611-SS-2.5' SW-4	Prep Method:	3051A	Prep Date:	03/28/2011 12:15
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/28/2011 11:38
Workgroup Number:	WG360123	Analyst:	EDL	Run Date:	03/28/2011 17:38
Collect Date:	03/26/2011 08:15	Dilution:	5	File ID:	EL.032811.173831
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.632	0.316
Chromium, Total	7440-47-3	17.6		2.53	1.26

U Analyte was not detected. The concentration is below the reported LOD.

Appendix D – Support Documentation

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

Laboratory Report Number: L11030925 - REVISED

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on April 11, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on April 11, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 1507 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11030925

04/11/11 10:09

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA
Invoice Number: 615871
P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-32511-SS-FC-8'-NUM2	L11030925-01	03/25/2011 13:55	03/28/2011
SWMU-57-32511-SS-4'SW-1	L11030925-02	03/25/2011 14:00	03/28/2011
SWMU-57-32511-SS-7.5'SW2	L11030925-03	03/25/2011 14:45	03/28/2011
SWMU-57-32511-SS-7'SW-3	L11030925-04	03/25/2011 16:25	03/28/2011
SWMU-57-32611-FC-15'-NUM3	L11030925-05	03/26/2011 08:45	03/28/2011
SWMU-57-32611-FC-13'-NUM4	L11030925-06	03/26/2011 09:20	03/28/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1956609
Report generated: 04/11/2011 10:09

Login Number: L11030925

Department: Metals

Analyst: Ji Hu

METHOD

Preparation: SW-846 3051

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360132 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG360132 - Due to a result that was noncompliant on the negative side upon initial analysis, antimony for client sample 05 was reported from a dilution analysis. Client sample 05 required a greater dilution analysis in order to obtain a result for iron within the calibration range.

Narrative ID: 24455
Approved By: Sheri Pfalzgraf

Login Number: L11030925

Department: Metals

Analyst: Erin Long

METHOD

Preparation: SW-846 3051

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360123 - Due to a suspected spiking error, the initial analysis of the post digestion spike performed on client sample 06 yielded a recovery for cadmium that was greater than the upper acceptance limit. An additional post digestion spike was performed on client sample 05 on a later calibration and met all acceptance criteria.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG360123 - Due to the high levels of nontarget analytes, client samples 01 through 06 were analyzed initially at dilutions for all analytes.

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.

Narrative ID: 24405
Approved By: Sheri Pfalzgraf

COC No. A 2164

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB - KEMRON

Project Contact: MARY LOU ROCHETTE | Contact Phone #: 740-373-4308

Turn Around Requirements: ~~RA0669-401-001~~ 1-DAY | Location: RFAAP - SWMU-57

Project ID: MA0669-401-001

Sampler (print): JOMH ANDERSON | Signature:

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	* METALS - SEE LIST
SWMU-57-32511		X	3-25-11	1355	SOIL	1		1
SS-FC-8'-NUM2								
SWMU-57-32511		X	3-25-11	1400	SOIL	1		1
SS-4'SW-1								
SWMU-57-32511		X	3-25-11	1445	SOIL	1		1
SS-7.5'SW-2								
SWMU-57-32511		X	3-25-11	1625	SOIL	1		1
SS-7'SW-3								
SWMU-57-32611		X	3-26-11	0845	SOIL	1		1
FC-15'-NUM3								
SWMU-57-32611		X	3-26-11	0920	SOIL	1		1
FC-13'-NUM4								

TOTAL # (LAB USE)

Program
☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other _____

ADDITIONAL REQUIREMENTS

* PER RFAAP QAPP
- ALUMINUM
- ANTIMONY
- MANGANESE
- CADMIUM
- CHROMIUM
- IRON

& TEMP
1 BLANK

Microbac OVD 221000013532
Received: 03/28/2011 10:27
By: BRENDA GREENWALT
Brenda Greenwalt

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	3-26-11	1135			
Relinquished by: (Signature)	Date	Time	Remarks:		

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11030925 | Work Group: WG360132
Blank File ID: T2.032811.150737 | Blank Sample ID: WG360099-02
Prep Date: 03/28/11 11:56 | Instrument ID: ICP-THERMO2
Analyzed Date: 03/28/11 15:07 | Method: 6010B
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360099-03	T2.032811.151118	03/28/11 15:11	01
SWMU-57-32511-SS-FC-8'-NUM2	L11030925-01	T2.032811.160530	03/28/11 16:05	01
SWMU-57-32511-SS-4'SW-1	L11030925-02	T2.032811.160909	03/28/11 16:09	01
SWMU-57-32511-SS-7.5'SW2	L11030925-03	T2.032811.161247	03/28/11 16:12	01
SWMU-57-32511-SS-7.5'SW-3	L11030925-04	T2.032811.161624	03/28/11 16:16	01
SWMU-57-32611-FC-15'-NUM3	L11030925-05	T2.032811.162002	03/28/11 16:20	01
SWMU-57-32611-FC-13'-NUM4	L11030925-06	T2.032811.162340	03/28/11 16:23	01
SWMU-57-32611-FC-15'-NUM3	L11030925-05	T2.032911.114524	03/29/11 11:45	DL01
SWMU-57-32611-FC-15'-NUM3	L11030925-05	T2.032911.114855	03/29/11 11:48	DL02

Report Name: BLANK_SUMMARY
PDF File ID: 1956346
Report generated 03/30/2011 09:31

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11030925 Prep Date:03/28/11 11:56 Sample ID:WG360099-02
Instrument ID:ICP-THERMO2 Run Date:03/28/11 15:07 Prep Method:3051A
File ID:T2.032811.150737 Analyst:JYH Method:6010B
Workgroup (AAB#):WG360132 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-28-MAR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Iron, Total	1.50	3.00	1.50	1	U
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1956347
30-MAR-2011 08:55

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360099-03
Instrument ID: ICP-THERMO2 Run Time: 15:11 Prep Method: 3051A
File ID: T2.032811.151118 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360132 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-28-MAR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	235	94.2	80 - 120	
Antimony, Total	30.0	28.5	94.9	80 - 120	
Iron, Total	100	96.5	96.5	80 - 120	
Manganese, Total	12.5	12.0	96.1	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1956348
Report generated: 03/30/2011 08:55

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11030925 Cal ID:ICP-THERMO2 - Worknum:WG360132

Instrument ID:ICP-THERMO2 Contract #: Method:6010B

Parent ID:WG360099-01 File ID:T2.032811.152545 Dil:1 Matrix:SOLID

Sample ID:WG360099-04 MS File ID:T2.032811.152922 Dil:1 Units:mg/kg

Sample ID:WG360099-05 MSD File ID:T2.032811.153258 Dil:1 Percent Solid:75.2

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	26500	253	31000	1770	253	28900	934	7.05	80 - 120	20	*
Antimony, Total	4.44	30.4	28.8	80.2	30.4	29.0	80.8	0.664	80 - 120	20	
Iron, Total	40900	101	40300	-614	101	39200	-1700	2.77	80 - 120	20	*
Manganese, Total	138	12.7	134	-26.7	12.7	130	-63.2	3.50	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:1956349

Report generated 03/31/2011 16:15

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11030925 **Worknum:** WG360132
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360132-02 **File ID:** T2.032811.155442 **Dil:** 5 **Units:** mg/L
Sample: L11030926-02 **File ID:** T2.032811.153635 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	572		640		11.90	E
Antimony	.0694	X	.0635	F	8.50	
Iron	837		945		12.90	E
Manganese	2.56		2.755		7.62	

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: 1956343
03/30/2011 08:55

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11030925 **Worknum:** WG360132
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360132-02 **File ID:** T2.032811.155819 **Dil:** 25 **Units:** mg/L
Sample: L11030926-02 **File ID:** T2.032811.155442 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	640		650		1.56	
Antimony	.0635	F	ND	U		
Iron	945		940		0.53	
Manganese	2.755		2.8		1.63	

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: 1956343
03/30/2011 08:55

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11030925 **Worknum:** WG360132
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360132-01 **File ID:** T2.032811.154012 **Dil:** 1 **Units:** mg/L
Sample ID: L11030926-02 **File ID:** T2.032811.153635 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	537		572		5	437.1	75 - 125	N
ANTIMONY	0.638		0.0694		.6	95.9	75 - 125	
IRON	761		837		2	385.4	75 - 125	N
MANGANESE	2.54		2.56		.25	97.0	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: 1956344
Report generated: 03/30/2011 08:55

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030925	Workgroup (AAB#):	WG360132
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360412	Initial Calibration Date:	28-MAR-2011 12:50

	WG360412-01		WG360412-02		WG360412-03		WG360412-04		WG360412-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.0117	.1	0.0196	.2	0.0288	10	0.872	20	1.82	.999681	
ANTIMONY	0	0.0000600	.012	0.000270	.024	0.000470	1.2	0.0224	2.4	0.0461	.999851	
IRON	0	0	.04	0.000540	.08	0.00103	4	0.0497	8	0.0994	.999986	
MANGANESE	0	0.000110	.005	0.000690	.01	0.00130	.5	0.0613	1	0.123	.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 1956352
Report generated: 30-MAR-2011 17:02

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030925	Workgroup (AAB#):	WG360132
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360276	Initial Calibration Date:	29-MAR-2011 11:14

	WG360276-01		WG360276-02		WG360276-03		WG360276-04		WG360276-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.00929	.1	0.0176	.2	0.0254	10	0.852	20	1.74	.999916	
ANTIMONY	0	0.0000500	.012	0.000260	.024	0.000480	1.2	0.0216	2.4	0.0431	.999999	
IRON	0	0.0000200	.04	0.000560	.08	0.00112	4	0.0578	8	0.111	.999798	
MANGANESE	0	0.000150	.005	0.000920	.01	0.00165	.5	0.0767	1	0.147	.999811	

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 1956352
Report generated: 30-MAR-2011 17:02

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412-07
Instrument ID: ICP-THERMO2 Run Time: 12:57 Method: 6010B
File ID: T2.032811.125733 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360132 Cal ID: ICP-THERI - 28-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1956354
Report generated 04/01/2011 15:28

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360276-07
Instrument ID: ICP-THERMO2 Run Time: 11:23 Method: 6010B
File ID: T2.032911.112332 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360132 Cal ID: ICP-THERI - 29-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1956354
Report generated 04/01/2011 15:28

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412-12

Instrument ID: ICP-THERMO2 Run Time: 13:15 Method: 6010B

File ID: T2.032811.131543 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956357
Report generated 04/01/2011 15:29

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11030925 Run Date:03/28/2011 Sample ID:WG360412-19
Instrument ID:ICP-THERMO2 Run Time:15:03 Method:6010B
File ID:T2.032811.150353 Analyst:JYH Units:mg/L
Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 28-MAR-11
Matrix:SOIL QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956357
Report generated 04/01/2011 15:29

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11030925 Run Date:03/28/2011 Sample ID:WG360412-22
Instrument ID:ICP-THERMO2 Run Time:15:47 Method:6010B
File ID:T2.032811.154723 Analyst:JYH Units:mg/L
Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 28-MAR-11
Matrix:SOIL QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956357
Report generated 04/01/2011 15:29

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412-24

Instrument ID: ICP-THERMO2 Run Time: 16:30 Method: 6010B

File ID: T2.032811.163049 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956357
Report generated 04/01/2011 15:29

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360276-12

Instrument ID: ICP-THERMO2 Run Time: 11:41 Method: 6010B

File ID: T2.032911.114136 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956357
Report generated 04/01/2011 15:29

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360276-14

Instrument ID: ICP-THERMO2 Run Time: 11:56 Method: 6010B

File ID: T2.032911.115604 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956357
Report generated 04/01/2011 15:29

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11030925 Run Date:03/28/2011 Sample ID:WG360412-06

Instrument ID:ICP-THERMO2 Run Time:12:54 Method:6010B

File ID:T2.032811.125407 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 28-MAR-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	9.89	98.9	90 - 110	
Antimony		1.2	1.17	97.7	90 - 110	
Iron		4	4.02	101	90 - 110	
Manganese		.5	0.506	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1956353

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11030925 Run Date:03/29/2011 Sample ID:WG360276-06

Instrument ID:ICP-THERMO2 Run Time:11:20 Method:6010B

File ID:T2.032911.112011 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 29-MAR-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	9.62	96.2	90 - 110	
Antimony		1.2	1.19	99.0	90 - 110	
Iron		4	3.99	99.6	90 - 110	
Manganese		.5	0.496	99.2	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1956353

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412-11

Instrument ID: ICP-THERMO2 Run Time: 13:12 Method: 6010B

File ID: T2.032811.131217 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.79	mg/L	97.9	90 - 110		
Antimony		1.20	1.18	mg/L	98.1	90 - 110		
Iron		4.00	4.05	mg/L	101	90 - 110		
Manganese		0.500	0.499	mg/L	99.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956356

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412-18

Instrument ID: ICP-THERMO2 Run Time: 15:00 Method: 6010B

File ID: T2.032811.150027 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.48	mg/L	94.8	90 - 110		
Antimony		1.20	1.19	mg/L	99.2	90 - 110		
Iron		4.00	3.89	mg/L	97.3	90 - 110		
Manganese		0.500	0.484	mg/L	96.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956356

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412-21

Instrument ID: ICP-THERMO2 Run Time: 15:43 Method: 6010B

File ID: T2.032811.154358 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.98	mg/L	99.8	90 - 110		
Antimony		1.20	1.22	mg/L	102	90 - 110		
Iron		4.00	4.12	mg/L	103	90 - 110		
Manganese		0.500	0.493	mg/L	98.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956356

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412-23

Instrument ID: ICP-THERMO2 Run Time: 16:27 Method: 6010B

File ID: T2.032811.162724 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.85	mg/L	98.5	90 - 110		
Antimony		1.20	1.20	mg/L	99.9	90 - 110		
Iron		4.00	3.92	mg/L	98.1	90 - 110		
Manganese		0.500	0.479	mg/L	95.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956356

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360276-11

Instrument ID: ICP-THERMO2 Run Time: 11:38 Method: 6010B

File ID: T2.032911.113814 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.21	mg/L	101	90 - 110		
Iron		4.00	3.92	mg/L	98.1	90 - 110		
Manganese		0.500	0.484	mg/L	96.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956356

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360276-13

Instrument ID: ICP-THERMO2 Run Time: 11:52 Method: 6010B

File ID: T2.032911.115242 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

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		
Iron		4.00	3.90	mg/L	97.5	90 - 110		
Manganese		0.500	0.486	mg/L	97.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956356

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030925 **Workgroup (AAB#):** WG360132
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360412-09 **File ID:** T2.032811.130458 **Units:** mg/L
Sol. AB : WG360412-10 **File ID:** T2.032811.130839 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	247	98.8	250	253	101	
Antimony	NS	-0.00636	NS	0.500	0.488	97.6	
Iron	100	97.4	97.4	100	97.0	97.0	
Manganese	NS	-0.00198	NS	0.250	0.236	94.4	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1956355
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030925 **Workgroup (AAB#):** WG360132
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360276-09 **File ID:** T2.032911.113054 **Units:** mg/L
Sol. AB : WG360276-10 **File ID:** T2.032911.113435 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	250	100	250	262	105	
Antimony	NS	-0.00464	NS	0.500	0.519	104	
Iron	100	93.9	93.9	100	96.5	96.5	
Manganese	NS	-0.00148	NS	0.250	0.236	94.4	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1956355
Report generated 03/30/2011 17:02

LRC SAMPLE

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360412
Instrument ID: ICP-THERMO2 Run Time: 12:50 Prep Method: 3051A
Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360132 Matrix: Solid Units: mg/kg
Cal ID: 28-MAR-11 - 28-MAR-2011 12:50

Analytes	Expected	Found	% Rec	Limits	Q
Aluminum, Total	900	869	96.6	90 - 110	
Iron, Total	1000	950	95.0	90 - 110	
Manganese, Total	200	184	92.0	90 - 110	

KEMRON FORMS - Modified 08/28/2006
Version 1.5 PDF File ID: 1956882
Report generated 03/30/2011 17:07

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11030925 Prep Date:03/28/11 12:15 Sample ID:WG360101-02
Instrument ID:ELAN-ICP Run Date:03/28/11 15:39 Prep Method:3051A
File ID:EL.032811.153947 Analyst:EDL Method:6020
Workgroup (AAB#):WG360123 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-28-MAR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1955893
29-MAR-2011 08:38

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360101-03
Instrument ID: ELAN-ICP Run Time: 15:46 Prep Method: 3051A
File ID: EL.032811.154635 Analyst: EDL Method: 6020
Workgroup (AAB#): WG360123 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-28-MAR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	9.23	92.3	80 - 120	
Chromium, Total	10.0	10.2	102	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1955894
Report generated: 03/29/2011 08:38

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11030925 Cal ID: ELAN-ICP- Worknum:WG360123

Instrument ID:ELAN-ICP Contract #: Method:6020

Parent ID:WG360101-01 File ID:EL.032811.170431 Dil:5 Matrix:SOLID

Sample ID:WG360101-04 MS File ID:EL.032811.171807 Dil:5 Units:mg/kg

Sample ID:WG360101-05 MSD File ID:EL.032811.172455 Dil:5 Percent Solid:100

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	0.423	9.88	11.9	116	9.88	11.3	110	5.16	80 - 120	20	
Chromium, Total	11.7	9.88	27.9	164	9.88	26.8	152	4.25	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:1955895

Report generated 03/29/2011 08:38

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11030925 **Worknum:** WG360123
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG360123-02 **File ID:** EL.032911.150956 **Dil:** 25 **Units:** ug/L
Sample: L11030925-05 **File ID:** EL.032911.145614 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Cadmium	ND	U	ND	U		
Chromium	9.05	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 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: 1955889
03/29/2011 15:21

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11030925 **Worknum:** WG360123
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG360123-01 **File ID:** EL.032911.150305 **Dil:** 5 **Units:** ug/L
Sample ID: L11030925-05 **File ID:** EL.032911.145614 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	53.2		0	U	50	106.4	75 - 125	
CHROMIUM	52.8		1.81		50	102.0	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: 1955890
Report generated: 03/29/2011 15:21

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030925	Workgroup (AAB#):	WG360123
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG360145	Initial Calibration Date:	28-MAR-2011 11:38

	WG360145-01		WG360145-02		WG360145-03		WG360145-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	1.31	.4	437	50	57900	100	117000	.999941	
CHROMIUM	0	7820	.4	10100	50	317000	100	620000	.99999	

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: 1955898
Report generated: 29-MAR-2011 15:24

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030925	Workgroup (AAB#):	WG360123
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG360228	Initial Calibration Date:	29-MAR-2011 09:14

	WG360228-01		WG360228-02		WG360228-03		WG360228-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	-5.36	.4	525	50	65200	100	127000	.999984	
CHROMIUM	0	9950	.4	12600	50	362000	100	690000	.999929	

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: 1955898
Report generated: 29-MAR-2011 15:24

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-06
Instrument ID: ELAN-ICP Run Time: 11:51 Method: 6020
File ID: EL.032811.115138 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360123 Cal ID: ELAN-ICP - 28-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1955900
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-06
Instrument ID: ELAN-ICP Run Time: 09:27 Method: 6020
File ID: EL.032911.092737 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360123 Cal ID: ELAN-ICP - 29-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1955900
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-11

Instrument ID: ELAN-ICP Run Time: 12:26 Method: 6020

File ID: EL.032811.122606 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955903
Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-17

Instrument ID: ELAN-ICP Run Time: 15:26 Method: 6020

File ID: EL.032811.152611 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955903
Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-20

Instrument ID: ELAN-ICP Run Time: 16:57 Method: 6020

File ID: EL.032811.165746 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955903
Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-11

Instrument ID: ELAN-ICP Run Time: 10:01 Method: 6020

File ID: EL.032911.100135 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955903
Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-19

Instrument ID: ELAN-ICP Run Time: 14:49 Method: 6020

File ID: EL.032911.144927 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955903
Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-21

Instrument ID: ELAN-ICP Run Time: 15:51 Method: 6020

File ID: EL.032911.155136 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955903
Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-05
Instrument ID: ELAN-ICP Run Time: 11:44 Method: 6020
File ID: EL.032811.114454 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	49.9	99.9	90 - 110	
Chromium		50	50.5	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1955899
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-05
Instrument ID: ELAN-ICP Run Time: 09:20 Method: 6020
File ID: EL.032911.092053 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	49.9	99.7	90 - 110	
Chromium		50	51.1	102	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1955899
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-10

Instrument ID: ELAN-ICP Run Time: 12:18 Method: 6020

File ID: EL.032811.121850 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.9	ug/L	99.9	90 - 110		
Chromium		50.0	49.9	ug/L	99.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955902

Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-16

Instrument ID: ELAN-ICP Run Time: 15:18 Method: 6020

File ID: EL.032811.151855 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.7	ug/L	99.5	90 - 110		
Chromium		50.0	49.2	ug/L	98.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955902

Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-19

Instrument ID: ELAN-ICP Run Time: 16:50 Method: 6020

File ID: EL.032811.165030 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	52.7	ug/L	105	90 - 110		
Chromium		50.0	54.4	ug/L	109	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955902

Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-10

Instrument ID: ELAN-ICP Run Time: 09:54 Method: 6020

File ID: EL.032911.095449 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.7	ug/L	99.3	90 - 110		
Chromium		50.0	49.3	ug/L	98.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955902

Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-18

Instrument ID: ELAN-ICP Run Time: 14:42 Method: 6020

File ID: EL.032911.144241 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.4	ug/L	98.8	90 - 110		
Chromium		50.0	49.3	ug/L	98.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955902

Report generated 03/29/2011 15:56

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-20

Instrument ID: ELAN-ICP Run Time: 15:44 Method: 6020

File ID: EL.032911.154451 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.7	ug/L	99.4	90 - 110		
Chromium		50.0	50.1	ug/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955902

Report generated 03/29/2011 15:56

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11030925 Run Date: 03/28/2011 Sample ID: WG360145-07
Instrument ID: ELAN-ICP Run Time: 11:58 Method: 6020
File ID: EL.032811.115825 Analyst: EDL QC Key: DOD4
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.217	ug/L	109	80 - 120		
Chromium		0.800	0.794	ug/L	99.3	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 1955904
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11030925 Run Date: 03/29/2011 Sample ID: WG360228-07
Instrument ID: ELAN-ICP Run Time: 09:34 Method: 6020
File ID: EL.032911.093424 Analyst: EDL QC Key: DOD4
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.202	ug/L	101	80 - 120		
Chromium		0.800	0.774	ug/L	96.8	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 1955904
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030925 **Workgroup (AAB#):** WG360123
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG360145-08 **File ID:** EL.032811.120514 **Units:** ug/L
Sol. AB : WG360145-09 **File ID:** EL.032811.121202 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0322	NS	100	99.6	99.6	
Chromium	NS	-0.175	NS	100	96.6	96.6	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1955901
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030925 **Workgroup (AAB#):** WG360123
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG360228-08 **File ID:** EL.032911.094113 **Units:** ug/L
Sol. AB : WG360228-09 **File ID:** EL.032911.094801 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0234	NS	100	100	100	
Chromium	NS	-0.130	NS	100	96.2	96.2	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1955901
Report generated 03/29/2011 15:24

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11030925 **Analytical Method:** 6020
Analytical Workgroup: WG360123 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 28-MAR-2011 11:17

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11030925-01	SAMP	28-MAR-2011 15:53	109.392	113.082	112.898	112.762
L11030925-02	SAMP	28-MAR-2011 16:00	109.125	113.774	113.162	111.789
L11030925-03	SAMP	28-MAR-2011 16:09	105.833	113.39	111.207	110.012
L11030925-04	SAMP	28-MAR-2011 16:15	105.647	114.987	111.337	109.42
L11030925-06	SAMP	28-MAR-2011 16:30	104.74	113.939	111.765	112.478
WG360101-02	BLANK	28-MAR-2011 15:39	102.638	104.732	107.041	108.071
WG360101-03	LCS	28-MAR-2011 15:46	112.565	113.734	116.574	116.791
WG360123-01	PSPK	28-MAR-2011 16:36	103.197	114.412	110.337	110.872
WG360123-02	SERIAL	28-MAR-2011 16:43	102.621	114.08	110.961	109.387
WG360145-05	ICV	28-MAR-2011 11:44	93.909	96.876	99.448	101.419
WG360145-06	ICB	28-MAR-2011 11:51	97.39	100.01	102.519	103.661
WG360145-07	LLICV	28-MAR-2011 11:58	97.539	98.873	102.022	102.815
WG360145-08	ICS	28-MAR-2011 12:05	94.371	99.076	99.197	100.074
WG360145-09	ICS	28-MAR-2011 12:12	94.609	95.507	94.103	96.047
WG360145-10	CCV	28-MAR-2011 12:18	96.591	100.468	101.419	102.395
WG360145-11	CCB	28-MAR-2011 12:26	95.215	97.768	99.118	100.778
WG360145-16	CCV	28-MAR-2011 15:18	105.213	110.945	111.318	111.187
WG360145-17	CCB	28-MAR-2011 15:26	107.396	110.436	112.055	113.157
WG360145-19	CCV	28-MAR-2011 16:50	102.433	113.921	114.589	112.233
WG360145-20	CCB	28-MAR-2011 16:57	104.106	116.997	114.452	114.298

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1955897
Report generated: 03/29/2011 15:56

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11030925 **Analytical Method:** 6020
Analytical Workgroup: WG360123 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 29-MAR-2011 08:53

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11030925-05	SAMP	29-MAR-2011 14:56	98.544	95.743	91.865	97.361
WG360123-01	PSPK	29-MAR-2011 15:03	97.685	92.286	90.955	96.476
WG360123-02	SERIAL	29-MAR-2011 15:09	99.75	92.218	91.389	94.854
WG360228-05	ICV	29-MAR-2011 09:20	99.905	98.539	100.628	101.694
WG360228-06	ICB	29-MAR-2011 09:27	104.029	102.926	104.14	104.978
WG360228-07	LLICV	29-MAR-2011 09:34	101.824	101.382	104.172	102.327
WG360228-08	ICS	29-MAR-2011 09:41	99.833	98.703	98.211	99.285
WG360228-09	ICS	29-MAR-2011 09:48	101.632	98.763	97.058	97.861
WG360228-10	CCV	29-MAR-2011 09:54	100.428	99.111	99.866	100.605
WG360228-11	CCB	29-MAR-2011 10:01	103.033	100.09	102.446	102.549
WG360228-18	CCV	29-MAR-2011 14:42	102.49	93.25	92.388	95.66
WG360228-19	CCB	29-MAR-2011 14:49	100.596	94.396	94.164	96.42
WG360228-20	CCV	29-MAR-2011 15:44	97.598	93.349	92.78	94.703
WG360228-21	CCB	29-MAR-2011 15:51	99.612	93.762	94.169	95.864

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1955897
Report generated: 03/29/2011 15:56

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11030925 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1955896
Report generated: 03/29/2011 15:24

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

Laboratory Report Number: L11030926

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on April 06, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on April 06, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 1524 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11030926

04/06/11 14:15

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-32511-SS-FC-2'-NUM1	L11030926-01	03/25/2011 08:15	03/28/2011
SWMU-57-32511-SS-DUP	L11030926-02	03/25/2011 08:15	03/28/2011
SWMU-57-32511-SS-MS	L11030926-03	03/25/2011 08:15	03/28/2011
SWMU-57-32511-SS-MSD	L11030926-04	03/25/2011 08:15	03/28/2011
SWMU-57-32511-SS-FC-B3-2.5'	L11030926-05	03/25/2011 11:00	03/28/2011
SWMU-57-32611-SS-2.5' SW-4	L11030926-06	03/26/2011 08:15	03/28/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1958818
Report generated: 04/06/2011 14:15

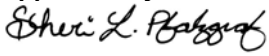
Serial Dilution/Post Digestion Spikes: WG360132 - Aluminum and iron for client sample 02 were reported from a five-fold dilution where the 25-fold serial dilution was compliant.

Matrix Spikes: WG360132 - Sample 01 was chosen by the client for MS/MSD analysis. Samples 03(MS) and 04(MSD) yielded noncompliant recoveries for three analytes.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 24456
Approved By: Sheri Pfalzgraf



Login Number: L11030926

Department: Metals

Analyst: Erin Long

METHOD

Preparation: SW-846 3051

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360123 - Due to a suspected spiking error, the initial analysis of the post digestion spike performed on a nonclient sample yielded a recovery for cadmium that was greater than the upper acceptance limit. An additional post digestion spike was performed on a later calibration and met all acceptance criteria.

Matrix Spikes: WG360123 - Sample 02 was chosen by the client for MS/MSD analysis. Samples 03(MS) and 04(MSD) yielded noncompliant recoveries for chromium.

SAMPLES

Samples: WG360123 - Due to the high levels of nontarget analytes, client samples 01 through 06 were analyzed initially at dilutions for all analytes.

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.

Narrative ID: 24406
Approved By: Sheri Pfalzgraf

COC No. A 2163

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB-KEMRON

Project Contact: MARY LOU ROCHOTTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 3-DAY | Location: RFAAP SWMU-57

Project ID: MA0669-401-001

Sampler (print): JONATH ANDERSON | Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	METALS * SEE LIST	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
SWMU-57-32511-SS-FC-2'-NUM1		X	3-25-11	0815	SOIL	1		1		* PER RFAAP QAPP - ALUMINUM - ANTIMONY - MANGANESE - CADMIUM - CHROMIUM - IRON & TEMP BLANK
SWMU-57-32511-SS-DUP		X	3-25-11	0815	SOIL	1		1		
SWMU-57-32511-SS-MS		X	3-25-11	0815	SOIL	1		1		
SWMU-57-32511-SS-MSD		X	3-25-11	0815	SOIL	1		1		
SWMU-57-32511-SS-FC-B3-2.5'		X	3-25-11	1100	SOIL	1		1		
SWMU-57-32611-SS-2.5' SW-4		X	3-26-11	0815	SOIL	1		1		

Microbac OVD
Received: 03/28/2011 10:30
By: BRENDA GREENWALT
221000013533

Brenda Greenwalt

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	3-26-11	1135			
Relinquished by: (Signature)	Date	Time	Remarks:		

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11030926
Work Group: WG360132
Blank File ID: T2.032811.150737
Blank Sample ID: WG360099-02
Prep Date: 03/28/11 11:56
Instrument ID: ICP-THERMO2
Analyzed Date: 03/28/11 15:07
Method: 6010B
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360099-03	T2.032811.151118	03/28/11 15:11	01
SWMU-57-32511-SS-FC-2'-NUM1	L11030926-01	T2.032811.152545	03/28/11 15:25	01
SWMU-57-32511-SS-MS	L11030926-03	T2.032811.152922	03/28/11 15:29	01
SWMU-57-32511-SS-MSD	L11030926-04	T2.032811.153258	03/28/11 15:32	01
SWMU-57-32511-SS-DUP	L11030926-02	T2.032811.153635	03/28/11 15:36	01
SWMU-57-32511-SS-DUP	L11030926-02	T2.032811.155442	03/28/11 15:54	DL01
SWMU-57-32511-SS-FC-B3-2.5'	L11030926-05	T2.032911.141049	03/29/11 14:10	01
SWMU-57-32611-SS-2.5' SW-4	L11030926-06	T2.032911.141428	03/29/11 14:14	01
SWMU-57-32511-SS-FC-B3-2.5'	L11030926-05	T2.032911.141805	03/29/11 14:18	DL01
SWMU-57-32611-SS-2.5' SW-4	L11030926-06	T2.032911.142143	03/29/11 14:21	DL01
SWMU-57-32511-SS-FC-B3-2.5'	L11030926-05	T2.032911.151610	03/29/11 15:16	DL02
SWMU-57-32611-SS-2.5' SW-4	L11030926-06	T2.032911.151949	03/29/11 15:19	DL02

Report Name: BLANK_SUMMARY
PDF File ID: 1956361
Report generated 03/30/2011 09:32

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11030926 Prep Date:03/28/11 11:56 Sample ID:WG360099-02
Instrument ID:ICP-THERMO2 Run Date:03/28/11 15:07 Prep Method:3051A
File ID:T2.032811.150737 Analyst:JYH Method:6010B
Workgroup (AAB#):WG360132 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-28-MAR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Iron, Total	1.50	3.00	1.50	1	U
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1956362
30-MAR-2011 08:56

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360099-03
Instrument ID: ICP-THERMO2 Run Time: 15:11 Prep Method: 3051A
File ID: T2.032811.151118 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360132 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-28-MAR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	235	94.2	80 - 120	
Antimony, Total	30.0	28.5	94.9	80 - 120	
Iron, Total	100	96.5	96.5	80 - 120	
Manganese, Total	12.5	12.0	96.1	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1956363
Report generated: 03/30/2011 08:56

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11030926 Cal ID: ICP-THERMO2- 28-MAR-11 Worknum:WG360132

Instrument ID:ICP-THERMO2 Contract #: Prep Method:3051A

Parent ID:L11030926-01 File ID:T2.032811.152545 Dil:1 Method:6010B

Sample ID:L11030926-03 MS File ID:T2.032811.152922 Dil:1 Matrix:Soil

Sample ID:L11030926-04 MSD File ID:T2.032811.153258 Dil:1 Units:mg/kg

Percent Solid:75.2

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	26500	253	31000	1770	253	28900	934	7.05	80 - 120	20	*
Antimony, Total	4.44	30.4	28.8	80.2	30.4	29.0	80.8	0.664	80 - 120	20	
Iron, Total	40900	101	40300	-614	101	39200	-1700	2.77	80 - 120	20	*
Manganese, Total	138	12.7	134	-26.7	12.7	130	-63.2	3.50	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1956364
Report generated 04/01/2011 15:48

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11030926 **Worknum:** WG360132
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360132-02 **File ID:** T2.032811.155442 **Dil:** 5 **Units:** mg/L
Sample: L11030926-02 **File ID:** T2.032811.153635 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	572		640		11.90	E
Antimony	.0694	X	.0635	F	8.50	
Iron	837		945		12.90	E
Manganese	2.56		2.755		7.62	

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: 1956358
03/30/2011 08:55

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11030926 **Worknum:** WG360132
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360132-02 **File ID:** T2.032811.155819 **Dil:** 25 **Units:** mg/L
Sample: L11030926-02 **File ID:** T2.032811.155442 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	640		650		1.56	
Antimony	.0635	F	ND	U		
Iron	945		940		0.53	
Manganese	2.755		2.8		1.63	

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: 1956358
03/30/2011 08:55

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11030926 **Worknum:** WG360132
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360132-01 **File ID:** T2.032811.154012 **Dil:** 1 **Units:** mg/L
Sample ID: L11030926-02 **File ID:** T2.032811.153635 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	537		572		5	437.1	75 - 125	N
ANTIMONY	0.638		0.0694		.6	95.9	75 - 125	
IRON	761		837		2	385.4	75 - 125	N
MANGANESE	2.54		2.56		.25	97.0	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: 1956359
Report generated: 03/30/2011 08:55

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030926	Workgroup (AAB#):	WG360132
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360412	Initial Calibration Date:	28-MAR-2011 12:50

	WG360412-01		WG360412-02		WG360412-03		WG360412-04		WG360412-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.0117	.1	0.0196	.2	0.0288	10	0.872	20	1.82	.999681	
ANTIMONY	0	0.0000600	.012	0.000270	.024	0.000470	1.2	0.0224	2.4	0.0461	.999851	
IRON	0	0	.04	0.000540	.08	0.00103	4	0.0497	8	0.0994	.999986	
MANGANESE	0	0.000110	.005	0.000690	.01	0.00130	.5	0.0613	1	0.123	.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 1956368
Report generated: 30-MAR-2011 17:02

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030926	Workgroup (AAB#):	WG360132
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360276	Initial Calibration Date:	29-MAR-2011 11:14

	WG360276-01		WG360276-02		WG360276-03		WG360276-04		WG360276-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.00929	.1	0.0176	.2	0.0254	10	0.852	20	1.74	.999916	
ANTIMONY	0	0.0000500	.012	0.000260	.024	0.000480	1.2	0.0216	2.4	0.0431	.999999	
IRON	0	0.0000200	.04	0.000560	.08	0.00112	4	0.0578	8	0.111	.999798	
MANGANESE	0	0.000150	.005	0.000920	.01	0.00165	.5	0.0767	1	0.147	.999811	

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 1956368
Report generated: 30-MAR-2011 17:02

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-07
Instrument ID: ICP-THERMO2 Run Time: 12:57 Method: 6010B
File ID: T2.032811.125733 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360132 Cal ID: ICP-THERI - 28-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1956370
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-07
Instrument ID: ICP-THERMO2 Run Time: 11:23 Method: 6010B
File ID: T2.032911.112332 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360132 Cal ID: ICP-THERI - 29-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1956370
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-12

Instrument ID: ICP-THERMO2 Run Time: 13:15 Method: 6010B

File ID: T2.032811.131543 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-19

Instrument ID: ICP-THERMO2 Run Time: 15:03 Method: 6010B

File ID: T2.032811.150353 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-22

Instrument ID: ICP-THERMO2 Run Time: 15:47 Method: 6010B

File ID: T2.032811.154723 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-24

Instrument ID: ICP-THERMO2 Run Time: 16:30 Method: 6010B

File ID: T2.032811.163049 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-12

Instrument ID: ICP-THERMO2 Run Time: 11:41 Method: 6010B

File ID: T2.032911.114136 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11030926 Run Date:03/29/2011 Sample ID:WG360276-14
Instrument ID:ICP-THERMO2 Run Time:11:56 Method:6010B
File ID:T2.032911.115604 Analyst:JYH Units:mg/L
Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 29-MAR-11
Matrix:SOIL QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-16

Instrument ID: ICP-THERMO2 Run Time: 12:39 Method: 6010B

File ID: T2.032911.123940 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-19

Instrument ID: ICP-THERMO2 Run Time: 13:19 Method: 6010B

File ID: T2.032911.131930 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number:L11030926 Run Date:03/29/2011 Sample ID:WG360276-22
Instrument ID:ICP-THERMO2 Run Time:14:07 Method:6010B
File ID:T2.032911.140706 Analyst:JYH Units:mg/L
Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 29-MAR-11
Matrix:SOIL QAPP:DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-24

Instrument ID: ICP-THERMO2 Run Time: 14:28 Method: 6010B

File ID: T2.032911.142848 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-26

Instrument ID: ICP-THERMO2 Run Time: 15:12 Method: 6010B

File ID: T2.032911.151226 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-28

Instrument ID: ICP-THERMO2 Run Time: 15:55 Method: 6010B

File ID: T2.032911.155555 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1956373
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11030926 Run Date:03/28/2011 Sample ID:WG360412-06
Instrument ID:ICP-THERMO2 Run Time:12:54 Method:6010B
File ID:T2.032811.125407 Analyst:JYH Units:mg/L
Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 28-MAR-11
QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	9.89	98.9	90 - 110	
Antimony		1.2	1.17	97.7	90 - 110	
Iron		4	4.02	101	90 - 110	
Manganese		.5	0.506	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1956369
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11030926 Run Date:03/29/2011 Sample ID:WG360276-06

Instrument ID:ICP-THERMO2 Run Time:11:20 Method:6010B

File ID:T2.032911.112011 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG360132 Cal ID:ICP-TH - 29-MAR-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	9.62	96.2	90 - 110	
Antimony		1.2	1.19	99.0	90 - 110	
Iron		4	3.99	99.6	90 - 110	
Manganese		.5	0.496	99.2	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1956369

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-11

Instrument ID: ICP-THERMO2 Run Time: 13:12 Method: 6010B

File ID: T2.032811.131217 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.79	mg/L	97.9	90 - 110		
Antimony		1.20	1.18	mg/L	98.1	90 - 110		
Iron		4.00	4.05	mg/L	101	90 - 110		
Manganese		0.500	0.499	mg/L	99.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-18

Instrument ID: ICP-THERMO2 Run Time: 15:00 Method: 6010B

File ID: T2.032811.150027 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.48	mg/L	94.8	90 - 110		
Antimony		1.20	1.19	mg/L	99.2	90 - 110		
Iron		4.00	3.89	mg/L	97.3	90 - 110		
Manganese		0.500	0.484	mg/L	96.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-21

Instrument ID: ICP-THERMO2 Run Time: 15:43 Method: 6010B

File ID: T2.032811.154358 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.98	mg/L	99.8	90 - 110		
Antimony		1.20	1.22	mg/L	102	90 - 110		
Iron		4.00	4.12	mg/L	103	90 - 110		
Manganese		0.500	0.493	mg/L	98.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412-23

Instrument ID: ICP-THERMO2 Run Time: 16:27 Method: 6010B

File ID: T2.032811.162724 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.85	mg/L	98.5	90 - 110		
Antimony		1.20	1.20	mg/L	99.9	90 - 110		
Iron		4.00	3.92	mg/L	98.1	90 - 110		
Manganese		0.500	0.479	mg/L	95.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-11

Instrument ID: ICP-THERMO2 Run Time: 11:38 Method: 6010B

File ID: T2.032911.113814 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.21	mg/L	101	90 - 110		
Iron		4.00	3.92	mg/L	98.1	90 - 110		
Manganese		0.500	0.484	mg/L	96.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-13

Instrument ID: ICP-THERMO2 Run Time: 11:52 Method: 6010B

File ID: T2.032911.115242 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

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		
Iron		4.00	3.90	mg/L	97.5	90 - 110		
Manganese		0.500	0.486	mg/L	97.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-15

Instrument ID: ICP-THERMO2 Run Time: 12:36 Method: 6010B

File ID: T2.032911.123618 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.81	mg/L	98.1	90 - 110		
Antimony		1.20	1.19	mg/L	99.3	90 - 110		
Iron		4.00	3.92	mg/L	98.1	90 - 110		
Manganese		0.500	0.482	mg/L	96.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-18

Instrument ID: ICP-THERMO2 Run Time: 13:16 Method: 6010B

File ID: T2.032911.131606 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.21	mg/L	101	90 - 110		
Iron		4.00	3.85	mg/L	96.2	90 - 110		
Manganese		0.500	0.480	mg/L	95.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-21

Instrument ID: ICP-THERMO2 Run Time: 14:03 Method: 6010B

File ID: T2.032911.140343 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.24	mg/L	103	90 - 110		
Iron		4.00	3.79	mg/L	94.9	90 - 110		
Manganese		0.500	0.461	mg/L	92.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1956372
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-23

Instrument ID: ICP-THERMO2 Run Time: 14:25 Method: 6010B

File ID: T2.032911.142525 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.23	mg/L	102	90 - 110		
Iron		4.00	3.76	mg/L	94.1	90 - 110		
Manganese		0.500	0.460	mg/L	91.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-25

Instrument ID: ICP-THERMO2 Run Time: 15:09 Method: 6010B

File ID: T2.032911.150905 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Antimony		1.20	1.24	mg/L	103	90 - 110		
Iron		4.00	3.80	mg/L	95.1	90 - 110		
Manganese		0.500	0.463	mg/L	92.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1956372
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360276-27

Instrument ID: ICP-THERMO2 Run Time: 15:52 Method: 6010B

File ID: T2.032911.155234 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360132 Cal ID: ICP-TH - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Antimony		1.20	1.25	mg/L	104	90 - 110		
Iron		4.00	3.76	mg/L	93.9	90 - 110		
Manganese		0.500	0.459	mg/L	91.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1956372

Report generated 03/30/2011 17:02

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030926 **Workgroup (AAB#):** WG360132
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360412-09 **File ID:** T2.032811.130458 **Units:** mg/L
Sol. AB : WG360412-10 **File ID:** T2.032811.130839 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	247	98.8	250	253	101	
Antimony	NS	-0.00636	NS	0.500	0.488	97.6	
Iron	100	97.4	97.4	100	97.0	97.0	
Manganese	NS	-0.00198	NS	0.250	0.236	94.4	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1956371
Report generated 03/30/2011 17:02

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030926 **Workgroup (AAB#):** WG360132
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360276-09 **File ID:** T2.032911.113054 **Units:** mg/L
Sol. AB : WG360276-10 **File ID:** T2.032911.113435 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	250	100	250	262	105	
Antimony	NS	-0.00464	NS	0.500	0.519	104	
Iron	100	93.9	93.9	100	96.5	96.5	
Manganese	NS	-0.00148	NS	0.250	0.236	94.4	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1956371
Report generated 03/30/2011 17:02

LRC SAMPLE

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360412
Instrument ID: ICP-THERMO2 Run Time: 12:50 Prep Method: 3051A
Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360132 Matrix: Solid Units: mg/kg
Cal ID: 28-MAR-11 - 28-MAR-2011 12:50

Analytes	Expected	Found	% Rec	Limits	Q
Aluminum, Total	900	869	96.6	90 - 110	
Iron, Total	1000	950	95.0	90 - 110	
Manganese, Total	200	184	92.0	90 - 110	

KEMRON FORMS - Modified 08/28/2006
Version 1.5 PDF File ID: 1957059
Report generated 03/30/2011 17:07

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11030926
Work Group: WG360123
Blank File ID: EL.032811.153947
Blank Sample ID: WG360101-02
Prep Date: 03/28/11 12:15
Instrument ID: ELAN-ICP
Analyzed Date: 03/28/11 15:39
Method: 6020
Analyst: EDL

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360101-03	EL.032811.154635	03/28/11 15:46	01
SWMU-57-32511-SS-FC-2'-NUM1	L11030926-01	EL.032811.170431	03/28/11 17:04	DL01
SWMU-57-32511-SS-DUP	L11030926-02	EL.032811.171119	03/28/11 17:11	DL01
SWMU-57-32511-SS-MS	L11030926-03	EL.032811.171807	03/28/11 17:18	DL01
SWMU-57-32511-SS-MSD	L11030926-04	EL.032811.172455	03/28/11 17:24	DL01
SWMU-57-32511-SS-FC-B3-2.5'	L11030926-05	EL.032811.173144	03/28/11 17:31	DL01
SWMU-57-32611-SS-2.5' SW-4	L11030926-06	EL.032811.173831	03/28/11 17:38	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1955908
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11030926 Prep Date:03/28/11 12:15 Sample ID:WG360101-02
Instrument ID:ELAN-ICP Run Date:03/28/11 15:39 Prep Method:3051A
File ID:EL.032811.153947 Analyst:EDL Method:6020
Workgroup (AAB#):WG360123 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-28-MAR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1955909
29-MAR-2011 08:40

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360101-03
Instrument ID: ELAN-ICP Run Time: 15:46 Prep Method: 3051A
File ID: EL.032811.154635 Analyst: EDL Method: 6020
Workgroup (AAB#): WG360123 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-28-MAR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	9.23	92.3	80 - 120	
Chromium, Total	10.0	10.2	102	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1955910
Report generated: 03/29/2011 08:40

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11030926 Cal ID:ELAN-ICP- 28-MAR-11 Worknum:WG360123

Instrument ID:ELAN-ICP Contract #: Prep Method:3051A

Parent ID:L11030926-01 File ID:EL.032811.170431 Dil:5 Method:6020

Sample ID:L11030926-03 MS File ID:EL.032811.171807 Dil:5 Matrix:Soil

Sample ID:L11030926-04 MSD File ID:EL.032811.172455 Dil:5 Units:mg/kg

Percent Solid:75.2

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	0.563	13.1	15.8	116	13.1	15.0	110	5.16	80 - 120	20	
Chromium, Total	15.6	13.1	37.1	164	13.1	35.6	152	4.25	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1955911
Report generated 04/01/2011 15:48

Microbac Laboratories Inc.

Serial Dilution Report

Login: L11030926 **Worknum:** WG360123

Instrument: ELAN-ICP **Method:** 6020

Serial Dil: WG360123-02 **File ID:** EL.032911.150956 **Dil:** 25 **Units:** ug/L

Sample: L11030925-05 **File ID:** EL.032911.145614 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Cadmium	ND	U	ND	U		
Chromium	9.05	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 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: 1955905

03/29/2011 15:26

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11030926 **Worknum:** WG360123
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG360123-01 **File ID:** EL.032911.150305 **Dil:** 5 **Units:** ug/L
Sample ID: L11030925-05 **File ID:** EL.032911.145614 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	53.2		0	U	50	106.4	75 - 125	
CHROMIUM	52.8		1.81		50	102.0	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: 1955906
Report generated: 03/29/2011 15:26

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030926	Workgroup (AAB#):	WG360123
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG360145	Initial Calibration Date:	28-MAR-2011 11:38

	WG360145-01		WG360145-02		WG360145-03		WG360145-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	1.31	.4	437	50	57900	100	117000	.999941	
CHROMIUM	0	7820	.4	10100	50	317000	100	620000	.99999	

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: 1955915
Report generated: 29-MAR-2011 15:26

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11030926	Workgroup (AAB#):	WG360123
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG360228	Initial Calibration Date:	29-MAR-2011 09:14

	WG360228-01		WG360228-02		WG360228-03		WG360228-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	-5.36	.4	525	50	65200	100	127000	.999984	
CHROMIUM	0	9950	.4	12600	50	362000	100	690000	.999929	

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: 1955915
Report generated: 29-MAR-2011 15:26

Microbac Laboratories Inc.

INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-06

Instrument ID: ELAN-ICP Run Time: 11:51 Method: 6020

File ID: EL.032811.115138 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-ICP - 28-MAR-11

Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL

F = Result is between MDL and 2 x MDL

* = Result is above 2 x MDL

ICB - Modified 07/14/2009

PDF File ID: 1955917

Report generated 03/29/2011 15:26

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-06
Instrument ID: ELAN-ICP Run Time: 09:27 Method: 6020
File ID: EL.032911.092737 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360123 Cal ID: ELAN-ICP - 29-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1955917
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-11

Instrument ID: ELAN-ICP Run Time: 12:26 Method: 6020

File ID: EL.032811.122606 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955920
Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-17

Instrument ID: ELAN-ICP Run Time: 15:26 Method: 6020

File ID: EL.032811.152611 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955920
Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-20

Instrument ID: ELAN-ICP Run Time: 16:57 Method: 6020

File ID: EL.032811.165746 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955920
Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926	Run Date: 03/28/2011	Sample ID: WG360145-22
Instrument ID: ELAN-ICP	Run Time: 17:52	Method: 6020
File ID: EL.032811.175233	Analyst: EDL	Units: ug/L
Workgroup (AAB#): WG360123	Cal ID: ELAN-I - 28-MAR-11	
Matrix: SOIL	QAPP: DOD4	

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955920
Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-11

Instrument ID: ELAN-ICP Run Time: 10:01 Method: 6020

File ID: EL.032911.100135 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955920
Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-19

Instrument ID: ELAN-ICP Run Time: 14:49 Method: 6020

File ID: EL.032911.144927 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955920
Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11030926	Run Date: 03/29/2011	Sample ID: WG360228-21
Instrument ID: ELAN-ICP	Run Time: 15:51	Method: 6020
File ID: EL.032911.155136	Analyst: EDL	Units: ug/L
Workgroup (AAB#): WG360123	Cal ID: ELAN-I - 29-MAR-11	
Matrix: SOIL	QAPP: DOD4	

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1955920
Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-05
Instrument ID: ELAN-ICP Run Time: 11:44 Method: 6020
File ID: EL.032811.114454 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	49.9	99.9	90 - 110	
Chromium		50	50.5	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1955916
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-05
Instrument ID: ELAN-ICP Run Time: 09:20 Method: 6020
File ID: EL.032911.092053 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11
QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	49.9	99.7	90 - 110	
Chromium		50	51.1	102	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1955916
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-10

Instrument ID: ELAN-ICP Run Time: 12:18 Method: 6020

File ID: EL.032811.121850 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.9	ug/L	99.9	90 - 110		
Chromium		50.0	49.9	ug/L	99.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955919

Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-16

Instrument ID: ELAN-ICP Run Time: 15:18 Method: 6020

File ID: EL.032811.151855 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.7	ug/L	99.5	90 - 110		
Chromium		50.0	49.2	ug/L	98.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955919

Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-19

Instrument ID: ELAN-ICP Run Time: 16:50 Method: 6020

File ID: EL.032811.165030 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	52.7	ug/L	105	90 - 110		
Chromium		50.0	54.4	ug/L	109	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955919

Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-21

Instrument ID: ELAN-ICP Run Time: 17:45 Method: 6020

File ID: EL.032811.174518 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.8	ug/L	102	90 - 110		
Chromium		50.0	52.8	ug/L	106	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955919

Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-10

Instrument ID: ELAN-ICP Run Time: 09:54 Method: 6020

File ID: EL.032911.095449 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.7	ug/L	99.3	90 - 110		
Chromium		50.0	49.3	ug/L	98.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955919

Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-18

Instrument ID: ELAN-ICP Run Time: 14:42 Method: 6020

File ID: EL.032911.144241 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.4	ug/L	98.8	90 - 110		
Chromium		50.0	49.3	ug/L	98.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955919

Report generated 03/29/2011 15:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-20

Instrument ID: ELAN-ICP Run Time: 15:44 Method: 6020

File ID: EL.032911.154451 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	49.7	ug/L	99.4	90 - 110		
Chromium		50.0	50.1	ug/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1955919

Report generated 03/29/2011 15:57

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11030926 Run Date: 03/28/2011 Sample ID: WG360145-07
Instrument ID: ELAN-ICP Run Time: 11:58 Method: 6020
File ID: EL.032811.115825 Analyst: EDL QC Key: DOD4
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 28-MAR-11
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.217	ug/L	109	80 - 120		
Chromium		0.800	0.794	ug/L	99.3	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 1955921
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11030926 Run Date: 03/29/2011 Sample ID: WG360228-07
Instrument ID: ELAN-ICP Run Time: 09:34 Method: 6020
File ID: EL.032911.093424 Analyst: EDL QC Key: DOD4
Workgroup (AAB#): WG360123 Cal ID: ELAN-I - 29-MAR-11
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.202	ug/L	101	80 - 120		
Chromium		0.800	0.774	ug/L	96.8	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 1955921
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030926 **Workgroup (AAB#):** WG360123
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG360145-08 **File ID:** EL.032811.120514 **Units:** ug/L
Sol. AB : WG360145-09 **File ID:** EL.032811.121202 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0322	NS	100	99.6	99.6	
Chromium	NS	-0.175	NS	100	96.6	96.6	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1955918
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11030926 **Workgroup (AAB#):** WG360123
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG360228-08 **File ID:** EL.032911.094113 **Units:** ug/L
Sol. AB : WG360228-09 **File ID:** EL.032911.094801 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0234	NS	100	100	100	
Chromium	NS	-0.130	NS	100	96.2	96.2	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1955918
Report generated 03/29/2011 15:26

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11030926 **Analytical Method:** 6020
Analytical Workgroup: WG360123 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 28-MAR-2011 11:17

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11030926-01	SAMP	28-MAR-2011 17:04	104.375	114.597	112.575	109.616
L11030926-02	SAMP	28-MAR-2011 17:11	104.636	115.428	111.352	108.753
L11030926-03	SAMP	28-MAR-2011 17:18	105.114	117.503	110.918	109.614
L11030926-04	SAMP	28-MAR-2011 17:24	105.812	117.775	113.658	109.89
L11030926-05	SAMP	28-MAR-2011 17:31	105.106	116.514	111.235	109.98
L11030926-06	SAMP	28-MAR-2011 17:38	104.809	116.338	111.438	108.569
WG360101-02	BLANK	28-MAR-2011 15:39	102.638	104.732	107.041	108.071
WG360101-03	LCS	28-MAR-2011 15:46	112.565	113.734	116.574	116.791
WG360123-01	PSPK	28-MAR-2011 16:36	103.197	114.412	110.337	110.872
WG360123-02	SERIAL	28-MAR-2011 16:43	102.621	114.08	110.961	109.387
WG360145-05	ICV	28-MAR-2011 11:44	93.909	96.876	99.448	101.419
WG360145-06	ICB	28-MAR-2011 11:51	97.39	100.01	102.519	103.661
WG360145-07	LLICV	28-MAR-2011 11:58	97.539	98.873	102.022	102.815
WG360145-08	ICS	28-MAR-2011 12:05	94.371	99.076	99.197	100.074
WG360145-09	ICS	28-MAR-2011 12:12	94.609	95.507	94.103	96.047
WG360145-10	CCV	28-MAR-2011 12:18	96.591	100.468	101.419	102.395
WG360145-11	CCB	28-MAR-2011 12:26	95.215	97.768	99.118	100.778
WG360145-16	CCV	28-MAR-2011 15:18	105.213	110.945	111.318	111.187
WG360145-17	CCB	28-MAR-2011 15:26	107.396	110.436	112.055	113.157
WG360145-19	CCV	28-MAR-2011 16:50	102.433	113.921	114.589	112.233
WG360145-20	CCB	28-MAR-2011 16:57	104.106	116.997	114.452	114.298
WG360145-21	CCV	28-MAR-2011 17:45	104.721	115.173	114.412	112.634
WG360145-22	CCB	28-MAR-2011 17:52	105.909	117.854	115.806	114.558

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1955914
Report generated: 03/29/2011 15:57

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11030926 **Analytical Method:** 6020
Analytical Workgroup: WG360123 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 29-MAR-2011 08:53

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11030925-05	SAMP	29-MAR-2011 14:56	98.544	95.743	91.865	97.361
WG360123-01	PSPK	29-MAR-2011 15:03	97.685	92.286	90.955	96.476
WG360123-02	SERIAL	29-MAR-2011 15:09	99.75	92.218	91.389	94.854
WG360228-05	ICV	29-MAR-2011 09:20	99.905	98.539	100.628	101.694
WG360228-06	ICB	29-MAR-2011 09:27	104.029	102.926	104.14	104.978
WG360228-07	LLICV	29-MAR-2011 09:34	101.824	101.382	104.172	102.327
WG360228-08	ICS	29-MAR-2011 09:41	99.833	98.703	98.211	99.285
WG360228-09	ICS	29-MAR-2011 09:48	101.632	98.763	97.058	97.861
WG360228-10	CCV	29-MAR-2011 09:54	100.428	99.111	99.866	100.605
WG360228-11	CCB	29-MAR-2011 10:01	103.033	100.09	102.446	102.549
WG360228-18	CCV	29-MAR-2011 14:42	102.49	93.25	92.388	95.66
WG360228-19	CCB	29-MAR-2011 14:49	100.596	94.396	94.164	96.42
WG360228-20	CCV	29-MAR-2011 15:44	97.598	93.349	92.78	94.703
WG360228-21	CCB	29-MAR-2011 15:51	99.612	93.762	94.169	95.864

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1955914
Report generated: 03/29/2011 15:57

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11030926 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1955913
Report generated: 03/29/2011 15:26

Kemron–Radford Army Ammunition Plant Data Validation Summary Worksheet

SDG#: L11030925/L11030926	Laboratory: Microbac	Validator: Charissa Lewis	Validation Date: 5/9/2011
Site: Radford	AR/COC#: 2164/2163		Validation Level: ☐ III ☒ IV
Matrix: Soil	# of Samples: 6/6	Tracking docs present: See sample receipt and log-in documentation	
COCs present: yes	COCs signed: yes	COCs dated: yes	Sample Container Integrity: OK

Analyses:
☐ VOCs ☐ SVOCs ☐ PAHs ☐ GRO ☐ DRO ☐ Pests ☐ PCBs ☒ Metals ☐ Gen Chem
☐ Other:

Requested Analyses Not Reported

Client Sample ID	Lab Sample ID	Analysis	Comments
None			

Hold Time/Preservation Outliers

Client Sample ID	Lab Sample ID	Analysis	Pres.	Collection Date	Preparation Date	Analysis Date	Analysis <2X HT	Analysis ≥2X HT
None								

Comments: Sampled 3/25, 3/26

Revised 12/2010

Kemron–Radford Army Ammunition Plant Inorganic Metals Worksheet

SDG: L11030925 and L11030926	Matrix: Soil	Level III Lab Sample IDs: NA
Method/Batch #s: 6010/WG360132; 6020/WG360123		Level IV Lab Sample IDs: L111030925-01 thru-06 and L11030926-01 thru -06

ICPMS Mass Cal: ☒ Pass ☐ Fail ☐ NA ICPMS Resolution: ☒ Pass ☐ Fail ☐ NA ICPMS %RSD: ☒ Pass ☐ Fail ☐ NA

Analyte (outliers)	Calibration						ICP CRDL *±10%*	Method Blank *(<MDL)*	5X MB	ICS A *<IDL*	ICS AB *±20%*	LCS %R *(80-120%)*	MS %R *(75-125%)*	MSD %R *(75-125%)*	MS/D RPD *(≤20%)*	Serial Dil. %D *(±10%)*	PS *(75-125%)*	DUP RPD
	r *≥0.995*	ICV *±10%*[1]	CCV *±10%*[1]	ICB ug/L	CCB *(<IDL)*	5X CB												
3/28 6010																		
Al	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	1770**	934**	✓	✓***	NA	✓
Sb	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	✓	✓	✓	✓	NA	✓
Fe	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-614**	-1700**	✓	✓***	NA	✓
Mn	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-27.6**	-63.2**	✓	✓	NA	✓
3/28 6020																		
Cd	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	NA	#	✓
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	164	152	✓	NA	#	53.5
3/29 6020																		
Cd	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	NA	NA	NA	✓	✓	NA
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	NA	NA	NA	✓	✓	NA

IS Outliers[3] *(60-120%)*				IS Outliers[3] *(60-120%)*			
Sample ID	**%Recovery**	**%Recovery**	**%Recovery**	**CCV/CCB ID**	**%Recovery**	**%Recovery**	**%Recovery**
None				None			

Comments: HTs OK

* 6010 low level ICV/CCVs analyzed but not reported; there is not enough information to calculate %R. 6020 low level ICV at 2X RL =CRDL.

ICS A/AB only at beginning of run. ICS applies to 926-1, -2, -5 Sb, -6Sb, 925-1 thru -4, -6 and -05 Al and Mn because one or more interferents > ICS concentration. Other analytes run at dilution interferents < ICS.

***Serial dilution Sb and Mn from 1X/5X (parent sample reported from 1X dilution) and Al and Fe from 5X/25X (parent sample reported from 5X dilution).

**parent >4X spike concentration; PS not applicable.

PS reported from analysis on 3/29.

[1]20% for Hg [2]For sample results <5X RL, ±RL [3]Standard CLP NFG criteria used; no criteria specified in QAPP or Region III NFG

Revised 12/2010

6010 METALS CALIBRATION VERIFICATION FOR L11030925 and L11030926

Date: WG360132 3/28/11 ICP-THERMO2
Analyte: Sb

Concentration	Mean Response
0	0.00006
0.012	0.00027
0.024	0.00047
1.2	0.02238
2.4	0.0461
Corr. Coef. =	0.999893

Date: WG360132 3/29/11 ICP-THERMO2
Analyte: Mn

Concentration	Mean Response
0	0.00015
0.005	0.00092
0.01	0.00165
0.5	0.07668
1	0.14706
Corr. Coef. =	0.999796

3/28/11 ICP-THERMO2	True Value	Reported	
	ICV		%Rec
Al	10.00	9.89	98.9
	ICSAB		%Rec
Fe	100.00	97.01	97.0
-18	CCV		%Rec
Sb	1.20	1.19	99.2
-21	CCV		%Rec
Mn	0.50	0.49	98.6
-23	CCV		%Rec
Al	10.00	9.85	98.5

3/29/11 ICP-THERMO2	True Value	Reported	
	ICV		%Rec
Al	10.00	9.62	96.2
	ICSAB		%Rec
Fe	100.00	96.46	96.5
-11	CCV		%Rec
Mn	0.50	0.48	96.9
-13	CCV2		%Rec
Sb	1.20	1.21	101.0
-21	CCV5		%Rec
Fe	4.00	3.79	94.9
-23	CCV6		%Rec
Mn	0.50	0.46	91.9

6010 METALS ICS AND CRDL CALCULATIONS FOR L11030925 and L11030926

ICSA Check

Total Metals

3/28/2011	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Al	10.00000	20.00000	247.020	*
Fe	1.500	3.000	97.449	*
Mn	0.250	0.500	-0.0020	
Sb	0.500	1.000	-0.0064	

3/29/2011	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Al	10.00000	20.00000	249.690	*
Fe	1.500	3.000	93.887	*
Mn	0.250	0.500	-0.0015	
Sb	0.500	1.000	-0.0046	

CRDL Check

(CRI analyzed but not reported) DNR - Unsure if True Values are correct.

3/28/2011 13:01	True Conc (mg/L)	Reported Conc (mg/L)	% Rec	Q
Al	0.2000	0.1800	90.0	L/UL
Sb	0.0200	0.0206	102.9	
Fe	0.0600	0.0798	133.0	K
Mn	0.0100	0.0099	98.6	

3/28/2011 14:02	True Conc (mg/L)	Reported Conc (mg/L)	% Rec	Q
Al	0.2000	0.1921	96.0	
Sb	0.0200	0.0224	112.2	K
Fe	0.0600	0.0826	137.6	K
Mn	0.0100	0.0097	96.9	

3/29/2011 11:27	True Conc (mg/L)	Reported Conc (mg/L)	% Rec	Q
Al	0.2000	0.4480	224.0	K
Sb	0.0200	0.0566	283.2	K
Fe	0.0600	0.1872	311.9	K
Mn	0.0100	0.0236	235.5	K

3/29/2011 13:23	True Conc (mg/L)	Reported Conc (mg/L)	% Rec	Q
Al	0.2000	0.4638	231.9	K
Sb	0.0200	0.0568	284.2	K
Fe	0.0600	0.1818	303.1	K
Mn	0.0100	0.0231	230.5	K

CALCULATION WORKSHEET FOR 6010 METALS SOIL RESULTS FOR SDG L11030925 and L11030926

Soil Sample Calculations:

L11030925

	MDL (mg/kg)	CRQL (mg/kg)		MB		LCS		-MS		-MSD		-01		-02	
			Final Volume (ml)		50		50		50		50		50		50
			Sample Aliquot (g)		1		1		1.312		1.312		1.352		1.313
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	100	%S	100	%S	75.2	%S	75.2	%S	77.4	%S	75.3
				DF	1	DF	1	DF	1	DF	1	DF	1	DF	1
Al	9.6	19.1		-0.00801	U	4.7	235	611.21	30975	569.59	28866	391.14	18689	546.51	27638
Sb	0.478	0.956		-0.00259	U	0.56911	28.456	0.56847	28.809	0.57226	29	-0.01205	U	-0.00964	U
Fe	1.430	2.870		0.00286	U	1.93	96.500	794.95	40286.370	773.21		591.14	28245.073	676.52	34213.0
Mn	0.24	0.5		-0.00014	U	0.24025	12	2.6512	134	2.56	130	4.4085	211	2.1713	110

	MDL (mg/kg)	CRQL (mg/kg)		-03		-04		-05		-5		-5		-06	
			Final Volume (ml)		50		50		50		50		50		50
			Sample Aliquot (g)		1.336		1.469		1.368		1.368		1.368		1.458
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	78.4	%S	79.3	%S	75.2	%S	75.2	%S	75.2	%S	77.8
				DF	1	DF	1	DF	5	DF	500	DF	1	DF	1
Al	9.6	19.1		466.47	22267	497.11	21337					252.23	12259	300.91	13264
Sb	0.478	0.956		-0.009	U	-0.0127	U	-0.00924	U					-0.00987	U
Fe	1.430	2.870		818.95	39094	637.39	27358			3.7808	91880			517.39	22806
Mn	0.24	0.5		6.95	332	5.2	223					9.1231	443	5.88	259

	MDL (mg/kg)	CRQL (mg/kg)				SD-L11030926-02		PS-L11030926-02							
			Final Volume (ml)			50		50							
			Sample Aliquot (g)			1.367		1.367							
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	100	%S	100	%S	100	%S		%S		%S	
				DF	200	DF	5	DF	200	DF		DF		DF	
Al	9.6	19.1				640	117045	537	3928310						
Sb	0.478	0.956				0.0635	12	0.638	4667						
Fe	1.430	2.870				945	172824	761	5566935						
Mn	0.24	0.5				2.755	504	2.54	18581						

L11030926

	MDL (mg/kg)	CRQL (mg/kg)		MB-same as above		LCS-same as above		-MS/MSD-same as above		-01		-02		-02	
			Final Volume (ml)							50		50		50	
			Sample Aliquot (g)							1.312		1.367		1.367	
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	100	%S	100	%S	100	%S	75.2	%S	75.1	%S	75.1
				DF	1	DF	1	DF	1	DF	1	DF	1	DF	5
Al	9.6	19.1								522.89	26498.9			128.08	31190
Sb	0.478	0.956								0.08753	4.4	0.06943	3		
Fe	1.430	2.870								807.24	40909.2			188.54	45913
Mn	0.24	0.5								2.71	137.3	2.5557	124		

	MDL (mg/kg)	CRQL (mg/kg)		-03		-04		-05		-05		-05		-06	
			Final Volume (ml)		50		50		50		50		50		50
			Sample Aliquot (g)		1.312		1.312		1.344		1.344		1.344		1.434
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	75.2	%S	75.2	%S	74	%S	74	%S	74	%S	77.4
				DF	1	DF	1	DF	1	DF	100	DF	200	DF	1
Al	9.6	19.1		611.21	30975	569.59	28866			4.9534	24902				
Sb	0.478	0.956		0.56847	29	0.57226	29	0.06849	3.44					-0.0041	U
Fe	1.430	2.870		794.95	40286	773.21	39185					4.3875	44115		
Mn	0.24	0.5		2.65	134	2.56	130			0.0525	264				

	MDL (mg/kg)	CRQL (mg/kg)		-06		-06	
			Final Volume (ml)		50		50
			Sample Aliquot (g)		1.434		1.434
				mg/L	mg/kg	mg/L	mg/kg
				%S	77.4	%S	77.4
				DF	100	DF	200
Sb	0.5	1.0					
Al	10.0	20.0		6.7209	30277		
Fe	1.500	3.000				4.4987	40532
Mn	0.25	0.5		0.04036	182		

	SD		PS	
		20		50
		1.312		1.367
	mg/L	mg/kg	mg/L	mg/kg
	%S	100	%S	75.1
	DF	1	DF	1
	569.59	8683	133.73	6513
	0.57226	U	0.6285	31
	773.21	11787	188.25	9168
	2.56	39	0.78964	38

6010 METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDG L11030925 and L11030926

28-Mar	LCS	- MS	-MSD	PS	PS	PS	PS
Analyte	Sb	Sb	Sb	Sb	Al	Fe	Mn
True Conc	30.5691	30.4000	30.4000	0.6379	5	2	0.25
Reported Conc	28.5000	28.8000	29.0000	0.6380	537.00	761	2.54
Sample Conc	30.0000	4.4400	4.4400	0.0694	572.00	837	2.56
%R	93.23	80.13	80.79	89.14	-700.00	-3800.00	-8.00
RPD		0.69					

Sample result >4X spike ; lab calculation does not match

6010 Soil:
L11030926-02

Analyte	-02	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	>Limit?
	mg/L	mg/L	mg/L	ug/kg	mg/L				
Sb	0.0694	0.0635	0.0635	0.5	0.50		10		
Al			0	10.000	10.000		10		
Fe			0	1.50	1.50		10		
Mn	2.56	2.75	2.75	0.25	0.25	Y	10	7	

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

L11030926-02

Analyte	-02 5X	Serial Dilution 25x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	>Limit?
	mg/L	mg/L	mg/L	ug/kg	mg/L				
Al			0	10.0	10.00		10		
Mn	2.75	2.8	2.8	0.250	0.250	Y	10	2	
Fe	945	940	940	1.50	1.50	Y	10	1	
Sb			0	0.50	0.50		10		

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

6020 TOTAL METALS CALIBRATION VERIFICATION FOR L11030925 and L11030926

Date: WG360123 3/28/11

Analyte: Cd

Concentration	Mean Response
0	1.31
0.4	437
50	57900
100	117000

Corr. Coef. = 0.999986

Date: WG360123 3/29/11

Analyte: Cd

Concentration	Mean Response
0	-5.36
0.4	525
50	65200
100	127000

Corr. Coef. = 0.999906

3/28/2011	True Value	Reported	%Rec
	ICV		
Cd	50.00	49.00	98.0
	ICSAB		%Rec
Cr	100.00	96.60	96.6
	CCV		%Rec
Cd	50.00	49.90	99.8
	CCV		%Rec
Cr	50.00	49.20	98.4
	CCV		%Rec
Cr	50.00	54.40	108.8
	CCV		%Rec
Cd	50.00	50.78	101.6

3/29/2011	True Value	Reported	%Rec
	ICV		
Cd	50.00	49.90	99.8
	ICSAB		%Rec
Cr	100.00	96.20	96.2
-18	CCV		%Rec
Cd	50.00	49.42	98.8
-20	CCV		%Rec
Cr	50.00	50.06	100.1

6020 METALS ICS AND CRDL CALCULATIONS FOR L11030925 and L11030926

ICSA Check

L11030925

3/28	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Cd	0.300	0.600	0.0322	
Cr	1.000	2.000	-0.1750	

L11030926

3/29	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Cd	0.300	0.600	0.0234	
Cr	1.000	2.000	-0.1300	

CRDL Check

3/28	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cd	0.2000	0.2173	108.7	
Cr	0.8000	0.7943	99.3	

3/29	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb				
Cd	0.2000	0.2018	100.9	
Cr	0.8000	0.7742	96.8	

CALCULATION WORKSHEET FOR 6020 METALS SOIL RESULTS FOR SDG L11030925 and L11030926

Soil Sample Calculations:

L11030925 WG360123

	MDL (mg/kg)	CRQL (mg/kg)		MB		LCS		-MS		-MSD		-01		-02	
			Final Volume (ml)		200		200		200		200		200		200
			Sample Aliquot (g)		0.5		0.5		0.506		0.506		0.515		0.512
				ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
				%S	100	%S	100	%S	100	%S	100	%S	77.4	%S	75.3
				DF	1	DF	1	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100		-0.113	U	23.06	9.224	6.01	11.877	5.71	11.285	0.0281	U	0.0921	U
Cr	0.200	0.400		0.0425	U	25.38	10.152	14.12	27.905	13.54	26.759	0.4541	U	5.4701	14.188

	MDL (mg/kg)	CRQL (mg/kg)		-03		-04		-05		-06		-06PS		-06SD	
			Final Volume (ml)		200		200		200		200		200		200
			Sample Aliquot (g)		0.503		0.505		0.506		0.505		0.505		0.506
				ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
				%S	78.4	%S	79.3	%S	75.2	%S	77.8	%S	100	%S	100
				DF	5	DF	5	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100		0.0209	U	0.0199	U	0.0165	U	0.0286	U	68.3339	135.3147	0.0177	U
Cr	0.200	0.400		11.4304	28.9853	5.2307	13.0616	1.8111	4.7596	6.937	17.6563	67.89	134.4356	1.0234	2.0225

L11030926

	MDL (mg/kg)	CRQL (mg/kg)		-01		-02		-03		-04		-05		-06	
			Final Volume (ml)		200		200		200		200		200		200
			Sample Aliquot (g)		0.506		0.518		0.506		0.506		0.524		0.511
				ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
				%S	75.2	%S	75.1	%S	75.2	%S	75.2	%S	74	%S	77.4
				DF	5	DF	5	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100		0.2141	0.5627	0.2347	0.6033	6.0196	15.8197	5.7169	15.0242	0.1782	0.4596	0.0207	U
Cr	0.200	0.400		5.9336	15.5937	10.5169	27.0345	14.1279	37.1287	13.5401	35.5839	11.8831	30.6455	6.9399	17.5465

6020 METALS MATRIX SPIKE AND SERIAL DILUTION CALCULATION WORKSHEET FOR SDG L11030925 and L11030926

Soil

	LCS	-MS	-MSD	
Analyte	**Cr**	**Cd**	**Cd**	
True Conc	10.0000	9.8800	9.8800	
Reported Conc	10.2000	11.9000	11.3000	
Sample Conc	25.0800	0.4230	0.4230	
%R	102.00	116.16	110.09	
RPD		5.17		

Analyte	Parent	Serial Dilution 25x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	> %D Limit?
	ug/L	ug/L	ug/L	ug/L	ug/L				
Cd	0.0050	0.003	0.015	0.200	10.0	N			
Cr	9.05	0.015	0.075	0.200	10.0	N			

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Subject: Data Validation for Lab Report L11031030
Radford Army Ammunition Plant

From: Linda Thal
Senior Data Validator, AQA

To: Mary Lou Rochotte
Kemron Environmental Services, Inc.

OVERVIEW

Microbac Laboratories Inc., Marietta, Ohio, received four field samples associated with the project work described in the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010) on March 31, 2011. The field samples were assigned laboratory sample delivery group (SDG) number L11031030 and included four normal soil samples. The samples were analyzed for metals (aluminum, iron, manganese, and antimony) using EPA method 6010B and metals (cadmium and chromium) using EPA method 6020 as detailed in *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (SW-846)*, Third Edition, Final Update III.

SUMMARY

The samples were analyzed according to the quality control (QC) criteria of the applicable analytical method. The data for these samples were found to be compliant with the requirements of the project QAPP and/or EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable, and the results are considered usable.

MAJOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- None

MINOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- The instrument tunes for method 6020 were not included in the data package. The missing data were requested and received from the laboratory and are included in Appendix D.

- CRDL standards were not analyzed with the samples for method 6010.

- SWMU-57-32911-SS-7'-SW-5: Total manganese 181 (J)
  Total antimony (UJ)
  Total iron 28900 (J)
  Total chromium 8.05 (J)

- SWMU-57-32911-SS-13'-FC-NUM5: Total manganese 285 (J)
  Total antimony (UJ)
  Total iron 25200 (J)
  Total chromium 14.4 (J)

- SWMU-57-33011-SS-FC-20'-NUM3B: Total iron 16800 (J)

- SWMU-57-33011-SS-FC-14'-NUM6: Total manganese 142 (J)
  Total antimony (UJ)
  Total iron 38200 (J)
  Total chromium 10.8 (J)

NOTES

(Refer to Appendix D – Support Documentation)

Sample Chain of Custody (COC) Records

- The samples were listed on COC #2165. Data were reported for all required analyses.

Preservation and Holding Times

- The samples were properly preserved and analyzed within the prescribed holding time.

Instrument Tune

- The instrument tunes for method 6020 were not included in the data package. The missing data were requested and received from the laboratory and are included in Appendix D.

- The instrument tunes for method 6020 were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration (ICAL)

- The ICAL correlation coefficients for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV)

- The ICV/CCV and/or percent recoveries (%Rs) for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Contract Required Detection Limit (CRDL)

- CRDL standards were not analyzed with the samples for method 6010, and there was insufficient information in the data package to calculate the %Rs for the lowest concentration ICAL standard. The associated sample results for antimony were non-detects and were **qualified UJ**. The remaining associated sample results were detects >2X the CRDL and were not qualified.

- The CRDL standard %Rs for method 6020 were within the criteria specified in the project QAPP and the Region III NFG.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS)

- ICP ICS recoveries were within the project QAPP- and Region III-specified control limits, and all non-spiked ICS A results were < the MDL. The results of the ICS A and ICS AB analyses were applicable to the samples because the concentrations of one or more of the interferents in those samples were ≥ those in the ICS solutions.

Field Blanks

- Field blanks were not collected with the samples in this SDG.

Laboratory Method Blanks

- Iron was detected in the method blank. The associated sample results were detects >5X the method blank concentration and, therefore, were not qualified.

Laboratory Calibration Blanks

- Total iron was detected in one or more of the calibration blanks. The associated sample results were detects >5X the highest blank concentration and, therefore, were not qualified.

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCSs/LCSDs)

- The LCS/LCSD recoveries met project QAPP- and Region III-specified QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

- One MS/MSD pair was analyzed on sample SWMU-57-33011-SS-FC-14'-NUM6 for all analyses.

- The MS/MSD %Rs met project QAPP- and Region III-specified QC acceptance criteria with the following exceptions.

    - The MS/MSD recoveries were >125% for total iron, aluminum, and manganese. The parent sample results were >4X the spike amount and, therefore, no data were qualified.

    - The post digestion spike (PDS) recovery for total iron was >125%. The parent sample result was >4X the spike amount and, therefore, no data were qualified.

    - The MS recovery for total chromium was >125%, and the MSD recovery for chromium was <75%. The associated sample results were detects and were **qualified J**.

    - The post digestion spike for method 6020 was performed on a non-project sample.

ICP Serial Dilution Analyses

- The serial dilution %Ds met project QAPP- and Region III-specified QC acceptance criteria with the following exceptions.

  - The serial dilution %D for total iron was >10%, and the parent sample result was >50X the MDL. The associated sample results were detects and were **qualified J**.

  - The serial dilution %D for total cadmium was >10%, and the parent sample result was >50X the MDL. The serial dilution was performed on a non-project sample from another SDG and, therefore, no data from this SDG were qualified.

Laboratory Sample Duplicate

- MSDs were analyzed as the laboratory duplicates for all analyses and met project QAPP- and Region III-specified QC acceptance criteria with the following exceptions.

  - The MS/MSD relative percent difference (RPD) for total manganese was >20%. The associated sample results were detects and were **qualified J**.

  - The MS/MSD RPD for total chromium was >20%. The associated sample results were detects and were **qualified J**.

Field Sample Duplicate

- A field duplicate was not collected with the samples in this SDG.

Sample Internal Standard Recoveries

- The internal standard recoveries for metals by method 6020 were within the 60-125% limits provided in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (NFG) (October 2004).

Sample Results

- The samples were analyzed for the methods requested on the COC. Method detection limits (MDLs) and reporting limits (RLs) were reported for all analyses; however, the current laboratory MDLs for total iron, manganese, chromium, and cadmium were > the MDLs specified in the project QAPP. The reported MDLs and RLs met project-specified MDLs and RLs with the following exceptions.

  - The reported total manganese MDL did not meet the project-specified MDL for sample SWMU-57-32911-SS-7'-SW-5.

  - All samples were diluted 5X for method 6020 analysis. The associated MDLs and RLs were adjusted accordingly and, therefore, did not meet project-specified RLs.

Action Level Notification

- No results were above the action levels specified in the Region III NFG.

Usability Statement

- There were 19 field sample data points associated with the data package for SDG L11031030. Of these field sample data points, 6 (31.6% of the total) were assessed and left unqualified, 10 (52.6% of the total) were assessed and qualified J, and 3 (15.8% of the total) were assessed and qualified UJ.

- The field sample data points that were qualified J can be categorized as definitive data with positively identified analyte concentrations that are only estimates due to QC deficiencies, and the field sample data points that were assessed and qualified UJ can be categorized as definitive data with nondetectable analyte concentrations that are only estimates due to QC deficiencies.

- The unqualified field sample data points can be categorized as definitive data with no associated QC deficiencies.

Reviewed by: JMP Level: 1 Date: 05/10/2011

Report Content Statement

This report has been formatted for consistency with Appendix B, Region III Standard Operating Procedures for Data Validation Reports, contained in the guidance *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). The laboratory data were reviewed in accordance with the EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable; the *Quality Assurance Project Plan for the Performance Based Contract, Revision 04, Fort Meade, Maryland* (May 2010) (project QAPP); and the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010); and the applicable SW-846 methods. This report only addresses those problems and issues that may affect data usability.

Attachments

Appendix A – Glossary of Data Qualifiers

Appendix B – Data Qualifier Summary

Appendix C – Laboratory Report Results/Data Summary

Appendix D – Support Documentation

Appendix A – Glossary of Data Qualifiers

Data Qualifier Codes

Codes Related to Identification

U Not detected. The associated number indicates the approximate sample concentration necessary to be detected.

B Not detected substantially above the level reported in laboratory or field blanks.

R Unusable result. Analyte may or may not be present in the sample.

Codes Related to Quantitation

J Analyte present. Reported value may or may not be accurate or precise.

K Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ Not detected. Quantitation limit may be inaccurate or imprecise.

UL The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Appendix B – Data Qualifier Summary

Data Qualifier Summary

Note: The results listed in this table are detects and qualified non-detects only. Unqualified non-detects are not listed.

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU-57-32911-SS-7'-SW-5 L11031030-01	Manganese Antimony Iron Chromium	J UJ J J	 U B 	MS/MSD RPD >UAL No CRDL standard Serial dilution %D >UAL MS %R >UAL; MSD %R <LAL; MS/MSD RPD >UAL
SWMU-57-32911-SS-13'-FC-NUM5 L11031030-02	Manganese Antimony Iron Chromium	J UJ J J	 U B 	MS/MSD RPD >UAL No CRDL standard Serial dilution %D >UAL MS %R >UAL; MSD %R <LAL; MS/MSD RPD >UAL
SWMU-57-33011-SS-FC-20'-NUM3B L11031030-03	Iron	J	B	Serial dilution %D >UAL
SWMU-57-33011-SS-FC-14'-NUM6 L11031030-04	Manganese Antimony Iron Chromium	J UJ J J	 U B 	MS/MSD RPD >UAL No CRDL standard Serial dilution %D >UAL MS %R >UAL; MSD %R <LAL; MS/MSD RPD >UAL

Appendix C – Laboratory Report Results/Data Summary

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 5, 2011**

Sample Number:	L11031030-01	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32911-SS-7'-SW-5	Prep Method:	3051A	Prep Date:	03/31/2011 12:03
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/31/2011 09:58
Workgroup Number:	WG360505	Analyst:	PDM	Run Date:	03/31/2011 18:50
Collect Date:	03/29/2011 12:00	Dilution:	1	File ID:	T2.033111.185049
Sample Tag:	01	Units:	mg/kg	Percent Solid:	81.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	13000		18.1	9.07
Iron, Total	7439-89-6	28900	B	2.72	1.36
Manganese, Total	7439-96-5	181		0.453	0.227

B The reported result is associated with a contaminated method blank.

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 5, 2011**

Sample Number:	L11031030-01	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-32911-SS-7'-SW-5	Prep Method:	3051A	Prep Date:	03/31/2011 12:03
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/01/2011 10:54
Workgroup Number:	WG360505	Analyst:	JYH	Run Date:	04/01/2011 11:25
Collect Date:	03/29/2011 12:00	Dilution:	1	File ID:	T2.040111.112533
Sample Tag:	02	Units:	mg/kg	Percent Solid:	81.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.907	0.453

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11031030**
Report Date : **April 5, 2011**

Sample Number:	L11031030-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU57-32911-SS-13'-FC-NUI	Prep Method:	3051A	Prep Date:	03/31/2011 12:03
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/31/2011 09:58
Workgroup Number:	WG360505	Analyst:	PDM	Run Date:	03/31/2011 18:54
Collect Date:	03/29/2011 13:00	Dilution:	1	File ID:	T2.033111.185422
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	11100		19.7	9.87
Iron, Total	7439-89-6	25200	B	2.96	1.48
Manganese, Total	7439-96-5	285		0.493	0.247

B The reported result is associated with a contaminated method blank.

Report Number: **L11031030**
Report Date : **April 5, 2011**

Sample Number:	L11031030-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU57-32911-SS-13'-FC-NUI	Prep Method:	3051A	Prep Date:	03/31/2011 12:03
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/01/2011 10:54
Workgroup Number:	WG360505	Analyst:	JYH	Run Date:	04/01/2011 11:32
Collect Date:	03/29/2011 13:00	Dilution:	1	File ID:	T2.040111.113245
Sample Tag:	02	Units:	mg/kg	Percent Solid:	75.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.987	0.493

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11031030**
Report Date : **April 5, 2011**

Sample Number:	L11031030-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-33011-SS-FC-20'-NU	Prep Method:	3051A	Prep Date:	03/31/2011 12:03
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/31/2011 09:58
Workgroup Number:	WG360505	Analyst:	PDM	Run Date:	03/31/2011 18:57
Collect Date:	03/30/2011 15:50	Dilution:	1	File ID:	T2.033111.185754
Sample Tag:	01	Units:	mg/kg	Percent Solid:	79.1

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Iron, Total	7439-89-6	16800	B	2.79	1.40

B The reported result is associated with a contaminated method blank.

Report Number: **L11031030**
Report Date : **April 5, 2011**

Sample Number:	L11031030-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-33011-SS-FC-14'-NU	Prep Method:	3051A	Prep Date:	03/31/2011 12:03
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	03/31/2011 09:58
Workgroup Number:	WG360505	Analyst:	PDM	Run Date:	03/31/2011 19:01
Collect Date:	03/30/2011 16:25	Dilution:	1	File ID:	T2.033111.190130
Sample Tag:	01	Units:	mg/kg	Percent Solid:	81.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	10800		18.5	9.27
Iron, Total	7439-89-6	38200	B	2.78	1.39
Manganese, Total	7439-96-5	142		0.464	0.232

B The reported result is associated with a contaminated method blank.

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 5, 2011**

Sample Number:	L11031030-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-33011-SS-FC-14'-NU	Prep Method:	3051A	Prep Date:	03/31/2011 12:03
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/01/2011 10:54
Workgroup Number:	WG360505	Analyst:	JYH	Run Date:	04/01/2011 11:40
Collect Date:	03/30/2011 16:25	Dilution:	1	File ID:	T2.040111.114001
Sample Tag:	02	Units:	mg/kg	Percent Solid:	81.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Antimony, Total	7440-36-0		U	0.927	0.464

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 5, 2011**

Sample Number:	L11031030-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-32911-SS-7'-SW-5	Prep Method:	3051A	Prep Date:	03/31/2011 12:24
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/31/2011 10:22
Workgroup Number:	WG360516	Analyst:	EDL	Run Date:	03/31/2011 18:28
Collect Date:	03/29/2011 12:00	Dilution:	5	File ID:	EL.033111.182807
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	81.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.588	0.294
Chromium, Total	7440-47-3	8.05		2.35	1.18

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 5, 2011**

Sample Number:	L11031030-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU57-32911-SS-13'-FC-NUI	Prep Method:	3051A	Prep Date:	03/31/2011 12:24
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/31/2011 10:22
Workgroup Number:	WG360516	Analyst:	EDL	Run Date:	03/31/2011 18:35
Collect Date:	03/29/2011 13:00	Dilution:	5	File ID:	EL.033111.183515
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.654	0.327
Chromium, Total	7440-47-3	14.4		2.62	1.31

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11031030**
Report Date : **April 5, 2011**

Sample Number:	L11031030-04	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-33011-SS-FC-14'-NU	Prep Method:	3051A	Prep Date:	03/31/2011 12:24
Matrix:	Soil	Analytical Method:	6020	Cal Date:	03/31/2011 10:22
Workgroup Number:	WG360516	Analyst:	EDL	Run Date:	03/31/2011 18:42
Collect Date:	03/30/2011 16:25	Dilution:	5	File ID:	EL.033111.184223
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	81.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.615	0.308
Chromium, Total	7440-47-3	10.8		2.46	1.23

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 1, 2011**

Sample Number:	L11031030-01	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	SWMU-57-32911-SS-7'-SW-5	Prep Method:	D2216-90	Prep Date:	04/01/2011 09:34
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG360529	Analyst:	JDH	Run Date:	04/01/2011 09:34
Collect Date:	03/29/2011 12:00	Dilution:	1	File ID:	B1.360529-0106
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Percent Solids	10-02-6	81.6		1.00	1.00

Report Number: **L11031030**
Report Date : **April 1, 2011**

Sample Number:	L11031030-02	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	SWMU57-32911-SS-13'-FC-NUI	Prep Method:	D2216-90	Prep Date:	04/01/2011 09:34
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG360529	Analyst:	JDH	Run Date:	04/01/2011 09:34
Collect Date:	03/29/2011 13:00	Dilution:	1	File ID:	B1.360529-0107
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Percent Solids	10-02-6	75.6		1.00	1.00

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 1, 2011**

Sample Number:	L11031030-03	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	SWMU-57-33011-SS-FC-20'-NU	Prep Method:	D2216-90	Prep Date:	04/01/2011 09:34
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG360529	Analyst:	JDH	Run Date:	04/01/2011 09:34
Collect Date:	03/30/2011 15:50	Dilution:	1	File ID:	B1.360529-0108
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Percent Solids	10-02-6	79.1		1.00	1.00

Microbac Laboratories Inc.

Report Number: **L11031030**

Report Date : **April 1, 2011**

Sample Number: **L11031030-04**
Client ID: **SWMU-57-33011-SS-FC-14'-NU**
Matrix: **Soil**
Workgroup Number: **WG360529**
Collect Date: **03/30/2011 16:25**
Sample Tag: **01**

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

Instrument: **BAL001**
Prep Date: **04/01/2011 09:34**
Cal Date:
Run Date: **04/01/2011 09:34**
File ID: **B1.360529-0109**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Percent Solids	10-02-6	81.0		1.00	1.00

Appendix D – Support Documentation

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

Laboratory Report Number: L11031030

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on April 05, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on April 05, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 1539 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11031030

04/05/11 16:08

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-32911-SS-7'-SW-5	L11031030-01	03/29/2011 12:00	03/31/2011
SWMU57-32911-SS-13'-FC-NUM5	L11031030-02	03/29/2011 13:00	03/31/2011
SWMU-57-33011-SS-FC-20'-NUM3I	L11031030-03	03/30/2011 15:50	03/31/2011
SWMU-57-33011-SS-FC-14'-NUM6	L11031030-04	03/30/2011 16:25	03/31/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1961040
Report generated: 04/05/2011 16:08

Login Number: L11031030

Department: Login

Chain of Custody:

Shipment Conditions

COC #	Cooler #	Temperature
2165	0014187	0.0

Sample Management: All samples were received intact.

Sample Identification

Lab ID	Client ID
L11031030-01	SWMU-57-32911-SS-7'-SW-5
L11031030-02	SWMU57-32911-SS-13'-FC-NUM5
L11031030-03	SWMU-57-33011-SS-FC-20'-NUM3B
L11031030-04	SWMU-57-33011-SS-FC-14'-NUM6

Narrative ID: 24616
Approved By: Stephanie Mossburg
Stephanie Mossburg

Login Number: L11031030

Department: Metals

Analyst: Pierce Morris
Analyst #2: Kim Rhodes

METHOD

Preparation: SW-846 3051

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: WG360505 - Due to continuing calibration verification failure for antimony on 31-Mar-2011 at 17:12, all client samples and batch QA/QC samples were reanalyzed on a later calibration which was compliant for antimony.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: WG360505 - The method blank associated with this analytical batch yielded a result for iron of 1.53 mg/Kg which exceeded the limit of detection. 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.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360505 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 24703
Approved By: Sheri Pfalzgraf

Login Number: L11031030

Department: Metals

Analyst: Erin Long

METHOD

Preparation: SW-846 3051

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360516 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG360516 - Due to the high levels of nontarget analytes, client samples 01, 02, and 04 were analyzed at dilutions for all analytes.

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.

Narrative ID: 24712
Approved By: Sheri Pfalzgraf

COC No. A 2165

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB-KEMRON

Project Contact: MARY LOU ROCHETTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 1-DAY | Location: RFAAP SWMU-57

Project ID: MR0669-401-001

Sampler (print): JONAH ANDERSON | Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	METALS ★ SEE LIST ★	METAL ★ IRON ★	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
SWMU-57-32911-SS 7'-SW-5		X	3-29-11	1200	SOIL	1		1			PER QAPP RFAAP ★ ★ ALUMINUM, ANTIMONY, MANGANESE, CADMIUM, CHROMIUM, IRON
SWMU57-32911-SS 13'-FC-NUM5		X	3-29-11	1300	SOIL	1		1			
SWMU-57-33011-SS FC-20'-NUM3B		X	3-30-11	1550	SOIL	1			1		
SWMU-57-33011-SS FC-14'-NUM6		X	3-30-11	1625	SOIL	1		1			+ TEMP BLANK

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	3-30-11	1700	Microbac OVD 221000013639 Received: 03/31/2011 10:49 By: BRENDA GREENWALT Brenda Greenwalt
Relinquished by: (Signature)	Date	Time	Received by: (Signature)

Remarks:

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11031030
Work Group: WG360505
Blank File ID: T2.033111.171929
Blank Sample ID: WG360488-02
Prep Date: 03/31/11 12:03
Instrument ID: ICP-THERMO2
Analyzed Date: 03/31/11 17:19
Method: 6010B
Analyst: PDM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360488-03	T2.033111.172257	03/31/11 17:22	01
SWMU-57-32911-SS-7'-SW-5	L11031030-01	T2.033111.185049	03/31/11 18:50	01
SWMU57-32911-SS-13'-FC-NUM5	L11031030-02	T2.033111.185422	03/31/11 18:54	01
SWMU-57-33011-SS-FC-20'-NUM3B	L11031030-03	T2.033111.185754	03/31/11 18:57	01
SWMU-57-33011-SS-FC-14'-NUM6	L11031030-04	T2.033111.190130	03/31/11 19:01	01
LCS	WG360488-03	T2.040111.112210	04/01/11 11:22	02
SWMU-57-32911-SS-7'-SW-5	L11031030-01	T2.040111.112533	04/01/11 11:25	02
SWMU57-32911-SS-13'-FC-NUM5	L11031030-02	T2.040111.113245	04/01/11 11:32	02
SWMU-57-33011-SS-FC-20'-NUM3B	L11031030-03	T2.040111.113620	04/01/11 11:36	02
SWMU-57-33011-SS-FC-14'-NUM6	L11031030-04	T2.040111.114001	04/01/11 11:40	02

Report Name: BLANK_SUMMARY
PDF File ID: 1960339
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11031030
Work Group: WG360505
Blank File ID: T2.040111.111838
Blank Sample ID: WG360488-02
Prep Date: 03/31/11 12:03
Instrument ID: ICP-THERMO2
Analyzed Date: 04/01/11 11:18
Method: 6010B
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360488-03	T2.033111.172257	03/31/11 17:22	01
SWMU-57-32911-SS-7'-SW-5	L11031030-01	T2.033111.185049	03/31/11 18:50	01
SWMU57-32911-SS-13'-FC-NUM5	L11031030-02	T2.033111.185422	03/31/11 18:54	01
SWMU-57-33011-SS-FC-20'-NUM3B	L11031030-03	T2.033111.185754	03/31/11 18:57	01
SWMU-57-33011-SS-FC-14'-NUM6	L11031030-04	T2.033111.190130	03/31/11 19:01	01
LCS	WG360488-03	T2.040111.112210	04/01/11 11:22	02
SWMU-57-32911-SS-7'-SW-5	L11031030-01	T2.040111.112533	04/01/11 11:25	02
SWMU57-32911-SS-13'-FC-NUM5	L11031030-02	T2.040111.113245	04/01/11 11:32	02
SWMU-57-33011-SS-FC-20'-NUM3B	L11031030-03	T2.040111.113620	04/01/11 11:36	02
SWMU-57-33011-SS-FC-14'-NUM6	L11031030-04	T2.040111.114001	04/01/11 11:40	02

Report Name: BLANK_SUMMARY
PDF File ID: 1960339
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11031030 Prep Date:03/31/11 12:03 Sample ID:WG360488-02
Instrument ID:ICP-THERMO2 Run Date:03/31/11 17:19 Prep Method:3051A
File ID:T2.033111.171929 Analyst:PDM Method:6010B
Workgroup (AAB#):WG360505 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-31-MAR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Iron, Total	1.50	3.00	1.53	1	*
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1960340
01-APR-2011 12:01

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11031030 Prep Date:03/31/11 12:03 Sample ID:WG360488-02
Instrument ID:ICP-THERMO2 Run Date:04/01/11 11:18 Prep Method:3051A
File ID:T2.040111.111838 Analyst:JYH Method:6010B
Workgroup (AAB#):WG360505 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-01-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Antimony, Total	0.500	1.00	0.500	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1960340
01-APR-2011 12:01

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360488-03
Instrument ID: ICP-THERMO2 Run Time: 17:22 Prep Method: 3051A
File ID: T2.033111.172257 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG360505 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-31-MAR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	241	96.3	80 - 120	
Iron, Total	100	98.2	98.2	80 - 120	
Manganese, Total	12.5	12.3	98.8	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1960341
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360488-03
Instrument ID: ICP-THERMO2 Run Time: 11:22 Prep Method: 3051A
File ID: T2.040111.112210 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360505 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-01-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Antimony, Total	30.0	29.6	98.7	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1960341
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11031030 Cal ID:ICP-THERMO2 - Worknum:WG360505

Instrument ID:ICP-THERMO2 Contract #: Method:6010B

Parent ID:WG360488-01 File ID:T2.033111.190130 Dil:1 Matrix:SOLID

Sample ID:WG360488-04 MS File ID:T2.033111.190503 Dil:1 Units:mg/kg

Sample ID:WG360488-05 MSD File ID:T2.033111.190834 Dil:1 Percent Solid:81.0

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	10800	232	11800	434	232	12800	855	7.94	80 - 120	20	*
Iron, Total	38200	92.7	33800	-4650	92.7	36900	-1330	8.68	80 - 120	20	*
Manganese, Total	142	11.6	157	132	11.6	276	1160	55.0	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:1960342

Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11031030 Cal ID:ICP-THERMO2- Worknum:WG360505

Instrument ID:ICP-THERMO2 Contract #: Method:6010B

Parent ID:WG360488-01 File ID:T2.040111.114001 Dil:1 Matrix:SOLID

Sample ID:WG360488-04 MS File ID:T2.040111.115422 Dil:1 Units:mg/kg

Sample ID:WG360488-05 MSD File ID:T2.040111.115756 Dil:1 Percent Solid:81.0

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Antimony, Total	ND	27.8	23.9	86.0	27.8	24.2	87.1	1.20	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: 1960342

Report generated 04/05/2011 10:05

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11031030 **Worknum:** WG360505
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360505-02 **File ID:** T2.033111.174449 **Dil:** 5 **Units:** mg/L
Sample: L11030995-01 **File ID:** T2.033111.173709 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	227		275.5		21.40	E
Antimony	.0151	F	ND	U		
Iron	920		1020		10.90	E
Manganese	7.65		8.15		6.54	

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: 1960336
04/01/2011 12:04

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11031030 **Worknum:** WG360505
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360505-02 **File ID:** T2.033111.174822 **Dil:** 25 **Units:** mg/L
Sample: L11030995-01 **File ID:** T2.033111.174449 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	275.5		287.5		4.36	
Antimony	ND	U	ND	U		
Iron	1020		1015		0.49	
Manganese	8.15		8.075		0.92	

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: 1960336
04/01/2011 12:04

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11031030 **Worknum:** WG360505
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360505-04 **File ID:** T2.040111.114341 **Dil:** 5 **Units:** mg/L
Sample: L11031030-01 **File ID:** T2.040111.112533 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	273		342.5		25.50	E
Antimony	ND	U	ND	U		
Iron	643		695		8.09	
Manganese	4		4.2		5.00	

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: 1960336
04/01/2011 12:04

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11031030 **Worknum:** WG360505
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360505-01 **File ID:** T2.033111.174100 **Dil:** 1 **Units:** mg/L
Sample ID: L11030995-01 **File ID:** T2.033111.173709 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	213		227		5	171.5	75 - 125	N
ANTIMONY	0.606		0.0151	F	.6	98.8	75 - 125	
IRON	851		920		2	******	75 - 125	N
MANGANESE	7.19		7.65		.25	121.4	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: 1960337
Report generated: 04/01/2011 12:04

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11031030 **Worknum:** WG360505
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360505-03 **File ID:** T2.040111.112909 **Dil:** 1 **Units:** mg/L
Sample ID: L11031030-01 **File ID:** T2.040111.112533 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	251		273		5	112.7	75 - 125	
ANTIMONY	0.541		0	U	.6	90.2	75 - 125	
IRON	589		643		2	510.8	75 - 125	N
MANGANESE	3.87		4.00		.25	105.9	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: 1960337
Report generated: 04/01/2011 12:04

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11031030	Workgroup (AAB#):	WG360505
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360579	Initial Calibration Date:	31-MAR-2011 09:58

	WG360579-01		WG360579-02		WG360579-03		WG360579-04		WG360579-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.0110	.1	0.0212	.2	0.0315	10	0.975	20	1.86	.999751	
ANTIMONY	0	0.0000900	.012	0.000290	.024	0.000500	1.2	0.0207	2.4	0.0403	.999941	
IRON	0	-0.0000100	.04	0.000690	.08	0.00141	4	0.0708	8	0.140	.999987	
MANGANESE	0	0.000310	.005	0.00132	.01	0.00223	.5	0.0956	1	0.190	.999987	

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 1960345
Report generated: 01-APR-2011 12:01

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11031030	Workgroup (AAB#):	WG360505
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360600	Initial Calibration Date:	01-APR-2011 10:54

	WG360600-01		WG360600-02		WG360600-03		WG360600-04		WG360600-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.0121	.1	0.0229	.2	0.0333	10	0.995	20	1.96	.999953	
ANTIMONY	0	0.0000600	.012	0.000300	.024	0.000490	1.2	0.0224	2.4	0.0429	.999766	
IRON	0	0.0000200	.04	0.000680	.08	0.00139	4	0.0675	8	0.136	.999988	
MANGANESE	0	0.000190	.005	0.00117	.01	0.00213	.5	0.0932	1	0.187	.999987	

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 1960345
Report generated: 01-APR-2011 12:01

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-07
Instrument ID: ICP-THERMO2 Run Time: 10:05 Method: 6010B
File ID: T2.033111.100535 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG360505 Cal ID: ICP-THERI - 31-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1960347
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360600-07
Instrument ID: ICP-THERMO2 Run Time: 11:00 Method: 6010B
File ID: T2.040111.110058 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360505 Cal ID: ICP-THERI - 01-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1960347
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-11

Instrument ID: ICP-THERMO2 Run Time: 10:19 Method: 6010B

File ID: T2.033111.101915 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-31

Instrument ID: ICP-THERMO2 Run Time: 16:58 Method: 6010B

File ID: T2.033111.165831 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-34

Instrument ID: ICP-THERMO2 Run Time: 17:15 Method: 6010B

File ID: T2.033111.171557 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-36

Instrument ID: ICP-THERMO2 Run Time: 17:58 Method: 6010B

File ID: T2.033111.175851 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-38

Instrument ID: ICP-THERMO2 Run Time: 18:43 Method: 6010B

File ID: T2.033111.184317 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0322	F
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-40

Instrument ID: ICP-THERMO2 Run Time: 19:15 Method: 6010B

File ID: T2.033111.191524 Analyst: PDM Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360600-11

Instrument ID: ICP-THERMO2 Run Time: 11:14 Method: 6010B

File ID: T2.040111.111458 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 01-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360600-13

Instrument ID: ICP-THERMO2 Run Time: 11:50 Method: 6010B

File ID: T2.040111.115042 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 01-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360600-16
Instrument ID: ICP-THERMO2 Run Time: 12:35 Method: 6010B
File ID: T2.040111.123545 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 01-APR-11
Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1960350
Report generated 04/05/2011 10:05

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11031030 Run Date:03/31/2011 Sample ID:WG360579-06

Instrument ID:ICP-THERMO2 Run Time:10:02 Method:6010B

File ID:T2.033111.100216 Analyst:PDM Units:mg/L

Workgroup (AAB#):WG360505 Cal ID:ICP-TH - 31-MAR-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.2	102	90 - 110	
Antimony		1.2	1.27	106	90 - 110	
Iron		4	4.00	99.9	90 - 110	
Manganese		.5	0.496	99.1	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1960346

Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11031030 Run Date:04/01/2011 Sample ID:WG360600-06
Instrument ID:ICP-THERMO2 Run Time:10:57 Method:6010B
File ID:T2.040111.105737 Analyst:JYH Units:mg/L
Workgroup (AAB#):WG360505 Cal ID:ICP-TH - 01-APR-11
QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.1	101	90 - 110	
Antimony		1.2	1.25	104	90 - 110	
Iron		4	3.94	98.5	90 - 110	
Manganese		.5	0.498	99.6	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1960346
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-10

Instrument ID: ICP-THERMO2 Run Time: 10:15 Method: 6010B

File ID: T2.033111.101559 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Antimony		1.20	1.27	mg/L	106	90 - 110		
Iron		4.00	4.08	mg/L	102	90 - 110		
Manganese		0.500	0.502	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1960349
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-30

Instrument ID: ICP-THERMO2 Run Time: 16:55 Method: 6010B

File ID: T2.033111.165514 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.5	mg/L	105	90 - 110		
Antimony		1.20	1.33	mg/L	111	90 - 110		*
Iron		4.00	3.90	mg/L	97.5	90 - 110		
Manganese		0.500	0.498	mg/L	99.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960349

Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-33

Instrument ID: ICP-THERMO2 Run Time: 17:12 Method: 6010B

File ID: T2.033111.171239 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.4	mg/L	104	90 - 110		
Antimony		1.20	1.33	mg/L	111	90 - 110		*
Iron		4.00	3.90	mg/L	97.5	90 - 110		
Manganese		0.500	0.502	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960349

Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-35

Instrument ID: ICP-THERMO2 Run Time: 17:55 Method: 6010B

File ID: T2.033111.175535 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.5	mg/L	105	90 - 110		
Antimony		1.20	1.32	mg/L	110	90 - 110		
Iron		4.00	3.91	mg/L	97.8	90 - 110		
Manganese		0.500	0.496	mg/L	99.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960349

Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-37

Instrument ID: ICP-THERMO2 Run Time: 18:39 Method: 6010B

File ID: T2.033111.183959 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.5	mg/L	105	90 - 110		
Antimony		1.20	1.32	mg/L	110	90 - 110		
Iron		4.00	3.84	mg/L	95.9	90 - 110		
Manganese		0.500	0.492	mg/L	98.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1960349
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579-39

Instrument ID: ICP-THERMO2 Run Time: 19:12 Method: 6010B

File ID: T2.033111.191207 Analyst: PDM QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.5	mg/L	105	90 - 110		
Antimony		1.20	1.31	mg/L	109	90 - 110		
Iron		4.00	3.93	mg/L	98.2	90 - 110		
Manganese		0.500	0.495	mg/L	99.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960349

Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360600-10

Instrument ID: ICP-THERMO2 Run Time: 11:11 Method: 6010B

File ID: T2.040111.111138 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 01-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.85	mg/L	98.5	90 - 110		
Antimony		1.20	1.22	mg/L	101	90 - 110		
Iron		4.00	3.89	mg/L	97.4	90 - 110		
Manganese		0.500	0.489	mg/L	97.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960349

Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360600-12

Instrument ID: ICP-THERMO2 Run Time: 11:47 Method: 6010B

File ID: T2.040111.114722 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 01-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.23	mg/L	103	90 - 110		
Iron		4.00	3.98	mg/L	99.5	90 - 110		
Manganese		0.500	0.498	mg/L	99.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1960349
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 04/01/2011 Sample ID: WG360600-15

Instrument ID: ICP-THERMO2 Run Time: 12:32 Method: 6010B

File ID: T2.040111.123223 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360505 Cal ID: ICP-TH - 01-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Antimony		1.20	1.24	mg/L	103	90 - 110		
Iron		4.00	4.03	mg/L	101	90 - 110		
Manganese		0.500	0.501	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960349

Report generated 04/05/2011 10:05

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11031030 **Workgroup (AAB#):** WG360505
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360579-08 **File ID:** T2.033111.100905 **Units:** mg/L
Sol. AB : WG360579-09 **File ID:** T2.033111.101233 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	231	92.4	250	238	95.2	
Antimony	NS	-0.00157	NS	0.500	0.529	106	
Iron	100	97.8	97.8	100	98.8	98.8	
Manganese	NS	-0.00197	NS	0.250	0.237	94.8	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1960348
Report generated 04/01/2011 12:01

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11031030 **Workgroup (AAB#):** WG360505
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360600-08 **File ID:** T2.040111.110433 **Units:** mg/L
Sol. AB : WG360600-09 **File ID:** T2.040111.110805 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	229	91.6	250	220	88.0	
Antimony	NS	0.00139	NS	0.500	0.520	104	
Iron	100	96.9	96.9	100	93.7	93.7	
Manganese	NS	-0.00124	NS	0.250	0.243	97.2	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1960348
Report generated 04/01/2011 12:01

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360579
Instrument ID: ICP-THERMO2 Run Time: 09:58 Prep Method: 3051A
Analyst: PDM Method: 6010B
Workgroup (AAB#): WG360505 Matrix: Solid Units: mg/kg
Cal ID: 31-MAR-11 - 31-MAR-2011 09:58

Analytes	Expected	Found	% Rec	Limits	Q
Aluminum, Total	800	724	90.5	90 - 110	
Iron, Total	1000	929	92.9	90 - 110	
Manganese, Total	200	182	91.0	90 - 110	

KEMRON FORMS - Modified 08/28/2006
Version 1.5 PDF File ID: 1960358
Report generated 04/05/2011 10:09

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11031030 **Date:** 01/25/2011
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	0.00190	0	-0.000140	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	0.000335	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
PHOSPHORUS	214.90	-0.000750	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1960344
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11031030 **Date:** 01/25/2011
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	-0.00200	0	0	-0.00000800
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000530
COBALT	228.60	0	0	0.000108	0	0
COPPER	224.70	0	0.0000770	0	0	0.000196
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
PHOSPHORUS	214.90	0	0	0	0.00200	0.00120
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	0.0000570	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	-0.00000200
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.20	0	0	0	0	-0.0000300

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1960344
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11031030 **Date:** 01/25/2011
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	0.00000900	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	0.00800	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1960344
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11031030 **Date:** 01/25/2011
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
PHOSPHORUS	214.90	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1960344
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11031030 **Date:** 01/25/2011
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	V	ZN	ZR
ALUMINUM	308.20	0.00300	0	0
ANTIMONY	206.80	-0.00438	0	0
ARSENIC	189.00	0.000107	0	0
BARIUM	455.40	0	0	0
BERYLLIUM	313.00	0	0	0
BORON	249.70	0	0	0
CADMIUM	228.80	0.0000820	0	0
CALCIUM	422.70	0	0	0
CHROMIUM	267.70	0	0	
COBALT	228.60	0.0000200	0	0
COPPER	224.70	0	0	
IRON	261.20	0	0	0
LEAD	220.30	-0.000126	0	0
LITHIUM	670.80	0	0	0
MAGNESIUM	279.10	0	0	0
MANGANESE	257.60	0	0	0
MOLYBDENUM	202.03	-0.000110	0	0
NICKEL	231.60	0	0	0
PHOSPHORUS	214.90	-0.00500	0	0.00200
POTASSIUM	766.40	0	0	0
SELENIUM	196.00	0	0	0
SILICON	212.40	0	0	0
SILVER	328.00	-0.00617	0	0
SODIUM	589.50	0	0	0
STRONTIUM	407.80	0	0	0
THALLIUM	190.80	-0.0282	0	0
TIN	189.90	0	0	0
TITANIUM	337.30	0	0	0
VANADIUM	292.40	0	0	
ZINC	206.20	0	0	0
ZIRCONIUM	339.20	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1960344
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11031030 **Date:** 12/13/2010
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	810.0
Antimony	10.00	90.0
Arsenic	10.00	90.0
Barium	10.00	90.0
Beryllium	15.00	4.5
Boron	10.00	90.0
Cadmium	10.00	16.2
Calcium	10.00	900.0
Chromium	10.00	81.0
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	9.0
Nickel	10.00	90.0
Phosphorus	10.00	900.0
Potassium	10.00	315.0
Selenium	10.00	90.0
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
Zirconium	10.00	45.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1960343
Report generated: 04/01/2011 12:01

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11031030
Work Group: WG360516
Blank File ID: EL.033111.162655
Blank Sample ID: WG360489-02
Prep Date: 03/31/11 12:24
Instrument ID: ELAN-ICP
Analyzed Date: 03/31/11 16:26
Method: 6020
Analyst: EDL

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360489-03	EL.033111.163401	03/31/11 16:34	01
SWMU-57-32911-SS-7'-SW-5	L11031030-01	EL.033111.182807	03/31/11 18:28	DL01
SWMU57-32911-SS-13'-FC-NUM5	L11031030-02	EL.033111.183515	03/31/11 18:35	DL01
SWMU-57-33011-SS-FC-14'-NUM6	L11031030-04	EL.033111.184223	03/31/11 18:42	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1960565
Report generated 04/01/2011 11:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11031030 Prep Date:03/31/11 12:24 Sample ID:WG360489-02
Instrument ID:ELAN-ICP Run Date:03/31/11 16:26 Prep Method:3051A
File ID:EL.033111.162655 Analyst:EDL Method:6020
Workgroup (AAB#):WG360516 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-31-MAR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1960566
01-APR-2011 11:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360489-03
Instrument ID: ELAN-ICP Run Time: 16:34 Prep Method: 3051A
File ID: EL.033111.163401 Analyst: EDL Method: 6020
Workgroup (AAB#): WG360516 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-31-MAR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	9.56	95.6	80 - 120	
Chromium, Total	10.0	10.0	100	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1960567
Report generated: 04/01/2011 11:27

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11031030 Cal ID:ELAN-ICP- Worknum:WG360516

Instrument ID:ELAN-ICP Contract #: Method:6020

Parent ID:WG360489-01 File ID:EL.033111.184223 Dil:5 Matrix:SOLID

Sample ID:WG360489-04 MS File ID:EL.033111.184932 Dil:5 Units:mg/kg

Sample ID:WG360489-05 MSD File ID:EL.033111.185641 Dil:5 Percent Solid:81.0

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	ND	12.3	13.2	108	12.3	12.6	102	5.16	80 - 120	20	
Chromium, Total	10.8	12.3	27.7	138	12.3	19.8	73.4	33.2	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:1960568

Report generated 04/01/2011 11:27

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11031030 **Worknum:** WG360516
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG360516-02 **File ID:** EL.033111.173106 **Dil:** 25 **Units:** ug/L
Sample: L11031006-01 **File ID:** EL.033111.171648 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Cadmium	8.9	X	6.925	X	22.20	
Chromium	19.15	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 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: 1960562
04/01/2011 11:27

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11031030 **Worknum:** WG360516
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG360516-01 **File ID:** EL.033111.172357 **Dil:** 5 **Units:** ug/L
Sample ID: L11031006-01 **File ID:** EL.033111.171648 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	58.6		1.78		50	113.7	75 - 125	
CHROMIUM	57.0		3.83		50	106.3	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1960563
Report generated: 04/01/2011 11:27

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11031030	Workgroup (AAB#):	WG360516
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG360519	Initial Calibration Date:	31-MAR-2011 10:22

	WG360519-01		WG360519-02		WG360519-03		WG360519-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	5.07	.4	561	50	63900	100	129000	.99967	
CHROMIUM	0	8790	.4	11900	50	383000	100	711000	.999979	

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 1960572
Report generated: 01-APR-2011 11:27

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-06
Instrument ID: ELAN-ICP Run Time: 10:36 Method: 6020
File ID: EL.033111.103603 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360516 Cal ID: ELAN-ICP - 31-MAR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL

F = Result is between MDL and 2 x MDL

* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1960575
Report generated 04/01/2011 11:27

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-11

Instrument ID: ELAN-ICP Run Time: 11:11 Method: 6020

File ID: EL.033111.111140 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1960579
Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-20

Instrument ID: ELAN-ICP Run Time: 16:11 Method: 6020

File ID: EL.033111.161143 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1960579
Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-23

Instrument ID: ELAN-ICP Run Time: 17:45 Method: 6020

File ID: EL.033111.174520 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1960579
Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-25

Instrument ID: ELAN-ICP Run Time: 19:10 Method: 6020

File ID: EL.033111.191055 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1960579
Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-05

Instrument ID: ELAN-ICP Run Time: 10:28 Method: 6020

File ID: EL.033111.102858 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	50.7	101	90 - 110	
Chromium		50	49.4	98.7	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1960573

Report generated 04/01/2011 11:27

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-10

Instrument ID: ELAN-ICP Run Time: 11:04 Method: 6020

File ID: EL.033111.110434 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	51.9	ug/L	104	90 - 110		
Chromium		50.0	49.1	ug/L	98.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960578

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-19

Instrument ID: ELAN-ICP Run Time: 16:04 Method: 6020

File ID: EL.033111.160437 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	51.0	ug/L	102	90 - 110		
Chromium		50.0	48.1	ug/L	96.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960578

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-22

Instrument ID: ELAN-ICP Run Time: 17:38 Method: 6020

File ID: EL.033111.173814 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	51.6	ug/L	103	90 - 110		
Chromium		50.0	50.5	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960578

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-24

Instrument ID: ELAN-ICP Run Time: 19:03 Method: 6020

File ID: EL.033111.190349 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	51.9	ug/L	104	90 - 110		
Chromium		50.0	50.2	ug/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1960578

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-07

Instrument ID: ELAN-ICP Run Time: 10:43 Method: 6020

File ID: EL.033111.104310 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.219	ug/L	110	80 - 120		
Chromium		0.800	0.811	ug/L	101	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1960581

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-16

Instrument ID: ELAN-ICP Run Time: 13:47 Method: 6020

File ID: EL.033111.134754 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.192	ug/L	95.9	80 - 120		
Chromium		0.800	0.746	ug/L	93.3	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1960581

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-21

Instrument ID: ELAN-ICP Run Time: 16:18 Method: 6020

File ID: EL.033111.161850 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.185	ug/L	92.6	80 - 120		
Chromium		0.800	0.830	ug/L	104	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1960581

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11031030 Run Date: 03/31/2011 Sample ID: WG360519-26

Instrument ID: ELAN-ICP Run Time: 19:18 Method: 6020

File ID: EL.033111.191802 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360516 Cal ID: ELAN-I - 31-MAR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.202	ug/L	101	80 - 120		
Chromium		0.800	0.831	ug/L	104	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1960581

Report generated 04/01/2011 11:28

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11031030 **Workgroup (AAB#):** WG360516
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG360519-08 **File ID:** EL.033111.105018 **Units:** ug/L
Sol. AB : WG360519-09 **File ID:** EL.033111.105726 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0296	NS	100	103	103	
Chromium	NS	-0.0483	NS	100	96.3	96.3	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1960577
Report generated 04/01/2011 11:27

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11031030 **Analytical Method** 6020
Analytical Workgroup: WG360516 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 31-MAR-2011 10:01

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11031006-01	SAMP	31-MAR-2011 17:16	90.249	92.927	89.115	91.809
L11031030-01	SAMP	31-MAR-2011 18:28	92.265	94.216	90.648	88.994
L11031030-02	SAMP	31-MAR-2011 18:35	91.261	95.466	90.443	91.799
L11031030-04	SAMP	31-MAR-2011 18:42	89.537	95.545	90.974	90.343
WG360489-02	BLANK	31-MAR-2011 16:26	95.29	100.927	99.093	97.373
WG360489-03	LCS	31-MAR-2011 16:34	95.054	101.294	99.848	98.515
WG360489-04	MS	31-MAR-2011 18:49	90.525	95.563	91.517	91.006
WG360489-05	MSD	31-MAR-2011 18:56	89.469	97.149	90.916	89.825
WG360516-01	PSPK	31-MAR-2011 17:23	90.063	91.891	89.829	91.822
WG360516-02	SERIAL	31-MAR-2011 17:31	92.53	96.694	92.819	92.097
WG360519-05	ICV	31-MAR-2011 10:28	94.192	96.704	97.111	97.303
WG360519-06	ICB	31-MAR-2011 10:36	98.31	99.92	101.442	100.031
WG360519-07	LLICV	31-MAR-2011 10:43	95.046	96.701	98.73	96.07
WG360519-08	ICS	31-MAR-2011 10:50	90.915	93.341	91.43	92.089
WG360519-09	ICS	31-MAR-2011 10:57	92.606	87.368	84.127	87.147
WG360519-10	CCV	31-MAR-2011 11:04	94.541	97.657	96.834	96.173
WG360519-11	CCB	31-MAR-2011 11:11	96.003	97.888	99.089	97.098
WG360519-16	LLCCV	31-MAR-2011 13:47	92.137	97.241	95.343	93.844
WG360519-19	CCV	31-MAR-2011 16:04	91.852	97.865	97.141	94.054
WG360519-20	CCB	31-MAR-2011 16:11	93.42	98.767	98.127	96.333
WG360519-21	LLCCV	31-MAR-2011 16:18	91.765	98.176	96.297	93.618
WG360519-22	CCV	31-MAR-2011 17:38	91.969	95.131	93.198	91.194
WG360519-23	CCB	31-MAR-2011 17:45	94.499	99.16	96.671	95.672
WG360519-24	CCV	31-MAR-2011 19:03	89.349	96.706	94.145	92.647
WG360519-25	CCB	31-MAR-2011 19:10	89.746	100.139	96.574	94.664
WG360519-26	LLCCV	31-MAR-2011 19:18	89.316	99.391	94.928	93.765

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1960570
Report generated: 04/01/2011 11:27

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11031030 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1960569
Report generated: 04/01/2011 11:27

Kemron–Radford Army Ammunition Plant Data Validation Summary Worksheet

SDG#: L11031030	Laboratory: Microbac	Validator: Linda Thal	Validation Date: 05/10/11
Site: Radford	AR/COC#: 2165		Validation Level: ☐ III ☒ IV
Matrix: Water	# of Samples: 4	Tracking docs present: See sample receipt and log-in documentation	
COCs present: yes	COCs signed: yes	COCs dated: yes	Sample Container Integrity: OK

Analyses:
☐ VOCs ☐ SVOCs ☐ PAHs ☐ GRO ☐ DRO ☐ Pests ☐ PCBs ☒ Metals ☐ Gen Chem
☐ Other:

Requested Analyses Not Reported

Client Sample ID	Lab Sample ID	Analysis	Comments
None			

Hold Time/Preservation Outliers

Client Sample ID	Lab Sample ID	Analysis	Pres.	Collection Date	Preparation Date	Analysis Date	Analysis <2X HT	Analysis ≥2X HT
None								

Comments: Sampled 3/29 and 3/30/11

Kemron–Radford Army Ammunition Plant Inorganic Metals Worksheet

SDG: L11031030	Matrix: Water	Level III Lab Sample IDs: NA
Method/Batch #s: 6010B/WG360505 6020/WG360516		Level IV Lab Sample IDs: L11031030-01 thru -04

ICPMS Mass Cal: ☐ Pass ☐ Fail ☐ NA ICPMS Resolution: ☐ Pass ☐ Fail ☐ NA ICPMS %RSD: ☐ Pass ☐ Fail ☐ NA

Analyte (outliers)	**Calibration**						**ICP CRDL** *±10%*	**Method Blank** *(<MDL)*	**5X MB**	**ICS A** *<IDL*	**ICS AB** *±20%*	**LCS %R** *(80-120%)*	**MS %R** *(75-125%)*	**MSD %R** *(75-125%)*	**MS/D RPD** *(≤20%)*	**Serial Dil. %D** *(±10%)*	**PS** *(75-125%)*	**EB** mg/L
	r *≥0.995*	**ICV** *±10%*[1]	**CCV** *±10%*[1]	**ICB** mg/L	**CCB** *(<IDL)*	**5X CB**												
Fe	✓	✓	✓	✓	.0322	0.161	NA	1.53	7.65	✓	✓	✓	-4650*	-1330*	✓	25.5	511*	NA
Al	✓	✓	✓	✓	✓	NA	NA	✓	NA	✓	✓	✓	434*	835*	✓	✓	✓	NA
Mn	✓	✓	✓	✓	✓	NA	NA	✓	NA	✓	✓	✓	132*	1160*	55	✓	✓	NA
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	138	73	33	✓	✓	NA
Cd	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	22.2**	✓	NA

IS Outliers[1] *(60-125%)*				**IS Outliers**[1] *(60-125%)*			
Sample ID	**%Recovery**	**%Recovery**	**%Recovery**	**CCV/CCB ID**	**%Recovery**	**%Recovery**	**%Recovery**
None				None			

Comments: HTs OK. 6010B: MS-04, SD -01, PS -01. No CRI – Sb ND – qualify UJ. Remaining targets >2X the CRDL, therefore no qualifiers. Fe and Mn MDLs > QAPP. Sb RL < QAPP. *sample result >4X the spike amount.

6020: MS -04. **SD and PS unknown sample. All samples diluted 5X due to the presence of high non-target analytes. RLs and MDLs > QAPP.

[1]Standard CLP NFG criteria used; no criteria specified in QAPP or Region III NFG

Radford Army Ammunition Plant: Data Validation for Lab Report L11031030 D-80

6010 METALS CALIBRATION VERIFICATION FOR L11031030

Date: WG360505 3/31/11
ICP-THERMO2
Analyte: Al

Concentration	Mean Response
0	0.011
0.1	0.0212
0.2	0.0315
10	0.975
20	1.86
Corr. Coef. =	0.999791

Date: WG360505 3/31/11
ICP-THERMO2
Analyte: Fe

Concentration	Mean Response
0	-0.00001
0.04	0.00069
0.08	0.00141
4	0.0708
8	0.14
Corr. Coef. =	0.999984

Date: WG360505 04/01/11
ICP-THERMO2
Analyte: Sb

Concentration	Mean Response
0	0.00006
0.012	0.0003
0.024	0.00049
1.2	0.0224
2.4	0.0429
Corr. Coef. =	0.999785

3/31/11 ICP-TH	True Value	Reported	
	ICV		**%Rec**
Al	10.00	10.19	101.9
	ICSAB		**%Rec**
Fe	100.00	98.78	98.8
	CCV5		**%Rec**
Al	10.00	10.43	104.3
	CCV6		**%Rec**
Fe	4.00	3.91	97.8
	CCV7		**%Rec**
Al	10.00	10.45	104.5
	CCV8		**%Rec**
Fe	4.00	3.93	98.2

4/1/2011	True Value	Reported	
	ICV		**%Rec**
Sb	1.20	1.25	103.8
	ICSAB		**%Rec**
Sb	0.50	0.52	104.1
	CCV1		**%Rec**
Sb	1.20	1.22	101.4
	CCV2		**%Rec**
Sb	1.20	1.23	102.9

6010 METALS ICS AND CRDL CALCULATIONS FOR L11031030

ICSA Check

Total Metals

3/31	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Mn	5.000	10.000	-1.9700	

4/1	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Sb	10.000	20.000	1.3900	

CRDL Check

(Low ICAL standards re-calculated; CRI not analyzed)

3/31	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Al	0.1000			
Fe	0.0400			
Mn	0.0050			

4/1	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Sb	0.0120			

CALCULATION WORKSHEET FOR 6010 METALS SOIL RESULTS FOR SDG L11031030

Soil Sample Calculations:

	MDL (mg/kg)	CRQL (mg/kg)			MB		LCS		-04MS		-04MSD		-04		-03	
Final Volume (ml)					50		50		50		50		50		50	
Sample Aliquot (g)					1		1		1.332		1.332		1.332		1.358	
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100	%S	81	%S	81	%S	81	%S	79.1
					DF	1	DF	1	DF	1	DF	1	DF	1	DF	1
Al	10.0	20.0			0.0154	U	4.8134	240.67	254.59	11798	275.63	12773	232.88	10792		
Sb	0.500	1.000			0.00338	U	0.59206	29.60	0.51621	23.923	0.52242	24	-0.00484	U		
Fe	1.500	3.000			0.03068	1.53	1.9638	98.19	730.05	33832.444	796.31	36903	822.98	38139	361.9	16845
Mn	0.25	0.5			0.00043	U	0.24692	12.35	3.3851	157	5.9519	276	3.0561	142		

	MDL (mg/kg)	CRQL (mg/kg)			-02		-01		-01PS		-01SD	
Final Volume (ml)					50		50		50		50	
Sample Aliquot (g)					1.341		1.351		1.351		1.351	
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	75.6	%S	81.6	%S	81.6	%S	81.6
					DF	1	DF	1	DF	1	DF	5
Al	10.0	20.0			225.03	11098	286.79	13007	251.21	11394	68.498	15534
Sb	0.5	1.0			0.00148	U	0.00039	U	0.54091	25	-0.00062	U
Fe	1.500	3.000			510.24	25165	637.23	28902	589.23	26724	138.57	31424
Mn	0.25	0.5			5.7772	285	3.9915	181	3.869	175	0.84042	191

6010 METALS MATRIX SPIKE AND SERIAL DILUTION CALCULATION WORKSHEET FOR SDG L11031030

3/31/2011	LCS	-04 MS	-04 MSD	-01PS	PS	PS
Analyte	Fe	Fe	Fe	Fe	Al	Mn
True Conc	100.0	92.7	92.7	2.0	5.0	0.3
Reported Conc	98.2	33800.0	36900.0	589.0	251.0	3.9
Sample Conc	0.0	38200.0	38200.0	643.0	273.0	4.0
%R	98.20	-4746.49	-1402.37	-2700.00	-440.00	-52.00
RPD		8.77				

Sample result >4X spike ; lab calculation does not match due to rounding.

4/1/2011	LCS	-03 MS	-04 MSD	PS
Analyte	Sb	Sb	Sb	Sb
True Conc	30.0	27.8000	27.8000	0.6
Reported Conc	29.6	23.900	24.200	0.5
Sample Conc	0.0	0.000	0.000	0.0
%R	98.67	85.97	87.05	86.25
RPD		1.25		

6010 Soil:

Analyte	-05	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	>Limit?
	mg/L	mg/L	mg/L	ug/kg	mg/L				
Sb	ND	ND		0.5	0.50		10		

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

Analyte	-01 1X	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	>Limit?
	mg/L	mg/L	mg/L	ug/kg	mg/L				
Al	273	68.5	342.5	10.0	10.00	Y	10	25	*
Mn	4	0.84	4.2	0.250	0.250	Y	10	5	
Fe	643	139	695	1.50	1.50	Y	10	8	

A control limit of 10%D will be applied when the original sample result is > 50*IDL.

6020 TOTAL METALS CALIBRATION VERIFICATION FOR L11031030

Date: WG360516 3/31/11 (ELAN ICP)

Analyte: Cd

Concentration	Mean Response
0	5.07
0.4	561
50	63900
100	129000

Corr. Coef. = 0.999988

3/31/2011	True Value	Reported	
	ICV		%Rec
Cd	50.00	50.70	101.4
	ICSAB		%Rec
Cd	100.00	103.00	103.0
	CCV6		%Rec
Cd	50.00	51.60	103.2
	CCV7		%Rec
Cd	50.00	51.90	103.8

6020 METALS ICS AND CRDL CALCULATIONS FOR L11031030

ICSA Check

3/31	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Cd	0.125	0.250	0.0296	
Cr	0.500	1.000	-0.0483	

CRDL Check

	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cd	0.2000	0.2190	109.5	
Cr	0.8000	0.8110	101.4	

CALCULATION WORKSHEET FOR 6020 METALS SOIL RESULTS FOR SDG L11020571

Soil Sample Calculations: WG360516

	MDL (mg/kg)	CRQL (mg/kg)			MB		LCS		-04MS		-04MSD		-04		-02	
Final Volume (ml)					200		200		200		200		200		200	
Sample Aliquot (g)					0.5		0.5		0.502		0.502		0.502		0.506	
					ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
					%S	100	%S	100	%S	81	%S	81	%S	81	%S	75.6
					DF	1	DF	1	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100			-0.0167	U	23.9007	9.560	5.3802	13.232	5.1095	12.566	-0.0178	U	0.0106	U
Cr	0.200	0.400			0.1336	U	25.051	10.020	11.268	27.711	8.0635	19.831	4.3927	10.803	5.4919	14.357

	MDL (mg/kg)	CRQL (mg/kg)			-01	
Final Volume (ml)					200	
Sample Aliquot (g)					0.509	
					ug/L	mg/kg
					%S	81.6
					DF	5
Cd	0.050	0.100			-0.0203	U
Cr	0.200	0.400			3.4251	8.2464

6020 METALS MATRIX SPIKE AND SERIAL DILUTION CALCULATION WORKSHEET FOR SDG L11031030

Soil

	LCS	-04 MS	-04 MSD	PS
Analyte	**Cr**	**Cr**	**Cr**	
True Conc	10.0000	12.3000	12.3000	
Reported Conc	10.0000	27.7000	19.8000	
Sample Conc	0.0000	10.8000	10.8000	
%R	100.00	137.40	73.17	
RPD		33.26		

	LCS	-04 MS	-04 MSD	PS
Analyte	**Cd**	**Cd**	**Cd**	
True Conc	10.0000	12.3000	12.3000	
Reported Conc	9.5600	13.200	12.600	
Sample Conc	0.0000	0.000	0.000	
%R	95.60	**107.32**	102.44	
RPD		4.65		

SD not performed on sample from this SDG.

Analyte	Parent	Serial Dilution 5x		IDL	IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	> %D Limit?
	ug/L	ug/L	ug/L	ug/L	ug/kg	ug/L				
Cr			0	0.200	0.2	10.0				
Cu			0	0.200	0.200	10.0				

Instrument Tuning Report

File Name: 06302008.tun
File Path: C:\Elandata\Tuning\06302008.tun

Sample Information

Sample Date/Time: Thursday, March 31, 2011 08:17:44

Analyte	Exact Mass	Meas. Mass	Mass DAC	Res. DAC	Meas. Pk. Width	Custom Res.
He	3.016	2.976	614	2060	0.757	
Li	7.016	7.029	1581	2060	0.717	
Co	58.933	58.929	14272	1990	0.666	
Ce	139.905	139.879	33990	2025	0.688	
Tl	204.975	205.027	49701	2255	0.706	

Relative Std. Dev.

Mass	Meas. Intens. RSD
2.000	1.103
3.000	1.553
4.000	18.296
5.000	20.518
6.000	0.515
7.000	2.449
8.000	22.736
9.000	3.208
58.000	0.590
59.000	0.693
60.000	13.907
139.000	4.532
140.000	1.088
141.000	12.694
204.000	1.148
205.000	1.437
206.000	1.040

Daily Performance Report

Sample ID: Sample
Sample Date/Time: Thursday, March 31, 2011 08:22:03
Sample Description:
Method File: C:\Elandata\Method\6020 DAILY.mth
Dataset File: C:\elandata\Dataset\032811\Sample.359
Tuning File: C:\Elandata\Tuning\06302008.tun
Optimization File: C:\elandata\Optimize\Default.dac
Dual Detector Mode: Dual
Acq. Dead Time(ns): 50
Current Dead Time (ns): 50

Summary

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Net Intens. SD	Net Intens. RSD
	Mg	24.0	58753.6	58753.597	294.441	0.5
	Rh	102.9	249601.9	249601.859	1620.703	0.6
	In	114.9	538551.3	538551.287	3177.183	0.6
	Pb	208.0	211560.7	211560.707	955.678	0.5
	U	238.1	17.8	17.800	0.447	2.5
⌈>	Ba	137.9	303825.5	303825.506	2501.918	0.8
⌊	Ba++	69.0	4394.6	0.014	0.000	1.6
⌈>	Ce	139.9	305893.1	305893.067	667.565	0.2
⌊	CeO	155.9	7158.5	0.023	0.000	1.3
	Bkgd	220.0	11.6	11.600	1.557	13.4
	Ar2	79.9	4983545.3	4983545.272	28335.895	0.6

Current Optimization File Data

Current Value	Description
0.98	Nebulizer Gas Flow
6.40	Lens Voltage
1500.00	ICP RF Power
-1862.50	Analog Stage Voltage
1000.00	Pulse Stage Voltage
20.00	Discriminator Threshold
-10.00	AC Rod Offset

Current Autolens Data

Analyte	Mass	Num of Pts	DAC Value	Maximum Intensity
Be	9	33	5.3	3999.5
Co	59	33	6.0	120809.0
Rh	103	33	6.8	174421.7
Pb	208	33	7.8	173459.1

Method 6020 - Summary Report

Sample ID: Blank

Sample Date/Time: Thursday, March 31, 2011 09:55:13
Number of Replicates: 3
Aliquot Volume (mL):
Diluted To Volume (mL):
Autosampler Position: 1
Method File: C:\elandata\Method\6020a.mth
Sample Description:

User ID: EDL

Cumulative Autodilution Factor: 1
ELAN-ICP 200.8\6020 External Calibration

Concentration Results

	Analyte	Mass	Meas. Intens. Mean	Net Intens. Mean	Conc. Mean	Conc. SD	Conc. RSD	Sample Unit
⌈	Li	6	20020.120					ug/L
|	Be	9	10.000					ug/L
|	Al	27	3517.288					ug/L
⌊>	Sc	45	171951.620					ug/L
⌈	Ti	49	30.003					ug/L
|	V	51	2399.579					ug/L
|	Cr	52	8537.729					ug/L
|	Cr	53	293.367					ug/L
|	Mn	55	407.346					ug/L
|	Co	59	155.003					ug/L
|	Ni	60	61.001					ug/L
|	Cu	65	70.001					ug/L
|	Zn	66	208.004					ug/L
| >	Ge	72	328782.928					ug/L
|	As	75	-158.103					ug/L
|	Se	77	70.000					ug/L
|	Se	82	-2.896					ug/L
⌊	Rb	85	21.334					mg/L
	Y	89	229510.190					ug/L
	Rh	103	13.333					ug/L
⌈	Mo	98	140.609					ug/L
|	Ag	107	33.334					ug/L
|	Cd	114	-0.919					ug/L
| >	In	115	327317.520					ug/L
|	Sn	118	171.068					ug/L
⌊	Sb	123	89.367					ug/L
⌈	Ba	135	16.667					ug/L
|	Ce	140	30.003					ug/L
⌊>	Tb	159	409792.012					ug/L
⌈	Ho	165	13.335					ug/L
|	Tl	203	20.334					ug/L
|	Tl	205	10.001					ug/L
|	Pb	206	300.341					ug/L
|	Pb	207	274.340					ug/L
|	Pb	208	1202.373					ug/L
|	U	238	28.334					ug/L
⌊>	Bi	209	352430.373					ug/L

Na	23	40653.316		mg/L
Mg	24	1293.547		mg/L
K	39	349728.413		mg/L
Ca	43	160.017		mg/L
Fe	54	57752.496		mg/L
Fe	57	5635.486		mg/L
Sc-1	45	171951.620		mg/L
Cl	35	12279.539		mg/L
Kr	83	64.668		mg/L
Br	81	7669.607		mg/L
P	31	11262.362		mg/L
S	34	142824.164		mg/L

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery	Dilution % Diff	Dup. Rel. % Diff
Li	6					
Be	9					
Al	27					
Sc	45					
Ti	49					
V	51					
Cr	52					
Cr	53					
Mn	55					
Co	59					
Ni	60					
Cu	65					
Zn	66					
Ge	72					
As	75					
Se	77					
Se	82					
Rb	85					
Y	89					
Rh	103					
Mo	98					
Ag	107					
Cd	114					
In	115					
Sn	118					
Sb	123					
Ba	135					
Ce	140					
Tb	159					
Ho	165					
Tl	203					
Tl	205					
Pb	206					
Pb	207					
Pb	208					
U	238					
Bi	209					
Na	23					

	Mg	24
	K	39
	Ca	43
	Fe	54
	Fe	57
>	Sc-1	45
	Cl	35
	Kr	83
	Br	81
	P	31
	S	34

QC Out Of Limits

Measurement Type	Analyte	Mass	Out of Limits Message

ANALYTICAL QUALITY ASSOCIATES, INC.

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Subject: Data Validation for Lab Reports L11040066 and L11040067
Radford Army Ammunition Plant

From: Charissa Lewis
Data Validator, AQA

To: Mary Lou Rochotte
Kemron Environmental Services, Inc.

OVERVIEW

Microbac Laboratories Inc., Marietta, Ohio, received 11 field samples associated with the project work described in the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010) on April 4, 2011. The field samples were assigned laboratory sample delivery group (SDG) numbers L11010066 and L11040067, and included eight normal soil samples, one field duplicate soil sample, and one matrix spike pair. The samples were analyzed for metals using EPA methods 6010B and 6020 as detailed in *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (SW-846)*, Third Edition, Final Update III.

SUMMARY

The samples were analyzed according to the quality control (QC) criteria of the applicable analytical method. The data for these samples were found to be compliant with the requirements of the project QAPP and/or EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable, and the results for all target analytes are considered usable.

MAJOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- None

MINOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- CRDL standards were not analyzed with the samples analyzed by method 6010
- SWMU-57-4111-SS-4′-SW-6: Total antimony (UJ)
- SWMU-57-4111-SS-1′-SW-7: Total antimony (UJ)
- SWMU-57-4111-SS-FC-2′-NUM7: Total antimony (UJ)
- SWMU-57-4111-SS-7′-SW-8: Total antimony (UJ)
- SWMU-57-4111-SS-7′-SW-9: Total antimony (UJ)
- SWMU-57-4111-SS-15′-FC-NUM8: Total antimony 0.722 (J)
- SWMU-57-4111-SS-7.5′-SW-13: Total antimony 0.424 (J)
- SWMU-57-4111-SS-7.5′-SW-10: Total antimony 0.621 (J)
- SWMU-57-4111-SS-DUP: Total antimony (UJ)

NOTES

(Refer to Appendix D – Support Documentation)

Sample Chain of Custody (COC) Records

- The samples were listed on COC #2166, 2167, and 2168. Data were reported for all required analyses.

Preservation and Holding Times

- The samples were properly preserved and analyzed within the specified holding time.

Instrument Tune

- The instrument tunes for all applicable analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration (ICAL)

- The ICAL correlation coefficients for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV)

- The ICV/CCV percent recoveries (%Rs) for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Contract Required Detection Limit (CRDL)

- CRDL standards were not analyzed with the samples analyzed by method 6010, and there was insufficient information in the data package to calculate the %Rs for the lowest concentration ICAL standard. The total antimony results for samples SWMU-57-4111-SS-15′-FC-NUM8, SWMU-57-4111-SS-7.5′-SW-13, and SWMU-57-4111-SS-7.5′-SW-10 were detects <2X the CRDL and, therefore, were **qualified J** for the lack of a CRDL analysis. The remaining total antimony results were non-detects and, therefore, were **qualified UJ** for the lack of a CRDL analysis. The associated total aluminum, iron, and manganese results were detects >2X the CRDL and, therefore, were not qualified.

- The beginning and ending CRDL recoveries associated with the samples analyzed by method 6020 were within the project QAPP- and Region III-specified control limits.

Inductively Coupled Plasma (ICP) Interference Check Sample

- ICP interference check sample recoveries were within the project QAPP- and Region III-specified control limits, and all non-spiked ICS A results were < the MDL.

- The results of the ICS A and ICS AB analyses were applicable to all sample results.

Field Blanks

- A field blank was not collected with the samples in these SDGs.

Laboratory Method Blanks

- No target analytes were detected in the method blanks.

Laboratory Calibration Blanks

- No target analytes were detected in the calibration blanks.

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCSs/LCSDs)

- The LCS/LCSD recoveries met project QAPP- and Region III-specified QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

- One MS/MSD pair was analyzed on sample SWMU-57-4111-SS-FC-2′-NUM7 for all analyses. The MS/MSD recoveries met project QAPP- and Region III-specified QC acceptance criteria with the following exceptions.

    - The MS/MSD recoveries were outside of the QC acceptance criteria for total aluminum, iron, and manganese. The parent sample results were >4X the spike amount and, therefore, no data were qualified.

    - The soil post spike recoveries were calculated incorrectly for total aluminum, iron, and manganese. When calculated correctly, the post spike recoveries were <75%; however, the parent sample results were >4X the spike amount and, therefore, no data were qualified.

ICP Serial Dilution Analyses

- The serial dilution %Ds met project QAPP- and Region III-specified QC acceptance criteria.

Laboratory Sample Duplicate

- MSDs were analyzed as the laboratory duplicates for all analyses and met project QAPP- and Region III-specified QC acceptance criteria.

Field Sample Duplicate

- Soil sample SWMU-57-4111-SS-FC-2′-NUM7 was collected and analyzed in duplicate (sample SWMU-57-4111-DUP) for all analyses. The RPDs between the sample and duplicate results were within the project QAPP-specified control limits.

	SWMU-57-4111-DUP		SWMU-57-4111-SS-FC-2'-NUM7			
Analyte	Result	RL	Result	RL	RPD	>35%
Sb	0	0.963	0	0.982	<RL	
Al	15200	19.3	17200	19.6	12.35	
Fe	36800	2.89	39000	2.95	5.80	
Mn	383	0.482	387	0.491	1.04	
Cd	0	0.5	0	0.5	<RL	
Cr	27.6	1.94	31.6	2	13.51	

Sample Internal Standard Recoveries

- The internal standard recoveries for metals analyzed by method 6020 were within the 60-125% limits provided in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (NFG) (October 2004).

Sample Results

- The samples were analyzed for the methods requested on the COC. Method detection limits (MDLs) and reporting limits (RLs) were reported for all analyses; however, the soil MDLs for total iron, total manganese, total cadmium and total chromium were > the MDLs specified in the project QAPP. The reported RLs met project-specified RLs with the following exceptions.

  - All soil samples were diluted 5X for the analysis of total chromium and total cadmium. The associated RLs were adjusted accordingly and, therefore, did not meet project-specified RLs.

Action Level Notification

- No results were above the action levels specified in the Region III NFG.

Usability Statement

- There were 54 field sample data points associated with the data package for SDG L11020571. Of these field sample data points, 45 (83.33% of the total) were assessed and left unqualified, 3 (5.56% of the total) were assessed and qualified J, and 6 (11.11% of the total were assessed and qualified UJ.

- The field sample data points that were qualified J can be categorized as definitive data with positively identified analyte concentrations that are only estimates due to QC deficiencies, the field sample data points that were qualified UJ can be categorized as definitive data with nondetectable analyte concentrations that are only estimates due to QC deficiencies.

- The unqualified field sample data points can be categorized as definitive data with no associated QC deficiencies.

Report Content Statement

This report has been formatted for consistency with Appendix B, Region III Standard Operating Procedures for Data Validation Reports, contained in the guidance *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). The laboratory data were reviewed in accordance with the EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable; the *Quality Assurance Project Plan for the Performance Based Contract, Revision 04, Fort Meade, Maryland* (May 2010) (project QAPP); and the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010); and the applicable SW-846 methods. This report only addresses those problems and issues that may affect data usability.

Attachments

Appendix A – Glossary of Data Qualifiers

Appendix B – Data Qualifier Summary

Appendix C – Laboratory Report Results/Data Summary

Appendix D – Support Documentation

Appendix A – Glossary of Data Qualifiers

Data Qualifier Codes

Codes Related to Identification

U Not detected. The associated number indicates the approximate sample concentration necessary to be detected.

B Not detected substantially above the level reported in laboratory or field blanks.

R Unusable result. Analyte may or may not be present in the sample.

Codes Related to Quantitation

J Analyte present. Reported value may or may not be accurate or precise.

K Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ Not detected. Quantitation limit may be inaccurate or imprecise.

UL The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Appendix B – Data Qualifier Summary

Data Qualifier Summary

Note: The results listed in this table are detects and qualified non-detects only. Unqualified non-detects are not listed.

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU-57-4111-SS-4′-SW-6 L11040066-01	Total antimony	UJ	U	No CRDL standard
SWMU-57-4111-SS-1′-SW-7 L11040066-02	Total antimony	UJ	U	No CRDL standard
SWMU-57-4111-SS-FC-2′-NUM7 L11040066-03	Total antimony	UJ	U	No CRDL standard
SWMU-57-4111-SS-7′-SW-8 L11040066-04	Total antimony	UJ	U	No CRDL standard
SWMU-57-4111-SS-7′-SW-9 L11040066-05	Total antimony	UJ	U	No CRDL standard
SWMU-57-4111-SS-15′-FC-NUM8 L11040066-06	Total antimony	J	J	No CRDL standard
SWMU-57-4111-SS-7.5′-SW-13 L11040066-07	Total antimony	J	J	No CRDL standard
SWMU-57-4111-SS-7.5′-SW-10 L11040066-08	Total antimony	J	J	No CRDL standard
SWMU-57-4111-SS-DUP L11040067-01	Total antimony	UJ	U	No CRDL standard

Appendix C – Laboratory Report Results/Data Summary

Microbac Laboratories Inc.

Report Number: **L11040066**

Report Date : **April 6, 2011**

Sample Number:	L11040066-01	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-4'-SW-6	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:00
Collect Date:	04/01/2011 09:40	Dilution:	1	File ID:	T2.040411.160013
Sample Tag:	01	Units:	mg/kg	Percent Solid:	76.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	16400		19.6	9.80
Antimony, Total	7440-36-0		U	0.980	0.490
Iron, Total	7439-89-6	30700		2.94	1.47
Manganese, Total	7439-96-5	183		0.490	0.245

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-1'-SW-7	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:03
Collect Date:	04/01/2011 11:45	Dilution:	1	File ID:	T2.040411.160340
Sample Tag:	01	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	11500		19.5	9.77
Antimony, Total	7440-36-0		U	0.977	0.489
Iron, Total	7439-89-6	36600		2.93	1.47
Manganese, Total	7439-96-5	459		0.489	0.244

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-FC-2'-NUM	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:07
Collect Date:	04/01/2011 12:00	Dilution:	1	File ID:	T2.040411.160708
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	15200		19.3	9.63
Antimony, Total	7440-36-0		U	0.963	0.482
Iron, Total	7439-89-6	36800		2.89	1.44
Manganese, Total	7439-96-5	383		0.482	0.241

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-7'-SW-8	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:10
Collect Date:	04/01/2011 14:00	Dilution:	1	File ID:	T2.040411.161035
Sample Tag:	01	Units:	mg/kg	Percent Solid:	76.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	13600		19.1	9.57
Antimony, Total	7440-36-0		U	0.957	0.478
Iron, Total	7439-89-6	28700		2.87	1.43
Manganese, Total	7439-96-5	461		0.478	0.239

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-05	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-7'-SW-9	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:14
Collect Date:	04/01/2011 14:25	Dilution:	1	File ID:	T2.040411.161408
Sample Tag:	01	Units:	mg/kg	Percent Solid:	76.7

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	11700		17.6	8.81
Antimony, Total	7440-36-0		U	0.881	0.441
Iron, Total	7439-89-6	23400		2.64	1.32
Manganese, Total	7439-96-5	125		0.441	0.220

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-06	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-15'-FC-NUI	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:17
Collect Date:	04/01/2011 14:55	Dilution:	1	File ID:	T2.040411.161734
Sample Tag:	01	Units:	mg/kg	Percent Solid:	80.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	11700		17.0	8.51
Antimony, Total	7440-36-0	0.722	J	0.851	0.426
Iron, Total	7439-89-6	17100		2.55	1.28
Manganese, Total	7439-96-5	251		0.426	0.213

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-07	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-7.5'-SW-1	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:21
Collect Date:	04/01/2011 16:25	Dilution:	1	File ID:	T2.040411.162102
Sample Tag:	01	Units:	mg/kg	Percent Solid:	82.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	8380		17.0	8.48
Antimony, Total	7440-36-0	0.424	J	0.848	0.424
Iron, Total	7439-89-6	17000		2.54	1.27
Manganese, Total	7439-96-5	15.8		0.424	0.212

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-08	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4211-SS-7.5'-SW-1(	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:31
Collect Date:	04/01/2011 07:50	Dilution:	1	File ID:	T2.040411.163142
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.9

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	15000		18.7	9.37
Antimony, Total	7440-36-0	0.621	J	0.937	0.468
Iron, Total	7439-89-6	30600		2.81	1.40
Manganese, Total	7439-96-5	420		0.468	0.234

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Microbac Laboratories Inc.

Report Number: **L11040066**

Report Date : **April 6, 2011**

Sample Number:	L11040066-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-4'-SW-6	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 17:15
Collect Date:	04/01/2011 09:40	Dilution:	5	File ID:	EL.040411.171533
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	76.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.580	J	0.637	0.318
Chromium, Total	7440-47-3	51.4		2.55	1.27

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-1'-SW-7	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 17:22
Collect Date:	04/01/2011 11:45	Dilution:	5	File ID:	EL.040411.172239
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	77.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.625	0.312
Chromium, Total	7440-47-3	63.3		2.50	1.25

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-FC-2'-NUM	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 17:29
Collect Date:	04/01/2011 12:00	Dilution:	5	File ID:	EL.040411.172946
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.651	0.325
Chromium, Total	7440-47-3	31.6		2.60	1.30

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11040066**

Report Date : **April 6, 2011**

Sample Number:	L11040066-04	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-7'-SW-8	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 17:36
Collect Date:	04/01/2011 14:00	Dilution:	5	File ID:	EL.040411.173653
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	76.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.622	0.311
Chromium, Total	7440-47-3	21.2		2.49	1.24

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-05	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-7'-SW-9	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 17:44
Collect Date:	04/01/2011 14:25	Dilution:	5	File ID:	EL.040411.174401
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	76.7

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.367	J	0.643	0.322
Chromium, Total	7440-47-3	22.6		2.57	1.29

J Estimated value ; the analyte concentration was less than the low standard (LOQ)

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-06	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-15'-FC-NUI	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 17:51
Collect Date:	04/01/2011 14:55	Dilution:	5	File ID:	EL.040411.175109
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	80.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	0.614		0.597	0.299
Chromium, Total	7440-47-3	22.3		2.39	1.19

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-07	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-7.5'-SW-1	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 17:58
Collect Date:	04/01/2011 16:25	Dilution:	5	File ID:	EL.040411.175816
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	82.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.580	0.290
Chromium, Total	7440-47-3	26.5		2.32	1.16

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11040066**
Report Date : **April 6, 2011**

Sample Number:	L11040066-08	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4211-SS-7.5'-SW-1(	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 18:05
Collect Date:	04/01/2011 07:50	Dilution:	5	File ID:	EL.040411.180522
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.9

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.658	0.329
Chromium, Total	7440-47-3	15.5		2.63	1.32

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11040067**

Report Date : **April 6, 2011**

Sample Number:	L11040067-01	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-DUP	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:35
Collect Date:	04/01/2011 12:00	Dilution:	1	File ID:	T2.040411.163509
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	17200		19.6	9.82
Antimony, Total	7440-36-0		U	0.982	0.491
Iron, Total	7439-89-6	39000		2.95	1.47
Manganese, Total	7439-96-5	387		0.491	0.246

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040067**
Report Date : **April 6, 2011**

Sample Number:	L11040067-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-MS	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:38
Collect Date:	04/01/2011 12:00	Dilution:	1	File ID:	T2.040411.163837
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	16300		19.6	9.82
Antimony, Total	7440-36-0	24.6		0.982	0.491
Iron, Total	7439-89-6	38100		2.95	1.47
Manganese, Total	7439-96-5	315		0.491	0.246

Microbac Laboratories Inc.

Report Number: **L11040067**

Report Date : **April 6, 2011**

Sample Number:	L11040067-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4111-SS-MSD	Prep Method:	3051A	Prep Date:	04/04/2011 12:28
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/04/2011 12:54
Workgroup Number:	WG360751	Analyst:	JYH	Run Date:	04/04/2011 16:42
Collect Date:	04/01/2011 12:00	Dilution:	1	File ID:	T2.040411.164203
Sample Tag:	01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	17800		19.6	9.82
Antimony, Total	7440-36-0	24.4		0.982	0.491
Iron, Total	7439-89-6	39300		2.95	1.47
Manganese, Total	7439-96-5	291		0.491	0.246

Microbac Laboratories Inc.

Report Number: **L11040067**

Report Date : **April 6, 2011**

Sample Number:	L11040067-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-DUP	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 16:25
Collect Date:	04/01/2011 12:00	Dilution:	5	File ID:	EL.040411.162554
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.657	0.328
Chromium, Total	7440-47-3	27.6		2.63	1.31

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11040067**

Report Date : **April 6, 2011**

Sample Number:	L11040067-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-MS	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 16:32
Collect Date:	04/01/2011 12:00	Dilution:	5	File ID:	EL.040411.163259
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	11.6		0.657	0.328
Chromium, Total	7440-47-3	40.2		2.63	1.31

Microbac Laboratories Inc.

Report Number: **L11040067**

Report Date : **April 6, 2011**

Sample Number:	L11040067-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4111-SS-MSD	Prep Method:	3051A	Prep Date:	04/04/2011 13:14
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/04/2011 10:32
Workgroup Number:	WG360750	Analyst:	EDL	Run Date:	04/04/2011 16:40
Collect Date:	04/01/2011 12:00	Dilution:	5	File ID:	EL.040411.164004
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.8

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	12.3		0.657	0.328
Chromium, Total	7440-47-3	41.4		2.63	1.31

Appendix D – Support Documentation

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

Laboratory Report Number: L11040066

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on April 06, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on April 06, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 649 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11040066

04/06/11 14:54

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-4111-SS-4'-SW-6	L11040066-01	04/01/2011 09:40	04/04/2011
SWMU-57-4111-SS-1'-SW-7	L11040066-02	04/01/2011 11:45	04/04/2011
SWMU-57-4111-SS-FC-2'-NUM7	L11040066-03	04/01/2011 12:00	04/04/2011
SWMU-57-4111-SS-7'-SW-8	L11040066-04	04/01/2011 14:00	04/04/2011
SWMU-57-4111-SS-7'-SW-9	L11040066-05	04/01/2011 14:25	04/04/2011
SWMU-57-4111-SS-15'-FC-NUM8	L11040066-06	04/01/2011 14:55	04/04/2011
SWMU-57-4111-SS-7.5'-SW-13	L11040066-07	04/01/2011 16:25	04/04/2011
SWMU-57-4211-SS-7.5'-SW-10	L11040066-08	04/01/2011 07:50	04/04/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1963934
Report generated: 04/06/2011 14:54

Login Number: L11040066

Department: Login

Chain of Custody:

Shipment Conditions

COC #	Cooler #	Temperature
2166	0015403	2.0

Sample Management: All samples were received intact.

Sample Identification

Lab ID	Client ID
L11040066-01	SWMU-57-4111-SS-4'-SW-6
L11040066-02	SWMU-57-4111-SS-1'-SW-7
L11040066-03	SWMU-57-4111-SS-FC-2'-NUM7
L11040066-04	SWMU-57-4111-SS-7'-SW-8
L11040066-05	SWMU-57-4111-SS-7'-SW-9
L11040066-06	SWMU-57-4111-SS-15'-FC-NUM8
L11040066-07	SWMU-57-4111-SS-7.5'-SW-13
L11040066-08	SWMU-57-4211-SS-7.5'-SW-10

Narrative ID: 24851
Approved By: Stephanie Mossburg
Stephanie Mossburg

Login Number: L11040066

Department: Metals

Analyst: Ji Hu

METHOD

Preparation: SW-846 3005

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360751 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 24909
Approved By: Sheri Pfalzgraf

Login Number: L11040066

Department: Metals

Analyst: Ji Hu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360750 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG360750 - Due to the high levels of nontarget analytes, all client samples were analyzed at dilutions for all analytes.

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.

Narrative ID: 24902
Approved By: Sheri Pfalzgraf

COC No. A 2166

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB-KEMRON

Project Contact: MARY LOU ROCHOTTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 1-DAY | Location: RFAAP RADFORD, VA

Project ID: MR06609 SWMU-57

Sampler (print): JOHN ANDERSON | Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	METALS ★ SEE LIST ★	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
SWMU-57-4111-SS 4'-SW-6		X	4-1-11	0940	SOIL	1		1		PER QAPP FOR RFAAP ★ ★ Aluminum Antimony Manganese Cadmium Chromium Iron
SWMU-57-4111-SS 1'-SW-7		X	4-1-11	1145	SOIL	1		1		
SWMU-57-4111-SS FC-2'-NUM7		X	4-1-11	1200	SOIL	1		1		
SWMU-57-4111-SS 4'-SW-8		X	4-1-11	1400	SOIL	1		1		
SWMU-57-4111-SS 7'-SW-9		X	4-1-11	1425	SOIL	1		1		
SWMU-57-4111-SS 15'-FC-NUM8		X	4-1-11	1455	SOIL	1		1		
SWMU-57-4111-SS 7.5'-SW-13		X	4-1-11	1625	SOIL	1		1		

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4-2-11	1040			
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Microbac OVD
Received: 04/04/2011 09:38
By: BRENDA GREENWALT
221000013709

Brenda Greenwalt

Remarks:

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

COC No. A 2168

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB-KEMRON

Project Contact: MARY LOU ROCHATTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 1-DAY | Location: ~~RFAAP~~ RADFORD, VA

Project ID: MR0669 SWMU-57

Sampler (print): JONATHAN ANDERSON | Signature:

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	MS/TAL ★ see list	TOTAL # (LAB USE)
SWMU-57-4211		X	4-2-11	750	SOIL	1		1	
SS-7.5'-SW-10									

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

ADDITIONAL REQUIREMENTS

PER QAPP for RFAAP

★ Aluminum
Antimony
Manganese
Cadmium
Chromium
Iron

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4-2-11	1040	Microbac OVD Received: 04/04/2011 09:38 By: ROBIN KLINGER 221000013709		
Relinquished by: (Signature)	Date	Time	Remarks:		
			Robin L. Klinger		

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040066 | Work Group: WG360751
Blank File ID: T2.040411.154927 | Blank Sample ID: WG360718-02
Prep Date: 04/04/11 12:28 | Instrument ID: ICP-THERMO2
Analyzed Date: 04/04/11 15:49 | Method: 6010B
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360718-03	T2.040411.155301	04/04/11 15:53	01
SWMU-57-4111-SS-4'-SW-6	L11040066-01	T2.040411.160013	04/04/11 16:00	01
SWMU-57-4111-SS-1'-SW-7	L11040066-02	T2.040411.160340	04/04/11 16:03	01
SWMU-57-4111-SS-FC-2'-NUM7	L11040066-03	T2.040411.160708	04/04/11 16:07	01
SWMU-57-4111-SS-7'-SW-8	L11040066-04	T2.040411.161035	04/04/11 16:10	01
SWMU-57-4111-SS-7'-SW-9	L11040066-05	T2.040411.161408	04/04/11 16:14	01
SWMU-57-4111-SS-15'-FC-NUM8	L11040066-06	T2.040411.161734	04/04/11 16:17	01
SWMU-57-4111-SS-7.5'-SW-13	L11040066-07	T2.040411.162102	04/04/11 16:21	01
SWMU-57-4211-SS-7.5'-SW-10	L11040066-08	T2.040411.163142	04/04/11 16:31	01

Report Name: BLANK_SUMMARY
PDF File ID: 1963528
Report generated 04/05/2011 08:58

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040066 Prep Date:04/04/11 12:28 Sample ID:WG360718-02
Instrument ID:ICP-THERMO2 Run Date:04/04/11 15:49 Prep Method:3051A
File ID:T2.040411.154927 Analyst:JYH Method:6010B
Workgroup (AAB#):WG360751 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-04-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Iron, Total	1.50	3.00	1.50	1	U
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1963529
05-APR-2011 08:58

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360718-03
Instrument ID: ICP-THERMO2 Run Time: 15:53 Prep Method: 3051A
File ID: T2.040411.155301 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360751 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-04-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	242	97.0	80 - 120	
Antimony, Total	30.0	28.8	96.1	80 - 120	
Iron, Total	100	96.4	96.4	80 - 120	
Manganese, Total	12.5	12.4	99.0	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1963530
Report generated: 04/05/2011 08:58

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11040066 Cal ID:ICP-THERMO2 - Worknum:WG360751

Instrument ID:ICP-THERMO2 Contract #: Method:6010B

Parent ID:WG360718-01 File ID:T2.040411.163509 Dil:1 Matrix:SOLID

Sample ID:WG360718-04 MS File ID:T2.040411.163837 Dil:1 Units:mg/kg

Sample ID:WG360718-05 MSD File ID:T2.040411.164203 Dil:1 Percent Solid:75.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	17200	246	16300	-385	246	17800	222	8.76	80 - 120	20	*
Antimony, Total	ND	29.5	24.6	83.5	29.5	24.4	82.9	0.727	80 - 120	20	
Iron, Total	39000	98.2	38100	-957	98.2	39300	246	3.05	80 - 120	20	*
Manganese, Total	387	12.3	315	-591	12.3	291	-781	7.70	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:1963531

Report generated 04/06/2011 14:23

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040066 **Worknum:** WG360751
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360751-02 **File ID:** T2.040411.164855 **Dil:** 5 **Units:** mg/L
Sample: L11040067-01 **File ID:** T2.040411.163509 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	351		356		1.42	
Antimony	ND	U	ND	U		
Iron	795		840		5.66	
Manganese	7.88		8.15		3.43	

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: 1963526
04/05/2011 08:58

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040066 **Worknum:** WG360751
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360751-01 **File ID:** T2.040411.164529 **Dil:** 1 **Units:** mg/L
Sample ID: L11040067-01 **File ID:** T2.040411.163509 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	322		351		5	132.3	75 - 125	N
ANTIMONY	0.584		0	U	.6	97.4	75 - 125	
IRON	701		795		2	-705.2	75 - 125	N
MANGANESE	7.36		7.88		.25	104.0	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: 1963527
Report generated: 04/05/2011 08:58

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040066	Workgroup (AAB#):	WG360751
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360766	Initial Calibration Date:	04-APR-2011 12:54

	WG360766-01		WG360766-02		WG360766-03		WG360766-04		WG360766-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.000240	.1	0.000760	.2	0.00120	10	0.0475	20	0.0941	.999981	
ANTIMONY	0	0.0000600	.012	0.000300	.024	0.000510	1.2	0.0218	2.4	0.0431	.999971	
IRON	0	0	.04	0.000620	.08	0.00127	4	0.0629	8	0.125	.99999	
MANGANESE	0	0.000180	.005	0.00110	.01	0.00197	.5	0.0885	1	0.175	.999986	

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 1963534
Report generated: 05-APR-2011 08:57

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-07
Instrument ID: ICP-THERMO2 Run Time: 13:01 Method: 6010B
File ID: T2.040411.130126 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360751 Cal ID: ICP-THERI - 04-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1963536
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-11

Instrument ID: ICP-THERMO2 Run Time: 13:15 Method: 6010B

File ID: T2.040411.131514 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963539
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-17

Instrument ID: ICP-THERMO2 Run Time: 15:13 Method: 6010B

File ID: T2.040411.151358 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963539
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-20

Instrument ID: ICP-THERMO2 Run Time: 15:45 Method: 6010B

File ID: T2.040411.154547 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963539
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-22

Instrument ID: ICP-THERMO2 Run Time: 16:28 Method: 6010B

File ID: T2.040411.162800 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963539
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-24

Instrument ID: ICP-THERMO2 Run Time: 17:02 Method: 6010B

File ID: T2.040411.170255 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963539
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-06

Instrument ID: ICP-THERMO2 Run Time: 12:58 Method: 6010B

File ID: T2.040411.125806 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.0	100	90 - 110	
Antimony		1.2	1.21	101	90 - 110	
Iron		4	3.97	99.3	90 - 110	
Manganese		.5	0.501	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1963535

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-10

Instrument ID: ICP-THERMO2 Run Time: 13:11 Method: 6010B

File ID: T2.040411.131155 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.98	mg/L	99.8	90 - 110		
Antimony		1.20	1.19	mg/L	99.4	90 - 110		
Iron		4.00	3.96	mg/L	98.9	90 - 110		
Manganese		0.500	0.499	mg/L	99.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963538

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-16

Instrument ID: ICP-THERMO2 Run Time: 15:10 Method: 6010B

File ID: T2.040411.151039 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.22	mg/L	102	90 - 110		
Iron		4.00	4.00	mg/L	99.9	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963538

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-19

Instrument ID: ICP-THERMO2 Run Time: 15:42 Method: 6010B

File ID: T2.040411.154228 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.99	mg/L	99.9	90 - 110		
Antimony		1.20	1.23	mg/L	103	90 - 110		
Iron		4.00	3.98	mg/L	99.6	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963538

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-21

Instrument ID: ICP-THERMO2 Run Time: 16:24 Method: 6010B

File ID: T2.040411.162441 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.81	mg/L	98.1	90 - 110		
Antimony		1.20	1.22	mg/L	102	90 - 110		
Iron		4.00	3.94	mg/L	98.5	90 - 110		
Manganese		0.500	0.502	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963538

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766-23

Instrument ID: ICP-THERMO2 Run Time: 16:59 Method: 6010B

File ID: T2.040411.165935 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.84	mg/L	98.4	90 - 110		
Antimony		1.20	1.22	mg/L	101	90 - 110		
Iron		4.00	3.94	mg/L	98.5	90 - 110		
Manganese		0.500	0.499	mg/L	99.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963538

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040066 **Workgroup (AAB#):** WG360751
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360766-08 **File ID:** T2.040411.130502 **Units:** mg/L
Sol. AB : WG360766-09 **File ID:** T2.040411.130829 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	253	101	250	247	98.8	
Antimony	NS	-0.00118	NS	0.500	0.506	101	
Iron	100	98.4	98.4	100	95.4	95.4	
Manganese	NS	-0.00136	NS	0.250	0.246	98.4	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1963537
Report generated 04/05/2011 08:57

LRC SAMPLE

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360766
Instrument ID: ICP-THERMO2 Run Time: 12:54 Prep Method: 3051A
Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360751 Matrix: Solid Units: mg/kg
Cal ID: 04-APR-11 - 04-APR-2011 12:54

Analytes	Expected	Found	% Rec	Limits	Q
Aluminum, Total	900	860	95.6	90 - 110	
Iron, Total	1000	962	96.2	90 - 110	
Manganese, Total	200	199	99.5	90 - 110	

KEMRON FORMS - Modified 08/28/2006
Version 1.5 PDF File ID: 1964265
Report generated 04/05/2011 13:40

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040066 | Work Group: WG360750
Blank File ID: EL.040411.155304 | Blank Sample ID: WG360724-02
Prep Date: 04/04/11 13:14 | Instrument ID: ELAN-ICP
Analyzed Date: 04/04/11 15:53 | Method: 6020
Analyst: EDL

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360724-03	EL.040411.160926	04/04/11 16:09	01
SWMU-57-4111-SS-4'-SW-6	L11040066-01	EL.040411.171533	04/04/11 17:15	DL01
SWMU-57-4111-SS-1'-SW-7	L11040066-02	EL.040411.172239	04/04/11 17:22	DL01
SWMU-57-4111-SS-FC-2'-NUM7	L11040066-03	EL.040411.172946	04/04/11 17:29	DL01
SWMU-57-4111-SS-7'-SW-8	L11040066-04	EL.040411.173653	04/04/11 17:36	DL01
SWMU-57-4111-SS-7'-SW-9	L11040066-05	EL.040411.174401	04/04/11 17:44	DL01
SWMU-57-4111-SS-15'-FC-NUM8	L11040066-06	EL.040411.175109	04/04/11 17:51	DL01
SWMU-57-4111-SS-7.5'-SW-13	L11040066-07	EL.040411.175816	04/04/11 17:58	DL01
SWMU-57-4211-SS-7.5'-SW-10	L11040066-08	EL.040411.180522	04/04/11 18:05	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1963324
Report generated 04/05/2011 07:53

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040066 Prep Date:04/04/11 13:14 Sample ID:WG360724-02
Instrument ID:ELAN-ICP Run Date:04/04/11 15:53 Prep Method:3051A
File ID:EL.040411.155304 Analyst:EDL Method:6020
Workgroup (AAB#):WG360750 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-04-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1963325
05-APR-2011 07:53

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360724-03
Instrument ID: ELAN-ICP Run Time: 16:09 Prep Method: 3051A
File ID: EL.040411.160926 Analyst: EDL Method: 6020
Workgroup (AAB#): WG360750 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-04-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	10.4	104	80 - 120	
Chromium, Total	10.0	11.6	116	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1963326
Report generated: 04/05/2011 07:53

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11040066 Cal ID:ELAN-ICP- Worknum:WG360750

Instrument ID:ELAN-ICP Contract #: Method:6020

Parent ID:WG360724-01 File ID:EL.040411.162554 Dil:5 Matrix:SOLID

Sample ID:WG360724-04 MS File ID:EL.040411.163259 Dil:5 Units:mg/kg

Sample ID:WG360724-05 MSD File ID:EL.040411.164004 Dil:5 Percent Solid:75.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	ND	13.1	11.6	88.6	13.1	12.3	93.4	5.27	80 - 120	20	
Chromium, Total	27.6	13.1	40.2	95.6	13.1	41.4	105	2.92	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:1963327

Report generated 04/06/2011 14:22

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040066 **Worknum:** WG360750
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG360750-02 **File ID:** EL.040411.165415 **Dil:** 25 **Units:** ug/L
Sample: L11040067-01 **File ID:** EL.040411.162554 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Cadmium	ND	U	ND	U		
Chromium	52.5	X	55.75	X	6.19	

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: 1963321
04/05/2011 07:53

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040066 **Worknum:** WG360750
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG360750-01 **File ID:** EL.040411.164709 **Dil:** 5 **Units:** ug/L
Sample ID: L11040067-01 **File ID:** EL.040411.162554 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	51.3		0	U	50	102.7	75 - 125	
CHROMIUM	62.2		10.5		50	103.5	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: 1963322
Report generated: 04/05/2011 07:53

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040066	Workgroup (AAB#):	WG360750
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG360790	Initial Calibration Date:	04-APR-2011 10:32

	WG360790-01		WG360790-02		WG360790-03		WG360790-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	-2.14	.4	546	50	70100	100	134000	.999987	
CHROMIUM	0	10700	.4	14200	50	417000	100	772000	.999933	

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 1963331
Report generated: 05-APR-2011 07:51

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-06
Instrument ID: ELAN-ICP Run Time: 10:46 Method: 6020
File ID: EL.040411.104642 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360750 Cal ID: ELAN-ICP - 04-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL

F = Result is between MDL and 2 x MDL

* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1963333
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-11

Instrument ID: ELAN-ICP Run Time: 11:22 Method: 6020

File ID: EL.040411.112220 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1963336
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-19

Instrument ID: ELAN-ICP Run Time: 15:41 Method: 6020

File ID: EL.040411.154105 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1963336
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-21

Instrument ID: ELAN-ICP Run Time: 17:08 Method: 6020

File ID: EL.040411.170828 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1963336
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-23

Instrument ID: ELAN-ICP Run Time: 18:19 Method: 6020

File ID: EL.040411.181936 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1963336
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-05

Instrument ID: ELAN-ICP Run Time: 10:39 Method: 6020

File ID: EL.040411.103938 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	50.0	100	90 - 110	
Chromium		50	50.1	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1963332

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-10

Instrument ID: ELAN-ICP Run Time: 11:15 Method: 6020

File ID: EL.040411.111514 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	51.4	ug/L	103	90 - 110		
Chromium		50.0	50.2	ug/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963335

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-18

Instrument ID: ELAN-ICP Run Time: 15:33 Method: 6020

File ID: EL.040411.153359 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	48.9	ug/L	97.8	90 - 110		
Chromium		50.0	47.2	ug/L	94.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963335

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-20

Instrument ID: ELAN-ICP Run Time: 17:01 Method: 6020

File ID: EL.040411.170122 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.9	ug/L	102	90 - 110		
Chromium		50.0	48.3	ug/L	96.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963335

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-22

Instrument ID: ELAN-ICP Run Time: 18:12 Method: 6020

File ID: EL.040411.181230 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.0	ug/L	100	90 - 110		
Chromium		50.0	49.1	ug/L	98.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963335

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-07

Instrument ID: ELAN-ICP Run Time: 10:53 Method: 6020

File ID: EL.040411.105349 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.209	ug/L	105	80 - 120		
Chromium		0.800	0.821	ug/L	103	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1963362

Report generated 04/05/2011 07:53

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040066 Run Date: 04/04/2011 Sample ID: WG360790-26

Instrument ID: ELAN-ICP Run Time: 19:44 Method: 6020

File ID: EL.040411.194454 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.219	ug/L	110	80 - 120		
Chromium		0.800	0.800	ug/L	100	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1963362

Report generated 04/05/2011 07:53

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040066 **Workgroup (AAB#):** WG360750
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG360790-08 **File ID:** EL.040411.110058 **Units:** ug/L
Sol. AB : WG360790-09 **File ID:** EL.040411.110806 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0893	NS	100	103	103	
Chromium	NS	0.0537	NS	100	97.1	97.1	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1963334
Report generated 04/05/2011 07:51

INTERNAL STANDARD REPORT

Login: L11040066 **Analytical Method** 6020
Analytical Workgroup: WG360750 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 04-APR-2011 10:12

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11040066-01	SAMP	04-APR-2011 17:15	96.408	91.911	87.145	88.942
L11040066-02	SAMP	04-APR-2011 17:22	96.71	92.158	87.29	88.465
L11040066-03	SAMP	04-APR-2011 17:29	97.478	93.193	87.675	89.268
L11040066-04	SAMP	04-APR-2011 17:36	95.492	92.103	87.324	89.412
L11040066-05	SAMP	04-APR-2011 17:44	96.675	91.78	87.415	90.286
L11040066-06	SAMP	04-APR-2011 17:51	97.435	91.508	87.502	89.749
L11040066-07	SAMP	04-APR-2011 17:58	96.635	91.334	87.563	89.219
L11040066-08	SAMP	04-APR-2011 18:05	97.337	90.597	86.673	88.041
L11040067-01	SAMP	04-APR-2011 16:25	97.442	93.078	88.329	89.593
WG360724-02	BLANK	04-APR-2011 15:53	100.055	87.464	87.117	91.395
WG360724-03	LCS	04-APR-2011 16:09	100.234	85.933	88.948	93.477
WG360750-01	PSPK	04-APR-2011 16:47	98.267	94.203	89.562	90.82
WG360750-02	SERIAL	04-APR-2011 16:54	96.349	94.306	89.209	89.622
WG360790-05	ICV	04-APR-2011 10:39	101.069	96.101	98.27	101.273
WG360790-06	ICB	04-APR-2011 10:46	99.963	96.456	97.835	99.626
WG360790-07	LLICV	04-APR-2011 10:53	100.598	98.549	99.48	100.806
WG360790-08	ICS	04-APR-2011 11:00	97.465	95.692	95.707	95.522
WG360790-09	ICS	04-APR-2011 11:08	97.687	90.828	85.543	90.107
WG360790-10	CCV	04-APR-2011 11:15	100.058	95.643	95.838	98.354
WG360790-11	CCB	04-APR-2011 11:22	100.142	96.374	97.235	98.242
WG360790-18	CCV	04-APR-2011 15:33	96.812	85.184	85.161	89.908
WG360790-19	CCB	04-APR-2011 15:41	97.645	85.407	86.048	90.171
WG360790-20	CCV	04-APR-2011 17:01	93.588	93.203	89.828	91.938
WG360790-21	CCB	04-APR-2011 17:08	93.812	94.337	90.461	91.787
WG360790-22	CCV	04-APR-2011 18:12	94.781	92.468	90.602	91.327
WG360790-23	CCB	04-APR-2011 18:19	99.077	96.44	93.271	94.409
WG360790-26	LLCCV	04-APR-2011 19:44	97.898	92.614	90.179	91.019

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1963330
Report generated: 04/05/2011 07:53

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11040066 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1963328
Report generated: 04/05/2011 07:51

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

Laboratory Report Number: L11040067

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on April 06, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on April 06, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 626 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11040067

04/06/11 14:54

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-4111-SS-DUP	L11040067-01	04/01/2011 12:00	04/04/2011
SWMU-57-4111-SS-MS	L11040067-02	04/01/2011 12:00	04/04/2011
SWMU-57-4111-SS-MSD	L11040067-03	04/01/2011 12:00	04/04/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1963944
Report generated: 04/06/2011 14:54

Login Number: L11040067

Department: Login

Chain of Custody:

Shipment Conditions

COC #	Cooler #	Temperature
2167	0015403	2.0

Sample Management: All samples were received intact.

Sample Identification

Lab ID	Client ID
L11040067-01	SWMU-57-4111-SS-DUP
L11040067-02	SWMU-57-4111-SS-MS
L11040067-03	SWMU-57-4111-SS-MSD

Narrative ID: 24850
Approved By: Stephanie Mossburg
Stephanie Mossburg

Login Number: L11040067

Department: Metals

Analyst: Ji Hu

METHOD

Preparation: SW-846 3051

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360751 - All acceptance criteria were met.

Matrix Spikes: WG360751 - Sample 01 was chosen by the client for MS/MSD analysis. Samples 02(MS) and 03(MSD) yielded noncompliant recoveries for three analytes.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 24907
Approved By: Sheri Pfalzgraf

Login Number: L11040067

Department: Metals

Analyst: Ji Hu

METHOD

Preparation: SW-846 3015

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360750 - All acceptance criteria were met.

Matrix Spikes: WG360750 - Sample 01 was chosen by the client for MS/MSD analysis. Samples 02(MS) and 03(MSD) met all acceptance criteria.

SAMPLES

Samples: WG360750 - Due to the high levels of nontarget analytes, all client samples were analyzed at dilutions for all analytes.

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.

Narrative ID: 24903
Approved By: Sheri Pfalzgraf

COC No. A 2167

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB-KEMRON

Project Contact: MARY COU ROCHOTTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 5-DAY | Location: RFAAP - RADFORD VA

Project ID: MR0669 | SWMU-57

Sampler (print): SARAH ANDERSON | Signature:

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	METALS ★ SEE LIST	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
SWMU-57-4111-SS-DUP		X	4-1-11	1200	SOIL	1		1		PERL QAPP FOR RFAAP
SWMU-57-4111-SS-MS		X	4-1-11	1200	SOIL	1		1		★ ALUMINUM ANTIMONY MANGANESE CADMIUM CHROMIUM IRON
SWMU-57-4111-SS-MSD		X	4-1-11	1200	SOIL	1		1		

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	4-2-11	1040			
Relinquished by: (Signature)	Date	Time	Remarks:		

Microbac OVD
Received: 04/04/2011 09:39
By: BRENDA GREENWALT
221000013711

Brenda Greenwalt

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040067
Blank File ID: T2.040411.154927
Prep Date: 04/04/11 12:28
Analyzed Date: 04/04/11 15:49
Analyst: JYH

Work Group: WG360751
Blank Sample ID: WG360718-02
Instrument ID: ICP-THERMO2
Method: 6010B

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360718-03	T2.040411.155301	04/04/11 15:53	01
SWMU-57-4111-SS-DUP	L11040067-01	T2.040411.163509	04/04/11 16:35	01
SWMU-57-4111-SS-MS	L11040067-02	T2.040411.163837	04/04/11 16:38	01
SWMU-57-4111-SS-MSD	L11040067-03	T2.040411.164203	04/04/11 16:42	01

Report Name: BLANK_SUMMARY
PDF File ID: 1963512
Report generated 04/05/2011 08:59

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040067 Prep Date:04/04/11 12:28 Sample ID:WG360718-02
Instrument ID:ICP-THERMO2 Run Date:04/04/11 15:49 Prep Method:3051A
File ID:T2.040411.154927 Analyst:JYH Method:6010B
Workgroup (AAB#):WG360751 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-04-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Iron, Total	1.50	3.00	1.50	1	U
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1963513
05-APR-2011 08:59

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360718-03
Instrument ID: ICP-THERMO2 Run Time: 15:53 Prep Method: 3051A
File ID: T2.040411.155301 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360751 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-04-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	242	97.0	80 - 120	
Antimony, Total	30.0	28.8	96.1	80 - 120	
Iron, Total	100	96.4	96.4	80 - 120	
Manganese, Total	12.5	12.4	99.0	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1963514
Report generated: 04/05/2011 08:59

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11040067 Cal ID: ICP-THERMO2- 04-APR-11 Worknum:WG360751

Instrument ID:ICP-THERMO2 Contract #: Prep Method:3051A

Parent ID:L11040067-01 File ID:T2.040411.163509 Dil:1 Method:6010B

Sample ID:L11040067-02 MS File ID:T2.040411.163837 Dil:1 Matrix:Soil

Sample ID:L11040067-03 MSD File ID:T2.040411.164203 Dil:1 Units:mg/kg

Percent Solid:75.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	17200	246	16300	-385	246	17800	222	8.76	80 - 120	20	*
Antimony, Total	U	29.5	24.6	83.5	29.5	24.4	82.9	0.727	80 - 120	20	
Iron, Total	39000	98.2	38100	-957	98.2	39300	246	3.05	80 - 120	20	*
Manganese, Total	387	12.3	315	-591	12.3	291	-781	7.70	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1963515
Report generated 04/06/2011 14:23

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040067 **Worknum:** WG360751
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360751-02 **File ID:** T2.040411.164855 **Dil:** 5 **Units:** mg/L
Sample: L11040067-01 **File ID:** T2.040411.163509 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	351		356		1.42	
Antimony	ND	U	ND	U		
Iron	795		840		5.66	
Manganese	7.88		8.15		3.43	

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: 1963510
04/05/2011 08:59

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040067 **Worknum:** WG360751
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360751-01 **File ID:** T2.040411.164529 **Dil:** 1 **Units:** mg/L
Sample ID: L11040067-01 **File ID:** T2.040411.163509 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	322		351		5	132.3	75 - 125	N
ANTIMONY	0.584		0	U	.6	97.4	75 - 125	
IRON	701		795		2	-705.2	75 - 125	N
MANGANESE	7.36		7.88		.25	104.0	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: 1963511
Report generated: 04/05/2011 08:59

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040067	Workgroup (AAB#):	WG360751
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG360766	Initial Calibration Date:	04-APR-2011 12:54

	WG360766-01		WG360766-02		WG360766-03		WG360766-04		WG360766-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.000240	.1	0.000760	.2	0.00120	10	0.0475	20	0.0941	.999981	
ANTIMONY	0	0.0000600	.012	0.000300	.024	0.000510	1.2	0.0218	2.4	0.0431	.999971	
IRON	0	0	.04	0.000620	.08	0.00127	4	0.0629	8	0.125	.99999	
MANGANESE	0	0.000180	.005	0.00110	.01	0.00197	.5	0.0885	1	0.175	.999986	

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 1963519
Report generated: 05-APR-2011 08:57

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-07
Instrument ID: ICP-THERMO2 Run Time: 13:01 Method: 6010B
File ID: T2.040411.130126 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360751 Cal ID: ICP-THERI - 04-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL

F = Result is between MDL and 2 x MDL

* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1963521
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-11

Instrument ID: ICP-THERMO2 Run Time: 13:15 Method: 6010B

File ID: T2.040411.131514 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963524
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-17

Instrument ID: ICP-THERMO2 Run Time: 15:13 Method: 6010B

File ID: T2.040411.151358 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963524
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-20

Instrument ID: ICP-THERMO2 Run Time: 15:45 Method: 6010B

File ID: T2.040411.154547 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963524
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-22

Instrument ID: ICP-THERMO2 Run Time: 16:28 Method: 6010B

File ID: T2.040411.162800 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963524
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-24

Instrument ID: ICP-THERMO2 Run Time: 17:02 Method: 6010B

File ID: T2.040411.170255 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1963524
Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11040067 Run Date:04/04/2011 Sample ID:WG360766-06

Instrument ID:ICP-THERMO2 Run Time:12:58 Method:6010B

File ID:T2.040411.125806 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG360751 Cal ID:ICP-TH - 04-APR-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.0	100	90 - 110	
Antimony		1.2	1.21	101	90 - 110	
Iron		4	3.97	99.3	90 - 110	
Manganese		.5	0.501	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1963520

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-10

Instrument ID: ICP-THERMO2 Run Time: 13:11 Method: 6010B

File ID: T2.040411.131155 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.98	mg/L	99.8	90 - 110		
Antimony		1.20	1.19	mg/L	99.4	90 - 110		
Iron		4.00	3.96	mg/L	98.9	90 - 110		
Manganese		0.500	0.499	mg/L	99.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963523

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-16

Instrument ID: ICP-THERMO2 Run Time: 15:10 Method: 6010B

File ID: T2.040411.151039 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Antimony		1.20	1.22	mg/L	102	90 - 110		
Iron		4.00	4.00	mg/L	99.9	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963523

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-19

Instrument ID: ICP-THERMO2 Run Time: 15:42 Method: 6010B

File ID: T2.040411.154228 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.99	mg/L	99.9	90 - 110		
Antimony		1.20	1.23	mg/L	103	90 - 110		
Iron		4.00	3.98	mg/L	99.6	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963523

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-21

Instrument ID: ICP-THERMO2 Run Time: 16:24 Method: 6010B

File ID: T2.040411.162441 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.81	mg/L	98.1	90 - 110		
Antimony		1.20	1.22	mg/L	102	90 - 110		
Iron		4.00	3.94	mg/L	98.5	90 - 110		
Manganese		0.500	0.502	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963523

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766-23

Instrument ID: ICP-THERMO2 Run Time: 16:59 Method: 6010B

File ID: T2.040411.165935 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360751 Cal ID: ICP-TH - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.84	mg/L	98.4	90 - 110		
Antimony		1.20	1.22	mg/L	101	90 - 110		
Iron		4.00	3.94	mg/L	98.5	90 - 110		
Manganese		0.500	0.499	mg/L	99.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963523

Report generated 04/05/2011 08:57

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040067 **Workgroup (AAB#):** WG360751
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG360766-08 **File ID:** T2.040411.130502 **Units:** mg/L
Sol. AB : WG360766-09 **File ID:** T2.040411.130829 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	253	101	250	247	98.8	
Antimony	NS	-0.00118	NS	0.500	0.506	101	
Iron	100	98.4	98.4	100	95.4	95.4	
Manganese	NS	-0.00136	NS	0.250	0.246	98.4	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1963522
Report generated 04/05/2011 08:57

LRC SAMPLE

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360766
Instrument ID: ICP-THERMO2 Run Time: 12:54 Prep Method: 3051A
Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360751 Matrix: Solid Units: mg/kg
Cal ID: 04-APR-11 - 04-APR-2011 12:54

Analytes	Expected	Found	% Rec	Limits	Q
Aluminum, Total	900	860	95.6	90 - 110	
Iron, Total	1000	962	96.2	90 - 110	
Manganese, Total	200	199	99.5	90 - 110	

KEMRON FORMS - Modified 08/28/2006
Version 1.5 PDF File ID: 1964687
Report generated 04/05/2011 15:51

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040067 | Work Group: WG360750
Blank File ID: EL.040411.155304 | Blank Sample ID: WG360724-02
Prep Date: 04/04/11 13:14 | Instrument ID: ELAN-ICP
Analyzed Date: 04/04/11 15:53 | Method: 6020
Analyst: EDL

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360724-03	EL.040411.160926	04/04/11 16:09	01
SWMU-57-4111-SS-DUP	L11040067-01	EL.040411.162554	04/04/11 16:25	DL01
SWMU-57-4111-SS-MS	L11040067-02	EL.040411.163259	04/04/11 16:32	DL01
SWMU-57-4111-SS-MSD	L11040067-03	EL.040411.164004	04/04/11 16:40	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1963340
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040067 Prep Date:04/04/11 13:14 Sample ID:WG360724-02
Instrument ID:ELAN-ICP Run Date:04/04/11 15:53 Prep Method:3051A
File ID:EL.040411.155304 Analyst:EDL Method:6020
Workgroup (AAB#):WG360750 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-04-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1963341
05-APR-2011 07:51

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360724-03
Instrument ID: ELAN-ICP Run Time: 16:09 Prep Method: 3051A
File ID: EL.040411.160926 Analyst: EDL Method: 6020
Workgroup (AAB#): WG360750 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-04-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	10.4	104	80 - 120	
Chromium, Total	10.0	11.6	116	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1963342
Report generated: 04/05/2011 07:51

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11040067 Cal ID:ELAN-ICP- 04-APR-11 Worknum:WG360750

Instrument ID:ELAN-ICP Contract #: Prep Method:3051A

Parent ID:L11040067-01 File ID:EL.040411.162554 Dil:5 Method:6020

Sample ID:L11040067-02 MS File ID:EL.040411.163259 Dil:5 Matrix:Soil

Sample ID:L11040067-03 MSD File ID:EL.040411.164004 Dil:5 Units:mg/kg

Percent Solid:75.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	U	13.1	11.6	88.6	13.1	12.3	93.4	5.27	80 - 120	20	
Chromium, Total	27.6	13.1	40.2	95.6	13.1	41.4	105	2.92	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1963343
Report generated 04/06/2011 14:23

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040067 **Worknum:** WG360750
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG360750-02 **File ID:** EL.040411.165415 **Dil:** 25 **Units:** ug/L
Sample: L11040067-01 **File ID:** EL.040411.162554 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Cadmium	ND	U	ND	U		
Chromium	52.5	X	55.75	X	6.19	

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: 1963337
04/05/2011 07:51

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040067 **Worknum:** WG360750
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG360750-01 **File ID:** EL.040411.164709 **Dil:** 5 **Units:** ug/L
Sample ID: L11040067-01 **File ID:** EL.040411.162554 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	51.3		0	U	50	102.7	75 - 125	
CHROMIUM	62.2		10.5		50	103.5	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: 1963355
Report generated: 04/05/2011 07:51

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040067	Workgroup (AAB#):	WG360750
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG360790	Initial Calibration Date:	04-APR-2011 10:32

	WG360790-01		WG360790-02		WG360790-03		WG360790-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	-2.14	.4	546	50	70100	100	134000	.999987	
CHROMIUM	0	10700	.4	14200	50	417000	100	772000	.999933	

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 1963348
Report generated: 05-APR-2011 07:51

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-06
Instrument ID: ELAN-ICP Run Time: 10:46 Method: 6020
File ID: EL.040411.104642 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360750 Cal ID: ELAN-ICP - 04-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1963350
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-11

Instrument ID: ELAN-ICP Run Time: 11:22 Method: 6020

File ID: EL.040411.112220 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1963353
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-19

Instrument ID: ELAN-ICP Run Time: 15:41 Method: 6020

File ID: EL.040411.154105 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1963353
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-21

Instrument ID: ELAN-ICP Run Time: 17:08 Method: 6020

File ID: EL.040411.170828 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1963353
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-05

Instrument ID: ELAN-ICP Run Time: 10:39 Method: 6020

File ID: EL.040411.103938 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	50.0	100	90 - 110	
Chromium		50	50.1	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1963349

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-10

Instrument ID: ELAN-ICP Run Time: 11:15 Method: 6020

File ID: EL.040411.111514 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	51.4	ug/L	103	90 - 110		
Chromium		50.0	50.2	ug/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963352

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-18

Instrument ID: ELAN-ICP Run Time: 15:33 Method: 6020

File ID: EL.040411.153359 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	48.9	ug/L	97.8	90 - 110		
Chromium		50.0	47.2	ug/L	94.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963352

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-20

Instrument ID: ELAN-ICP Run Time: 17:01 Method: 6020

File ID: EL.040411.170122 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.9	ug/L	102	90 - 110		
Chromium		50.0	48.3	ug/L	96.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1963352

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-07

Instrument ID: ELAN-ICP Run Time: 10:53 Method: 6020

File ID: EL.040411.105349 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.209	ug/L	105	80 - 120		
Chromium		0.800	0.821	ug/L	103	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1963357

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040067 Run Date: 04/04/2011 Sample ID: WG360790-26

Instrument ID: ELAN-ICP Run Time: 19:44 Method: 6020

File ID: EL.040411.194454 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360750 Cal ID: ELAN-I - 04-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.219	ug/L	110	80 - 120		
Chromium		0.800	0.800	ug/L	100	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1963357

Report generated 04/05/2011 07:51

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040067 **Workgroup (AAB#):** WG360750
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG360790-08 **File ID:** EL.040411.110058 **Units:** ug/L
Sol. AB : WG360790-09 **File ID:** EL.040411.110806 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0893	NS	100	103	103	
Chromium	NS	0.0537	NS	100	97.1	97.1	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1963351
Report generated 04/05/2011 07:51

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11040067 **Analytical Method** 6020
Analytical Workgroup: WG360750 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 04-APR-2011 10:12

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11040067-01	SAMP	04-APR-2011 16:25	97.442	93.078	88.329	89.593
L11040067-02	SAMP	04-APR-2011 16:32	97.756	93.096	87.779	89.629
L11040067-03	SAMP	04-APR-2011 16:40	96.356	93.688	88.255	89.6
WG360724-02	BLANK	04-APR-2011 15:53	100.055	87.464	87.117	91.395
WG360724-03	LCS	04-APR-2011 16:09	100.234	85.933	88.948	93.477
WG360750-01	PSPK	04-APR-2011 16:47	98.267	94.203	89.562	90.82
WG360750-02	SERIAL	04-APR-2011 16:54	96.349	94.306	89.209	89.622
WG360790-05	ICV	04-APR-2011 10:39	101.069	96.101	98.27	101.273
WG360790-06	ICB	04-APR-2011 10:46	99.963	96.456	97.835	99.626
WG360790-07	LLICV	04-APR-2011 10:53	100.598	98.549	99.48	100.806
WG360790-08	ICS	04-APR-2011 11:00	97.465	95.692	95.707	95.522
WG360790-09	ICS	04-APR-2011 11:08	97.687	90.828	85.543	90.107
WG360790-10	CCV	04-APR-2011 11:15	100.058	95.643	95.838	98.354
WG360790-11	CCB	04-APR-2011 11:22	100.142	96.374	97.235	98.242
WG360790-18	CCV	04-APR-2011 15:33	96.812	85.184	85.161	89.908
WG360790-19	CCB	04-APR-2011 15:41	97.645	85.407	86.048	90.171
WG360790-20	CCV	04-APR-2011 17:01	93.588	93.203	89.828	91.938
WG360790-21	CCB	04-APR-2011 17:08	93.812	94.337	90.461	91.787
WG360790-26	LLCCV	04-APR-2011 19:44	97.898	92.614	90.179	91.019

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1963347
Report generated: 04/05/2011 07:51

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11040067 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1963345
Report generated: 04/05/2011 07:51

Kemron–Radford Army Ammunition Plant Data Validation Summary Worksheet

SDG#: L11040066 and L11040067	Laboratory: Microbac	Validator: Charissa Lewis	Validation Date: 5/10/2011
Site: Radford	AR/COC#: 2166, 2167 and 2168		Validation Level: ☐ III ☒ IV
Matrix: Soil	# of Samples: 9	Tracking docs present: See sample receipt and log-in documentation	
COCs present: yes	COCs signed: yes	COCs dated: yes	Sample Container Integrity: OK

Analyses:
☐ VOCs ☐ SVOCs ☐ PAHs ☐ GRO ☐ DRO ☐ Pests ☐ PCBs ☒ Metals ☐ Gen Chem
☐ Other:

Requested Analyses Not Reported

Client Sample ID	Lab Sample ID	Analysis	Comments
None			

Hold Time/Preservation Outliers

Client Sample ID	Lab Sample ID	Analysis	Pres.	Collection Date	Preparation Date	Analysis Date	Analysis <2X HT	Analysis ≥2X HT
None								

Comments: Sampled 4/1 and 4/2

Revised 12/2010

Kemron–Radford Army Ammunition Plant Inorganic Metals Worksheet

SDG: L11040066 and L11040067	Matrix: Soil	Level III Lab Sample IDs: NA
Method/Batch #s: 6010/WG360751; 6020/WG360750		Level IV Lab Sample IDs: L110040066-01 through -08 and L11040067-01

ICPMS Mass Cal: ☒ Pass ☐ Fail ☐ NA ICPMS Resolution: ☒ Pass ☐ Fail ☐ NA ICPMS %RSD: ☒ Pass ☐ Fail ☐ NA

Analyte (outliers)	Calibration						ICP CRDL *±10%*	Method Blank *(<MDL)*	5X MB	ICS A *<IDL*	ICS AB *±20%*	LCS %R *(80-120%)*	MS %R *(75-125%)*	MSD %R *(75-125%)*	MS/D RPD *(≤20%)*	Serial Dil. %D *(±10%)*	PS *(75-125%)*	DUP RPD
	r *≥0.995*	ICV *±10%*[1]	CCV *±10%*[1]	ICB ug/L	CCB *(<IDL)*	5X CB												
6010																		
Al	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-385**	222**	✓	✓	NA	✓
Sb	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	✓	✓	✓	✓	NA	✓
Fe	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-957**	246**	✓	✓	NA	✓
Mn	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-591**	291**	✓	✓	NA	✓
6020																		
Cd	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	NA	✓
Cr	✓	✓	✓	✓	✓	NA	✓	✓	NA	✓	✓	✓	✓	✓	✓	✓	NA	✓

IS Outliers[3] *(60-120%)*				IS Outliers[3] *(60-120%)*			
Sample ID	**%Recovery**	**%Recovery**	**%Recovery**	**CCV/CCB ID**	**%Recovery**	**%Recovery**	**%Recovery**
None				None			

Comments: HTs OK
*CRI not analyzed. 6010 ICAL low standard <RL but can't re-calculate %R, not enough information.
6020 low level ICV ≤2XLOD, %R met CRDL criteria; run at beg and end of run (>8 hours between CRDL standards).
ICS A/AB only at beginning of run. All samples interferents >ICS.
**parent >4X spike concentration; PS not applicable.

[1]20% for Hg [2]For sample results <5X RL, ±RL [3]Standard CLP NFG criteria used; no criteria specified in QAPP or Region III NFG Revised 12/2010

6010 METALS CALIBRATION VERIFICATION FOR L11040066 and L11040067

Date: WG360751 4/4/11
ICP-THERMO2
Analyte: Al

Concentration	Mean Response
0	0.00024
0.1	0.00076
0.2	0.0012
10	0.0475
20	0.0941
Corr. Coef. =	0.999994

Date: WG360751 4/4/11
ICP-THERMO2
Analyte: Sb

Concentration	Mean Response
0	0.00006
0.012	0.0003
0.024	0.00051
1.2	0.0218
2.4	0.0431
Corr. Coef. =	0.999988

Date: WG360751 4/4/11
ICP-THERMO2
Analyte: Mn

Concentration	Mean Response
0	0.00018
0.005	0.0011
0.01	0.00197
0.5	0.0885
1	0.175
Corr. Coef. =	0.999988

4/4/2011	True Value	Reported	%Rec
	ICV		
Al	10.00	10.00	100.0
	ICSAB		%Rec
Fe	100.00	95.40	95.4
-10	CCV2		%Rec
Al	10.00	10.00	100.0
-20	CCV3		%Rec
Fe	4.00	3.98	99.5
-22	CCV4		%Rec
Al	10.00	9.81	98.1
-24	CCV5		%Rec
Fe	4.00	3.94	98.5

4/4/2011	True Value	Reported	%Rec
	ICV		
Sb	1.20	1.21	100.8
	ICSAB		%Rec
Sb	0.50	0.51	101.2
-10	CCV2		%Rec
Sb	1.20	1.22	101.7
-24	CCV3		%Rec
Sb	1.20	1.23	102.5
-26	CCV4		%Rec
Sb	1.20	1.22	101.7
-28	CCV5		%Rec
Sb	1.20	1.22	101.7

	True Value	Reported	%Rec
	ICV		
Al	10.00		0.0
	ICSAB		%Rec
Fe	100.00		0.0
-10	CCV1		%Rec
Mn	0.50		0.0
-12	CCV3		%Rec
Al	10.00		0.0
-14	CCV4		%Rec
Fe	4.00		0.0
-16	CCV4		%Rec
Mn	0.50		0.0

6010 METALS ICS AND CRDL CALCULATIONS FOR L11040066 and L11040067

ICSA Check

Total Metals

4/4	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Al	0.20000	0.02000		
Fe	0.03000	0.00300		
Mn	0.00500	0.0005	-0.0014	

4/4	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Sb	0.0100	0.001	-0.00118	

CRDL Check

(Low ICAL standards were <2X the CRQL but there was not enough information to re-calculate the %Rs; CRI not analyzed)

4/4	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Al	0.20000			
Sb	0.01000			
Fe	0.03000			
Mg	0.0050			

CALCULATION WORKSHEET FOR 6010 METALS SOIL RESULTS FOR SDG L11040066 and L11040067

Soil Sample Calculations:

	MDL (mg/kg)	CRQL (mg/kg)		MB		LCS		-01		-02	
			Final Volume (ml)		50		50		50		50
			Sample Aliquot (g)		1		1		1.338		1.322
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	100	%S	100	%S	76.3	%S	77.4
				DF	1	DF	1	DF	1	DF	1
Al	10.0	20.0		-0.00871	U	4.8494	242	334.2	16368	236.12	11538
Sb	0.500	1.000		0.00287	U	0.57679	28.84	0.00246	U	0.00896	U
Fe	1.500	3.000		0.00382	U	1.9271	96.36	626.29	30673.61	749.71	36634.55
Mn	0.25	0.5		0.00017	U	0.2474	12.37	3.7341	182.88	9.4021	459.43

	MDL (mg/kg)	CRQL (mg/kg)		-03		-04		-05		-06		-07		-08	
			Final Volume (ml)		50		50		50		50		50		50
			Sample Aliquot (g)		1.37		1.368		1.48		1.462		1.432		1.407
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	75.8	%S	76.4	%S	76.7	%S	80.4	%S	82.4	%S	75.9
				DF	1	DF	1	DF	1	DF	1	DF	1	DF	1
Al	10.0	20.0		315.21	15177	283.47	13561	266.1	11721	275.87	11735	197.76	8380	320.45	15004
Sb	0.500	1.0		0.00397	U	0.00115	U	-0.00331	U	0.01696	0.721	0.01001	0.424	0.01327	0.621
Fe	1.500	3.000		763.91	36781	599.6	28685	531.48	23410	402.7	17130	401.73	17023	653.72	30607
Mn	0.25	0.5		7.9581	383	9.642	461	2.8301	125	5.9023	251	0.37351	16	8.9722	420

	MDL (mg/kg)	CRQL (mg/kg)		67-01		67-02 (66-03MS)		67-02 (66-03MSD)		67-01PS		67-01SD	
			Final Volume (ml)		50		50		50		50		50
			Sample Aliquot (g)		1.343		1.343		1.343		1.343		1.343
				mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
				%S	75.8	%S	75.8	%S	75.8	%S	75.8	%S	75.8
				DF	1	DF	1	DF	1	DF	1	DF	5
Al	10.0	20.0		350.74	17227	331.47	16281	361.82	17771	322.28	15829	71.167	17477
Sb	0.500	1.0		0.00569	U	0.50093	25	0.4973	24	0.58448	29	0.00027	U
Fe	1.500	3.000		794.87	39041	775.73	38101	799.79	39283	701.28	34444	168.06	41272
Mn	0.25	0.5		7.8847	387	6.4076	315	5.9326	291	7.3561	361	1.6264	399

METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDG L11040066 and L1104

4-Apr	LCS	-03 MS	-03 MSD	PS	PS	PS	PS
Analyte	Sb	Sb	Sb	Sb	Al	Fe	Mn
True Conc	30.0	29.5	29.5	0.600	5	2	0.25
Reported Conc	28.8	24.6	24.4	0.584	322.00	701	7.36
Sample Conc	0.00	0.00	0.00	0.00	351.00	795	1.88
%R	96.00	83.39	82.71	97.33	-580.00	-4700.00	2192.00
RPD		0.82					

Sample result >4X spike ; lab calculation does not match

4-Apr	LCS	MS	MSD	PS
Analyte	Mn	Mn	Mn	Mn
True Conc	12.5	12.3	12.3	0.25
Reported Conc	12.4	315	291	7.36
Sample Conc	0.0000	387	387	7.88
%R	99.2	-585	-780	-208.00
RPD		7.92		

Sample result >4X spike ; lab calculation does not match

6020 TOTAL METALS CALIBRATION VERIFICATION FOR L11040066 and L11040067

Date: WG360750 4/4/11

Analyte: Cd

Concentration	Mean Response
0	-2.14
0.4	546
50	70100
100	134000

Corr. Coef. = 0.999718

	True Value	Reported	
	ICV		**%Rec**
Cd	50.00	49.99	100.0
	ICSAB		**%Rec**
Cr	100.00	97.14	97.1
	CCV5		**%Rec**
Cd	50.00	48.90	97.8
	CCV6		**%Rec**
Cr	50.00	48.32	96.6
	CCV7		**%Rec**
Cd	50.00	50.01	100.0

6020 METALS ICS AND CRDL CALCULATIONS FOR L11040066 and L11040067

ICSA Check

2/25	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Cd	0.300	0.600	0.0893	
Cr	1.000	2.000	0.0537	

CRDL Check

Soil

	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cd	0.200	0.209	104.6	
Cr	0.800	0.821	102.6	

	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cd	0.200	0.219	109.7	
Cr	0.800	0.800	100.0	

CALCULATION WORKSHEET FOR 6020 METALS SOIL RESULTS FOR SDG L11040066 and L11040067

Soil Sample Calculations:

WG360724-02 WG360724-03

	MDL (mg/kg)	CRQL (mg/kg)		MB		LCS		MS		MSD		-01		-02	
			Final Volume (ml)		200		200		200		200		200		200
			Sample Aliquot (g)		0.5		0.5		0.502		0.502		0.515		0.517
				ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
				%S	100	%S	100	%S	75.8	%S	75.8	%S	76.3	%S	77.4
				DF	1	DF	1	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100		0.0037	U	25.9	10.4	4.43	11.64	4.67	12.27	0.228	0.580	0.0308	U
Cr	0.200	0.400		-0.0865	U	29.1	11.6	15.3	40.2	15.7	41.4	20.2	51.4	25.3	63.3

	MDL (mg/kg)	CRQL (mg/kg)		-3		-04		-05		-06		-07		-08	
			Final Volume (ml)		200		200		200		200		200		200
			Sample Aliquot (g)		0.507		0.526		0.507		0.521		0.523		0.501
				ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
				%S	75.8	%S	76.4	%S	76.7	%S	80.4	%S	82.4	%S	75.9
				DF	5	DF	5	DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100		0.011	U	0.0324	U	0.143	0.366	0.257	0.613	0.0185	U	0.0951	U
Cr	0.200	0.400		12.1	31.5	8.54	21.2	8.80	22.6	9.33	22.3	11.4	26.5	5.89	15.5

L11040067 (MB, LCS, MS and MSD same as above)

	MDL (mg/kg)	CRQL (mg/kg)		-01		-02		-03	
			Final Volume (ml)		200		200		200
			Sample Aliquot (g)		0.502		0.502		0.502
				ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
				%S	75.8	%S	75.8	%S	75.8
				DF	5	DF	5	DF	5
Cd	0.050	0.100		0.0158	U	4.4303	11.6429	4.6701	12.2731
Cr	0.200	0.400		10.5104	27.6214	15.2885	40.1783	15.7416	41.3691

6020 METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDG L11040066 and L11040067

Soil

	LCS	MS	MSD	67-01 PS
Analyte	**Cd**	**Cd**	**Cd**	**Cd**
True Conc	10.0	13.1	13.1	50.0
Reported Conc	10.4	11.6	12.3	51.3
Sample Conc	0.00	0.00	0.00	0.00
%R	104.00	88.5	93.9	102.60
RPD		5.86		

	LCS	MS	MSD	PS
Analyte	**Cr**	**Cr**	**Cr**	**Cr**
True Conc	10.0	13.1	13.1	50.0
Reported Conc	11.6	40.2	41.4	62.2
Sample Conc	0.00	27.6	27.6	10.5
%R	116.00	96.2	105	103.40
RPD		2.94		

Analyte	Parent	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	> %D Limit?
	ug/L	ug/L	ug/L	ug/L	ug/L				
Cd	0.0158	0.01	0.037	0.200	10.0				
Cr	10.5104	2.2	11.13	0.200	10.0	Y	10	6	

616 Maxine NE
Albuquerque, NM 87123
505-299-5201
www.aqainc.net

Subject: Data Validation for Lab Reports L11040179 and L11040180
Radford Army Ammunition Plant

From: Larry M. Fukui
Senior Data Validator, AQA

To: Mary Lou Rochotte
Kemron Environmental Services, Inc.

OVERVIEW

Microbac Laboratories Inc., Marietta, Ohio, received seven field samples associated with the project work described in the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010) on April 6, 2011. The field samples were assigned laboratory sample delivery group (SDG) numbers L11040179 and L11040180 and included four normal soil samples, one field duplicate sample and one matrix spike pair. The samples were analyzed for inorganic compounds (metals) using EPA methods 6010 and 6020 as detailed in *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods (SW-846),* Third Edition, Final Update III.

SUMMARY

The samples were analyzed according to the quality control (QC) criteria of the applicable analytical method. The data for these samples were found to be compliant with the requirements of the project QAPP and/or EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable, and the results for all target analytes are considered usable.

MAJOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- None

MINOR PROBLEMS

(Refer to Appendix B – Data Qualifier Summary)

- CRDL standards were not analyzed with the samples analyzed by method 6010.
- SWMU-57-4411-SS-7.5′-SW-11: Total manganese 291 (J)
Total chromium 29.6 (J)
- SWMU-57-4411-SS-15′-FC-NUM9: Total antimony (UJ)
Total manganese 355 (J)
Total chromium 27.7 (J)
- SWMU-57-4411-SS-15′-FC-NUM10: Total antimony (UJ)
Total manganese 420 (J)
Total chromium 27.1 (J)
- SWMU-57-4511-SS-7.5′-SW-12: Total antimony (UJ)
Total manganese 718 (J)
Total chromium 18.4 (J)

- SWMU-57-4511-SS-DUP: Total antimony (UJ)
  Total manganese 542 (J)
  Total chromium 15.5 (J)

NOTES

(Refer to Appendix D – Support Documentation)

Sample Chain of Custody (COC) Records

- The samples were listed on COC #2169 and 2170. Data were reported for all required analyses.

- The samples were logged in by the laboratory without the apostrophe in the sample ID indicating the depth of the sample in feet. The actual sample IDs from the COC were used for this validation report.

Preservation and Holding Times

- The preservation and holding times were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration (ICAL)

- The ICAL correlation coefficients for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Initial Calibration Verification (ICV)/Continuing Calibration Verification (CCV)

- The ICV/CCV percent recoveries (%Rs) for all analyses were within the criteria specified in the project QAPP and the Region III NFG.

Contract Required Detection Limit (CRDL)

- CRDL standards were not analyzed with the samples analyzed by method 6010, and there was insufficient information in the data package to calculate the %Rs for the lowest concentration ICAL standard. The total antimony result for sample SWMU-57-4411-SS-7.5′-SW-11 was a detect >2X the CRDL and, therefore, was not qualified based on professional judgment. The remaining total antimony results were non-detects and, therefore, were **qualified UJ** for the lack of a CRDL analysis.

- The CRDL recoveries for total cadmium and total chromium were >110%. All associated total cadmium results non-detects and, therefore, were not qualified. All associated total chromium results were detects <2X the CRDL and, therefore, were **qualified K**.

Inductively Coupled Plasma (ICP) Interference Check Sample

- ICP interference check sample recoveries were within the project QAPP- and Region III-specified control limits, and all non-spiked ICS A results were < the MDL.

- The results of the ICS A and ICS AB analyses were applicable to all sample results because the concentrations of one or more of the interferents in the samples were ≥ those in the ICS solutions.

Field Blanks

- There were no field blanks collected with the samples in these SDGs.

Laboratory Method Blanks

- No target analytes were detected in the method blanks.

Laboratory Calibration Blanks

- No target analytes were detected in the calibration blanks.

Laboratory Control Samples/Laboratory Control Sample Duplicates (LCSs/LCSDs)

- The LCS/LCSD recoveries met project QAPP- and Region III-specified QC acceptance criteria.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

- One MS/MSD pair was analyzed on sample SWMU-57-4411-SS-7.5′-SW12 for all analyses.

    - The MS/MSD recoveries were >125% for total chromium. All associated sample results were detects and, therefore, were **qualified K**.

    - The MS/MSD recoveries were >125% for total manganese and <75% for total iron. The parent sample results were >4X the spike amount and, therefore, no data were qualified.

    - The soil post spike recoveries were calculated incorrectly for total aluminum, total iron, and total manganese. When calculated correctly, the post spike recoveries were <75%; however, the parent sample results were >4X the spike amount and, therefore, no data were qualified.

ICP Serial Dilution Analyses

- The serial dilution %Ds met project QAPP- and Region III-specified QC acceptance criteria with the following exceptions.

- The serial dilution associated with the samples analyzed by method 6020 was performed on sample SWMU-57-4411-SS-7.5′-SW12. The %D was >10% for total chromium, and the parent sample result was >50X the MDL. The associated sample results were detects and, therefore, were **qualified J**.

Laboratory Sample Duplicate

- MSDs were analyzed as the laboratory duplicates for all analyses and met project QAPP- and Region III-specified QC acceptance criteria with the following exception.

  - The soil MS/MSD RPD was >35% for total manganese. The associated sample results were detects and, therefore, were **qualified J**.

Field Sample Duplicate

- Sample SWMU-57-4411-SS-7.5′-SW12 was collected and analyzed in duplicate (sample SWMU-57-4511-SS-DUP) for all analyses. The RPDs between the sample and duplicate results were within the project QAPP specified control limits.

	SWMU-57-4511-DUP		SWMU-57-4411-SS-7.5′ –SW 12			
Analyte	**Result**	**RL**	**Result**	**RL**	**RPD**	**>35%**
Sb	0	0.955	0	0.972	<RL	
Al	14600	19.1	15500	19.4	5.98	
Fe	30300	2.87	32100	2.92	5.77	
Mn	718	0.478	542	2.92	27.94	
Cd	0	0.628	0	0.615	<RL	
Cr	18.4	2.51	15.5	2.46	17.11	

Sample Internal Standard Recoveries

- The internal standard recoveries for metals analyzed by method 6020 were within the 60-125% limits provided in the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (NFG) (October 2004).

Sample Results

- The samples were analyzed for the methods requested on the COC. Method detection limits (MDLs) and reporting limits (RLs) were reported for all analyses; however, the MDLs for total iron; total manganese, total cadmium and total chromium were > the MDLs specified in the project QAPP. The reported RLs met project-specified RLs.

Action Level Notification

- No results were above the action levels specified in the Region III NFG.

Usability Statement

- There were 30 field sample data points associated with the data packages for SDGs L11040179 and L11040180. Of these field sample data points, 16 (53.30% of the total) were assessed and left unqualified, 10 (33.33% of the total) were assessed and qualified J, 4 (13.33% of the total) were assessed and qualified UJ.

- The field sample data points that were qualified J can be categorized as definitive data with positively identified analyte concentrations that are only estimates due to QC deficiencies, the field sample data points that were qualified UJ can be categorized as definitive data with nondetectable analyte concentrations that are only estimates due to QC deficienciess.

- The unqualified field sample data points can be categorized as definitive data with no associated QC deficiencies.

Reviewed by: CLL Level: 1 Date: 05/11/2011

Report Content Statement

This report has been formatted for consistency with Appendix B, Region III Standard Operating Procedures for Data Validation Reports, contained in the guidance *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994). The laboratory data were reviewed in accordance with the EPA Region III's *Innovative Approaches to Data Validation* (June 1995) and *EPA Region III Modifications to the National Functional Guidelines for Organic Data Review* (September 1994) or *EPA Region III Modifications to the Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses* (April 1993) (Region III NFG, collectively), as applicable; the *Quality Assurance Project Plan for the Performance Based Contract, Revision 04, Fort Meade, Maryland* (May 2010) (project QAPP); and the *Draft Final SWMU 57, RAAP-022 Interim Measures Work Plan* (November 2010); and the applicable SW-846 methods. This report only addresses those problems and issues that may affect data usability.

Attachments

Appendix A – Glossary of Data Qualifiers

Appendix B – Data Qualifier Summary

Appendix C – Laboratory Report Results/Data Summary

Appendix D – Support Documentation

Appendix A – Glossary of Data Qualifiers

Data Qualifier Codes

Codes Related to Identification

U Not detected. The associated number indicates the approximate sample concentration necessary to be detected.

B Not detected substantially above the level reported in laboratory or field blanks.

R Unusable result. Analyte may or may not be present in the sample.

Codes Related to Quantitation

J Analyte present. Reported value may or may not be accurate or precise.

K Analyte present. Reported value may be biased high. Actual value is expected to be lower.

L Analyte present. Reported value may be biased low. Actual value is expected to be higher.

UJ Not detected. Quantitation limit may be inaccurate or imprecise.

UL The analyte was not detected, and the reported quantitation limit is probably higher than reported.

Appendix B – Data Qualifier Summary

Data Qualifier Summary

Note: The results listed in this table are detects and qualified non-detects only. Unqualified non-detects are not listed.

FIELD SAMPLE ID/ LAB SAMPLE ID	ANALYTE	FINAL VALIDATION QUALIFIER	INITIAL LAB QUALIFIER	REASON
SWMU-57-4411-SS-7.5′-SW-11 L11040179-01	Total manganese Total chromium	J J		MS/MSD RPD >UAL CRDL %R >UAL; MS/MSD %R >125%; SD %D >UAL
SWMU-57-4411-SS-15′-FC-NUM9 L11040179-02	Total antimony Total manganese Total chromium	UJ J J	U	No CRDL standard MS/MSD RPD >UAL CRDL %R >UAL; MS/MSD %R >125%; SD %D >UAL
SWMU-57-4411-SS-15′-FC-NUM10 L11040179-03	Total antimony Total manganese Total chromium	UJ J J	U	No CRDL standard MS/MSD RPD >UAL CRDL %R >UAL; MS/MSD %R >125%; SD %D >UAL
SWMU-57-4511-SS-7.5′-SW-12 L11040179-04	Total antimony Total manganese Total chromium	UJ J J	U	No CRDL standard MS/MSD RPD >UAL CRDL %R >UAL; MS/MSD %R >125%; SD %D >UAL
SWMU-57-4511-SS-DUP L11040180-01	Total antimony Total manganese Total chromium	UJ J J	U	No CRDL standard MS/MSD RPD >UAL CRDL %R >UAL; MS/MSD %R >125%; SD %D >UAL

Appendix C – Laboratory Report Results/Data Summary

Microbac Laboratories Inc.

Report Number: **L11040179**

Report Date : **April 8, 2011**

Sample Number: **L11040179-01**
Client ID: **SWMU-57-4411-SS-7.5-SW-11**
Matrix: **Soil**
Workgroup Number: **WG360996**
Collect Date: **04/04/2011 08:00**
Sample Tag: **01**

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

Instrument: **ICP-THERMO2**
Prep Date: **04/06/2011 13:21**
Cal Date: **04/06/2011 10:51**
Run Date: **04/06/2011 16:14**
File ID: **T2.040611.161400**
Percent Solid: **75.2**

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	16100		20.1	10.0
Antimony, Total	7440-36-0	2.69		1.00	0.502
Iron, Total	7439-89-6	33200		3.01	1.51
Manganese, Total	7439-96-5	291		0.502	0.251

Report Number: **L11040179**
Report Date : **April 8, 2011**

Sample Number:	L11040179-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4411-SS-15-FC-NUM	Prep Method:	3051A	Prep Date:	04/06/2011 13:21
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/06/2011 10:51
Workgroup Number:	WG360996	Analyst:	JYH	Run Date:	04/06/2011 16:17
Collect Date:	04/04/2011 14:00	Dilution:	1	File ID:	T2.040611.161728
Sample Tag:	01	Units:	mg/kg	Percent Solid:	78.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	13700		17.7	8.86
Antimony, Total	7440-36-0		U	0.886	0.443
Iron, Total	7439-89-6	28600		2.66	1.33
Manganese, Total	7439-96-5	335		0.443	0.221

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040179**
Report Date : **April 8, 2011**

Sample Number:	L11040179-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4411-SS-15-FC-NUM	Prep Method:	3051A	Prep Date:	04/06/2011 13:21
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/06/2011 10:51
Workgroup Number:	WG360996	Analyst:	JYH	Run Date:	04/06/2011 16:20
Collect Date:	04/04/2011 15:00	Dilution:	1	File ID:	T2.040611.162056
Sample Tag:	01	Units:	mg/kg	Percent Solid:	80.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	14600		17.0	8.49
Antimony, Total	7440-36-0		U	0.849	0.425
Iron, Total	7439-89-6	28800		2.55	1.27
Manganese, Total	7439-96-5	420		0.425	0.212

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040179**
Report Date : **April 8, 2011**

Sample Number:	L11040179-04	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4511-SS-7.5-SW-12	Prep Method:	3051A	Prep Date:	04/06/2011 13:21
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/06/2011 10:51
Workgroup Number:	WG360996	Analyst:	JYH	Run Date:	04/06/2011 16:24
Collect Date:	04/05/2011 13:30	Dilution:	1	File ID:	T2.040611.162424
Sample Tag:	01	Units:	mg/kg	Percent Solid:	79.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	14600		19.1	9.55
Antimony, Total	7440-36-0		U	0.955	0.478
Iron, Total	7439-89-6	30300		2.87	1.43
Manganese, Total	7439-96-5	718		0.478	0.239

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11040180**

Report Date : **April 8, 2011**

Sample Number:	L11040180-01	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4511-SS-DUP	Prep Method:	3051A	Prep Date:	04/06/2011 13:21
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/06/2011 10:51
Workgroup Number:	WG360996	Analyst:	JYH	Run Date:	04/06/2011 15:42
Collect Date:	04/05/2011 13:30	Dilution:	1	File ID:	T2.040611.154234
Sample Tag:	01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	15500		19.4	9.72
Antimony, Total	7440-36-0		U	0.972	0.486
Iron, Total	7439-89-6	32100		2.92	1.46
Manganese, Total	7439-96-5	542		0.486	0.243

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040180**
Report Date : **April 8, 2011**

Sample Number:	L11040180-02	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4511-SS-MS	Prep Method:	3051A	Prep Date:	04/06/2011 13:21
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/06/2011 10:51
Workgroup Number:	WG360996	Analyst:	JYH	Run Date:	04/06/2011 15:46
Collect Date:	04/05/2011 13:30	Dilution:	1	File ID:	T2.040611.154601
Sample Tag:	01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	16200		19.4	9.72
Antimony, Total	7440-36-0	24.8		0.972	0.486
Iron, Total	7439-89-6	31000		2.92	1.46
Manganese, Total	7439-96-5	889		0.486	0.243

Report Number: **L11040180**
Report Date : **April 8, 2011**

Sample Number:	L11040180-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	SWMU-57-4511-SS-MSD	Prep Method:	3051A	Prep Date:	04/06/2011 13:21
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	04/06/2011 10:51
Workgroup Number:	WG360996	Analyst:	JYH	Run Date:	04/06/2011 15:49
Collect Date:	04/05/2011 13:30	Dilution:	1	File ID:	T2.040611.154927
Sample Tag:	01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Aluminum, Total	7429-90-5	15800		19.4	9.72
Antimony, Total	7440-36-0	25.4		0.972	0.486
Iron, Total	7439-89-6	30800		2.92	1.46
Manganese, Total	7439-96-5	1410		0.486	0.243

Report Number: **L11040179**
Report Date : **April 8, 2011**

Sample Number:	L11040179-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4411-SS-7.5-SW-11	Prep Method:	3051A	Prep Date:	04/06/2011 13:34
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/06/2011 16:17
Workgroup Number:	WG360998	Analyst:	EDL	Run Date:	04/06/2011 21:16
Collect Date:	04/04/2011 08:00	Dilution:	5	File ID:	EL.040611.211621
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	75.2

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.656	0.328
Chromium, Total	7440-47-3	29.6		2.62	1.31

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040179**
Report Date : **April 8, 2011**

Sample Number:	L11040179-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4411-SS-15-FC-NUM	Prep Method:	3051A	Prep Date:	04/06/2011 13:34
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/06/2011 16:17
Workgroup Number:	WG360998	Analyst:	EDL	Run Date:	04/06/2011 21:23
Collect Date:	04/04/2011 14:00	Dilution:	5	File ID:	EL.040611.212330
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	78.3

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.635	0.318
Chromium, Total	7440-47-3	27.7		2.54	1.27

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040179**
Report Date : **April 8, 2011**

Sample Number:	L11040179-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4411-SS-15-FC-NUM	Prep Method:	3051A	Prep Date:	04/06/2011 13:34
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/06/2011 16:17
Workgroup Number:	WG360998	Analyst:	EDL	Run Date:	04/06/2011 21:30
Collect Date:	04/04/2011 15:00	Dilution:	5	File ID:	EL.040611.213039
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	80.0

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.624	0.312
Chromium, Total	7440-47-3	27.1		2.49	1.25

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040179**
Report Date : **April 8, 2011**

Sample Number:	L11040179-04	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4511-SS-7.5-SW-12	Prep Method:	3051A	Prep Date:	04/06/2011 13:34
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/06/2011 16:17
Workgroup Number:	WG360998	Analyst:	EDL	Run Date:	04/06/2011 21:37
Collect Date:	04/05/2011 13:30	Dilution:	5	File ID:	EL.040611.213748
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	79.6

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.628	0.314
Chromium, Total	7440-47-3	18.4		2.51	1.26

U Analyte was not detected. The concentration is below the reported LOD.

Microbac Laboratories Inc.

Report Number: **L11040180**

Report Date : **April 8, 2011**

Sample Number:	L11040180-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4511-SS-DUP	Prep Method:	3051A	Prep Date:	04/06/2011 13:34
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/06/2011 16:17
Workgroup Number:	WG360998	Analyst:	EDL	Run Date:	04/06/2011 22:13
Collect Date:	04/05/2011 13:30	Dilution:	5	File ID:	EL.040611.221328
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9		U	0.615	0.308
Chromium, Total	7440-47-3	15.5		2.46	1.23

U Analyte was not detected. The concentration is below the reported LOD.

Report Number: **L11040180**
Report Date : **April 8, 2011**

Sample Number:	L11040180-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4511-SS-MS	Prep Method:	3051A	Prep Date:	04/06/2011 13:34
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/06/2011 16:17
Workgroup Number:	WG360998	Analyst:	EDL	Run Date:	04/06/2011 22:20
Collect Date:	04/05/2011 13:30	Dilution:	5	File ID:	EL.040611.222035
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	14.2		0.615	0.308
Chromium, Total	7440-47-3	34.9		2.46	1.23

Report Number: **L11040180**
Report Date : **April 8, 2011**

Sample Number:	L11040180-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	SWMU-57-4511-SS-MSD	Prep Method:	3051A	Prep Date:	04/06/2011 13:34
Matrix:	Soil	Analytical Method:	6020	Cal Date:	04/06/2011 16:17
Workgroup Number:	WG360998	Analyst:	EDL	Run Date:	04/06/2011 22:27
Collect Date:	04/05/2011 13:30	Dilution:	5	File ID:	EL.040611.222742
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	78.4

Analyte	CAS. Number	Result	Qual	LOQ	LOD
Cadmium, Total	7440-43-9	13.2		0.615	0.308
Chromium, Total	7440-47-3	32.9		2.46	1.23

Appendix D – Support Documentation

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

Laboratory Report Number: L11040179

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on April 08, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on April 08, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 861 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11040179

04/08/11 12:35

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-4411-SS-7.5-SW-11	L11040179-01	04/04/2011 08:00	04/06/2011
SWMU-57-4411-SS-15-FC-NUM9	L11040179-02	04/04/2011 14:00	04/06/2011
SWMU-57-4411-SS-15-FC-NUM10	L11040179-03	04/04/2011 15:00	04/06/2011
SWMU-57-4511-SS-7.5-SW-12	L11040179-04	04/05/2011 13:30	04/06/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1968091
Report generated: 04/08/2011 12:35

Login Number: L11040179

Department: Login

Chain of Custody:

Shipment Conditions

COC #	Cooler #	Temperature
2169	001-000080	0.0

Sample Management: All samples were received intact.

Sample Identification

Lab ID	Client ID
L11040179-01	SWMU-57-4411-SS-7.5-SW-11
L11040179-02	SWMU-57-4411-SS-15-FC-NUM9
L11040179-03	SWMU-57-4411-SS-15-FC-NUM10
L11040179-04	SWMU-57-4511-SS-7.5-SW-12

Narrative ID: 25082
Approved By: Stephanie Mossburg

Login Number: L11040179

Department: Metals

Analyst: Ji Hu

METHOD

Preparation: SW-846 3051SW-846 3005A

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360996 - All acceptance criteria were met.All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 25162
Approved By: Sheri Pfalzgraf

Login Number: L11040179

Department: Metals

Analyst: Erin Long

METHOD

Preparation: SW-846 30513051A

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360998 - All acceptance criteria were met.All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG360998 - Due to the high levels of nontarget analytes, client samples 01 through 04 were analyzed initially at dilutions for all analytes.All acceptance criteria were met.

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.

Narrative ID: 25155
Approved By: Sheri Pfalzgraf

COC No. A 2169

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: BXB-KEMRON

Project Contact: Mary Lou Rochette | Contact Phone #: 740-373-4308

Turn Around Requirements: 1-DAY | Location: RFAAP - RADFORD, VA

Project ID: MR0669 | SWMU-57

Sampler (print): Jonah Anderson | Signature:

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	METALS ★ SEE LIST ★	TOTAL # (LAB USE)	ADDITIONAL REQUIREMENTS
SWMU-57-4411		X	4-4-11	0800	SOIL	1		1		PER QAPP for RFAAP ★ Aluminum Antimony Manganese Cadmium Chromium Iron
SS-7.5'-SW-11										
SWMU-57-4411		X	4-4-11	1400	SOIL	1		1		
SS-15'-FC-NUM9										
SWMU-57-4411		X	4-4-11	1500	SOIL	1		1		
SS-15'-FC-NUM10										
SWMU-57-4511		X	4-5-11	1330	SOIL	1		1		
SS-7.5'-SW-12										

Relinquished by: (Signature)	Date	Time	Received (Signature)
	4-5-11	1120	
Relinquished by: (Signature)	Date	Time	Received (Signature)

Microbac OVD
Received: 04/06/2011 11:46
By: ROBIN KLINGER
Robin L. Klinger

221000013792

Date	Time	Received by: (Signature)

Remarks:

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page _____ of _____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040179 | Work Group: WG360996
Blank File ID: T2.040611.152452 | Blank Sample ID: WG360981-02
Prep Date: 04/06/11 13:21 | Instrument ID: ICP-THERMO2
Analyzed Date: 04/06/11 15:24 | Method: 6010B
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360981-03	T2.040611.152827	04/06/11 15:28	01
SWMU-57-4411-SS-7.5-SW-11	L11040179-01	T2.040611.161400	04/06/11 16:14	01
SWMU-57-4411-SS-15-FC-NUM9	L11040179-02	T2.040611.161728	04/06/11 16:17	01
SWMU-57-4411-SS-15-FC-NUM10	L11040179-03	T2.040611.162056	04/06/11 16:20	01
SWMU-57-4511-SS-7.5-SW-12	L11040179-04	T2.040611.162424	04/06/11 16:24	01

Report Name: BLANK_SUMMARY
PDF File ID: 1967233
Report generated 04/07/2011 09:38

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040179 Prep Date:04/06/11 13:21 Sample ID:WG360981-02
Instrument ID:ICP-THERMO2 Run Date:04/06/11 15:24 Prep Method:3051A
File ID:T2.040611.152452 Analyst:JYH Method:6010B
Workgroup (AAB#):WG360996 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-06-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Iron, Total	1.50	3.00	1.50	1	U
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1967234
07-APR-2011 09:38

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG360981-03
Instrument ID: ICP-THERMO2 Run Time: 15:28 Prep Method: 3051A
File ID: T2.040611.152827 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360996 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-06-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	236	94.5	80 - 120	
Antimony, Total	30.0	29.9	99.6	80 - 120	
Iron, Total	100	96.0	96.0	80 - 120	
Manganese, Total	12.5	12.5	99.9	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1967235
Report generated: 04/07/2011 09:38

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11040179 Cal ID:ICP-THERMO2 - Worknum:WG360996

Instrument ID:ICP-THERMO2 Contract #: Method:6010B

Parent ID:WG360981-01 File ID:T2.040611.154234 Dil:1 Matrix:SOLID

Sample ID:WG360981-04 MS File ID:T2.040611.154601 Dil:1 Units:mg/kg

Sample ID:WG360981-05 MSD File ID:T2.040611.154927 Dil:1 Percent Solid:78.4

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	15500	243	16200	275	243	15800	110	2.50	80 - 120	20	*
Antimony, Total	ND	29.2	24.8	85.2	29.2	25.4	87.2	2.33	80 - 120	20	
Iron, Total	32100	97.2	31000	-1140	97.2	30800	-1310	0.512	80 - 120	20	*
Manganese, Total	542	12.1	889	2860	12.1	1410	7120	45.1	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:1967236

Report generated 04/07/2011 11:05

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040179 **Worknum:** WG360996
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360996-02 **File ID:** T2.040611.155628 **Dil:** 5 **Units:** mg/L
Sample: L11040180-01 **File ID:** T2.040611.154234 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	319		335		5.02	
Antimony	ND	U	ND	U		
Iron	661		720		8.93	
Manganese	11.1		12		8.11	

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: 1967230
04/07/2011 09:38

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040179 **Worknum:** WG360996
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360996-01 **File ID:** T2.040611.155302 **Dil:** 1 **Units:** mg/L
Sample ID: L11040180-01 **File ID:** T2.040611.154234 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	287		319		5	-11.9	75 - 125	N
ANTIMONY	0.571		0	U	.6	95.2	75 - 125	
IRON	592		661		2	-159.6	75 - 125	N
MANGANESE	10.3		11.1		.25	95.2	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: 1967231
Report generated: 04/07/2011 09:38

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040179	Workgroup (AAB#):	WG360996
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG361002	Initial Calibration Date:	06-APR-2011 10:51

	WG361002-01		WG361002-02		WG361002-03		WG361002-04		WG361002-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.000910	.1	0.00218	.2	0.00372	10	0.135	20	0.269	.999986	
ANTIMONY	0	0.000130	.012	0.000610	.024	0.00103	1.2	0.0420	2.4	0.0846	.999938	
IRON	0	0.0000100	.04	0.00166	.08	0.00338	4	0.165	8	0.327	.999994	
MANGANESE	0	0.000550	.005	0.00280	.01	0.00482	.5	0.208	1	0.412	.999977	

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 1967239
Report generated: 07-APR-2011 08:16

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-07
Instrument ID: ICP-THERMO2 Run Time: 10:58 Method: 6010B
File ID: T2.040611.105839 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360996 Cal ID: ICP-THERI - 06-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1967241
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-11

Instrument ID: ICP-THERMO2 Run Time: 11:12 Method: 6010B

File ID: T2.040611.111226 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1967244
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-23

Instrument ID: ICP-THERMO2 Run Time: 15:21 Method: 6010B

File ID: T2.040611.152114 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1967244
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-26

Instrument ID: ICP-THERMO2 Run Time: 16:03 Method: 6010B

File ID: T2.040611.160315 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1967244
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-28

Instrument ID: ICP-THERMO2 Run Time: 16:38 Method: 6010B

File ID: T2.040611.163830 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1967244
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11040179 Run Date:04/06/2011 Sample ID:WG361002-06

Instrument ID:ICP-THERMO2 Run Time:10:55 Method:6010B

File ID:T2.040611.105517 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG360996 Cal ID:ICP-TH - 06-APR-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.1	101	90 - 110	
Antimony		1.2	1.22	102	90 - 110	
Iron		4	4.04	101	90 - 110	
Manganese		.5	0.508	102	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1967240

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-10

Instrument ID: ICP-THERMO2 Run Time: 11:09 Method: 6010B

File ID: T2.040611.110905 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Antimony		1.20	1.24	mg/L	103	90 - 110		
Iron		4.00	4.04	mg/L	101	90 - 110		
Manganese		0.500	0.507	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967243

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-22

Instrument ID: ICP-THERMO2 Run Time: 15:17 Method: 6010B

File ID: T2.040611.151754 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.71	mg/L	97.1	90 - 110		
Antimony		1.20	1.28	mg/L	107	90 - 110		
Iron		4.00	3.96	mg/L	99.0	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967243

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-25

Instrument ID: ICP-THERMO2 Run Time: 15:59 Method: 6010B

File ID: T2.040611.155953 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.51	mg/L	95.1	90 - 110		
Antimony		1.20	1.30	mg/L	109	90 - 110		
Iron		4.00	3.88	mg/L	96.9	90 - 110		
Manganese		0.500	0.507	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967243

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361002-27

Instrument ID: ICP-THERMO2 Run Time: 16:35 Method: 6010B

File ID: T2.040611.163508 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.55	mg/L	95.5	90 - 110		
Antimony		1.20	1.32	mg/L	110	90 - 110		
Iron		4.00	3.94	mg/L	98.6	90 - 110		
Manganese		0.500	0.510	mg/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967243

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040179 **Workgroup (AAB#):** WG360996
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG361002-08 **File ID:** T2.040611.110215 **Units:** mg/L
Sol. AB : WG361002-09 **File ID:** T2.040611.110539 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	256	102	250	245	98.0	
Antimony	NS	-0.00165	NS	0.500	0.513	103	
Iron	100	100	100	100	95.6	95.6	
Manganese	NS	-0.00143	NS	0.250	0.247	98.8	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1967242
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040179 **Date:** 01/25/2011
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	0.00190	0	-0.000140	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	0.000335	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
PHOSPHORUS	214.90	-0.000750	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967238
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040179 **Date:** 01/25/2011
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	-0.00200	0	0	-0.00000800
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000530
COBALT	228.60	0	0	0.000108	0	0
COPPER	224.70	0	0.0000770	0	0	0.000196
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
PHOSPHORUS	214.90	0	0	0	0.00200	0.00120
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	0.0000570	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	-0.00000200
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.20	0	0	0	0	-0.0000300

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967238
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040179 **Date:** 01/25/2011
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	0.00000900	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	0.00800	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967238
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040179 **Date:** 01/25/2011
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
PHOSPHORUS	214.90	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967238
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040179 **Date:** 01/25/2011
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	V	ZN	ZR
ALUMINUM	308.20	0.00300	0	0
ANTIMONY	206.80	-0.00438	0	0
ARSENIC	189.00	0.000107	0	0
BARIUM	455.40	0	0	0
BERYLLIUM	313.00	0	0	0
BORON	249.70	0	0	0
CADMIUM	228.80	0.0000820	0	0
CALCIUM	422.70	0	0	0
CHROMIUM	267.70	0	0	
COBALT	228.60	0.0000200	0	0
COPPER	224.70	0	0	
IRON	261.20	0	0	0
LEAD	220.30	-0.000126	0	0
LITHIUM	670.80	0	0	0
MAGNESIUM	279.10	0	0	0
MANGANESE	257.60	0	0	0
MOLYBDENUM	202.03	-0.000110	0	0
NICKEL	231.60	0	0	0
PHOSPHORUS	214.90	-0.00500	0	0.00200
POTASSIUM	766.40	0	0	0
SELENIUM	196.00	0	0	0
SILICON	212.40	0	0	0
SILVER	328.00	-0.00617	0	0
SODIUM	589.50	0	0	0
STRONTIUM	407.80	0	0	0
THALLIUM	190.80	-0.0282	0	0
TIN	189.90	0	0	0
TITANIUM	337.30	0	0	0
VANADIUM	292.40	0	0	
ZINC	206.20	0	0	0
ZIRCONIUM	339.20	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967238
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11040179 **Date:** 12/13/2010
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	810.0
Antimony	10.00	90.0
Arsenic	10.00	90.0
Barium	10.00	90.0
Beryllium	15.00	4.5
Boron	10.00	90.0
Cadmium	10.00	16.2
Calcium	10.00	900.0
Chromium	10.00	81.0
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	9.0
Nickel	10.00	90.0
Phosphorus	10.00	900.0
Potassium	10.00	315.0
Selenium	10.00	90.0
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
Zirconium	10.00	45.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1967237
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040179 | Work Group: WG360998
Blank File ID: EL.040611.205458 | Blank Sample ID: WG360983-02
Prep Date: 04/06/11 13:34 | Instrument ID: ELAN-ICP
Analyzed Date: 04/06/11 20:54 | Method: 6020
Analyst: EDL

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360983-03	EL.040611.210206	04/06/11 21:02	01
SWMU-57-4411-SS-7.5-SW-11	L11040179-01	EL.040611.211621	04/06/11 21:16	DL01
SWMU-57-4411-SS-15-FC-NUM9	L11040179-02	EL.040611.212330	04/06/11 21:23	DL01
SWMU-57-4411-SS-15-FC-NUM10	L11040179-03	EL.040611.213039	04/06/11 21:30	DL01
SWMU-57-4511-SS-7.5-SW-12	L11040179-04	EL.040611.213748	04/06/11 21:37	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1967162
Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040179 Prep Date:04/06/11 13:34 Sample ID:WG360983-02
Instrument ID:ELAN-ICP Run Date:04/06/11 20:54 Prep Method:3051A
File ID:EL.040611.205458 Analyst:EDL Method:6020
Workgroup (AAB#):WG360998 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-06-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1967163
07-APR-2011 08:09

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG360983-03
Instrument ID: ELAN-ICP Run Time: 21:02 Prep Method: 3051A
File ID: EL.040611.210206 Analyst: EDL Method: 6020
Workgroup (AAB#): WG360998 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-06-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	9.25	92.5	80 - 120	
Chromium, Total	10.0	10.1	101	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1967164
Report generated: 04/07/2011 08:09

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum:L11040179 Cal ID:ELAN-ICP- Worknum:WG360998

Instrument ID:ELAN-ICP Contract #: Method:6020

Parent ID:WG360983-01 File ID:EL.040611.221328 Dil:5 Matrix:SOLID

Sample ID:WG360983-04 MS File ID:EL.040611.222035 Dil:5 Units:mg/kg

Sample ID:WG360983-05 MSD File ID:EL.040611.222742 Dil:5 Percent Solid:78.4

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	ND	12.3	14.2	115	12.3	13.2	107	7.06	80 - 120	20	
Chromium, Total	15.5	12.3	34.9	157	12.3	32.9	142	5.72	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:1967754

Report generated 04/07/2011 11:14

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040179 **Worknum:** WG360998
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG360998-02 **File ID:** EL.040611.215207 **Dil:** 25 **Units:** ug/L
Sample: L11040179-04 **File ID:** EL.040611.213748 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Cadmium	ND	U	ND	U		
Chromium	36.55	X	25.75	X	29.50	

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: 1967159
04/07/2011 08:09

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040179 **Worknum:** WG360998
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG360998-01 **File ID:** EL.040611.214457 **Dil:** 5 **Units:** ug/L
Sample ID: L11040179-04 **File ID:** EL.040611.213748 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	58.8		0	U	50	117.5	75 - 125	
CHROMIUM	61.8		7.31		50	108.9	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: 1967160
Report generated: 04/07/2011 08:09

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040179	Workgroup (AAB#):	WG360998
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG361026	Initial Calibration Date:	06-APR-2011 16:17

	WG361026-01		WG361026-02		WG361026-03		WG361026-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	-0.729	.4	552	50	67000	100	128000	.999952	
CHROMIUM	0	9030	.4	12300	50	404000	100	766000	.999968	

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 1967169
Report generated: 07-APR-2011 08:09

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number:L11040179 Run Date:04/06/2011 Sample ID: WG361026-06
Instrument ID:ELAN-ICP Run Time:16:31 Method: 6020
File ID:EL.040611.163122 Analyst:EDL Units: ug/L
Workgroup (AAB#):WG360998 Cal ID:ELAN-ICP - 06-APR-11
Matrix:SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL

F = Result is between MDL and 2 x MDL

* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1967171
Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-11
Instrument ID: ELAN-ICP Run Time: 17:07 Method: 6020
File ID: EL.040611.170702 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11
Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1967175
Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-20

Instrument ID: ELAN-ICP Run Time: 20:47 Method: 6020

File ID: EL.040611.204752 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1967175
Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-22

Instrument ID: ELAN-ICP Run Time: 22:06 Method: 6020

File ID: EL.040611.220622 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1967175
Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-05

Instrument ID: ELAN-ICP Run Time: 16:24 Method: 6020

File ID: EL.040611.162417 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	50.3	101	90 - 110	
Chromium		50	50.1	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1967170

Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-10

Instrument ID: ELAN-ICP Run Time: 16:59 Method: 6020

File ID: EL.040611.165955 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.2	ug/L	100	90 - 110		
Chromium		50.0	49.2	ug/L	98.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967173

Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-19

Instrument ID: ELAN-ICP Run Time: 20:40 Method: 6020

File ID: EL.040611.204046 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.4	ug/L	101	90 - 110		
Chromium		50.0	49.7	ug/L	99.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967173

Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-21

Instrument ID: ELAN-ICP Run Time: 21:59 Method: 6020

File ID: EL.040611.215916 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.8	ug/L	102	90 - 110		
Chromium		50.0	49.5	ug/L	98.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967173

Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-07

Instrument ID: ELAN-ICP Run Time: 16:38 Method: 6020

File ID: EL.040611.163829 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.190	ug/L	94.9	80 - 120		
Chromium		0.800	0.850	ug/L	106	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1967177

Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040179 Run Date: 04/06/2011 Sample ID: WG361026-18

Instrument ID: ELAN-ICP Run Time: 19:50 Method: 6020

File ID: EL.040611.195049 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.223	ug/L	112	80 - 120		
Chromium		0.800	0.887	ug/L	111	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1967177

Report generated 04/07/2011 08:09

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040179 **Workgroup (AAB#):** WG360998
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG361026-08 **File ID:** EL.040611.164539 **Units:** ug/L
Sol. AB : WG361026-09 **File ID:** EL.040611.165247 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0190	NS	100	102	102	
Chromium	NS	0.104	NS	100	101	101	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1967172
Report generated 04/07/2011 08:09

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11040179 **Analytical Method** 6020
Analytical Workgroup: WG360998 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 06-APR-2011 15:57

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11040179-01	SAMP	06-APR-2011 21:16	98.838	95.01	91.732	93.196
L11040179-02	SAMP	06-APR-2011 21:23	98.537	95.226	90.905	94.305
L11040179-03	SAMP	06-APR-2011 21:30	96.987	95.143	91.676	93.314
L11040179-04	SAMP	06-APR-2011 21:37	97.611	97.967	94.603	94.552
WG360983-02	BLANK	06-APR-2011 20:54	98.34	96.93	94.955	96.636
WG360983-03	LCS	06-APR-2011 21:02	100.8	98.412	96.736	98.416
WG360998-01	PSPK	06-APR-2011 21:44	96.218	96.616	92.573	93.149
WG360998-02	SERIAL	06-APR-2011 21:52	98.76	100.114	97.898	95.864
WG361026-05	ICV	06-APR-2011 16:24	97.211	94.571	95.741	97.497
WG361026-06	ICB	06-APR-2011 16:31	99.474	97.796	97.729	97.915
WG361026-07	LLICV	06-APR-2011 16:38	100.126	99.157	99.207	99.391
WG361026-08	ICS	06-APR-2011 16:45	96.702	95.633	92.711	94.541
WG361026-09	ICS	06-APR-2011 16:52	96.884	85.703	81.439	90.359
WG361026-10	CCV	06-APR-2011 16:59	98.086	94.31	92.967	94.924
WG361026-11	CCB	06-APR-2011 17:07	100.183	96.323	95.675	95.769
WG361026-18	LLCCV	06-APR-2011 19:50	97.831	99.526	98.452	97.42
WG361026-19	CCV	06-APR-2011 20:40	97.913	94.33	92.663	95.716
WG361026-20	CCB	06-APR-2011 20:47	98.423	96.534	95.211	96.071
WG361026-21	CCV	06-APR-2011 21:59	94.71	96.848	97.609	95.728
WG361026-22	CCB	06-APR-2011 22:06	97.564	101.862	102.042	98.39

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1967168
Report generated: 04/07/2011 08:09

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11040179 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1967167
Report generated: 04/07/2011 08:09

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

Laboratory Report Number: L11040180

Client: Mary Lou Rochette, 156 Starlite Drive, Marietta, OH, 45750

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*	Kathy.Albertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	Stephanie.Mossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	Tony.Long@microbac.com
Amanda Fickiesen	*Client Services Specialist*	Amanda.Fickiesen@microbac.com
Annie Brown	*Client Services Specialist*	Annie.Brown@microbac.com

This report was reviewed on April 08, 2011.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in this report. 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, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on April 08, 2011.

David Vandenberg - Managing Director

State of origin: Virginia
Accrediting authority: N/A ID:N/A
QAPP: DOD Ver 4.1
This report contains a total of 858 pages.

Look closer. Go further. Do more.

LABORATORY REPORT

L11040180

04/08/11 13:10

Submitted By

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

For

Account Name: Kemron Environmental Services
156 Starlite Drive

Marietta, OH 45750
Attention: Mary Lou Rochette

Project Number: 2820.216
Project: Radford AAP
Site: RADFORD VIRGINIA

P.O. Number: MSA

Sample Summary

Client ID	Lab ID	Date Collected	Date Received
SWMU-57-4511-SS-DUP	L11040180-01	04/05/2011 13:30	04/06/2011
SWMU-57-4511-SS-MS	L11040180-02	04/05/2011 13:30	04/06/2011
SWMU-57-4511-SS-MSD	L11040180-03	04/05/2011 13:30	04/06/2011

L1_A_PROD_COVER - Modified 02/06/2008
PDF File ID: 1968712
Report generated: 04/08/2011 13:10

Login Number: L11040180

Department: Login

Chain of Custody:

Shipment Conditions

COC #	Cooler #	Temperature
2170	001-000080	0.0

Sample Management: All samples were received intact.

Sample Identification

Lab ID	Client ID
L11040180-01	SWMU-57-4511-SS-DUP
L11040180-02	SWMU-57-4511-SS-MS
L11040180-03	SWMU-57-4511-SS-MSD

Narrative ID: 25083
Approved By: Stephanie Mossburg
Stephanie Mossburg

Login Number: L11040180

Department: Metals

Analyst: Ji Hu

METHOD

Preparation: SW-846 3051

Analysis: SW-846 6010

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360996 - All acceptance criteria were met.All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 25163
Approved By: Sheri Pfalzgraf

Login Number: L11040180

Department: Metals

Analyst: Erin Long

METHOD

Preparation: SW-846 30513051A

Analysis: SW-846 6020

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Interference Check Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

Low Level Check: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spikes: WG360998 - All acceptance criteria were met.All acceptance criteria were met.

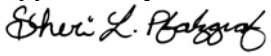
Matrix Spikes: WG360998 - Sample 01 was chosen by the client for MS/MSD analysis. Samples 02(MS) and 03(MSD) yielded noncompliant recoveries for chromium. Recoveries out of range were observed for the following analytes: Chromium, Total. Please see the applicable QC report for a detailed presentation of the failures.

SAMPLES

Samples: WG360998 - Due to the high levels of nontarget analytes, client samples 01, 02, and 03 were analyzed initially at dilutions for all analytes.All acceptance criteria were met.

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.

Narrative ID: 25156
Approved By: Sheri Pfalzgraf



COC No. A 2170

156 Starlite Drive
Marietta, OH 45750

KEMRON
ENVIRONMENTAL SERVICES

CHAIN-OF-CUSTODY RECORD

Phone: 740-373-4308
Fax: 740-376-2536

Company Name: UXB-KEMRON

Project Contact: MARY LOU ROCHOTTE | Contact Phone #: 740-373-4308

Turn Around Requirements: 5-DAY | Location: RFAAP - RADFORD, VA

Project ID: MR0669 | SWMU-57

Sampler (print): JONAH ANDERSON | Signature:

Sample I.D. No.	Comp	Grab	Date	Time	Matrix*	NUMBER OF CONTAINERS	Hold	*METALS, SEE LIST
SWMU-57-4511-SS-DUP		X	4-5-11	1330	SOIL	1		1
SWMU-57-4511-SS-MS		X	4-5-11	1330	SOIL	1		1
SWMU-57-4511-SS-MSD		X	4-5-11	1330	SOIL	1		1

TOTAL # (LAB USE)

Program: ☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other

ADDITIONAL REQUIREMENTS

PER QAPP FOR RFAAP
*Aluminum
Antimony
Manganese
Cadmium
Chromium
Iron

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
	4-5-11	1520	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)

Microbac OVD 221000013793
Received: 04/06/2011 11:46
By: ROBIN KLINGER
Robin L. Klinger

Remarks:

*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

Page ____ of ____

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040180
Work Group: WG360996
Blank File ID: T2.040611.152452
Blank Sample ID: WG360981-02
Prep Date: 04/06/11 13:21
Instrument ID: ICP-THERMO2
Analyzed Date: 04/06/11 15:24
Method: 6010B
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360981-03	T2.040611.152827	04/06/11 15:28	01
SWMU-57-4511-SS-DUP	L11040180-01	T2.040611.154234	04/06/11 15:42	01
SWMU-57-4511-SS-MS	L11040180-02	T2.040611.154601	04/06/11 15:46	01
SWMU-57-4511-SS-MSD	L11040180-03	T2.040611.154927	04/06/11 15:49	01

Report Name: BLANK_SUMMARY
PDF File ID: 1967248
Report generated 04/07/2011 09:39

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040180 Prep Date:04/06/11 13:21 Sample ID:WG360981-02
Instrument ID:ICP-THERMO2 Run Date:04/06/11 15:24 Prep Method:3051A
File ID:T2.040611.152452 Analyst:JYH Method:6010B
Workgroup (AAB#):WG360996 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ICP-TH-06-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Iron, Total	1.50	3.00	1.50	1	U
Manganese, Total	0.250	0.500	0.250	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1967249
07-APR-2011 09:39

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG360981-03
Instrument ID: ICP-THERMO2 Run Time: 15:28 Prep Method: 3051A
File ID: T2.040611.152827 Analyst: JYH Method: 6010B
Workgroup (AAB#): WG360996 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD39933 Cal ID: ICP-TH-06-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	236	94.5	80 - 120	
Antimony, Total	30.0	29.9	99.6	80 - 120	
Iron, Total	100	96.0	96.0	80 - 120	
Manganese, Total	12.5	12.5	99.9	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1967250
Report generated: 04/07/2011 09:39

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11040180 Cal ID: ICP-THERMO2- 06-APR-11 Worknum:WG360996

Instrument ID:ICP-THERMO2 Contract #: Prep Method:3051A

Parent ID:L11040180-01 File ID:T2.040611.154234 Dil:1 Method:6010B

Sample ID:L11040180-02 MS File ID:T2.040611.154601 Dil:1 Matrix:Soil

Sample ID:L11040180-03 MSD File ID:T2.040611.154927 Dil:1 Units:mg/kg

Percent Solid:78.4

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	15500	243	16200	275	243	15800	110	2.50	80 - 120	20	*
Antimony, Total	U	29.2	24.8	85.2	29.2	25.4	87.2	2.33	80 - 120	20	
Iron, Total	32100	97.2	31000	-1140	97.2	30800	-1310	0.512	80 - 120	20	*
Manganese, Total	542	12.1	889	2860	12.1	1410	7120	45.1	80 - 120	20	*#

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1967251
Report generated 04/07/2011 13:13

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040180 **Worknum:** WG360996
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG360996-02 **File ID:** T2.040611.155628 **Dil:** 5 **Units:** mg/L
Sample: L11040180-01 **File ID:** T2.040611.154234 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	319		335		5.02	
Antimony	ND	U	ND	U		
Iron	661		720		8.93	
Manganese	11.1		12		8.11	

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: 1967245
04/07/2011 09:39

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040180 **Worknum:** WG360996
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG360996-01 **File ID:** T2.040611.155302 **Dil:** 1 **Units:** mg/L
Sample ID: L11040180-01 **File ID:** T2.040611.154234 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	287		319		5	-11.9	75 - 125	N
ANTIMONY	0.571		0	U	.6	95.2	75 - 125	
IRON	592		661		2	-159.6	75 - 125	N
MANGANESE	10.3		11.1		.25	95.2	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: 1967246
Report generated: 04/07/2011 09:39

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040180	Workgroup (AAB#):	WG360996
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG361002	Initial Calibration Date:	06-APR-2011 10:51

	WG361002-01		WG361002-02		WG361002-03		WG361002-04		WG361002-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.000910	.1	0.00218	.2	0.00372	10	0.135	20	0.269	.999986	
ANTIMONY	0	0.000130	.012	0.000610	.024	0.00103	1.2	0.0420	2.4	0.0846	.999938	
IRON	0	0.0000100	.04	0.00166	.08	0.00338	4	0.165	8	0.327	.999994	
MANGANESE	0	0.000550	.005	0.00280	.01	0.00482	.5	0.208	1	0.412	.999977	

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 1967255
Report generated: 07-APR-2011 08:16

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361002-07
Instrument ID: ICP-THERMO2 Run Time: 10:58 Method: 6010B
File ID: T2.040611.105839 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG360996 Cal ID: ICP-THERI - 06-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
IRON	.03	.06	.03	U
MANGANESE	.005	.01	.005	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1967257
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361002-11

Instrument ID: ICP-THERMO2 Run Time: 11:12 Method: 6010B

File ID: T2.040611.111226 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1967260
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361002-23

Instrument ID: ICP-THERMO2 Run Time: 15:21 Method: 6010B

File ID: T2.040611.152114 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1967260
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361002-26

Instrument ID: ICP-THERMO2 Run Time: 16:03 Method: 6010B

File ID: T2.040611.160315 Analyst: JYH Units: mg/L

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Antimony	0.0100	0.0200	0.0100	U
Iron	0.0300	0.0600	0.0300	U
Manganese	0.00500	0.0100	0.00500	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: 1967260
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number:L11040180 Run Date:04/06/2011 Sample ID:WG361002-06

Instrument ID:ICP-THERMO2 Run Time:10:55 Method:6010B

File ID:T2.040611.105517 Analyst:JYH Units:mg/L

Workgroup (AAB#):WG360996 Cal ID:ICP-TH - 06-APR-11

QC Key:DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	10.1	101	90 - 110	
Antimony		1.2	1.22	102	90 - 110	
Iron		4	4.04	101	90 - 110	
Manganese		.5	0.508	102	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1967256

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361002-10

Instrument ID: ICP-THERMO2 Run Time: 11:09 Method: 6010B

File ID: T2.040611.110905 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Antimony		1.20	1.24	mg/L	103	90 - 110		
Iron		4.00	4.04	mg/L	101	90 - 110		
Manganese		0.500	0.507	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967259

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361002-22

Instrument ID: ICP-THERMO2 Run Time: 15:17 Method: 6010B

File ID: T2.040611.151754 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.71	mg/L	97.1	90 - 110		
Antimony		1.20	1.28	mg/L	107	90 - 110		
Iron		4.00	3.96	mg/L	99.0	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967259

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361002-25

Instrument ID: ICP-THERMO2 Run Time: 15:59 Method: 6010B

File ID: T2.040611.155953 Analyst: JYH QC Key: DOD4

Workgroup (AAB#): WG360996 Cal ID: ICP-TH - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.51	mg/L	95.1	90 - 110		
Antimony		1.20	1.30	mg/L	109	90 - 110		
Iron		4.00	3.88	mg/L	96.9	90 - 110		
Manganese		0.500	0.507	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967259

Report generated 04/07/2011 08:16

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040180 **Workgroup (AAB#):** WG360996
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG361002-08 **File ID:** T2.040611.110215 **Units:** mg/L
Sol. AB : WG361002-09 **File ID:** T2.040611.110539 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	256	102	250	245	98.0	
Antimony	NS	-0.00165	NS	0.500	0.513	103	
Iron	100	100	100	100	95.6	95.6	
Manganese	NS	-0.00143	NS	0.250	0.247	98.8	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1967258
Report generated 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040180 **Date:** 01/25/2011
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	0.00190	0	-0.000140	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	0.000335	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
PHOSPHORUS	214.90	-0.000750	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967254
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040180 **Date:** 01/25/2011
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	-0.00200	0	0	-0.00000800
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000530
COBALT	228.60	0	0	0.000108	0	0
COPPER	224.70	0	0.0000770	0	0	0.000196
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
PHOSPHORUS	214.90	0	0	0	0.00200	0.00120
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	0.0000570	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	-0.00000200
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.20	0	0	0	0	-0.0000300

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967254
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040180 **Date:** 01/25/2011
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	0.00000900	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	0.00800	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967254
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040180 **Date:** 01/25/2011
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
PHOSPHORUS	214.90	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
ZIRCONIUM	339.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967254
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L11040180 **Date:** 01/25/2011
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	V	ZN	ZR
ALUMINUM	308.20	0.00300	0	0
ANTIMONY	206.80	-0.00438	0	0
ARSENIC	189.00	0.000107	0	0
BARIUM	455.40	0	0	0
BERYLLIUM	313.00	0	0	0
BORON	249.70	0	0	0
CADMIUM	228.80	0.0000820	0	0
CALCIUM	422.70	0	0	0
CHROMIUM	267.70	0	0	
COBALT	228.60	0.0000200	0	0
COPPER	224.70	0	0	
IRON	261.20	0	0	0
LEAD	220.30	-0.000126	0	0
LITHIUM	670.80	0	0	0
MAGNESIUM	279.10	0	0	0
MANGANESE	257.60	0	0	0
MOLYBDENUM	202.03	-0.000110	0	0
NICKEL	231.60	0	0	0
PHOSPHORUS	214.90	-0.00500	0	0.00200
POTASSIUM	766.40	0	0	0
SELENIUM	196.00	0	0	0
SILICON	212.40	0	0	0
SILVER	328.00	-0.00617	0	0
SODIUM	589.50	0	0	0
STRONTIUM	407.80	0	0	0
THALLIUM	190.80	-0.0282	0	0
TIN	189.90	0	0	0
TITANIUM	337.30	0	0	0
VANADIUM	292.40	0	0	
ZINC	206.20	0	0	0
ZIRCONIUM	339.20	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1967254
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11040180 **Date:** 12/13/2010
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	810.0
Antimony	10.00	90.0
Arsenic	10.00	90.0
Barium	10.00	90.0
Beryllium	15.00	4.5
Boron	10.00	90.0
Cadmium	10.00	16.2
Calcium	10.00	900.0
Chromium	10.00	81.0
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	9.0
Nickel	10.00	90.0
Phosphorus	10.00	900.0
Potassium	10.00	315.0
Selenium	10.00	90.0
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
Zirconium	10.00	45.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1967253
Report generated: 04/07/2011 08:16

Microbac Laboratories Inc.

METHOD BLANK SUMMARY

Login Number: L11040180
Work Group: WG360998
Blank File ID: EL.040611.205458
Blank Sample ID: WG360983-02
Prep Date: 04/06/11 13:34
Instrument ID: ELAN-ICP
Analyzed Date: 04/06/11 20:54
Method: 6020
Analyst: EDL

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG360983-03	EL.040611.210206	04/06/11 21:02	01
SWMU-57-4511-SS-DUP	L11040180-01	EL.040611.221328	04/06/11 22:13	DL01
SWMU-57-4511-SS-MS	L11040180-02	EL.040611.222035	04/06/11 22:20	DL01
SWMU-57-4511-SS-MSD	L11040180-03	EL.040611.222742	04/06/11 22:27	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1967182
Report generated 04/07/2011 08:10

Microbac Laboratories Inc.

METHOD BLANK REPORT

Login Number:L11040180 Prep Date:04/06/11 13:34 Sample ID:WG360983-02
Instrument ID:ELAN-ICP Run Date:04/06/11 20:54 Prep Method:3051A
File ID:EL.040611.205458 Analyst:EDL Method:6020
Workgroup (AAB#):WG360998 Matrix:Soil Units:mg/kg
Contract #: Cal ID:ELAN-I-06-APR-11

Analytes	LOD	LOQ	Concentration	Dilution	Qualifier
Cadmium, Total	0.0500	0.100	0.0500	1	U
Chromium, Total	0.200	0.400	0.200	1	U

LOD Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name:BLANK
PDF ID: 1967183
07-APR-2011 08:10

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG360983-03
Instrument ID: ELAN-ICP Run Time: 21:02 Prep Method: 3051A
File ID: EL.040611.210206 Analyst: EDL Method: 6020
Workgroup (AAB#): WG360998 Matrix: Soil Units: mg/kg
QC Key: DOD4 Lot#: STD41894 Cal ID: ELAN-I-06-APR-11

Analytes	Expected	Found	% Rec	LCS Limits	Q
Cadmium, Total	10.0	9.25	92.5	80 - 120	
Chromium, Total	10.0	10.1	101	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1967184
Report generated: 04/07/2011 08:10

Microbac Laboratories Inc.

MS/MSD REPORT

Loginnum:L11040180 Cal ID:ELAN-ICP- 06-APR-11 Worknum:WG360998

Instrument ID:ELAN-ICP Contract #: Prep Method:3051A

Parent ID:L11040180-01 File ID:EL.040611.221328 Dil:5 Method:6020

Sample ID:L11040180-02 MS File ID:EL.040611.222035 Dil:5 Matrix:Soil

Sample ID:L11040180-03 MSD File ID:EL.040611.222742 Dil:5 Units:mg/kg

Percent Solid:78.4

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	U	12.3	14.2	115	12.3	13.2	107	7.06	80 - 120	20	
Chromium, Total	15.5	12.3	34.9	157	12.3	32.9	142	5.72	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008
PDF File ID: 1967185
Report generated 04/07/2011 11:15

Microbac Laboratories Inc.
Serial Dilution Report

Login: L11040180 **Worknum:** WG360998
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG360998-02 **File ID:** EL.040611.215207 **Dil:** 25 **Units:** ug/L
Sample: L11040179-04 **File ID:** EL.040611.213748 **Dil:** 5

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Cadmium	ND	U	ND	U		
Chromium	36.55	X	25.75	X	29.50	

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: 1967179
04/07/2011 08:10

Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L11040180 **Worknum:** WG360998
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG360998-01 **File ID:** EL.040611.214457 **Dil:** 5 **Units:** ug/L
Sample ID: L11040179-04 **File ID:** EL.040611.213748 **Dil:** 5 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
CADMIUM	58.8		0	U	50	117.5	75 - 125	
CHROMIUM	61.8		7.31		50	108.9	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: 1967180
Report generated: 04/07/2011 08:10

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L11040180	Workgroup (AAB#):	WG360998
Analytical Method:	6020	Instrument ID:	ELAN-ICP
ICAL Worknum:	WG361026	Initial Calibration Date:	06-APR-2011 16:17

	WG361026-01		WG361026-02		WG361026-03		WG361026-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
CADMIUM	0	-0.729	.4	552	50	67000	100	128000	.999952	
CHROMIUM	0	9030	.4	12300	50	404000	100	766000	.999968	

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 1967191
Report generated: 07-APR-2011 08:11

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-06
Instrument ID: ELAN-ICP Run Time: 16:31 Method: 6020
File ID: EL.040611.163122 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360998 Cal ID: ELAN-ICP - 06-APR-11
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
CADMIUM	.125	.25	.125	U
CHROMIUM	.5	1	.5	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL

ICB - Modified 07/14/2009
PDF File ID: 1967193
Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-11
Instrument ID: ELAN-ICP Run Time: 17:07 Method: 6020
File ID: EL.040611.170702 Analyst: EDL Units: ug/L
Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11
Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1967196
Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-20

Instrument ID: ELAN-ICP Run Time: 20:47 Method: 6020

File ID: EL.040611.204752 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1967196
Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-22

Instrument ID: ELAN-ICP Run Time: 22:06 Method: 6020

File ID: EL.040611.220622 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1967196
Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-24

Instrument ID: ELAN-ICP Run Time: 22:41 Method: 6020

File ID: EL.040611.224156 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Cadmium	0.125	0.250	0.125	U
Chromium	0.500	1.00	0.500	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: 1967196
Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-05

Instrument ID: ELAN-ICP Run Time: 16:24 Method: 6020

File ID: EL.040611.162417 Analyst: EDL Units: ug/L

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

QC Key: DOD4

Analyte		Expected	Found	%REC	LIMITS	Q
Cadmium		50	50.3	101	90 - 110	
Chromium		50	50.1	100	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008

PDF File ID: 1967192

Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-10

Instrument ID: ELAN-ICP Run Time: 16:59 Method: 6020

File ID: EL.040611.165955 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.2	ug/L	100	90 - 110		
Chromium		50.0	49.2	ug/L	98.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967195

Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-19

Instrument ID: ELAN-ICP Run Time: 20:40 Method: 6020

File ID: EL.040611.204046 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.4	ug/L	101	90 - 110		
Chromium		50.0	49.7	ug/L	99.5	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967195

Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-21

Instrument ID: ELAN-ICP Run Time: 21:59 Method: 6020

File ID: EL.040611.215916 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.8	ug/L	102	90 - 110		
Chromium		50.0	49.5	ug/L	98.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967195

Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-23

Instrument ID: ELAN-ICP Run Time: 22:34 Method: 6020

File ID: EL.040611.223450 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		50.0	50.9	ug/L	102	90 - 110		
Chromium		50.0	49.3	ug/L	98.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1967195

Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-07

Instrument ID: ELAN-ICP Run Time: 16:38 Method: 6020

File ID: EL.040611.163829 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.190	ug/L	94.9	80 - 120		
Chromium		0.800	0.850	ug/L	106	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1967197

Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

LOW LEVEL CALIBRATION VERIFICATION

Login Number: L11040180 Run Date: 04/06/2011 Sample ID: WG361026-18

Instrument ID: ELAN-ICP Run Time: 19:50 Method: 6020

File ID: EL.040611.195049 Analyst: EDL QC Key: DOD4

Workgroup (AAB#): WG360998 Cal ID: ELAN-I - 06-APR-11

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Cadmium		0.200	0.223	ug/L	112	80 - 120		
Chromium		0.800	0.887	ug/L	111	80 - 120		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010

PDF File ID: 1967197

Report generated 04/07/2011 08:11

Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L11040180 **Workgroup (AAB#):** WG360998
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG361026-08 **File ID:** EL.040611.164539 **Units:** ug/L
Sol. AB : WG361026-09 **File ID:** EL.040611.165247 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Cadmium	NS	0.0190	NS	100	102	102	
Chromium	NS	0.104	NS	100	101	101	

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).
+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.

ICS - Modified 03/06/2008
PDF File ID: 1967194
Report generated 04/07/2011 08:11

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L11040180 **Analytical Method** 6020
Analytical Workgroup: WG360998 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** EDL
ICAL Date: 06-APR-2011 15:57

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L11040179-04	SAMP	06-APR-2011 21:37	97.611	97.967	94.603	94.552
L11040180-01	SAMP	06-APR-2011 22:13	95.226	97.649	95.222	93.476
L11040180-02	SAMP	06-APR-2011 22:20	95.516	98.827	94.455	93.137
L11040180-03	SAMP	06-APR-2011 22:27	96.13	100.917	97.233	95.452
WG360983-02	BLANK	06-APR-2011 20:54	98.34	96.93	94.955	96.636
WG360983-03	LCS	06-APR-2011 21:02	100.8	98.412	96.736	98.416
WG360998-01	PSPK	06-APR-2011 21:44	96.218	96.616	92.573	93.149
WG360998-02	SERIAL	06-APR-2011 21:52	98.76	100.114	97.898	95.864
WG361026-05	ICV	06-APR-2011 16:24	97.211	94.571	95.741	97.497
WG361026-06	ICB	06-APR-2011 16:31	99.474	97.796	97.729	97.915
WG361026-07	LLICV	06-APR-2011 16:38	100.126	99.157	99.207	99.391
WG361026-08	ICS	06-APR-2011 16:45	96.702	95.633	92.711	94.541
WG361026-09	ICS	06-APR-2011 16:52	96.884	85.703	81.439	90.359
WG361026-10	CCV	06-APR-2011 16:59	98.086	94.31	92.967	94.924
WG361026-11	CCB	06-APR-2011 17:07	100.183	96.323	95.675	95.769
WG361026-18	LLCCV	06-APR-2011 19:50	97.831	99.526	98.452	97.42
WG361026-19	CCV	06-APR-2011 20:40	97.913	94.33	92.663	95.716
WG361026-20	CCB	06-APR-2011 20:47	98.423	96.534	95.211	96.071
WG361026-21	CCV	06-APR-2011 21:59	94.71	96.848	97.609	95.728
WG361026-22	CCB	06-APR-2011 22:06	97.564	101.862	102.042	98.39
WG361026-23	CCV	06-APR-2011 22:34	93.328	97.767	97.454	96.732
WG361026-24	CCB	06-APR-2011 22:41	97.279	101.728	102.193	98.948

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
PDF File ID: 1967189
Report generated: 04/07/2011 08:11

Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L11040180 **Date:** 12/07/2010
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
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

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

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1967188
Report generated: 04/07/2011 08:11

Kemron–Radford Army Ammunition Plant Data Validation Summary Worksheet

SDG#: L11040179/L11040180	Laboratory: Microbac	Validator: Larry M. Fukui	Validation Date: 5/11/11
Site: Radford	AR/COC#s: 2169 and 2170		Validation Level: ☐ III ☒ IV
Matrix: Soil	# of Samples: 4/3	Tracking docs present: See sample receipt and log-in documentation	
COCs present: yes	COCs signed: yes	COCs dated: yes	Sample Container Integrity: OK

Analyses:
☐ VOCs ☐ SVOCs ☐ PAHs ☐ GRO ☐ DRO ☐ Pests ☐ PCBs ☒ Metals ☐ Gen Chem
☐ Other:

Requested Analyses Not Reported

Client Sample ID	Lab Sample ID	Analysis	Comments
None			

Hold Time/Preservation Outliers

Client Sample ID	Lab Sample ID	Analysis	Pres.	Collection Date	Preparation Date	Analysis Date	Analysis <2X HT	Analysis ≥2X HT
None								

Comments: Sampled 4/4, 4/5

Kemron–Radford Army Ammunition Plant Inorganic Metals Worksheet

SDG: L11040179/L11040180	Matrix: Soil	Level III Lab Sample IDs: NA
Method/Batch #s: 6010/WG360996; 6020/WG360998		Level IV Lab Sample IDs: L11040179-01 thru -04 and L11040180-01 thru -03

ICPMS Mass Cal: ☒ Pass ☐ Fail ☐ NA ICPMS Resolution: ☒ Pass ☐ Fail ☐ NA ICPMS %RSD: ☒ Pass ☐ Fail ☐ NA

Analyte (outliers)	**Calibration**						**ICP CRDL** *±10%*	**Method Blank** *(<MDL)*	**5X MB**	**ICS A** *<IDL*	**ICS AB** *±20%*	**LCS %R** *(80-120%)*	**MS %R** *(75-125%)*	**MSD %R** *(75-125%)*	**MS/D RPD** *(≤20%)*	**Serial Dil. %D** *(±10%)*	**PS** *(75-125%)*	**DUP RPD**
	r *≥0.995*	**ICV** *±10%*[1]	**CCV** *±10%*[1]	**ICB** ug/L	**CCB** *(<IDL)*	**5X CB**												
Sb	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mn	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	2860**	7120**	45.1	✓	✓	✓
Cr	✓	✓	✓	✓	✓	NA	110.9	✓	NA	✓	✓	✓	157	142	✓	29.50	NA	✓
Cd	✓	✓	✓	✓	✓	NA	111.6	✓	NA	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fe	✓	✓	✓	✓	✓	NA	*	✓	NA	✓	✓	✓	-1140**	-1310**	✓	✓	NA	✓

IS Outliers[3] *(60-120%)*				**IS Outliers**[3] *(60-120%)*			
Sample ID	**%Recovery**	**%Recovery**	**%Recovery**	**CCV/CCB ID**	**%Recovery**	**%Recovery**	**%Recovery**
None				None			

Comments: HTs OK
ICS A/AB only at beginning of run. All samples one or more interferents >ICS concentration.
*CRDL not analyzed for 6010.
*parent >4X spike concentration; PS not applicable.

[1]20% for Hg [2]For sample results <5X RL, ±RL [3]Standard CLP NFG criteria used; no criteria specified in QAPP or Region III NFG

6010 METALS CALIBRATION VERIFICATION FOR L11040179 and L11040180

Date: WG360981 04/06/11
ICP-THERMO2
Analyte: Al

Concentration	Mean Response
0	0.00091
0.1	0.00218
0.2	0.00372
10	0.13538
20	0.2687
Corr. Coef. =	0.999998

Date: WG360981 04/06/11
ICP-THERMO2
Analyte: Sb

Concentration	Mean Response
0	0.00013
0.1	0.00061
0.2	0.00103
10	0.04201
20	0.08458
Corr. Coef. =	0.999991

Date: WG360981 04/06/11
ICP-THERMO2
Analyte: Fe

Concentration	Mean Response
0	0.00001
0.1	0.00166
0.2	0.00338
10	0.16463
20	0.32737
Corr. Coef. =	0.999996

Date: WG360981 04/06/11
ICP-THERMO2
Analyte: Mn

Concentration	Mean Response
0	0.00055
0.1	0.0028
0.2	0.00482
10	0.20776
20	0.4118
Corr. Coef. =	0.999993

	True Value	Reported	
	ICV		**%Rec**
Al	10.00	10.13	101.3
	ICSAB		**%Rec**
Fe	100.00	100.04	100.0
	CCV1 (11:09)		**%Rec**
Mn	0.50	0.51	101.4
	CCV7 (15:17)		**%Rec**
Sb	1.20	1.28	107.0
	CCV8 (15:59)		**%Rec**
Al	10.00	9.51	95.1
	CCV9 (16:35)		**%Rec**
Fe	4.00	3.94	98.6

6010 METALS ICS AND CRDL CALCULATIONS FOR L11040179 and L11040180

ICSA Check

Total Metals

4/6	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Sb	0.500	1.000	-0.0017	
Mn	0.250	0.500	-0.0014	

4/6	True Conc	Reported	% Rec	Q
Al	250.0000	255.7100	102.3	
Fe	100.0000	100.0400	100.0	

ICSAB Check

4/6	True Conc	Reported	% Rec	Q
Al	250.0000	255.7100	102.3	
Sb	0.5000	0.5129	102.6	
Fe	100.0000	100.0400	100.0	
Mn	0.2500	0.2469	98.8	

CRDL Check

(CRI not analyzed)

CALCULATION WORKSHEET FOR 6010 METALS SOIL RESULTS FOR SDG L11040179 and L11040180

Soil Sample Calculations:

	MDL (mg/kg)	CRQL (mg/kg)			MB		LCS				L11040180-01 (FD)		L11040180-02MS		L11040180-03MSD	
Final Volume (ml)						50		50				50		50		50
Sample Aliquot (g)						1		1				1.312		1.312		1.312
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	100	%S	100	%S		%S	78.4	%S	78.4	%S	78.4
					DF	1	DF	1	DF		DF	1	DF	1	DF	1
Al	10.0	20.0					4.7256	236			319.25	15519	332.99	16186	324.77	15787
Sb	0.500	1.000			0.59732	30	0.59732	29.866			0.00222	U	0.51112	24.8	0.52317	25.4
Fe	1.500	3.000					1.9209	96.045			660.78	32120	637.9	31008	634.64	30849
Mn	0.25	0.5					0.2497	12			11.149	542	18.288	889	28.938	1407

	MDL (mg/kg)	CRQL (mg/kg)			L11040179-01		L11040179-02		L11040179-03		L11040179-04		L11040180-01PS			
Final Volume (ml)						50		50		50		50		50		
Sample Aliquot (g)						1.324		1.443		1.471		1.315		1.312		
					mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg	mg/L	mg/kg
					%S	75.2	%S	78.3	%S	80	%S	79.6	%S	78.4	%S	
					DF	1	DF	1	DF	1	DF	1	DF	1	DF	
Al	10.0	20.0			320.76	16108	309.35	13690	343.33	14587	305	14569	286.73	13938		
Sb	0.5	1.0			0.05361	2.69	0.00803	U	-0.00047	U	0.00323	U	0.57126	28		
Fe	1.500	3.000			660.19	33154	646.86	28625	678.57	28831	633.25	30249	591.51	28753		
Mn	0.25	0.5			5.7895	291	7.5738	335	9.8958	420	15.022	718	10.272	499		

METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDG L11040179 and L11040180

6-Apr	LCS	-03 MS	-04 MSD	PS	PS	PS
Analyte	Al	Al	Al	Al	Fe	Mn
True Conc	250.0	243	243	5.0	2.0	0.3
Reported Conc	236.0	16186	15787	286.73	591.51	10.272
Sample Conc	0.0	15519	15519	319.25	660.78	11.1
%R	94.40	274.85	110.42	-650.40	-3463.50	-350.80
RPD		2.50		Sample result >4X spike ; lab calculation does not match		
		Sample >4X Spike Amount; %R NA				

6-Apr	LCS	-03 MS	-04 MSD	PS
Analyte	Sb	Sb	Sb	Sb
True Conc	30.000	29.2000	29.2000	0.6
Reported Conc	29.866	24.8	25.4	0.57126
Sample Conc	0.0	0.000	0.000	0
%R	99.55	85.09	87.09	95.21
RPD		2.33		

6-Apr	LCS	-03 MS	-04 MSD	LCS	-03 MS	-04 MSD
Analyte	Fe	Fe	Fe	Mn	Mn	Mn
True Conc	100.0	97.2	97.2	12.5	12.1	12.1
Reported Conc	96.045	31008	30849	12	889	1407
Sample Conc	0.0	32120	32120	0.0	542	542
%R	96.05	-1144.22	-1307.25	99.88	2868	7146
RPD		0.51			45.10	
		Sample >4X Spike Amount			Sample >4X Spike Amount	

6010 Soil:

Analyte	180-01	Serial Dilution 5x		IDL	50 * IDL	> 50*IDL?	RPD Limit	%D	>Limit?
	mg/L	mg/L	mg/L	ug/kg	mg/L				
Al	319.25	67.045	335.225	10.0	10.00	Y	10	5	
Sb	0.00222	-0.00014	-0.0007	0.500	0.500		10		
Mn	660.78	144.01	720.05	1.50	1.50	Y	10	9	
Fe	11.149	2.3999	11.9995	0.25	0.25	Y	10	8	

6020 TOTAL METALS CALIBRATION VERIFICATION FOR SDG L11040179 and L11040180

Date: WG360998 04/06/11

Analyte: Cd

Concentration	Mean Response
0	-0.729
0.4	551.812
50	67026.877
100	127649.482

Corr. Coef. = 0.999671

Water

	True Value	Reported	
	ICV		**%Rec**
Cd	50.00	50.25	100.5
	ICSAB		**%Rec**
Cr	100.00	101.25	101.3
	CCV1 (16:59)		**%Rec**
Cd	50.00	50.17	100.3
	CCV5 (20:40)		**%Rec**
Cr	50.00	49.73	99.5
	CCV6 (21:59)		**%Rec**
Cd	50.00	50.78	101.6
	CCV7 (22:34)		**%Rec**
Cr	50.00	49.33	98.7

6020 METALS ICS AND CRDL CALCULATIONS FOR SDG L11040179 and L11040180

ICSA Check

2/25	IDL (ug/L)	CRQL (ug/L)	ICSA (ug/L)	>IDL
Cd	0.300	0.600	0.0190	
Cr	1.000	2.000		

CRDL Check

2/6 16:38	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cd	0.2000	0.1898	94.9	
Cr	0.8000	0.8499	106.2	

2/6 19:50	True Conc (ug/L)	Reported Conc (ug/L)	% Rec (ug/L)	Q
Cd	0.2000	0.2232	111.6	K
Cr	0.8000	0.8872	110.9	K

CALCULATION WORKSHEET FOR 6020 METALS SOIL RESULTS FOR SDG L11040179 and L11040180

Soil Sample Calculations:

WG360998

	MDL (mg/kg)	CRQL (mg/kg)			MB		LCS		L11040180-01 (FD)		L11040180-02 (MS)		L11040180-03 (MSD)	
			Final Volume (ml)			200		200		200		200		200
			Sample Aliquot (g)			0.5		0.5		0.518		0.518		0.518
					ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
					%S	100	%S	100	%S	78.4	%S	78.4	%S	78.4
					DF	1	DF	1	DF	5	DF	5	DF	5
Cd	0.050	0.100			-0.0091	U	23.1218	9.249	0.0058	U	5.7639	14.193	5.3707	13.225
Cr	0.200	0.400			0.2137	U	25.3609	10.144	6.2979	15.508	14.161	34.870	13.3734	32.930

	MDL (mg/kg)	CRQL (mg/kg)			L11040179-01		L11040179-02		L11040179-03		L11040179-04	
			Final Volume (ml)			200		200		200		200
			Sample Aliquot (g)			0.507		0.503		0.501		0.5
					ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg	ug/L	mg/kg
					%S	75.2	%S	78.3	%S	80	%S	79.6
					DF	5	DF	5	DF	5	DF	5
Cd	0.050	0.100			0.0114	U	0.0813	U	-0.0021	U	-0.0091	U
Cr	0.200	0.400			11.2905	29.6133	10.9017	27.6799	10.8651	27.1085	7.31	18.3668

6020 METALS MATRIX SPIKE CALCULATION WORKSHEET FOR SDGs L11040179 and L11040180

Soil

	LCS	180-02 (MS)	180-03 (MSD)	179-04 PS
Analyte	**Cd**	**Cd**	**Cd**	**Cd**
True Conc	10.0000	12.3000	12.3000	
Reported Conc	9.249	14.1929	13.2247	
Sample Conc	0.0000	0.0000	0.0000	
%R	92.49	115.39	107.52	
RPD		7.06		

	LCS	180-02 (MS)	180-03 (MSD)	179-04 PS
Analyte	**Cr**	**Cr**	**Cr**	**Cr**
True Conc	10.0000	12.3000	12.3000	50.0000
Reported Conc	10.144	34.870	32.930	61.763
Sample Conc	0.0000	15.508	15.508	7.310
%R	101.44	157.41	141.64	108.91
RPD		5.72		

Analyte	179-04	Serial Dilution 5x		IDL	IDL		50 * IDL	> 50*IDL?	RPD	%D	> %D
	ug/L	ug/L	ug/L	ug/L	ug/kg		ug/L		Limit		Limit?
Cd				0.200	10.0		10.0				
Cr	36.55	5.15	25.75	0.200	0.025		10.0	Y	10	30	*