

Laboratory Report Number: L16120521

Shane Lowe
CH2MHILL, Inc
CH2MHILL
Richmond Heights, MO 63117

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 Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Michelle Taylor – Client Services Specialist
(740) 373-4071
Michelle.Taylor@microbac.com

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

This report was certified on January 03 2017



Leslie Bucina – Managing Director

State of Origin: NY
Accrediting Authority: Department of Health ID:10861
QAPP: WATERLOO



Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
Sample ID: MW21-120816. The pH is out of the acceptable range for the Metals and TOC...etc container. Due to matrix of sample, suggest lab to adjust. BRG	Please have them attempt to adjust in the labs. MRT
Sample ID: MW31-120816. The pH is out of the acceptable range for the Metals and TOC...etc container. Due to matrix of sample, suggest lab to adjust. BRG	

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00114300	I	0.0		1015923871210004575000784922209622	X
00112160	I	0.0		1002239571210004575000809948944344	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	No
12	Were VOA samples free of headspace (less than 6mm)?	NA

Samples Received

Client ID	Laboratory ID	Date Collected	Date Received
MW36-120816	L16120521-01	12/08/2016 11:20	12/09/2016 11:05
MW36-120816	L16120521-02	12/08/2016 11:20	12/09/2016 11:05
MW37-120816	L16120521-03	12/08/2016 09:55	12/09/2016 11:05
MW37-120816	L16120521-04	12/08/2016 09:55	12/09/2016 11:05
MW35-120816	L16120521-05	12/08/2016 14:45	12/09/2016 11:05
MW35-120816	L16120521-06	12/08/2016 14:45	12/09/2016 11:05
MW21-120816	L16120521-07	12/08/2016 14:50	12/09/2016 11:05
MW21-120816	L16120521-08	12/08/2016 14:50	12/09/2016 11:05
MW31-120816	L16120521-09	12/08/2016 11:45	12/09/2016 11:05
MW31-120816	L16120521-10	12/08/2016 11:45	12/09/2016 11:05
MW24-120816	L16120521-11	12/08/2016 10:25	12/09/2016 11:05
MW24-120816	L16120521-12	12/08/2016 10:25	12/09/2016 11:05



Login Number: L16120521
Department: Metals
Analyst: Kerri Buck

METHOD

Preparation: SW-846 3015

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: WG595175 - The low level calibration check analyzed on 23-Dec-2016 at 01:51 yielded a noncompliant result for magnesium. Batch QA/QC samples and client samples 01, 03, 05 and 11 were reanalyzed on a later calibration which was compliant for magnesium.

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: WG594869 - All acceptance criteria were met.

WG595175 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG594869 - Due to the dark color of the digestates, all client samples were initially analyzed at dilutions for all analytes. Client sample 07 required analysis at a further dilution in order to obtain a result for sodium within the linear range.

Narrative ID: 120565

Approved By: Maren Beery

Maren Beery



Login Number: L16120521
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: WG594709 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 120405

Approved By: Maren Beery

Maren Beery



Login Number: L16120521
Department: General Chromatography
Analyst: Craig Smith

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO₂ and NO₃ are 48 hours and the hold times for F, Cl, Br, and SO₄ are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source 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.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: Samples 01, 03, 05, 07, 09, and 11 were analyzed at dilutions only due to their pre-run screen results for CL and/or SO₄ which were greater than 200 ppm. Any sample that has a single anion load greater than 200 ppm will be diluted in order to prevent damage to the ion chromatograph, which is caused by repeated overloading of the analytical column and oversaturation of the conductivity suppressor and/or detector.

MANUAL INTEGRATION: Sample 09 was manually integrated. 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.

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: 120917

Approved By: Eric Lawson

A handwritten signature in black ink, appearing to read "Eric C. Lawson", is written over a light gray rectangular background.



Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis EPA 310.2 (Alkalinity)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: Sample fractions 07 and 09 were diluted to reduce color/matrix interference. The reporting limits are elevated accordingly.

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Narrative ID: 120403
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.



Login Number: L16120521
Department: Conventionals
Analyst: David Merckle

METHOD

Analysis EPA 350.1/SM4500-NH3 B(NH3)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 120847
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.



Login Number: L16120521
Department: Conventionals
Analyst: David Merckle

METHOD

Analysis EPA 353.2/SM4500-NO3 F (Nitrate)

HOLDING TIMES

Sample Analysis: The instrument used for the analysis of nitrate only analyzes for nitrate-nitrite (NO₃NO₂) which is the amount of total nitrate (NO₃) and nitrite (NO₂) combined. The NO₃ concentration is determined by analyzing for NO₃NO₂ and NO₂ and calculating NO₃ by the difference. An unpreserved bottle only has a 48 hour hold time for NO₃ and NO₂ separately. However if the bottle is preserved with sulfuric acid, the hold time for NO₃NO₂ is 28 days. The NO₂ was analyzed within 48 hours. The NO₃NO₂ was analyzed from a preserved container within 28 days..

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 120850
Approved By: Deanna Hesson

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Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis EPA 365.4 (Phosphorus)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 120848
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over the printed name.



Login Number: L16120521
Department: Conventional
Analyst: Dorothy Payne

METHOD

Analysis EPA 365.2/SM4500-P E (Orthophosphate)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: Sample fractions 07 and 09 were diluted to reduce color/matrix interference. The reporting limits are elevated accordingly.

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Narrative ID: 120393
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.



Login Number: L16120521
Department: Conventional
Analyst: Todd Boyle

METHOD

Analysis SW-846 9030/EPA 376.1/SM4500-S(-2) F (Sulfide)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 120852
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.



Login Number: L16120521
Department: Conventionals
Analyst: April Greene

METHOD

Analysis EPA 160.1/SM2540 C(Total Dissolved Solids)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 120853
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.



Login Number: L16120521
Department: Conventionals
Analyst: David Merckle

METHOD

Analysis EPA 351.2(TKN)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 120849
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.



Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

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Narrative ID: 120851
Approved By: Deanna Hesson

A handwritten signature in cursive script, appearing to read "Deanna Hesson", written in dark ink.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/22/2016 23:55
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: T3.122216.235533
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	97.2		0.500	0.250
Iron, Total	7439-89-6	4.11		0.100	0.0500
Manganese, Total	7439-96-5	0.0364		0.0100	0.00500
Potassium, Total	7440-09-7	5.34		1.00	0.500
Silica, Calculated as SiO ₂		20.4		2.14	1.07
Silicon, Total	7440-21-3	9.54		1.00	0.500
Sodium, Total	7440-23-5	174		0.500	0.250
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:25
Collect Date: 12/08/2016 11:20	Dilution: 10	File ID: T3.122916.072534
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	74.0		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:26
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: NI.121316.142626
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.169		0.00100	0.000500

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: IC3
Client ID: MW36-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 18:00
Collect Date: 12/08/2016 11:20	Dilution: 4	File ID: I3_122216-07
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	205	E	0.800	0.400
Sulfate	14808-79-8	233		4.00	2.00
E	Semiquantitative result (out of calibration range)				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: IC3
Client ID: MW36-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 18:20
Collect Date: 12/08/2016 11:20	Dilution: 20	File ID: I3_122216-08
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	215		4.00	2.00
Sulfate	14808-79-8	227		20.0	10.0

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:48
Collect Date: 12/08/2016 11:20	Dilution: 2	File ID: S2161212004.024
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	398		40.0	20.0

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:45
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: S2161216001.024
Sample Tag: 01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.216		0.100	0.0500

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:20	Dilution: 4	File ID: S216121610520001
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		0.844		0.200	0.100

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:20	Dilution: 4	File ID: S216121610481101
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	0.844		0.200	0.100

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW36-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:24
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: SC161215002.018
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW36-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: 00.1612091600-06
Sample Tag:	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	0.0279	J	0.0500	0.0250
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: BURET
Client ID: MW36-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: ET.1612121630-10
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW36-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594355	Analyst: AWE	Run Date: 12/09/2016 16:05
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: EN.1612091605-20
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		1040		20.0	10.0

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW36-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:32
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: SC161215001.024
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	0.222		0.200	0.100

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW36-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 22:51
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: TC12152016.055
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.97		1.00	0.500

Sample #: L16120521-02	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/22/2016 23:59
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: T3.122216.235925
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	3.81		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.0357		0.0100	0.00500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-02	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:06
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: NI.121316.150655
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.162		0.00100	0.000500

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:03
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: T3.122316.000317
Sample Tag: 01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	216		0.500	0.250
Iron, Total	7439-89-6	0.141		0.100	0.0500
Manganese, Total	7439-96-5	0.362		0.0100	0.00500
Potassium, Total	7440-09-7	3.90		1.00	0.500
Silica, Calculated as SiO ₂		16.3		2.14	1.07
Silicon, Total	7440-21-3	7.61		1.00	0.500
Sodium, Total	7440-23-5	714		0.500	0.250
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:29
Collect Date: 12/08/2016 09:55	Dilution: 10	File ID: T3.122916.072928
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	88.8		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:10
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: NI.121316.151000
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00219		0.00100	0.000500

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: IC3
Client ID: MW37-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 18:41
Collect Date: 12/08/2016 09:55	Dilution: 10	File ID: I3_122216-09
Sample Tag: DL01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	994	E	2.00	1.00
Sulfate	14808-79-8	836		10.0	5.00
E	Semiquantitative result (out of calibration range)				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: IC3
Client ID: MW37-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 19:01
Collect Date: 12/08/2016 09:55	Dilution: 100	File ID: I3_122216-10
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	1220		20.0	10.0
Sulfate	14808-79-8	829		100	50.0

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:49
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: S2161212004.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO ₃)	11-43-8	266		20.0	10.0

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:47
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: S2161216001.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7		U	0.100	0.0500
U	Not detected at or above adjusted sample detection limit.				

Certificate of Analysis

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 09:55	Dilution: 4	File ID: S216121610523401
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		0.696		0.200	0.100

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 09:55	Dilution: 4	File ID: S216121610521701
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	0.696		0.200	0.100

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW37-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:25
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: SC161215002.021
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW37-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: 00.1612091600-07
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	0.0517		0.0500	0.0250

Certificate of Analysis

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: BURET
Client ID: MW37-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: ET.1612121630-11
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW37-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594355	Analyst: AWE	Run Date: 12/09/2016 16:05
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: EN.1612091605-21
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		3300		20.0	10.0

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW37-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:32
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: SC161215001.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW37-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:05
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: TC12152016.056
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.02		1.00	0.500

Certificate of Analysis

Sample #: L16120521-04	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:07
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: T3.122316.000717
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	0.133		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.365		0.0100	0.00500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-04	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:13
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: NI.121316.151306
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00198		0.00100	0.000500

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:11
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: T3.122316.001120
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	155		0.500	0.250
Iron, Total	7439-89-6	1.03		0.100	0.0500
Manganese, Total	7439-96-5	0.174		0.0100	0.00500
Potassium, Total	7440-09-7	4.31		1.00	0.500
Silica, Calculated as SiO2		18.4		2.14	1.07
Silicon, Total	7440-21-3	8.58		1.00	0.500
Sodium, Total	7440-23-5	164		0.500	0.250
U	Not detected at or above adjusted sample detection limit.				

Certificate of Analysis

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:52
Collect Date: 12/08/2016 14:45	Dilution: 10	File ID: T3.122916.075225
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	94.0		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:16
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: NI.121316.151611
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00896		0.00100	0.000500

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: IC3
Client ID: MW35-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 19:22
Collect Date: 12/08/2016 14:45	Dilution: 5	File ID: I3_122216-11
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	398	E	1.00	0.500
Sulfate	14808-79-8	166		5.00	2.50
E	Semiquantitative result (out of calibration range)				

Certificate of Analysis

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: IC3
Client ID: MW35-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 19:42
Collect Date: 12/08/2016 14:45	Dilution: 50	File ID: I3_122216-12
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	453		10.0	5.00
Sulfate	14808-79-8	162		50.0	25.0

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:49
Collect Date: 12/08/2016 14:45	Dilution: 2	File ID: S2161212004.026
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	322		40.0	20.0

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:47
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: S2161216001.026
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0822	J	0.100	0.0500
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:45	Dilution: 4	File ID: S216121610525501
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	0.804		0.200	0.100

Certificate of Analysis

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:45	Dilution: 4	File ID: S216121610530701
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		0.804		0.200	0.100

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW35-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:26
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: SC161215002.022
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW35-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: 00.1612091600-08
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	0.0454	J	0.0500	0.0250
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: BURET
Client ID: MW35-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: ET.1612121630-12
Sample Tag:	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW35-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594355	Analyst: AWE	Run Date: 12/09/2016 16:05
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: EN.1612091605-22
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		1330		20.0	10.0

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW35-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:34
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: SC161215001.026
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW35-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:18
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: TC12152016.057
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	1.53		1.00	0.500

Certificate of Analysis

Sample #: L16120521-06	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:15
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: T3.122316.001512
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	0.846		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.172		0.0100	0.00500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-06	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:19
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: NI.121316.151916
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00839		0.00100	0.000500

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:18
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: T4.121516.211822
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5	1.05	J	2.00	1.00
Calcium, Total	7440-70-2	2.71	J	5.00	2.50
Iron, Total	7439-89-6	0.663	J	1.00	0.500
Magnesium, Total	7439-95-4		U	5.00	2.50
Manganese, Total	7439-96-5		U	0.100	0.0500
Potassium, Total	7440-09-7		U	10.0	5.00
Silica, Calculated as SiO ₂		16.7	J	21.4	10.7
Silicon, Total	7440-21-3	7.79	J	10.0	5.00
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Certificate of Analysis

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/18/2016 11:25
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/18/2016 16:10
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: T4.121816.161014
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sodium, Total	7440-23-5	6900		50.0	25.0
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:28
Collect Date: 12/08/2016 14:50	Dilution: 50	File ID: NI.121316.152836
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	4.10		0.0500	0.0250

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: IC3
Client ID: MW21-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 20:23
Collect Date: 12/08/2016 14:50	Dilution: 50	File ID: I3_122216-14
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	308		10.0	5.00
Sulfate	14808-79-8	1040		50.0	25.0

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:50
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: S2161212004.027
Sample Tag: DL01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	13300		2000	1000

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:49
Collect Date: 12/08/2016 14:50	Dilution: 4	File ID: S2161216001.027
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	11.9		0.400	0.200

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: S216121610532901
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	13.9		5.00	2.50

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: S216121610534301
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		14.3		5.00	2.50

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW21-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:26
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: SC161215002.023
Sample Tag: DL01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0	14.5		2.00	1.00

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW21-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 14:50	Dilution: 200	File ID: 00.1612091600-09
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	23.0		10.0	5.00

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: BURET
Client ID: MW21-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 14:50	Dilution: 1	File ID: ET.1612121630-13
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8	37.2		1.00	0.500

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW21-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594631	Analyst: ADG	Run Date: 12/13/2016 09:42
Collect Date: 12/08/2016 14:50	Dilution: 1	File ID: EN.1612130942-25
Sample Tag: 1	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		16000		500	250

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW21-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:34
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: SC161215001.027
Sample Tag: DL01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	23.0		2.00	1.00

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW21-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:30
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: TC12152016.058
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	729		100	50.0

Sample #: L16120521-08	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:22
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: T4.121516.212219
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5	1.07	J	2.00	1.00
Iron, Dissolved	7439-89-6	0.541	J	1.00	0.500
Manganese, Dissolved	7439-96-5		U	0.100	0.0500
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-08	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:31
Collect Date: 12/08/2016 14:50	Dilution: 50	File ID: NI.121316.153142
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	3.94		0.0500	0.0250

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:26
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: T4.121516.212614
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	2.00	1.00
Calcium, Total	7440-70-2	3.47	J	5.00	2.50
Iron, Total	7439-89-6	1.95		1.00	0.500
Magnesium, Total	7439-95-4	3.06	J	5.00	2.50
Manganese, Total	7439-96-5		U	0.100	0.0500
Potassium, Total	7440-09-7	11.8		10.0	5.00
Silica, Calculated as SiO ₂		24.3		21.4	10.7
Silicon, Total	7440-21-3	11.4		10.0	5.00
Sodium, Total	7440-23-5	2410		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:55
Collect Date: 12/08/2016 11:45	Dilution: 5	File ID: NI.121316.145545
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.0329		0.00500	0.00250

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: IC3
Client ID: MW31-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 21:24
Collect Date: 12/08/2016 11:45	Dilution: 5	File ID: I3_122216-17
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	522	E	1.00	0.500
Sulfate	14808-79-8	380		5.00	2.50
E	Semiquantitative result (out of calibration range)				

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: IC3
Client ID: MW31-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 21:44
Collect Date: 12/08/2016 11:45	Dilution: 50	File ID: I3_122216-18
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	608		10.0	5.00
Sulfate	14808-79-8	370		50.0	25.0

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:51
Collect Date: 12/08/2016 11:45	Dilution: 100	File ID: S2161212004.028
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	4510		2000	1000

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 09:42
Collect Date: 12/08/2016 11:45	Dilution: 2	File ID: S2161216001.065
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	4.10		0.200	0.100

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:45	Dilution: 100	File ID: S216121610552001
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		16.8		5.00	2.50

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:45	Dilution: 100	File ID: S216121610540301
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	16.2		5.00	2.50

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW31-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:27
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: SC161215002.024
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0	4.91		2.00	1.00

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW31-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 11:45	Dilution: 200	File ID: 00.1612091600-10
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	9.07	J	10.0	5.00
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: BURET
Client ID: MW31-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 11:45	Dilution: 1	File ID: ET.1612121630-14
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8	35.1		1.00	0.500

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW31-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594437	Analyst: AWE	Run Date: 12/12/2016 10:57
Collect Date: 12/08/2016 11:45	Dilution: 1	File ID: EN.1612121057-04
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		3550		500	250

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW31-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:45
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: SC161215001.039
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	7.77		2.00	1.00

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW31-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:43
Collect Date: 12/08/2016 11:45	Dilution: 25	File ID: TC12152016.059
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	255		25.0	12.5

Sample #: L16120521-10	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:30
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: T4.121516.213003
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	2.00	1.00
Iron, Dissolved	7439-89-6	1.80		1.00	0.500

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Manganese, Dissolved	7439-96-5		U	0.100	0.0500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-10	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:58
Collect Date: 12/08/2016 11:45	Dilution: 5	File ID: NI.121316.145850
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.0298		0.00500	0.00250

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:34
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: T3.122316.003409
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5	0.307		0.200	0.100
Calcium, Total	7440-70-2	164		0.500	0.250
Iron, Total	7439-89-6	11.1		0.100	0.0500
Manganese, Total	7439-96-5	0.302		0.0100	0.00500
Potassium, Total	7440-09-7	7.02		1.00	0.500
Silica, Calculated as SiO2		24.3		2.14	1.07
Silicon, Total	7440-21-3	11.3		1.00	0.500
Sodium, Total	7440-23-5	514		0.500	0.250

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:56
Collect Date: 12/08/2016 10:25	Dilution: 10	File ID: T3.122916.075619
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	96.5		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				

Certificate of Analysis

U	Not detected at or above adjusted sample detection limit.

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:43
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: NI.121316.144304
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00948		0.00100	0.000500

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: IC3
Client ID: MW24-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 22:04
Collect Date: 12/08/2016 10:25	Dilution: 10	File ID: I3_122216-19
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	282	E	2.00	1.00
Sulfate	14808-79-8	975		10.0	5.00
E	Semiquantitative result (out of calibration range)				

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: IC3
Client ID: MW24-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 22:25
Collect Date: 12/08/2016 10:25	Dilution: 40	File ID: I3_122216-20
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	281		8.00	4.00
Sulfate	14808-79-8	961		40.0	20.0

Certificate of Analysis

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:52
Collect Date: 12/08/2016 10:25	Dilution: 4	File ID: S2161212004.029
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	809		80.0	40.0

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:50
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: S2161216001.029
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.759		0.100	0.0500

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 10:25	Dilution: 20	File ID: S216121610555401
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		2.22		1.00	0.500

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 10:25	Dilution: 20	File ID: S216121610554001
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	2.22		1.00	0.500

Certificate of Analysis

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW24-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:28
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: SC161215002.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0	0.101	J	0.200	0.100
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW24-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: 00.1612091600-11
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2		U	0.0500	0.0250
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: BURET
Client ID: MW24-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: ET.1612121630-15
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW24-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594437	Analyst: AWE	Run Date: 12/12/2016 10:57
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: EN.1612121057-05
Sample Tag:	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		2470		20.0	10.0

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW24-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:36
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: SC161215001.028
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	0.922		0.200	0.100

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW24-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595482	Analyst: DIH	Run Date: 12/19/2016 23:58
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: TC12192016.040
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	10.0		1.00	0.500

Sample #: L16120521-12	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:38
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: T3.122316.003811
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	8.42		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.185		0.0100	0.00500
U	Not detected at or above adjusted sample detection limit.				

Certificate of Analysis

Sample #: L16120521-12	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 13:52
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: NI.121316.135219
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00894		0.00100	0.000500

2.1 Metals Data

2.1.1 Metals I C P Data

2.1.1.1 Summary Data



Login Number: L16120521
Department: Metals
Analyst: Kerri Buck

METHOD

Preparation: SW-846 3015

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: WG595175 - The low level calibration check analyzed on 23-Dec-2016 at 01:51 yielded a noncompliant result for magnesium. Batch QA/QC samples and client samples 01, 03, 05 and 11 were reanalyzed on a later calibration which was compliant for magnesium.

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: WG594869 - All acceptance criteria were met.

WG595175 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: WG594869 - Due to the dark color of the digestates, all client samples were initially analyzed at dilutions for all analytes. Client sample 07 required analysis at a further dilution in order to obtain a result for sodium within the linear range.

Narrative ID: 120565

Approved By: Maren Beery

Maren Beery

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/22/2016 23:55
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: T3.122216.235533
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	97.2		0.500	0.250
Iron, Total	7439-89-6	4.11		0.100	0.0500
Manganese, Total	7439-96-5	0.0364		0.0100	0.00500
Potassium, Total	7440-09-7	5.34		1.00	0.500
Silica, Calculated as SiO ₂		20.4		2.14	1.07
Silicon, Total	7440-21-3	9.54		1.00	0.500
Sodium, Total	7440-23-5	174		0.500	0.250
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:25
Collect Date: 12/08/2016 11:20	Dilution: 10	File ID: T3.122916.072534
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	74.0		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-02	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/22/2016 23:59
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: T3.122216.235925
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	3.81		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.0357		0.0100	0.00500

Certificate of Analysis

U	Not detected at or above adjusted sample detection limit.

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:03
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: T3.122316.000317
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	216		0.500	0.250
Iron, Total	7439-89-6	0.141		0.100	0.0500
Manganese, Total	7439-96-5	0.362		0.0100	0.00500
Potassium, Total	7440-09-7	3.90		1.00	0.500
Silica, Calculated as SiO ₂		16.3		2.14	1.07
Silicon, Total	7440-21-3	7.61		1.00	0.500
Sodium, Total	7440-23-5	714		0.500	0.250
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:29
Collect Date: 12/08/2016 09:55	Dilution: 10	File ID: T3.122916.072928
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	88.8		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-04	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:07
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: T3.122316.000717
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Iron, Dissolved	7439-89-6	0.133		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.365		0.0100	0.00500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:11
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: T3.122316.001120
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	0.200	0.100
Calcium, Total	7440-70-2	155		0.500	0.250
Iron, Total	7439-89-6	1.03		0.100	0.0500
Manganese, Total	7439-96-5	0.174		0.0100	0.00500
Potassium, Total	7440-09-7	4.31		1.00	0.500
Silica, Calculated as SiO ₂		18.4		2.14	1.07
Silicon, Total	7440-21-3	8.58		1.00	0.500
Sodium, Total	7440-23-5	164		0.500	0.250
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:52
Collect Date: 12/08/2016 14:45	Dilution: 10	File ID: T3.122916.075225
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	94.0		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Certificate of Analysis

Sample #: L16120521-06	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:15
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: T3.122316.001512
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	0.846		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.172		0.0100	0.00500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:18
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: T4.121516.211822
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5	1.05	J	2.00	1.00
Calcium, Total	7440-70-2	2.71	J	5.00	2.50
Iron, Total	7439-89-6	0.663	J	1.00	0.500
Magnesium, Total	7439-95-4		U	5.00	2.50
Manganese, Total	7439-96-5		U	0.100	0.0500
Potassium, Total	7440-09-7		U	10.0	5.00
Silica, Calculated as SiO ₂		16.7	J	21.4	10.7
Silicon, Total	7440-21-3	7.79	J	10.0	5.00
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/18/2016 11:25
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/18/2016 16:10
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: T4.121816.161014
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sodium, Total	7440-23-5	6900		50.0	25.0

Certificate of Analysis

U	Not detected at or above adjusted sample detection limit.

Sample #: L16120521-08	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:22
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: T4.121516.212219
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5	1.07	J	2.00	1.00
Iron, Dissolved	7439-89-6	0.541	J	1.00	0.500
Manganese, Dissolved	7439-96-5		U	0.100	0.0500
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:26
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: T4.121516.212614
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5		U	2.00	1.00
Calcium, Total	7440-70-2	3.47	J	5.00	2.50
Iron, Total	7439-89-6	1.95		1.00	0.500
Magnesium, Total	7439-95-4	3.06	J	5.00	2.50
Manganese, Total	7439-96-5		U	0.100	0.0500
Potassium, Total	7440-09-7	11.8		10.0	5.00
Silica, Calculated as SiO2		24.3		21.4	10.7
Silicon, Total	7440-21-3	11.4		10.0	5.00
Sodium, Total	7440-23-5	2410		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Certificate of Analysis

Sample #: L16120521-10	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 07:36
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/15/2016 18:27
Workgroup #: WG594869	Analyst: KKB	Run Date: 12/15/2016 21:30
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: T4.121516.213003
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	2.00	1.00
Iron, Dissolved	7439-89-6	1.80		1.00	0.500
Manganese, Dissolved	7439-96-5		U	0.100	0.0500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:34
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: T3.122316.003409
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Total	7429-90-5	0.307		0.200	0.100
Calcium, Total	7440-70-2	164		0.500	0.250
Iron, Total	7439-89-6	11.1		0.100	0.0500
Manganese, Total	7439-96-5	0.302		0.0100	0.00500
Potassium, Total	7440-09-7	7.02		1.00	0.500
Silica, Calculated as SiO ₂		24.3		2.14	1.07
Silicon, Total	7440-21-3	11.3		1.00	0.500
Sodium, Total	7440-23-5	514		0.500	0.250

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/29/2016 06:36
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/29/2016 07:56
Collect Date: 12/08/2016 10:25	Dilution: 10	File ID: T3.122916.075619
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Magnesium, Total	7439-95-4	96.5		5.00	2.50
J	The analyte was positively identified, but the quantitation was below the RL.				
U	Not detected at or above adjusted sample detection limit.				

Certificate of Analysis

Sample #: L16120521-12	PrePrep Method: N/A	Instrument: ICP-THERMO3
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/14/2016 13:25
Matrix: Water	Analytical Method: 6010C	Cal Date: 12/22/2016 16:14
Workgroup #: WG595175	Analyst: JYH	Run Date: 12/23/2016 00:38
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: T3.122316.003811
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Aluminum, Dissolved	7429-90-5		U	0.200	0.100
Iron, Dissolved	7439-89-6	8.42		0.100	0.0500
Manganese, Dissolved	7439-96-5	0.185		0.0100	0.00500
U	Not detected at or above adjusted sample detection limit.				

2.1.1.2 QC Summary Data

Example 6010 Calculations
Thermo Scientific iCAP

1.0 Initial Calibration (ICAL) Parameters

For a multi-point calibration, the system performs linear regression from data consisting of a blank and four standards.

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

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

Where:

Cs = Concentration computed by the data system in ug/mL (ppm)

Vf = Final volume (mL)

Vi = Initial volume (mL)

D = Dilution factor as a multiplier (10X = 10)

Example:

0.1

50

50

1

Cx = Concentration of element in ug/mL (mg/L)

0.1

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

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

Where:

Cs = Concentration computed by the data system (mg/L) (ppm)

Vf = Final volume (mL)

Vi = Initial weight (g)

D = Dilution factor as a multiplier (10X = 10)

Example:

0.1

50

1

1

Cx = Concentration of element in ug/g (mg/kg)

5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

Example:

5

80

$Cdry$ = Concentration calculated as dry weight (mg/kg)

6.25

Example 6010 Calculations
Thermo Scientific iCAP

1.0 Initial Calibration (ICAL) Parameters

For a multi-point calibration, the system performs linear regression from data consisting of a blank and four standards.

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

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

Where:

Cs = Concentration computed by the data system in ug/mL (ppm)

Vf = Final volume (mL)

Vi = Initial volume (mL)

D = Dilution factor as a multiplier (10X = 10)

Example:

0.1

50

50

1

Cx = Concentration of element in ug/mL (mg/L)

0.1

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

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

Where:

Cs = Concentration computed by the data system (mg/L) (ppm)

Vf = Final volume (mL)

Vi = Initial weight (g)

D = Dilution factor as a multiplier (10X = 10)

Example:

0.1

50

1

1

Cx = Concentration of element in ug/g (mg/kg)

5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

Example:

5

80

$Cdry$ = Concentration calculated as dry weight (mg/kg)

6.25

Microbac Laboratories Inc.
Microwave Digestion Log

Workgroup: WG594906
Analyst: AC
Spike Analyst: AC
Run Date: 12/14/2016 13:25
Method: 3015
Balance: BAL019
Instrument: MW-4
Instrument Start: 12/14/2016 13:25

SOP: ME407 Revision 19
Spike Solution: STD79117
Spike Witness: VC
HN03 Lot #: COA19324
HCL Lot #: COA19265
ICP FILTERS LOT# R6EA4780 RGT38286
40 & 50 ML. DIGESTION TUCOA19282

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG594906-02	BLANK	1	40 mL	50 mL	205.657 g	205.655 g		
2	WG594906-03	LCS	1	40 mL	50 mL	212.855 g	212.84 g	5 mL	
3	L16120521-01	SAMP	1	40 mL	50 mL	207.367 g	207.357 g		12/23/16
4	L16120521-02	SAMP	1	40 mL	50 mL	205.103 g	205.101 g		12/23/16
5	L16120521-03	SAMP	1	40 mL	50 mL	207.161 g	207.152 g		12/23/16
6	L16120521-04	SAMP	1	40 mL	50 mL	208.146 g	208.136 g		12/23/16
7	L16120521-05	SAMP	1	40 mL	50 mL	205.551 g	205.535 g		12/23/16
8	L16120521-06	SAMP	1	40 mL	50 mL	206.315 g	206.297 g		12/23/16
9	L16120521-11	SAMP	1	40 mL	50 mL	207.511 g	207.5 g		12/23/16
10	L16120521-12	SAMP	1	40 mL	50 mL	204.295 g	204.281 g		12/23/16
11	WG594906-01	REF	1	40 mL	50 mL	205.451 g	205.437 g		
12	L16120639-14	RS02	1	40 mL	50 mL	205.451 g	205.437 g		12/23/16
13	L16120639-16	SAMP	1	40 mL	50 mL	207.239 g	207.223 g		12/23/16
14	L16120639-17	SAMP	1	40 mL	50 mL	204.959 g	204.937 g		12/23/16
15	WG594906-04	MS	1	40 mL	50 mL	209.433 g	209.411 g	5 mL	
16	L16120639-18	MS02	1	40 mL	50 mL	209.433 g	209.411 g	5 mL	12/23/16
17	WG594906-05	MSD	1	40 mL	50 mL	212.415 g	212.389 g	5 mL	
18	L16120639-20	SD02	1	40 mL	50 mL	212.415 g	212.389 g	5 mL	12/23/16
19	L16120639-22	SAMP	1	40 mL	50 mL	203.922 g	203.918 g		12/23/16
20	L16120747-01	SAMP	1	40 mL	50 mL	205.722 g	205.701 g		12/27/16
21	L16120747-02	SAMP	1	40 mL	50 mL	206.499 g	206.486 g		12/27/16
22	L16120747-03	SAMP	1	40 mL	50 mL	207.982 g	207.964 g		12/27/16
23	L16120747-04	SAMP	1	40 mL	50 mL	207.554 g	207.535 g		12/27/16
24	L16120747-05	SAMP	1	40 mL	50 mL	205.833 g	205.809 g		12/27/16
25	L16120775-02	SAMP	1	1 mL	50 mL	205.969 g	205.943 g		12/23/16
26	L16120775-04	SAMP	1	1 mL	50 mL	207.626 g	207.606 g		12/23/16
27	L16120775-06	SAMP	1	1 mL	50 mL	206.609 g	206.595 g		12/23/16

L16120775-04 Filtered Digestate

Analyst: Andre R. Gehring

Reviewer: Eric P. Botton

Microbac Laboratories Inc.
Microwave Digestion Log

Workgroup: WG594606
Analyst: ERP
Spike Analyst: ERP
Run Date: 12/13/2016 07:36
Method: 3015
Balance: BAL019
Instrument: MW-1
Instrument Start: 12/13/2016 07:54

SOP: ME407 Revision 19
Spike Solution: STD79117
Spike Witness: REK
HN03 Lot #: COA19324
HCL Lot #: COA19265
40 & 50 ML. DIGESTION TUCOA19282
ICP FILTERS LOT#R6EA4780RGT38286

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG594606-02	BLANK	1	40 mL	50 mL	206.676 g	206.677 g		
2	WG594606-03	LCS	1	40 mL	50 mL	210.999 g	210.993 g	5 mL	
3	L16120520-02	SAMP	1	40 mL	50 mL	206.46 g	206.458 g		12/20/16
4	L16120520-03	SAMP	1	40 mL	50 mL	203.854 g	203.841 g		12/20/16
5	L16120520-04	SAMP	1	40 mL	50 mL	206.829 g	206.816 g		12/20/16
6	L16120520-11	SAMP	1	40 mL	50 mL	205.389 g	205.382 g		12/20/16
7	L16120521-07	SAMP	1	40 mL	50 mL	208.018 g	208.001 g		12/23/16
8	L16120521-08	SAMP	1	40 mL	50 mL	206.018 g	205.968 g		12/23/16
9	L16120521-09	SAMP	1	40 mL	50 mL	206.688 g	206.656 g		12/23/16
10	L16120521-10	SAMP	1	40 mL	50 mL	207.693 g	207.669 g		12/23/16
11	L16120564-01	SAMP	1	40 mL	50 mL	206.144 g	206.128 g		12/20/16
12	L16120564-02	SAMP	1	40 mL	50 mL	205.468 g	205.449 g		12/20/16
13	L16120564-03	SAMP	1	40 mL	50 mL	205.159 g	205.161 g		12/20/16
14	L16120564-04	SAMP	1	40 mL	50 mL	207.945 g	207.935 g		12/20/16
15	L16120618-02	SAMP	1	40 mL	50 mL	207.238 g	207.227 g		12/20/16
16	L16120619-01	SAMP	1	40 mL	50 mL	205.554 g	205.498 g		12/16/16
17	L16120620-01	SAMP	1	40 mL	50 mL	204.199 g	204.178 g		12/16/16
18	L16120621-01	SAMP	1	40 mL	50 mL	206.762 g	206.749 g		12/16/16
19	WG594606-01	REF	1	40 mL	50 mL	207.677 g	207.699 g		
20	L16120641-04	SAMP	1	40 mL	50 mL	207.677 g	207.699 g		12/19/16
21	WG594606-04	MS	1	40 mL	50 mL	210.21 g	210.213 g	5 mL	
22	WG594606-05	MSD	1	40 mL	50 mL	211.93 g	211.935 g	5 mL	

L16120521-07	filtered digestate
L16120521-08	filtered digestate
L16120521-09	filtered digestate
L16120521-10	filtered digestate
L16120618-02	filtered digestate
L16120619-01	filtered digestate
L16120620-01	filtered digestate
L16120621-01	filtered digestate

Analyst: Eun P. Kim

Reviewer: [Signature]



Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO4 Dataset: 121516T4.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG737691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594871,594869,594866,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T4.121516.181207	WG595250-01	Calibration Point		1		12/15/16 18:12
2	T4.121516.181555	WG595250-02	Calibration Point		1		12/15/16 18:15
3	T4.121516.181944	WG595250-03	Calibration Point		1		12/15/16 18:19
4	T4.121516.182333	WG595250-04	Calibration Point		1		12/15/16 18:23
5	T4.121516.182706	WG595250-05	Calibration Point		1		12/15/16 18:27
6	T4.121516.183036	WG595250-06	Initial Calibration Verification		1		12/15/16 18:30
7	T4.121516.183409	WG595250-07	Initial Calib Blank		1		12/15/16 18:34
8	T4.121516.183757	WG595250-08	Low Level Initial Calibration V		1		12/15/16 18:37
9	T4.121516.184424	WG595250-09	Low Level Initial Calibration V		1		12/15/16 18:44
10	T4.121516.185114	WG595250-10	Interference Check		1		12/15/16 18:51
11	T4.121516.185504	WG595250-11	Interference Check		1		12/15/16 18:55
12	T4.121516.185843	WG595250-12	CCV		1		12/15/16 18:58
13	T4.121516.190215	WG595250-13	CCB		1		12/15/16 19:02
14	T4.121516.195149	WG594816-02	Method/Prep Blank	40/50	1		12/15/16 19:51
15	T4.121516.195538	WG594816-03	Laboratory Control S	40/50	1		12/15/16 19:55
16	T4.121516.195916	WG594701-01	Fluid Blank 1		1		12/15/16 19:59
17	T4.121516.200304	L16120608-02	120716-IN-DIRT	5/50	1		12/15/16 20:03
18	T4.121516.200659	WG594871-03	Post Digestion Spike		1	L16120608-02	12/15/16 20:06
19	T4.121516.201045	WG594871-04	Serial Dilution		5	L16120608-02	12/15/16 20:10
20	T4.121516.201432	L16120648-02	J6L0692-01	5/50	1		12/15/16 20:14
21	T4.121516.201819	WG594816-01	Reference Sample		1	L16120685-02	12/15/16 20:18
22	T4.121516.202207	WG594816-04	Matrix Spike	5/50	1	L16120685-02	12/15/16 20:22
23	T4.121516.202544	WG594816-05	Matrix Spike Duplica	5/50	1	L16120685-02	12/15/16 20:25
24	T4.121516.202922	WG595250-14	CCV		1		12/15/16 20:29
25	T4.121516.203254	WG595250-15	CCB		1		12/15/16 20:32
26	T4.121516.203646	L16120692-01	WVOG	40/50	100		12/15/16 20:36
27	T4.121516.204050	WG595250-16	CCV		1		12/15/16 20:40
28	T4.121516.204422	WG595250-17	CCB		1		12/15/16 20:44
29	T4.121516.204814	WG595250-18	Low Level Continuing Calibra		1		12/15/16 20:48
30	T4.121516.205202	WG595250-19	LLCCV		1		12/15/16 20:52
31	T4.121516.205551	WG594606-02	Method/Prep Blank	40/50	1		12/15/16 20:55
32	T4.121516.205939	WG594606-03	Laboratory Control S	40/50	1		12/15/16 20:59
33	T4.121516.210316	L16120520-02	A08-MW03-Y1S4	40/50	1		12/15/16 21:03
34	T4.121516.210703	L16120520-03	A08-MW09-Y1S4	40/50	1		12/15/16 21:07

Page: 1 Approved: December 16, 2016

Kim H. Rhodes



Microbac Laboratories Inc.
Instrument Run Log

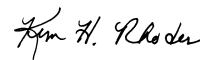
Instrument: ICP-THERMO4 Dataset: 121516T4.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT37691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594871,594869,594866,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T4.121516.211050	L16120520-04	A08-MW10-Y1S4	40/50	1		12/15/16 21:10
36	T4.121516.211436	L16120520-11	A08-TM01-Y1S4	40/50	1		12/15/16 21:14
37	T4.121516.211822	L16120521-07	MW21-120816	40/50	10		12/15/16 21:18
38	T4.121516.212219	L16120521-08	MW21-120816	40/50	10		12/15/16 21:22
39	T4.121516.212614	L16120521-09	MW31-120816	40/50	10		12/15/16 21:26
40	T4.121516.213003	L16120521-10	MW31-120816	40/50	10		12/15/16 21:30
41	T4.121516.213352	WG595250-20	CCV		1		12/15/16 21:33
42	T4.121516.213725	WG595250-21	CCB		1		12/15/16 21:37
43	T4.121516.214116	L16120564-01	MW34-GW-120816	40/50	1		12/15/16 21:41
44	T4.121516.214535	L16120564-02	SW01-120816	40/50	1		12/15/16 21:45
45	T4.121516.214928	L16120564-03	MW31-GW-120916	40/50	1		12/15/16 21:49
46	T4.121516.215312	L16120564-04	MW32-GW-120916	40/50	1		12/15/16 21:53
47	T4.121516.215659	L16120618-02	SCF-WL01-120916	40/50	1		12/15/16 21:56
48	T4.121516.220043	L16120619-01	INS-WL01-120816	40/50	1		12/15/16 22:00
49	T4.121516.220427	L16120620-01	INS-WL02-120816	40/50	1		12/15/16 22:04
50	T4.121516.220810	L16120621-01	INS-WL03-120816	40/50	1		12/15/16 22:08
51	T4.121516.221155	WG595250-22	CCV		1		12/15/16 22:11
52	T4.121516.221527	WG595250-23	CCB		1		12/15/16 22:15
53	T4.121516.221917	WG594606-01	Reference Sample		1	L16120641-04	12/15/16 22:19
54	T4.121516.222306	WG594869-01	Post Digestion Spike		1	L16120641-04	12/15/16 22:23
55	T4.121516.222643	WG594869-02	Serial Dilution		5	L16120641-04	12/15/16 22:26
56	T4.121516.223032	WG594606-04	Matrix Spike	40/50	1	L16120641-04	12/15/16 22:30
57	T4.121516.223409	WG594606-05	Matrix Spike Duplica	40/50	1	L16120641-04	12/15/16 22:34
58	T4.121516.223747	WG595250-24	CCV		1		12/15/16 22:37
59	T4.121516.224119	WG595250-25	CCB		1		12/15/16 22:41
60	T4.121516.224510	WG595250-26	LLCCV		1		12/15/16 22:45
61	T4.121516.224859	WG595250-27	Low Level Continuing Calibra		1		12/15/16 22:48
62	T4.121516.225247	WG594495-02	Method/Prep Blank	40/50	1		12/15/16 22:52
63	T4.121516.225636	WG594495-03	Laboratory Control S	40/50	1		12/15/16 22:56
64	T4.121516.230012	L16120455-02	18CPTMW22DW-120616	40/50	1		12/15/16 23:00
65	T4.121516.230357	L16120455-04	18CPTMW22RF-120616	40/50	1		12/15/16 23:03
66	T4.121516.230741	L16120455-07	18CPTMW12SW-120616	40/50	1		12/15/16 23:07
67	T4.121516.231126	L16120455-08	18CPTMW12SWFD-120616	40/50	1		12/15/16 23:11
68	T4.121516.231511	L16120455-10	18CPTMW26SW-120716	40/50	1		12/15/16 23:15

Page: 2 Approved: December 16, 2016




Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 121516T4.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____

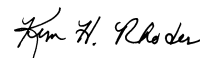
Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT37691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594871,594869,594866,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T4.121516.231856	L16120455-12	MW10-120716	40/50	1		12/15/16 23:18
70	T4.121516.232241	WG594866-01	Post Digestion Spike		1	L16120455-12	12/15/16 23:22
71	T4.121516.232616	WG594866-02	Serial Dilution		5	L16120455-12	12/15/16 23:26
72	T4.121516.233004	WG595250-28	CCV		1		12/15/16 23:30
73	T4.121516.233336	WG595250-29	CCB		1		12/15/16 23:33
74	T4.121516.233726	L16120455-15	18CPTMW23SWF-120716	40/50	1		12/15/16 23:37
75	T4.121516.234112	L16120472-01	MW26-GW-120616	40/50	1		12/15/16 23:41
76	T4.121516.234530	L16120472-02	MW23-GW-120716	40/50	1		12/15/16 23:45
77	T4.121516.234948	L16120472-03	MW21-GW-120716	40/50	1		12/15/16 23:49
78	T4.121516.235406	L16120472-04	MW35-GW-120716	40/50	1		12/15/16 23:54
79	T4.121516.235823	WG594495-01	Reference Sample		1	L16120472-05	12/15/16 23:58
80	T4.121616.000241	WG594495-04	Matrix Spike	40/50	1	L16120472-05	12/16/16 00:02
81	T4.121616.000649	WG594495-05	Matrix Spike Duplica	40/50	1	L16120472-05	12/16/16 00:06
82	T4.121616.001059	WG595250-30	CCV		1		12/16/16 00:10
83	T4.121616.001430	WG595250-31	CCB		1		12/16/16 00:14
84	T4.121616.001819	L16120481-02	ANNUAL HEAVY METALS	40/50	1		12/16/16 00:18
85	T4.121616.002208	L16120593-01	10207-G02-WQ-W0007	40/50	1		12/16/16 00:22
86	T4.121616.002556	L16120593-02	16014-G03-WQ-W0013	40/50	1		12/16/16 00:25
87	T4.121616.002945	L16120593-03	16014-G04-WQ-W0018	40/50	1		12/16/16 00:29
88	T4.121616.003333	L16120593-04	19305-G35-WQ-W0078	40/50	1		12/16/16 00:33
89	T4.121616.003724	WG595250-32	CCV		1		12/16/16 00:37
90	T4.121616.004055	WG595250-33	CCB		1		12/16/16 00:40
91	T4.121616.004446	WG595250-34	LLCCV		1		12/16/16 00:44
92	T4.121616.004834	WG595250-35	Low Level Continuing Calibra		1		12/16/16 00:48
93	T4.121616.005222	WG594498-02	Method/Prep Blank	40/50	1		12/16/16 00:52
94	T4.121616.005610	WG594498-03	Laboratory Control S	40/50	1		12/16/16 00:56
95	T4.121616.005947	WG594498-01	Reference Sample		1	L16120352-08	12/16/16 00:59
96	T4.121616.010332	WG594498-04	Matrix Spike	40/50	1	L16120352-08	12/16/16 01:03
97	T4.121616.010707	WG594498-05	Matrix Spike Duplica	40/50	1	L16120352-08	12/16/16 01:07
98	T4.121616.011045	L16120352-16	MW01-120616	40/50	1		12/16/16 01:10
99	T4.121616.011431	L16120352-17	MW16I-120616	40/50	1		12/16/16 01:14
100	T4.121616.011817	L16120352-18	MW16I-120616	40/50	1		12/16/16 01:18
101	T4.121616.012202	WG594872-01	Post Digestion Spike		1	L16120352-18	12/16/16 01:22
102	T4.121616.012539	WG594872-02	Serial Dilution		5	L16120352-18	12/16/16 01:25

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Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 121516T4.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT37691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594871,594869,594866,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	T4.121616.012928	WG595250-36	CCV		1		12/16/16 01:29
104	T4.121616.013259	WG595250-37	CCB		1		12/16/16 01:32
105	T4.121616.013650	L16120352-21	MW26-120616	40/50	1		12/16/16 01:36
106	T4.121616.014036	L16120425-21	DUP-GW-120716-1	40/50	1		12/16/16 01:40
107	T4.121616.014423	L16120425-22	DUP-GW-120716-1	40/50	1		12/16/16 01:44
108	T4.121616.014808	L16120425-23	DUP-GW-120716-2	40/50	1		12/16/16 01:48
109	T4.121616.015203	L16120425-24	DUP-GW-120716-2	40/50	1		12/16/16 01:52
110	T4.121616.015556	L16120484-01	CENTRIFUGE OVERFLOW		10		12/16/16 01:55
111	T4.121616.020007	L16120484-02	INFLECTION FLOW BACK		10		12/16/16 02:00
112	T4.121616.020413	L16120484-03	KAYDEN OVERFLOW		10		12/16/16 02:04
113	T4.121616.020823	L16120484-04	DIFFUSER		10		12/16/16 02:08
114	T4.121616.021225	L16120484-05	PRODUCTION		10		12/16/16 02:12
115	T4.121616.021632	WG595250-38	CCV		1		12/16/16 02:16
116	T4.121616.022004	WG595250-39	CCB		1		12/16/16 02:20
117	T4.121616.022353	L16120484-09	EFFLUENT FROM DIFFUSE		10		12/16/16 02:23
118	T4.121616.022755	L16120484-10	KAYDEN MIX		10		12/16/16 02:27
119	T4.121616.023205	L16120484-11	KAYDEN BLOW BACK		10		12/16/16 02:32
120	T4.121616.023615	L16120568-01	A08/09-120516-RB01-Y1S4	40/50	1		12/16/16 02:36
121	T4.121616.024002	L16120591-01	FQC-WW04-W0011	40/50	1		12/16/16 02:40
122	T4.121616.024339	L16120591-02	FQC-WW05-W0012	40/50	1		12/16/16 02:43
123	T4.121616.024718	WG595250-40	CCV		1		12/16/16 02:47
124	T4.121616.025051	WG595250-41	CCB		1		12/16/16 02:50
125	T4.121616.025441	WG595250-42	Low Level Continuing Calibra		1		12/16/16 02:54
126	T4.121616.025829	WG595250-43	LLCCV		1		12/16/16 02:58
127	T4.121616.030217	WG595250-44	Interference Check		1		12/16/16 03:02
128	T4.121616.030611	WG595250-45	Interference Check		1		12/16/16 03:06
129	T4.121616.030959	WG595250-46	CCV		1		12/16/16 03:09
130	T4.121616.031331	WG595250-47	CCB		1		12/16/16 03:13

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO4 Dataset: 121816T4.1R.TXT
 Analyst1: KKB Analyst2: PDM
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____

Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG737691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol: _____
 Stannous: _____ Hydroxylamine: _____

Workgroups: 594866,594869,594871,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T4.121816.111053	WG595477-01	Calibration Point		1		12/18/16 11:10
2	T4.121816.111442	WG595477-02	Calibration Point		1		12/18/16 11:14
3	T4.121816.111831	WG595477-03	Calibration Point		1		12/18/16 11:18
4	T4.121816.112222	WG595477-04	Calibration Point		1		12/18/16 11:22
5	T4.121816.112555	WG595477-05	Calibration Point		1		12/18/16 11:25
6	T4.121816.112927	WG595477-06	Initial Calibration Verification		1		12/18/16 11:29
7	T4.121816.113300	WG595477-07	Initial Calib Blank		1		12/18/16 11:33
8	T4.121816.113649	WG595477-08	Low Level Initial Calibration V		1		12/18/16 11:36
9	T4.121816.114037	WG595477-09	Low Level Initial Calibration V		1		12/18/16 11:40
10	T4.121816.114425	WG595477-10	Interference Check		1		12/18/16 11:44
11	T4.121816.114812	WG595477-11	Interference Check		1		12/18/16 11:48
12	T4.121816.115614	WG595477-12	CCV		1		12/18/16 11:56
13	T4.121816.120006	WG595477-13	CCB		1		12/18/16 12:00
14	T4.121816.123755	WG594495-02	Method/Prep Blank	40/50	1		12/18/16 12:37
15	T4.121816.124145	WG594495-03	Laboratory Control S	40/50	1		12/18/16 12:41
16	T4.121816.124522	L16120455-02	18CPTMW22DW-120616	40/50	1		12/18/16 12:45
17	T4.121816.124907	L16120455-02	18CPTMW22DW-120616	40/50	5		12/18/16 12:49
18	T4.121816.125255	L16120455-04	18CPTMW22RF-120616	40/50	1		12/18/16 12:52
19	T4.121816.125639	L16120455-07	18CPTMW12SW-120616	40/50	1		12/18/16 12:56
20	T4.121816.130024	L16120455-07	18CPTMW12SW-120616	40/50	5		12/18/16 13:00
21	T4.121816.130410	L16120455-08	18CPTMW12SWFD-120616	40/50	1		12/18/16 13:04
22	T4.121816.130756	L16120455-08	18CPTMW12SWFD-120616	40/50	5		12/18/16 13:07
23	T4.121816.131141	L16120455-10	18CPTMW26SW-120716	40/50	10		12/18/16 13:11
24	T4.121816.131530	WG595477-14	CCV		1		12/18/16 13:15
25	T4.121816.131902	WG595477-15	CCB		1		12/18/16 13:19
26	T4.121816.132253	L16120455-12	MW10-120716	40/50	10		12/18/16 13:22
27	T4.121816.132641	WG594866-01	Post Digestion Spike		10	L16120455-12	12/18/16 13:26
28	T4.121816.133017	WG594866-02	Serial Dilution		50	L16120455-12	12/18/16 13:30
29	T4.121816.133405	L16120455-15	18CPTMW23SWF-120716	40/50	1		12/18/16 13:34
30	T4.121816.133751	L16120455-15	18CPTMW23SWF-120716	40/50	10		12/18/16 13:37
31	T4.121816.134137	L16120472-01	MW26-GW-120616	40/50	1		12/18/16 13:41
32	T4.121816.134554	L16120472-01	MW26-GW-120616	40/50	5		12/18/16 13:45
33	T4.121816.134941	L16120472-02	MW23-GW-120716	40/50	1		12/18/16 13:49
34	T4.121816.135400	L16120472-03	MW21-GW-120716	40/50	1		12/18/16 13:54

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Kim H. Rhodes



Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO4 Dataset: 121816T4.1R.TXT
 Analyst1: KKB Analyst2: PDM
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____

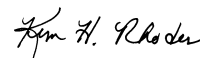
Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG737691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594866,594869,594871,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T4.121816.135817	L16120472-04	MW35-GW-120716	40/50	1		12/18/16 13:58
36	T4.121816.140235	WG595477-16	CCV		1		12/18/16 14:02
37	T4.121816.140607	WG595477-17	CCB		1		12/18/16 14:06
38	T4.121816.140958	L16120472-04	MW35-GW-120716	40/50	5		12/18/16 14:09
39	T4.121816.141344	WG594495-01	Reference Sample		1	L16120472-05	12/18/16 14:13
40	T4.121816.141801	WG594495-04	Matrix Spike	40/50	1	L16120472-05	12/18/16 14:18
41	T4.121816.142209	WG594495-05	Matrix Spike Duplica	40/50	1	L16120472-05	12/18/16 14:22
42	T4.121816.142618	WG595477-18	CCV		1		12/18/16 14:26
43	T4.121816.142951	WG595477-19	CCB		1		12/18/16 14:29
44	T4.121816.143342	WG595477-20	Low Level Continuing Calibra		1		12/18/16 14:33
45	T4.121816.143730	WG595477-21	Low Level Continuing Calibra		1		12/18/16 14:37
46	T4.121816.154018	WG595477-22	CCV		1		12/18/16 15:40
47	T4.121816.154349	WG595477-23	CCB		1		12/18/16 15:43
48	T4.121816.154740	WG594606-02	Method/Prep Blank	40/50	1		12/18/16 15:47
49	T4.121816.155128	WG594606-03	Laboratory Control S	40/50	1		12/18/16 15:51
50	T4.121816.155506	L16120520-02	A08-MW03-Y1S4	40/50	1		12/18/16 15:55
51	T4.121816.155854	L16120520-03	A08-MW09-Y1S4	40/50	1		12/18/16 15:58
52	T4.121816.160241	L16120520-04	A08-MW10-Y1S4	40/50	1		12/18/16 16:02
53	T4.121816.160627	L16120520-11	A08-TM01-Y1S4	40/50	1		12/18/16 16:06
54	T4.121816.161014	L16120521-07	MW21-120816	40/50	100		12/18/16 16:10
55	T4.121816.161402	L16120564-01	MW34-GW-120816	40/50	1		12/18/16 16:14
56	T4.121816.161821	WG594869-03	Post Digestion Spike		1	L16120564-01	12/18/16 16:18
57	T4.121816.162231	WG594869-04	Serial Dilution		5	L16120564-01	12/18/16 16:22
58	T4.121816.162619	WG595477-24	CCV		1		12/18/16 16:26
59	T4.121816.162952	WG595477-25	CCB		1		12/18/16 16:29
60	T4.121816.163343	L16120564-02	SW01-120816	40/50	1		12/18/16 16:33
61	T4.121816.163736	L16120564-03	MW31-GW-120916	40/50	1		12/18/16 16:37
62	T4.121816.164121	L16120564-04	MW32-GW-120916	40/50	1		12/18/16 16:41
63	T4.121816.164507	L16120618-02	SCF-WL01-120916	40/50	1		12/18/16 16:45
64	T4.121816.164852	L16120619-01	INS-WL01-120816	40/50	1		12/18/16 16:48
65	T4.121816.165236	L16120620-01	INS-WL02-120816	40/50	1		12/18/16 16:52
66	T4.121816.165618	L16120621-01	INS-WL03-120816	40/50	1		12/18/16 16:56
67	T4.121816.170003	L16120641-04	13202-F01-WQ-W0010		1	WG594606-01	12/18/16 17:00
68	T4.121816.170352	WG594606-04	Matrix Spike	40/50	1	L16120641-04	12/18/16 17:03

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO4 Dataset: 121816T4.1R.TXT
 Analyst1: KKB Analyst2: PDM
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____

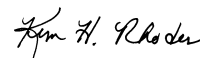
Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT37691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594866,594869,594871,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T4.121816.170730	WG594606-05	Matrix Spike Duplica	40/50	1	L16120641-04	12/18/16 17:07
70	T4.121816.171107	WG595477-26	CCV		1		12/18/16 17:11
71	T4.121816.171439	WG595477-27	CCB		1		12/18/16 17:14
72	T4.121816.171830	WG595477-28	Low Level Continuing Calibra		1		12/18/16 17:18
73	T4.121816.172218	WG595477-29	Low Level Continuing Calibra		1		12/18/16 17:22
74	T4.121816.172606	WG594816-02	Method/Prep Blank	40/50	1		12/18/16 17:26
75	T4.121816.172956	WG594816-03	Laboratory Control S	40/50	1		12/18/16 17:29
76	T4.121816.173332	WG594701-01	Fluid Blank 1		1		12/18/16 17:33
77	T4.121816.173720	L16120608-02	120716-IN-DIRT	5/50	1		12/18/16 17:37
78	T4.121816.174114	L16120648-02	J6L0692-01	5/50	1		12/18/16 17:41
79	T4.121816.174502	WG594871-03	Post Digestion Spike		1	L16120648-02	12/18/16 17:45
80	T4.121816.174839	WG594871-04	Serial Dilution		5	L16120648-02	12/18/16 17:48
81	T4.121816.175228	WG594816-01	Reference Sample		1	L16120685-02	12/18/16 17:52
82	T4.121816.175616	WG594816-04	Matrix Spike	5/50	1	L16120685-02	12/18/16 17:56
83	T4.121816.175954	WG594816-05	Matrix Spike Duplica	5/50	1	L16120685-02	12/18/16 17:59
84	T4.121816.180333	WG595477-30	CCV		1		12/18/16 18:03
85	T4.121816.180705	WG595477-31	CCB		1		12/18/16 18:07
86	T4.121816.181055	L16120692-01	WVOG	40/50	1000		12/18/16 18:10
87	T4.121816.181445	WG595477-32	CCV		1		12/18/16 18:14
88	T4.121816.181817	WG595477-33	CCB		1		12/18/16 18:18
89	T4.121816.182208	WG595477-34	Low Level Continuing Calibra		1		12/18/16 18:22
90	T4.121816.182557	WG595477-35	Low Level Continuing Calibra		1		12/18/16 18:25
91	T4.121816.182945	WG594498-02	Method/Prep Blank	40/50	1		12/18/16 18:29
92	T4.121816.183334	WG594498-03	Laboratory Control S	40/50	1		12/18/16 18:33
93	T4.121816.183711	WG594498-01	Reference Sample		1	L16120352-08	12/18/16 18:37
94	T4.121816.184056	WG594498-04	Matrix Spike	40/50	1	L16120352-08	12/18/16 18:40
95	T4.121816.184433	WG594498-05	Matrix Spike Duplica	40/50	1	L16120352-08	12/18/16 18:44
96	T4.121816.184810	L16120352-16	MW01-120616	40/50	1		12/18/16 18:48
97	T4.121816.185156	L16120352-17	MW16I-120616	40/50	1		12/18/16 18:51
98	T4.121816.185541	L16120352-18	MW16I-120616	40/50	1		12/18/16 18:55
99	T4.121816.185927	L16120352-21	MW26-120616	40/50	1		12/18/16 18:59
100	T4.121816.190313	L16120425-21	DUP-GW-120716-1	40/50	1		12/18/16 19:03
101	T4.121816.190701	WG595477-36	CCV		1		12/18/16 19:07
102	T4.121816.191034	WG595477-37	CCB		1		12/18/16 19:10

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Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 121816T4.1R.TXT
 Analyst1: KKB Analyst2: PDM
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG737691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594866,594869,594871,594872

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	T4.121816.191425	L16120425-22	DUP-GW-120716-1	40/50	1		12/18/16 19:14
104	T4.121816.191811	L16120425-23	DUP-GW-120716-2	40/50	1		12/18/16 19:18
105	T4.121816.192205	L16120425-23	DUP-GW-120716-2	40/50	10		12/18/16 19:22
106	T4.121816.192553	L16120425-24	DUP-GW-120716-2	40/50	1		12/18/16 19:25
107	T4.121816.192947	L16120484-01	CENTRIFUGE OVERFLOW	40/50	100		12/18/16 19:29
108	T4.121816.193400	L16120484-02	INFLECTION FLOW BACK	40/50	100		12/18/16 19:34
109	T4.121816.193805	L16120484-03	KAYDEN OVERFLOW	40/50	100		12/18/16 19:38
110	T4.121816.194218	L16120484-04	DIFFUSER	40/50	100		12/18/16 19:42
111	T4.121816.194622	L16120484-05	PRODUCTION	40/50	100		12/18/16 19:46
112	T4.121816.195026	L16120484-09	EFFLUENT FROM DIFFUSE	40/50	100		12/18/16 19:50
113	T4.121816.195432	WG595477-38	CCV		1		12/18/16 19:54
114	T4.121816.195804	WG595477-39	CCB		1		12/18/16 19:58
115	T4.121816.200154	L16120484-10	KAYDEN MIX	40/50	100		12/18/16 20:01
116	T4.121816.200606	L16120484-11	KAYDEN BLOW BACK	40/50	100		12/18/16 20:06
117	T4.121816.201019	L16120568-01	A08/09-120516-RB01-Y1S4	40/50	1		12/18/16 20:10
118	T4.121816.201408	WG594872-03	Post Digestion Spike		1	L16120568-01	12/18/16 20:14
119	T4.121816.201745	WG594872-04	Serial Dilution		5	L16120568-01	12/18/16 20:17
120	T4.121816.202134	WG595477-40	CCV		1		12/18/16 20:21
121	T4.121816.202506	WG595477-41	CCB		1		12/18/16 20:25
122	T4.121816.202855	WG595477-42	Low Level Continuing Calibra		1		12/18/16 20:28
123	T4.121816.203243	WG595477-43	Low Level Continuing Calibra		1		12/18/16 20:32
124	T4.121816.203630	WG595477-44	Interference Check		1		12/18/16 20:36
125	T4.121816.204026	WG595477-45	Interference Check		1		12/18/16 20:40
126	T4.121816.204412	WG595477-46	CCV		1		12/18/16 20:44
127	T4.121816.204743	WG595477-47	CCB		1		12/18/16 20:47

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO4 Dataset: 122116T4.1
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG737691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594869,595141,594644,594975

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T4.122116.114705	WG596008-01	Calibration Point		1		12/21/16 11:47
2	T4.122116.115053	WG596008-02	Calibration Point		1		12/21/16 11:50
3	T4.122116.115442	WG596008-03	Calibration Point		1		12/21/16 11:54
4	T4.122116.115832	WG596008-04	Calibration Point		1		12/21/16 11:58
5	T4.122116.120205	WG596008-05	Calibration Point		1		12/21/16 12:02
6	T4.122116.120534	WG596008-06	Initial Calibration Verification		1		12/21/16 12:05
7	T4.122116.121004	WG596008-07	Initial Calib Blank		1		12/21/16 12:10
8	T4.122116.121353	WG596008-08	LLICV		1		12/21/16 12:13
9	T4.122116.121742	WG596008-09	Low Level Initial Calibration V		1		12/21/16 12:17
10	T4.122116.123354	WG596008-10	Low Level Initial Calibration V		1		12/21/16 12:33
11	T4.122116.123919	WG596008-11	Interference Check		1		12/21/16 12:39
12	T4.122116.124308	WG596008-12	Interference Check		1		12/21/16 12:43
13	T4.122116.124647	WG596008-13	CCV		1		12/21/16 12:46
14	T4.122116.125019	WG596008-14	CCB		1		12/21/16 12:50
15	T4.122116.131720	WG594606-02	Method/Prep Blank	40/50	1		12/21/16 13:17
16	T4.122116.132109	WG594606-03	Laboratory Control S	40/50	1		12/21/16 13:21
17	T4.122116.132447	L16120520-02	A08-MW03-Y1S4	40/50	1		12/21/16 13:24
18	T4.122116.132834	L16120520-03	A08-MW09-Y1S4	40/50	1		12/21/16 13:28
19	T4.122116.133220	L16120520-04	A08-MW10-Y1S4	40/50	1		12/21/16 13:32
20	T4.122116.133607	L16120520-11	A08-TM01-Y1S4	40/50	1		12/21/16 13:36
21	T4.122116.133955	WG594869-05	Post Digestion Spike		1	L16120520-11	12/21/16 13:39
22	T4.122116.134332	WG594869-06	Serial Dilution		5	L16120520-11	12/21/16 13:43
23	T4.122116.134722	WG596008-15	CCV		1		12/21/16 13:47
24	T4.122116.135054	WG596008-16	CCB		1		12/21/16 13:50
25	T4.122116.135446	WG594606-01	Reference Sample		1	L16120641-04	12/21/16 13:54
26	T4.122116.135835	WG594606-04	Matrix Spike	40/50	1	L16120641-04	12/21/16 13:58
27	T4.122116.140211	WG594606-05	Matrix Spike Duplica	40/50	1	L16120641-04	12/21/16 14:02
28	T4.122116.140549	WG596008-17	CCV		1		12/21/16 14:05
29	T4.122116.140921	WG596008-18	CCB		1		12/21/16 14:09
30	T4.122116.141312	WG596008-19	LLCCV		1		12/21/16 14:13
31	T4.122116.141700	WG596008-20	Low Level Continuing Calibra		1		12/21/16 14:17
32	T4.122116.142213	WG594996-02	Method/Prep Blank	40/50	1		12/21/16 14:22
33	T4.122116.142602	WG594996-03	Laboratory Control S	40/50	1		12/21/16 14:26
34	T4.122116.142939	L16120719-03	120F-120916	40/50	1		12/21/16 14:29

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO4 Dataset: 122116T4.1
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____

Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT37691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594869,595141,594644,594975

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T4.122116.143325	L16120719-04	109-120916	40/50	1		12/21/16 14:33
36	T4.122116.143710	WG595141-01	Post Digestion Spike		1	L16120719-04	12/21/16 14:37
37	T4.122116.144047	WG595141-02	Serial Dilution		5	L16120719-04	12/21/16 14:40
38	T4.122116.144434	WG594996-01	Reference Sample		1	L16120719-08	12/21/16 14:44
39	T4.122116.144819	WG594996-04	Matrix Spike	40/50	1	L16120719-08	12/21/16 14:48
40	T4.122116.145156	WG594996-05	Matrix Spike Duplica	40/50	1	L16120719-08	12/21/16 14:51
41	T4.122116.145533	L16120719-16	18WW25F-120916	40/50	1		12/21/16 14:55
42	T4.122116.145920	WG596008-21	CCV		1		12/21/16 14:59
43	T4.122116.150252	WG596008-22	CCB		1		12/21/16 15:02
44	T4.122116.150643	L16120719-18	18WW02-121216	40/50	1		12/21/16 15:06
45	T4.122116.151029	L16120719-19	MW16-121216	40/50	1		12/21/16 15:10
46	T4.122116.151414	L16120719-21	18CPTMW19SW-121216	40/50	1		12/21/16 15:14
47	T4.122116.151800	L16120768-01	0101-0131A-S7	40/50	1		12/21/16 15:18
48	T4.122116.152146	L16120768-02	0101-0131A-S14	40/50	1		12/21/16 15:21
49	T4.122116.152532	L16120768-03	0101-0131A-S3	40/50	1		12/21/16 15:25
50	T4.122116.152918	L16120768-04	0101-0131A-S2	40/50	1		12/21/16 15:29
51	T4.122116.153305	L16120768-05	0101-0131A-S4	40/50	1		12/21/16 15:33
52	T4.122116.153651	L16120768-06	0101-0131A-S5	40/50	1		12/21/16 15:36
53	T4.122116.154037	L16120768-07	0101-0131A-S12	40/50	1		12/21/16 15:40
54	T4.122116.154425	WG596008-23	CCV		1		12/21/16 15:44
55	T4.122116.154758	WG596008-24	CCB		1		12/21/16 15:47
56	T4.122116.155149	L16120768-08	0101-0131A-S6	40/50	1		12/21/16 15:51
57	T4.122116.155535	L16120768-09	0101-0131A-S18	40/50	1		12/21/16 15:55
58	T4.122116.155922	L16120768-10	0101-0131A-S8	40/50	1		12/21/16 15:59
59	T4.122116.160308	L16120768-11	0101-0131A-S9	40/50	1		12/21/16 16:03
60	T4.122116.160655	L16120773-01	0101-129-S2	40/50	1		12/21/16 16:06
61	T4.122116.161041	L16120719-03	120F-120916	40/50	2		12/21/16 16:10
62	T4.122116.161429	WG596008-25	CCV		1		12/21/16 16:14
63	T4.122116.161802	WG596008-26	CCB		1		12/21/16 16:18
64	T4.122116.162154	WG596008-27	Low Level Continuing Calibra		1		12/21/16 16:21
65	T4.122116.162542	WG596008-28	Low Level Continuing Calibra		1		12/21/16 16:25
66	T4.122116.162934	WG595274-02	Method/Prep Blank		1		12/21/16 16:29
67	T4.122116.163323	WG595274-03	Laboratory Control S		1		12/21/16 16:33
68	T4.122116.163700	WG595020-01	Fluid Blank 1		1		12/21/16 16:37

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Microbac Laboratories Inc. Instrument Run Log

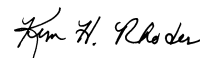
Instrument: ICP-THERMO4 Dataset: 122116T4.1
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT37691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594869,595141,594644,594975

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T4.122116.164048	WG595020-02	Fluid Blank 2		1		12/21/16 16:40
70	T4.122116.164436	L16120748-02	INS-WS01-121216		1		12/21/16 16:44
71	T4.122116.164824	WG595274-01	Reference Sample		1	L16120834-01	12/21/16 16:48
72	T4.122116.165210	WG595274-04	Matrix Spike		1	L16120834-01	12/21/16 16:52
73	T4.122116.165549	WG595274-05	Matrix Spike Duplica		1	L16120834-01	12/21/16 16:55
74	T4.122116.165936	WG596008-29	CCV		1		12/21/16 16:59
75	T4.122116.170308	WG596008-30	CCB		1		12/21/16 17:03
76	T4.122116.170658	L16120957-01	TNK-WW121516EL-001		1		12/21/16 17:06
77	T4.122116.171051	WG595380-03	Post Digestion Spike		1	L16120748-02	12/21/16 17:10
78	T4.122116.171437	WG595380-04	Serial Dilution		5	L16120748-02	12/21/16 17:14
79	T4.122116.171827	WG596008-31	CCV		1		12/21/16 17:18
80	T4.122116.172159	WG596008-32	CCB		1		12/21/16 17:21
81	T4.122116.172550	WG596008-33	LLCCV		1		12/21/16 17:25
82	T4.122116.172938	WG596008-34	Low Level Continuing Calibra		1		12/21/16 17:29
83	T4.122116.173327	WG594037-03	Method/Prep Blank		1		12/21/16 17:33
84	T4.122116.173715	WG594037-04	Laboratory Control S		1		12/21/16 17:37
85	T4.122116.174052	L16120342-04	A09-TM02-Y1S4		1		12/21/16 17:40
86	T4.122116.174439	WG594644-03	Post Digestion Spike		1	L16120360-01	12/21/16 17:44
87	T4.122116.174816	WG594644-04	Serial Dilution		5	L16120360-01	12/21/16 17:48
88	T4.122116.175204	WG594037-01	Reference Sample		1	L16120352-01	12/21/16 17:52
89	T4.122116.175559	WG594037-02	Reference Sample		1	L16120352-02	12/21/16 17:55
90	T4.122116.175953	WG594037-05	Matrix Spike		1	L16120352-01	12/21/16 17:59
91	T4.122116.180340	WG594037-07	Matrix Spike		1	L16120352-02	12/21/16 18:03
92	T4.122116.180727	WG596008-35	CCV		1		12/21/16 18:07
93	T4.122116.181100	WG596008-36	CCB		1		12/21/16 18:11
94	T4.122116.181450	WG594037-06	Matrix Spike Duplica		1	L16120352-01	12/21/16 18:14
95	T4.122116.181838	WG594037-08	Matrix Spike Duplica		1	L16120352-02	12/21/16 18:18
96	T4.122116.182225	WG594037-01	Reference Sample		10	L16120352-01	12/21/16 18:22
97	T4.122116.182611	WG594037-05	Matrix Spike	40/50	10	L16120352-01	12/21/16 18:26
98	T4.122116.182956	WG594037-06	Matrix Spike Duplica	40/50	10	L16120352-01	12/21/16 18:29
99	T4.122116.183341	WG596008-37	CCV		1		12/21/16 18:33
100	T4.122116.183714	WG596008-38	CCB		1		12/21/16 18:37
101	T4.122116.184102	WG596008-39	LLCCV		1		12/21/16 18:41
102	T4.122116.184451	WG596008-40	Low Level Continuing Calibra		1		12/21/16 18:44

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO4 Dataset: 122116T4.1
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG737691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594869,595141,594644,594975

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	T4.122116.184841	WG594498-02	Method/Prep Blank		1		12/21/16 18:48
104	T4.122116.185229	WG594498-03	Laboratory Control S		1		12/21/16 18:52
105	T4.122116.185608	WG594498-01	Reference Sample		1	L16120352-08	12/21/16 18:56
106	T4.122116.185954	WG594498-04	Matrix Spike		1	L16120352-08	12/21/16 18:59
107	T4.122116.190332	WG594498-05	Matrix Spike Duplica		1	L16120352-08	12/21/16 19:03
108	T4.122116.190709	L16120352-16	MW01-120616		1		12/21/16 19:07
109	T4.122116.191054	WG594872-05	Post Digestion Spike		1	L16120352-17	12/21/16 19:10
110	T4.122116.191433	WG594872-06	Serial Dilution		5	L16120352-17	12/21/16 19:14
111	T4.122116.191820	L16120352-17	MW16I-120616		1		12/21/16 19:18
112	T4.122116.192206	L16120352-18	MW16I-120616		1		12/21/16 19:22
113	T4.122116.192554	WG596008-41	CCV		1		12/21/16 19:25
114	T4.122116.192927	WG596008-42	CCB		1		12/21/16 19:29
115	T4.122116.193316	L16120352-21	MW26-120616		1		12/21/16 19:33
116	T4.122116.193703	L16120425-21	DUP-GW-120716-1		1		12/21/16 19:37
117	T4.122116.194048	L16120425-22	DUP-GW-120716-1		1		12/21/16 19:40
118	T4.122116.194434	L16120425-23	DUP-GW-120716-2		1		12/21/16 19:44
119	T4.122116.194828	L16120425-24	DUP-GW-120716-2		1		12/21/16 19:48
120	T4.122116.195222	L16120568-01	A08/09-120516-RB01-Y1S4		1		12/21/16 19:52
121	T4.122116.195612	WG596008-43	CCV		1		12/21/16 19:56
122	T4.122116.195945	WG596008-44	CCB		1		12/21/16 19:59
123	T4.122116.200335	WG596008-45	LLCCV		1		12/21/16 20:03
124	T4.122116.200724	WG596008-46	Low Level Continuing Calibra		1		12/21/16 20:07
125	T4.122116.201113	WG594634-02	Method/Prep Blank	40/50	1		12/21/16 20:11
126	T4.122116.201501	WG594634-03	Laboratory Control S	40/50	1		12/21/16 20:15
127	T4.122116.201839	L16120425-01	PZ06-120616	40/50	1		12/21/16 20:18
128	T4.122116.202225	L16120425-02	PZ06-120616	40/50	1		12/21/16 20:22
129	T4.122116.202612	L16120425-03	MW18-120616	40/50	1		12/21/16 20:26
130	T4.122116.202956	L16120425-04	MW18-120616	40/50	1		12/21/16 20:29
131	T4.122116.203342	L16120425-05	MW11S-120716	40/50	1		12/21/16 20:33
132	T4.122116.203737	L16120425-06	MW11S-120716	40/50	1		12/21/16 20:37
133	T4.122116.204132	WG594875-01	Post Digestion Spike		1	L16120425-06	12/21/16 20:41
134	T4.122116.204518	WG594875-02	Serial Dilution		5	L16120425-06	12/21/16 20:45
135	T4.122116.204909	WG596008-47	CCV		1		12/21/16 20:49
136	T4.122116.205242	WG596008-48	CCB		1		12/21/16 20:52

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Kim H. Rhodes



Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 122116T4.1
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD78879 ICV Std: STD79359 Post Spike: STD77492
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG737691
 CCV: STD79360 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594869,595141,594644,594975

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
137	T4.122116.205633	L16120425-07	MW05I-120716	40/50	1		12/21/16 20:56
138	T4.122116.210018	L16120425-08	MW05I-120716	40/50	1		12/21/16 21:00
139	T4.122116.210405	L16120425-09	MW30-120716	40/50	1		12/21/16 21:04
140	T4.122116.210759	L16120425-10	MW30-120716	40/50	1		12/21/16 21:07
141	T4.122116.211144	L16120425-11	MW07-120716	40/50	1		12/21/16 21:11
142	T4.122116.211530	L16120425-12	MW07-120716	40/50	1		12/21/16 21:15
143	T4.122116.211914	L16120425-13	MW20-120716	40/50	1		12/21/16 21:19
144	T4.122116.212300	L16120425-14	MW20-120716	40/50	1		12/21/16 21:23
145	T4.122116.212646	L16120425-15	MW06-120716	40/50	1		12/21/16 21:26
146	T4.122116.213032	L16120425-16	MW06-120716	40/50	1		12/21/16 21:30
147	T4.122116.213421	WG596008-49	CCV		1		12/21/16 21:34
148	T4.122116.213754	WG596008-50	CCB		1		12/21/16 21:37
149	T4.122116.214144	L16120425-17	MW10-120716	40/50	1		12/21/16 21:41
150	T4.122116.214530	L16120425-18	MW10-120716	40/50	1		12/21/16 21:45
151	T4.122116.214916	L16120425-19	PZ03-120716	40/50	1		12/21/16 21:49
152	T4.122116.215310	WG594634-01	Reference Sample		1	L16120425-20	12/21/16 21:53
153	T4.122116.215705	WG594634-04	Matrix Spike	40/50	1	L16120425-20	12/21/16 21:57
154	T4.122116.220052	WG594634-05	Matrix Spike Duplica	40/50	1	L16120425-20	12/21/16 22:00
155	T4.122116.220439	WG596008-51	CCV		1		12/21/16 22:04
156	T4.122116.220812	WG596008-52	CCB		1		12/21/16 22:08
157	T4.122116.221202	WG596008-53	LLCCV		1		12/21/16 22:12
158	T4.122116.221552	WG596008-54	Low Level Continuing Calibra		1		12/21/16 22:15
159	T4.122116.221940	WG596008-55	Interference Check		1		12/21/16 22:19
160	T4.122116.222335	WG596008-56	Interference Check		1		12/21/16 22:23
161	T4.122116.222724	WG596008-57	CCV		1		12/21/16 22:27
162	T4.122116.223056	WG596008-58	CCB		1		12/21/16 22:30

Page: 5 Approved: December 22, 2016

Jim H. Rhodes



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO3 Dataset: 122216T3.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG731668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594872,594644,594875,595139,595141,595175,595976

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T3.122216.155910	WG596231-01	Calibration Point		1		12/22/16 15:59
2	T3.122216.160305	WG596231-02	Calibration Point		1		12/22/16 16:03
3	T3.122216.160701	WG596231-03	Calibration Point		1		12/22/16 16:07
4	T3.122216.161058	WG596231-04	Calibration Point		1		12/22/16 16:10
5	T3.122216.161433	WG596231-05	Calibration Point		1		12/22/16 16:14
6	T3.122216.161808	WG596231-06	Initial Calibration Verification		1		12/22/16 16:18
7	T3.122216.162132	WG596231-07	Initial Calib Blank		1		12/22/16 16:21
8	T3.122216.162528	WG596231-08	Low Level Initial Calibration V		1		12/22/16 16:25
9	T3.122216.162911	WG596231-09	Low Level Initial Calibration V		1		12/22/16 16:29
10	T3.122216.163303	WG596231-10	Interference Check		1		12/22/16 16:33
11	T3.122216.163656	WG596231-11	Interference Check		1		12/22/16 16:36
12	T3.122216.164038	WG596231-12	CCV		1		12/22/16 16:40
13	T3.122216.164412	WG596231-13	CCB		1		12/22/16 16:44
14	T3.122216.172732	WG594498-02	Method/Prep Blank	40/50	1		12/22/16 17:27
15	T3.122216.173128	WG594498-03	Laboratory Control S	40/50	1		12/22/16 17:31
16	T3.122216.173507	WG594498-01	Reference Sample		1	L16120352-08	12/22/16 17:35
17	T3.122216.173859	WG594498-04	Matrix Spike	40/50	1	L16120352-08	12/22/16 17:38
18	T3.122216.174238	WG594498-05	Matrix Spike Duplica	40/50	1	L16120352-08	12/22/16 17:42
19	T3.122216.174617	L16120352-16	MW01-120616	40/50	1		12/22/16 17:46
20	T3.122216.175009	L16120352-17	MW16I-120616	40/50	1		12/22/16 17:50
21	T3.122216.175401	WG594872-05	Post Digestion Spike		1	L16120352-17	12/22/16 17:54
22	T3.122216.175739	WG594872-06	Serial Dilution		5	L16120352-17	12/22/16 17:57
23	T3.122216.180132	L16120352-18	MW16I-120616	40/50	1		12/22/16 18:01
24	T3.122216.180525	WG596231-14	CCV		1		12/22/16 18:05
25	T3.122216.180900	WG596231-15	CCB		1		12/22/16 18:09
26	T3.122216.181258	L16120352-21	MW26-120616	40/50	1		12/22/16 18:12
27	T3.122216.181649	L16120425-21	DUP-GW-120716-1	40/50	1		12/22/16 18:16
28	T3.122216.182041	L16120425-22	DUP-GW-120716-1	40/50	1		12/22/16 18:20
29	T3.122216.182434	L16120425-23	DUP-GW-120716-2	40/50	1		12/22/16 18:24
30	T3.122216.182835	L16120425-24	DUP-GW-120716-2	40/50	1		12/22/16 18:28
31	T3.122216.183237	L16120568-01	A08/09-120516-RB01-Y1S4	40/50	1		12/22/16 18:32
32	T3.122216.183634	WG596231-16	CCV		1		12/22/16 18:36
33	T3.122216.184009	WG596231-17	CCB		1		12/22/16 18:40
34	T3.122216.184408	WG596231-18	Low Level Continuing Calibra		1		12/22/16 18:44

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K: K Buck



Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO3 Dataset: 122216T3.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG31668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol: _____
 Stannous: _____ Hydroxylamine: _____

Workgroups: 594872,594644,594875,595139,595141,595175,595976

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T3.122216.184802	WG596231-19	Low Level Continuing Calibra		1		12/22/16 18:48
36	T3.122216.185154	WG594037-03	Method/Prep Blank	40/50	1		12/22/16 18:51
37	T3.122216.185549	WG594037-04	Laboratory Control S	40/50	1		12/22/16 18:55
38	T3.122216.185927	WG594037-01	Reference Sample		1	L16120352-01	12/22/16 18:59
39	T3.122216.190328	WG594037-02	Reference Sample		1	L16120352-02	12/22/16 19:03
40	T3.122216.190730	WG594037-05	Matrix Spike	40/50	1	L16120352-01	12/22/16 19:07
41	T3.122216.191117	WG594037-07	Matrix Spike	40/50	1	L16120352-02	12/22/16 19:11
42	T3.122216.191504	WG594037-06	Matrix Spike Duplica	40/50	1	L16120352-01	12/22/16 19:15
43	T3.122216.191850	WG594037-08	Matrix Spike Duplica	40/50	1	L16120352-02	12/22/16 19:18
44	T3.122216.192238	WG596231-20	CCV		1		12/22/16 19:22
45	T3.122216.192613	WG596231-21	CCB		1		12/22/16 19:26
46	T3.122216.193011	L16120360-01	12002-F01-WQ-W0011	40/50	1		12/22/16 19:30
47	T3.122216.193406	WG594644-03	Post Digestion Spike		1	L16120360-01	12/22/16 19:34
48	T3.122216.193744	WG594644-04	Serial Dilution		5	L16120360-01	12/22/16 19:37
49	T3.122216.194142	WG596231-22	CCV		1		12/22/16 19:41
50	T3.122216.194517	WG596231-23	CCB		1		12/22/16 19:45
51	T3.122216.194915	WG596231-24	Low Level Continuing Calibra		1		12/22/16 19:49
52	T3.122216.195308	WG596231-25	Low Level Continuing Calibra		1		12/22/16 19:53
53	T3.122216.195701	WG594634-02	Method/Prep Blank	40/50	1		12/22/16 19:57
54	T3.122216.200057	WG594634-03	Laboratory Control S	40/50	1		12/22/16 20:00
55	T3.122216.200436	L16120425-01	PZ06-120616	40/50	1		12/22/16 20:04
56	T3.122216.200831	L16120425-01	PZ06-120616	40/50	5		12/22/16 20:08
57	T3.122216.201226	L16120425-02	PZ06-120616	40/50	1		12/22/16 20:12
58	T3.122216.201618	L16120425-03	MW18-120616	40/50	1		12/22/16 20:16
59	T3.122216.202007	L16120425-04	MW18-120616	40/50	1		12/22/16 20:20
60	T3.122216.202359	WG594875-03	Post Digestion Spike		1	L16120425-04	12/22/16 20:23
61	T3.122216.202736	WG594875-04	Serial Dilution		5	L16120425-04	12/22/16 20:27
62	T3.122216.203129	L16120425-05	MW11S-120716	40/50	1		12/22/16 20:31
63	T3.122216.203533	WG596231-26	CCV		1		12/22/16 20:35
64	T3.122216.203908	WG596231-27	CCB		1		12/22/16 20:39
65	T3.122216.204305	L16120425-05	MW11S-120716	40/50	5		12/22/16 20:43
66	T3.122216.204701	L16120425-06	MW11S-120716	40/50	1		12/22/16 20:47
67	T3.122216.205104	L16120425-07	MW05I-120716	40/50	1		12/22/16 20:51
68	T3.122216.205457	L16120425-08	MW05I-120716	40/50	1		12/22/16 20:54

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K: K Buck



Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-THERMO3 Dataset: 122216T3.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT31668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594872,594644,594875,595139,595141,595175,595976

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T3.122216.205850	L16120425-09	MW30-120716	40/50	1		12/22/16 20:58
70	T3.122216.210251	L16120425-09	MW30-120716	40/50	5		12/22/16 21:02
71	T3.122216.210645	L16120425-10	MW30-120716	40/50	1		12/22/16 21:06
72	T3.122216.211038	L16120425-11	MW07-120716	40/50	1		12/22/16 21:10
73	T3.122216.211433	L16120425-12	MW07-120716	40/50	1		12/22/16 21:14
74	T3.122216.211826	L16120425-13	MW20-120716	40/50	1		12/22/16 21:18
75	T3.122216.212219	WG596231-28	CCV		1		12/22/16 21:22
76	T3.122216.212553	WG596231-29	CCB		1		12/22/16 21:25
77	T3.122216.212950	L16120425-14	MW20-120716	40/50	1		12/22/16 21:29
78	T3.122216.213342	L16120425-15	MW06-120716	40/50	1		12/22/16 21:33
79	T3.122216.213735	L16120425-16	MW06-120716	40/50	1		12/22/16 21:37
80	T3.122216.214127	L16120425-17	MW10-120716	40/50	1		12/22/16 21:41
81	T3.122216.214520	L16120425-18	MW10-120716	40/50	1		12/22/16 21:45
82	T3.122216.214913	L16120425-19	PZ03-120716	40/50	1		12/22/16 21:49
83	T3.122216.215314	L16120425-19	PZ03-120716	40/50	5		12/22/16 21:53
84	T3.122216.215715	WG594634-01	Reference Sample		1	L16120425-20	12/22/16 21:57
85	T3.122216.220100	WG594634-04	Matrix Spike	40/50	1	L16120425-20	12/22/16 22:01
86	T3.122216.220446	WG594634-05	Matrix Spike Duplica	40/50	1	L16120425-20	12/22/16 22:04
87	T3.122216.220840	WG596231-30	CCV		1		12/22/16 22:08
88	T3.122216.221215	WG596231-31	CCB		1		12/22/16 22:12
89	T3.122216.221611	WG596231-32	Low Level Continuing Calibra		1		12/22/16 22:16
90	T3.122216.222005	WG596231-33	Low Level Continuing Calibra		1		12/22/16 22:20
91	T3.122216.222358	WG594999-02	Method/Prep Blank	40/50	1		12/22/16 22:23
92	T3.122216.222755	WG594999-03	Laboratory Control S	40/50	1		12/22/16 22:27
93	T3.122216.223133	WG594999-01	Reference Sample		1	L16120639-15	12/22/16 22:31
94	T3.122216.223526	WG594999-04	Matrix Spike	40/50	1	L16120639-15	12/22/16 22:35
95	T3.122216.223903	WG594999-05	Matrix Spike Duplica	40/50	1	L16120639-15	12/22/16 22:39
96	T3.122216.224240	L16120680-01	6-10-23 W1	40/50	1		12/22/16 22:42
97	T3.122216.224633	WG595139-03	Post Digestion Spike		1	L16120680-01	12/22/16 22:46
98	T3.122216.225011	WG595139-04	Serial Dilution		5	L16120680-01	12/22/16 22:50
99	T3.122216.225406	WG596231-34	CCV		1		12/22/16 22:54
100	T3.122216.225741	WG596231-35	CCB		1		12/22/16 22:57
101	T3.122216.230137	WG596231-36	Low Level Continuing Calibra		1		12/22/16 23:01
102	T3.122216.230531	WG596231-37	Low Level Continuing Calibra		1		12/22/16 23:05

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K: K Buck



Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO3 Dataset: 122216T3.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG731668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594872,594644,594875,595139,595141,595175,595976

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	T3.122216.230923	L16120719-03	120F-120916	40/50	10		12/22/16 23:09
104	T3.122216.231316	WG594996-01	Reference Sample		5	L16120719-08	12/22/16 23:13
105	T3.122216.231710	WG594996-04	Matrix Spike	40/50	5	L16120719-08	12/22/16 23:17
106	T3.122216.232100	WG594996-05	Matrix Spike Duplica	40/50	5	L16120719-08	12/22/16 23:21
107	T3.122216.232451	L16120719-16	18WW25F-120916	40/50	5		12/22/16 23:24
108	T3.122216.232845	L16120719-19	MW16-121216	40/50	10		12/22/16 23:28
109	T3.122216.233240	WG596231-38	CCV		1		12/22/16 23:32
110	T3.122216.233615	WG596231-39	CCB		1		12/22/16 23:36
111	T3.122216.234011	WG596231-40	Low Level Continuing Calibra		1		12/22/16 23:40
112	T3.122216.234405	WG596231-41	Low Level Continuing Calibra		1		12/22/16 23:44
113	T3.122216.234759	WG594906-02	Method/Prep Blank	40/50	1		12/22/16 23:47
114	T3.122216.235155	WG594906-03	Laboratory Control S	40/50	1		12/22/16 23:51
115	T3.122216.235533	L16120521-01	MW36-120816	40/50	1		12/22/16 23:55
116	T3.122216.235925	L16120521-02	MW36-120816	40/50	1		12/22/16 23:59
117	T3.122316.000317	L16120521-03	MW37-120816	40/50	1		12/23/16 00:03
118	T3.122316.000717	L16120521-04	MW37-120816	40/50	1		12/23/16 00:07
119	T3.122316.001120	L16120521-05	MW35-120816	40/50	1		12/23/16 00:11
120	T3.122316.001512	L16120521-06	MW35-120816	40/50	1		12/23/16 00:15
121	T3.122316.001904	WG595175-01	Post Digestion Spike		1	L16120521-06	12/23/16 00:19
122	T3.122316.002231	WG595175-02	Serial Dilution		5	L16120521-06	12/23/16 00:22
123	T3.122316.002637	WG596231-42	CCV		1		12/23/16 00:26
124	T3.122316.003012	WG596231-43	CCB		1		12/23/16 00:30
125	T3.122316.003409	L16120521-11	MW24-120816	40/50	1		12/23/16 00:34
126	T3.122316.003811	L16120521-12	MW24-120816	40/50	1		12/23/16 00:38
127	T3.122316.004211	WG594906-01	Reference Sample		1	L16120639-14	12/23/16 00:42
128	T3.122316.004604	L16120639-16	MW6AC	40/50	1		12/23/16 00:46
129	T3.122316.004956	L16120639-17	MW6AC	40/50	1		12/23/16 00:49
130	T3.122316.005349	WG594906-04	Matrix Spike	40/50	1	L16120639-14	12/23/16 00:53
131	T3.122316.005727	WG594906-05	Matrix Spike Duplica	40/50	1	L16120639-14	12/23/16 00:57
132	T3.122316.010105	L16120639-22	RINSATE 02	40/50	1		12/23/16 01:01
133	T3.122316.010500	L16120747-01	PTO-EB01-121116	40/50	1		12/23/16 01:05
134	T3.122316.010856	L16120747-02	PTO-EB02-121116	40/50	1		12/23/16 01:08
135	T3.122316.011254	WG596231-44	CCV		1		12/23/16 01:12
136	T3.122316.011628	WG596231-45	CCB		1		12/23/16 01:16

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K: K Buck



Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-THERMO3 Dataset: 122216T3.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG731668
 CCV: STD79360 LLCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594872,594644,594875,595139,595141,595175,595976

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
137	T3.122316.012024	L16120747-03	PTO-EB03-121116	40/50	1		12/23/16 01:20
138	T3.122316.012420	L16120747-04	MW854B-GW-121216	40/50	1		12/23/16 01:24
139	T3.122316.012811	L16120747-05	MW107-GW-121216	40/50	1		12/23/16 01:28
140	T3.122316.013203	L16120775-02	PERMEATE	1/50	1		12/23/16 01:32
141	T3.122316.013557	L16120775-04	BLEED	1/50	1		12/23/16 01:35
142	T3.122316.013950	L16120775-06	N. DOCK FLUME	1/50	1		12/23/16 01:39
143	T3.122316.014346	WG596231-46	CCV		1		12/23/16 01:43
144	T3.122316.014721	WG596231-47	CCB		1		12/23/16 01:47
145	T3.122316.015117	WG596231-48	Low Level Continuing Calibra		1		12/23/16 01:51
146	T3.122316.015511	WG596231-49	Low Level Continuing Calibra		1		12/23/16 01:55
147	T3.122316.015905	WG595481-02	Method/Prep Blank	40/50	1		12/23/16 01:59
148	T3.122316.020300	WG595481-03	Laboratory Control S	40/50	1		12/23/16 02:03
149	T3.122316.020639	L16120975-02	AWD4F-121316	40/50	1		12/23/16 02:06
150	T3.122316.021030	L16120975-04	AWD4FDF-121316	40/50	1		12/23/16 02:10
151	T3.122316.021420	L16120975-06	18CPTMW24-121316	40/50	1		12/23/16 02:14
152	T3.122316.021819	L16120975-07	MW8-121516	40/50	1		12/23/16 02:18
153	T3.122316.022212	L16120975-08	MW8FD-121516	40/50	1		12/23/16 02:22
154	T3.122316.022605	L16120975-10	MW18F-121516	40/50	1		12/23/16 02:26
155	T3.122316.022957	WG595976-01	Post Digestion Spike		1	L16120975-10	12/23/16 02:29
156	T3.122316.023335	WG595976-02	Serial Dilution		5	L16120975-10	12/23/16 02:33
157	T3.122316.023729	WG596231-50	CCV		1		12/23/16 02:37
158	T3.122316.024104	WG596231-51	CCB		1		12/23/16 02:41
159	T3.122316.024500	L16120975-11	18WW20-121516	40/50	1		12/23/16 02:45
160	T3.122316.024854	L16120975-13	18CPTMW14F-121516	40/50	1		12/23/16 02:48
161	T3.122316.025254	L16120975-15	18CPTMW18F-121516	40/50	1		12/23/16 02:52
162	T3.122316.025653	L16120989-02	SW1A-328-14	40/50	1		12/23/16 02:56
163	T3.122316.030047	L16120989-05	SW1B-328-14	40/50	1		12/23/16 03:00
164	T3.122316.030441	L16120989-08	SW2A-328-14	40/50	1		12/23/16 03:04
165	T3.122316.030837	WG595481-01	Reference Sample		1	L16120989-13	12/23/16 03:08
166	T3.122316.031231	WG595481-04	Matrix Spike	40/50	1	L16120989-13	12/23/16 03:12
167	T3.122316.031608	WG595481-05	Matrix Spike Duplica	40/50	1	L16120989-13	12/23/16 03:16
168	T3.122316.031945	L16120989-20	SW4A-328-14	40/50	1		12/23/16 03:19
169	T3.122316.032341	WG596231-52	CCV		1		12/23/16 03:23
170	T3.122316.032717	WG596231-53	CCB		1		12/23/16 03:27

Page: 5 Approved: December 23, 2016

K: K Buck



Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-THERMO3 Dataset: 122216T3.1R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT31668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594872,594644,594875,595139,595141,595175,595976

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
171	T3.122316.033113	L16120989-23	SW5A-328-14	40/50	1		12/23/16 03:31
172	T3.122316.033508	L16121003-01	DEC 2016 PAINT PREP WA	40/50	1		12/23/16 03:35
173	T3.122316.033844	L16121034-01	10206-D01-WQ-W0008	40/50	1		12/23/16 03:38
174	T3.122316.034240	L16121034-02	15105-D04-WQ-W0016	40/50	1		12/23/16 03:42
175	T3.122316.034637	L16121034-03	15105-D09-WQ-W0039	40/50	1		12/23/16 03:46
176	T3.122316.035032	L16121034-04	15105-G07-WQ-W0109	40/50	1		12/23/16 03:50
177	T3.122316.035432	WG596231-54	CCV		1		12/23/16 03:54
178	T3.122316.035807	WG596231-55	CCB		1		12/23/16 03:58
179	T3.122316.040204	WG596231-56	Low Level Continuing Calibra		1		12/23/16 04:02
180	T3.122316.040556	WG596231-57	Low Level Continuing Calibra		1		12/23/16 04:05
181	T3.122316.040949	WG596231-58	Interference Check		1		12/23/16 04:09
182	T3.122316.041342	WG596231-59	Interference Check		1		12/23/16 04:13
183	T3.122316.041726	WG596231-60	CCV		1		12/23/16 04:17
184	T3.122316.042100	WG596231-61	CCB		1		12/23/16 04:21
185	T3.122316.042458	STD79561	STD79561		1		12/23/16 04:24
186	T3.122316.042857	WG596231-62	CCV		1		12/23/16 04:28
187	T3.122316.043232	WG596231-63	CCB		1		12/23/16 04:32

Page: 6 Approved: December 23, 2016

K: K Buck



Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-THERMO3 Dataset: 122916T3.1R.TXT
 Analyst1: JYH Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____

Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG731668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 595175,596688,596614

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T3.122916.062104	WG596943-01	Calibration Point		1		12/29/16 06:21
2	T3.122916.062500	WG596943-02	Calibration Point		1		12/29/16 06:25
3	T3.122916.062858	WG596943-03	Calibration Point		1		12/29/16 06:28
4	T3.122916.063254	WG596943-04	Calibration Point		1		12/29/16 06:32
5	T3.122916.063631	WG596943-05	Calibration Point		1		12/29/16 06:36
6	T3.122916.064007	WG596943-06	Initial Calibration Verification		1		12/29/16 06:40
7	T3.122916.064343	WG596943-07	Initial Calib Blank		1		12/29/16 06:43
8	T3.122916.064740	WG596943-08	Low Level Initial Calibration V		1		12/29/16 06:47
9	T3.122916.065135	WG596943-09	Interference Check		1		12/29/16 06:51
10	T3.122916.065529	WG596943-10	Interference Check		1		12/29/16 06:55
11	T3.122916.065911	WG596943-11	CCV		1		12/29/16 06:59
12	T3.122916.070247	WG596943-12	CCB		1		12/29/16 07:02
13	T3.122916.070645	WG594906-02	Method/Prep Blank	40/50	1		12/29/16 07:06
14	T3.122916.071042	WG594906-03	Laboratory Control S	40/50	1		12/29/16 07:10
15	T3.122916.071421	L16120639-14	MW6AA		1	WG594906-01	12/29/16 07:14
16	T3.122916.071815	L16120639-18	MW6AMS	40/50	1	WG594906-04	12/29/16 07:18
17	T3.122916.072155	L16120639-20	MW6AMSD	40/50	1	WG594906-05	12/29/16 07:21
18	T3.122916.072534	L16120521-01	MW36-120816	40/50	10		12/29/16 07:25
19	T3.122916.072928	L16120521-03	MW37-120816	40/50	10		12/29/16 07:29
20	T3.122916.073323	L16120521-06	MW35-120816	40/50	10		12/29/16 07:33
21	T3.122916.073717	WG595175-01	Post Digestion Spike		10	L16120521-06	12/29/16 07:37
22	T3.122916.074056	WG595175-02	Serial Dilution		50	L16120521-06	12/29/16 07:40
23	T3.122916.074453	WG596943-13	CCV		1		12/29/16 07:44
24	T3.122916.074828	WG596943-14	CCB		1		12/29/16 07:48
25	T3.122916.075225	L16120521-05	MW35-120816	40/50	10		12/29/16 07:52
26	T3.122916.075619	L16120521-11	MW24-120816	40/50	10		12/29/16 07:56
27	T3.122916.080013	WG596943-15	Interference Check		1		12/29/16 08:00
28	T3.122916.080406	WG596943-16	Interference Check		1		12/29/16 08:04
29	T3.122916.080748	WG596943-17	CCV		1		12/29/16 08:07
30	T3.122916.081124	WG596943-18	CCB		1		12/29/16 08:11
31	T3.122916.081521	WG596943-19	Low Level Continuing Calibra		1		12/29/16 08:15
32	T3.122916.081916	WG596444-02	Method/Prep Blank	40/50	1		12/29/16 08:19
33	T3.122916.082313	WG596444-03	Laboratory Control S	40/50	1		12/29/16 08:23
34	T3.122916.082653	WG596444-01	Reference Sample		1	L16121220-06	12/29/16 08:26

Page: 1 Approved: December 30, 2016

K: K Buck

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO3 Dataset: 122916T3.1R.TXT
 Analyst1: JYH Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RGT31668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 595175,596688,596614

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T3.122916.083047	WG596444-04	Matrix Spike	40/50	1	L16121220-06	12/29/16 08:30
36	T3.122916.083413	WG596444-05	Matrix Spike Duplica	40/50	1	L16121220-06	12/29/16 08:34
37	T3.122916.083752	L16121220-13	KA3147	40/50	1		12/29/16 08:37
38	T3.122916.084144	L16121220-14	KA3147	40/50	1		12/29/16 08:41
39	T3.122916.084537	L16121220-15	KA3148	40/50	1		12/29/16 08:45
40	T3.122916.084919	WG596688-01	Post Digestion Spike		1	L16121220-15	12/29/16 08:49
41	T3.122916.085259	WG596688-02	Serial Dilution		5	L16121220-15	12/29/16 08:52
42	T3.122916.085654	WG596943-20	CCV		1		12/29/16 08:56
43	T3.122916.090030	WG596943-21	CCB		1		12/29/16 09:00
44	T3.122916.090428	WG596688-02	Serial Dilution		25	L16121220-15	12/29/16 09:04
45	T3.122916.090825	L16121220-16	KA3148	40/50	1		12/29/16 09:08
46	T3.122916.091219	L16121220-17	KA3149	40/50	1		12/29/16 09:12
47	T3.122916.091612	L16121220-18	KA3149	40/50	1		12/29/16 09:16
48	T3.122916.092004	L16121220-19	KA3150	40/50	1		12/29/16 09:20
49	T3.122916.092358	L16121220-20	KA3150	40/50	1		12/29/16 09:23
50	T3.122916.092752	L16121220-21	KA3151	40/50	1		12/29/16 09:27
51	T3.122916.093145	L16121220-22	KA3151	40/50	1		12/29/16 09:31
52	T3.122916.093538	L16121220-23	KA3151EB	40/50	1		12/29/16 09:35
53	T3.122916.093935	L16121220-24	KA3151EB	40/50	1		12/29/16 09:39
54	T3.122916.094332	WG596943-22	CCV		1		12/29/16 09:43
55	T3.122916.094708	WG596943-23	CCB		1		12/29/16 09:47
56	T3.122916.095106	L16121344-01	SCF-WL02-122116	40/50	1		12/29/16 09:51
57	T3.122916.095459	L16121351-02	C08F-121616	40/50	1		12/29/16 09:54
58	T3.122916.095900	L16121351-04	C06F-121616	40/50	1		12/29/16 09:59
59	T3.122916.100252	L16121393-01	LF003MW0309-008	40/50	1		12/29/16 10:02
60	T3.122916.100644	L16121393-02	SS007MWOB02-008	40/50	1		12/29/16 10:06
61	T3.122916.101037	L16121405-01	40020-G01-WQ-W0002	40/50	1		12/29/16 10:10
62	T3.122916.101433	L16121405-02	40113-G01-WQ-W0003	40/50	1		12/29/16 10:14
63	T3.122916.102400	L16121351-02	C08F-121616	40/50	50		12/29/16 10:24
64	T3.122916.102756	L16121351-04	C06F-121616	40/50	20		12/29/16 10:27
65	T3.122916.103153	WG596943-24	CCV		1		12/29/16 10:31
66	T3.122916.103528	WG596943-25	CCB		1		12/29/16 10:35
67	T3.122916.103926	WG596943-26	Interference Check		1		12/29/16 10:39
68	T3.122916.104319	WG596943-27	Interference Check		1		12/29/16 10:43

Page: 2 Approved: December 30, 2016

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Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-THERMO3 Dataset: 122916T3.1R.TXT
 Analyst1: JYH Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD79328 ICV Std: STD79359 Post Spike: STD77272
 ICSA: STD79273 ICSAB: STD79274 Int. Std: RG731668
 CCV: STD79360 LLCCV: STD79605 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 595175,596688,596614

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T3.122916.104701	WG596943-28	CCV		1		12/29/16 10:47
70	T3.122916.105038	WG596943-29	CCB		1		12/29/16 10:50
71	T3.122916.105435	WG596943-30	Low Level Continuing Calibra		1		12/29/16 10:54
72	T3.122916.110850	WG596943-31	CCV		1		12/29/16 11:08
73	T3.122916.111226	WG596943-32	CCB		1		12/29/16 11:12
74	T3.122916.111622	WG596401-01	Method/Prep Blank	1/50	1		12/29/16 11:16
75	T3.122916.112019	WG596401-02	Laboratory Control S	1/50	1		12/29/16 11:20
76	T3.122916.112359	WG596401-03	Laboratory Control S	1/50	1		12/29/16 11:23
77	T3.122916.112740	L16121020-01	TSP-MB-328A	1.009/50	1		12/29/16 11:27
78	T3.122916.113133	L16121020-02	TSP-FB-328A	1.014/50	1		12/29/16 11:31
79	T3.122916.113525	L16121020-03	TSP-LL-328A	1.014/50	1		12/29/16 11:35
80	T3.122916.113920	L16121020-04	TSP-EE-328A	1.005/50	1		12/29/16 11:39
81	T3.122916.114313	L16121020-05	TSP-II-328A	1.008/50	1		12/29/16 11:43
82	T3.122916.114705	WG596614-01	Post Digestion Spike		1	L16121020-05	12/29/16 11:47
83	T3.122916.115044	WG596614-02	Serial Dilution		5	L16121020-05	12/29/16 11:50
84	T3.122916.115441	WG596943-33	CCV		1		12/29/16 11:54
85	T3.122916.115816	WG596943-34	CCB		1		12/29/16 11:58
86	T3.122916.120214	L16121020-06	TSP-HH-328A	1.015/50	1		12/29/16 12:02
87	T3.122916.120609	WG596943-35	CCV		1		12/29/16 12:06
88	T3.122916.120945	WG596943-36	CCB		1		12/29/16 12:09

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K: K Buck



Microbac Laboratories Inc.

Data Checklist

Date: 15-DEC-2016

Analyst: KKB

Analyst: NA

Method: 6010B/6010C/200.7

Instrument: ICP-THERMO4

Curve Workgroup: 595250

Runlog ID: 79270

Analytical Workgroups: 594871,594869,594866,594872

Add'l WGs	
STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	564,618,619,620,621,472
Level 4	520,521,641,455,593,352,425,568,591
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KKB
Secondary Reviewer	KHR
Comments	

Primary Reviewer:
16-DEC-2016

Secondary Reviewer:
16-DEC-2016

Ki K Buck

Lyn H. Rhodes



Microbac Laboratories Inc.

Data Checklist

Date: 18-DEC-2016

Analyst: KKB

Analyst: PDM

Method: 6010B/6010C/200.7

Instrument: ICP-THERMO4

Curve Workgroup: 595477

Runlog ID: 79311

Analytical Workgroups: 594866,594869,594871,594872

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0455,0472,0520,0521,0564,0618,0619 0620,0621,0641,0608,0648,0692,0352 0425,0484,0568,
Client Forms	
Level X	
Level 3	0564,0618,0619,0620,0621,0472
Level 4	0568,0520,0521,0641,0455
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	PDM
Secondary Reviewer	KHR
Comments	

Primary Reviewer:
19-DEC-2016

Secondary Reviewer:
19-DEC-2016

Pierce Morris Kim H. Rhodes

CHECKLIST1 - Modified 03/05/2008

Generated: DEC-19-2016 14:06:13



Microbac Laboratories Inc.

Data Checklist

Date: 21-DEC-2016

Analyst: KKB

Analyst: NA

Method: 6010B/6010C/200.7

Instrument: ICP-THERMO4

Curve Workgroup: 596008

Runlog ID: 79399

Analytical Workgroups: 594869,595141,594644,594975

Add'l WGs	
STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	
Level 4	520,719,352,425
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KKB
Secondary Reviewer	KHR
Comments	

Primary Reviewer:
22-DEC-2016

Secondary Reviewer:
22-DEC-2016

K: K Buck

Lyn H. Rhodes

CHECKLIST1 - Modified 03/05/2008

Generated: DEC-22-2016 13:34:17



Microbac Laboratories Inc.

Data Checklist

Date: 22-DEC-2016

Analyst: KKB

Analyst: NA

Method: 200.7/6010B/6010C

Instrument: ICP-THERMO3

Curve Workgroup: 596231

Runlog ID: 79436

Analytical Workgroups: 594872,594644,594875,595139,595141,595175,595976

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	747
Level 4	352,425,568,639,719,521,639
	975,1034
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	KKB
Comments	

Primary Reviewer:
23-DEC-2016

J. Y. H.

Secondary Reviewer:
23-DEC-2016

K. K. Buck



Microbac Laboratories Inc.

Data Checklist

Date: 29-DEC-2016

Analyst: JYH

Analyst: NA

Method: 200.7/6010B/6010C

Instrument: ICP-THERMO3

Curve Workgroup: 596943

Runlog ID: 79515

Analytical Workgroups: 595175,596688,596614

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	1344
Level 4	521,1220,1351,1393,1405
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	KKB
Comments	

Primary Reviewer:
30-DEC-2016

J. Y. H.

Secondary Reviewer:
30-DEC-2016

K. K. Buck

CHECKLIST1 - Modified 03/05/2008

Generated: DEC-30-2016 15:27:00



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6010C

AAB#: WG595175

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/14/2016	6.1	180		12/29/16	20.8	180	
MW36-120816	01	12/08/16					12/14/2016	6.1	180		12/22/16	14.5	180	
MW36-120816	02	12/08/16					12/14/2016	6.1	180		12/22/16	14.5	180	
MW37-120816	03	12/08/16					12/14/2016	6.1	180		12/29/16	20.9	180	
MW37-120816	03	12/08/16					12/14/2016	6.1	180		12/23/16	14.6	180	
MW37-120816	04	12/08/16					12/14/2016	6.1	180		12/23/16	14.6	180	
MW35-120816	05	12/08/16					12/14/2016	5.9	180		12/23/16	14.4	180	
MW35-120816	05	12/08/16					12/14/2016	5.9	180		12/29/16	20.7	180	
MW35-120816	06	12/08/16					12/14/2016	5.9	180		12/23/16	14.4	180	
MW24-120816	11	12/08/16					12/14/2016	6.1	180		12/29/16	20.9	180	
MW24-120816	11	12/08/16					12/14/2016	6.1	180		12/23/16	14.6	180	
MW24-120816	12	12/08/16					12/14/2016	6.1	180		12/23/16	14.6	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5080254
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method:6010C

AAB#:WG594869

Login Number:L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW21-120816	07	12/08/16					12/13/2016	4.7	180		12/15/16	7.3	180	
MW21-120816	07	12/08/16					12/13/2016	4.7	180		12/18/16	10.1	180	
MW21-120816	08	12/08/16					12/13/2016	4.7	180		12/15/16	7.3	180	
MW31-120816	09	12/08/16					12/13/2016	4.8	180		12/15/16	7.4	180	
MW31-120816	10	12/08/16					12/13/2016	4.8	180		12/15/16	7.4	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5067690
Report generated 12/20/2016 08:22



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG595175</u>
Blank File ID: <u>T3.122216.234759</u>	Blank Sample ID: <u>WG594906-02</u>
Prep Date: <u>12/14/16 13:25</u>	Instrument ID: <u>ICP-THERM03</u>
Analyzed Date: <u>12/22/16 23:47</u>	Method: <u>6010C</u>
Analyst: <u>JYH</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594906-03	T3.122216.235155	12/22/16 23:51	01
MW36-120816	L16120521-01	T3.122216.235533	12/22/16 23:55	01
MW36-120816	L16120521-02	T3.122216.235925	12/22/16 23:59	01
MW37-120816	L16120521-03	T3.122316.000317	12/23/16 00:03	01
MW37-120816	L16120521-04	T3.122316.000717	12/23/16 00:07	01
MW35-120816	L16120521-05	T3.122316.001120	12/23/16 00:11	01
MW35-120816	L16120521-06	T3.122316.001512	12/23/16 00:15	01
MW24-120816	L16120521-11	T3.122316.003409	12/23/16 00:34	01
MW24-120816	L16120521-12	T3.122316.003811	12/23/16 00:38	01
LCS	WG594906-03	T3.122916.071042	12/29/16 07:10	03
MW36-120816	L16120521-01	T3.122916.072534	12/29/16 07:25	DL02
MW37-120816	L16120521-03	T3.122916.072928	12/29/16 07:29	DL02
MW35-120816	L16120521-06	T3.122916.073323	12/29/16 07:33	DL02
MW35-120816	L16120521-05	T3.122916.075225	12/29/16 07:52	DL02
MW24-120816	L16120521-11	T3.122916.075619	12/29/16 07:56	DL02

Report Name: BLANK_SUMMARY
 PDF File ID: 5080255
 Report generated 12/30/2016 13:57



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG595175</u>
Blank File ID: <u>T3.122916.070645</u>	Blank Sample ID: <u>WG594906-02</u>
Prep Date: <u>12/14/16 13:25</u>	Instrument ID: <u>ICP-THERM03</u>
Analyzed Date: <u>12/29/16 07:06</u>	Method: <u>6010C</u>
Analyst: <u>JYH</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594906-03	T3.122216.235155	12/22/16 23:51	01
MW36-120816	L16120521-01	T3.122216.235533	12/22/16 23:55	01
MW36-120816	L16120521-02	T3.122216.235925	12/22/16 23:59	01
MW37-120816	L16120521-03	T3.122316.000317	12/23/16 00:03	01
MW37-120816	L16120521-04	T3.122316.000717	12/23/16 00:07	01
MW35-120816	L16120521-05	T3.122316.001120	12/23/16 00:11	01
MW35-120816	L16120521-06	T3.122316.001512	12/23/16 00:15	01
MW24-120816	L16120521-11	T3.122316.003409	12/23/16 00:34	01
MW24-120816	L16120521-12	T3.122316.003811	12/23/16 00:38	01
LCS	WG594906-03	T3.122916.071042	12/29/16 07:10	03
MW36-120816	L16120521-01	T3.122916.072534	12/29/16 07:25	DL02
MW37-120816	L16120521-03	T3.122916.072928	12/29/16 07:29	DL02
MW35-120816	L16120521-06	T3.122916.073323	12/29/16 07:33	DL02
MW35-120816	L16120521-05	T3.122916.075225	12/29/16 07:52	DL02
MW24-120816	L16120521-11	T3.122916.075619	12/29/16 07:56	DL02

Report Name: BLANK_SUMMARY
 PDF File ID: 5080255
 Report generated 12/30/2016 13:57



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: T4.121516.205551
 Prep Date: 12/13/16 07:36
 Analyzed Date: 12/15/16 20:55
 Analyst: KKB

Work Group: WG594869
 Blank Sample ID: WG594606-02
 Instrument ID: ICP-THERM04
 Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594606-03	T4.121516.205939	12/15/16 20:59	01
MW21-120816	L16120521-07	T4.121516.211822	12/15/16 21:18	DL01
MW21-120816	L16120521-08	T4.121516.212219	12/15/16 21:22	DL01
MW31-120816	L16120521-09	T4.121516.212614	12/15/16 21:26	DL01
MW31-120816	L16120521-10	T4.121516.213003	12/15/16 21:30	DL01
LCS	WG594606-03	T4.121816.155128	12/18/16 15:51	02
MW21-120816	L16120521-07	T4.121816.161014	12/18/16 16:10	DL02

Report Name: BLANK_SUMMARY
 PDF File ID: 5067691
 Report generated 12/20/2016 08:22



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: T4.121816.154740
 Prep Date: 12/13/16 07:36
 Analyzed Date: 12/18/16 15:47
 Analyst: KKB

Work Group: WG594869
 Blank Sample ID: WG594606-02
 Instrument ID: ICP-THERM04
 Method: 6010C

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594606-03	T4.121516.205939	12/15/16 20:59	01
MW21-120816	L16120521-07	T4.121516.211822	12/15/16 21:18	DL01
MW21-120816	L16120521-08	T4.121516.212219	12/15/16 21:22	DL01
MW31-120816	L16120521-09	T4.121516.212614	12/15/16 21:26	DL01
MW31-120816	L16120521-10	T4.121516.213003	12/15/16 21:30	DL01
LCS	WG594606-03	T4.121816.155128	12/18/16 15:51	02
MW21-120816	L16120521-07	T4.121816.161014	12/18/16 16:10	DL02

Report Name: BLANK_SUMMARY
 PDF File ID: 5067691
 Report generated 12/20/2016 08:22



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/14/16 13:25 Sample ID: WG594906-02
Instrument ID: ICP-THERM03 Run Date: 12/22/16 23:47 Prep Method: 3015
File ID: T3.122216.234759 Analyst: JYH Method: 6010C
Workgroup (AAB#): WG595175 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: ICP-TH - 22-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Aluminum, Total	0.100	0.200	0.100	1	U
Calcium, Total	0.250	0.500	0.250	1	U
Iron, Total	0.0500	0.100	0.0500	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Manganese, Total	0.00500	0.0100	0.00500	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Silica, Calculated as SiO ₂	1.07	2.14	1.07	1	U
Silicon, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

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

Report Name: BLANK
PDF ID: 5080256
30-DEC-2016 13:57



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/14/16 13:25 Sample ID: WG594906-02
Instrument ID: ICP-THERM03 Run Date: 12/29/16 07:06 Prep Method: 3015
File ID: T3.122916.070645 Analyst: JYH Method: 6010C
Workgroup (AAB#): WG595175 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: ICP-TH - 29-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Magnesium, Total	0.250	0.500	0.250	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5080256

30-DEC-2016 13:57



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/13/16 07:36 Sample ID: WG594606-02
Instrument ID: ICP-THERM04 Run Date: 12/15/16 20:55 Prep Method: 3015
File ID: T4.121516.205551 Analyst: KKB Method: 6010C
Workgroup (AAB#): WG594869 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: ICP-TH - 15-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Aluminum, Total	0.100	0.200	0.100	1	U
Calcium, Total	0.250	0.500	0.250	1	U
Iron, Total	0.0500	0.100	0.0500	1	U
Magnesium, Total	0.250	0.500	0.250	1	U
Manganese, Total	0.00500	0.0100	-0.00653	1	U
Potassium, Total	0.500	1.00	0.500	1	U
Silica, Calculated as SiO2	1.07	2.14	1.07	1	U
Silicon, Total	0.500	1.00	0.500	1	U
Sodium, Total	0.250	0.500	0.250	1	U

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

Report Name: BLANK
PDF ID: 5067692
19-DEC-2016 11:21



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/13/16 07:36 Sample ID: WG594606-02
Instrument ID: ICP-THERM04 Run Date: 12/18/16 15:47 Prep Method: 3015
File ID: T4.121816.154740 Analyst: KKB Method: 6010C
Workgroup (AAB#): WG594869 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: ICP-TH -

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Iron, Total	0.0500	0.100	0.0500	1	U
Manganese, Total	0.00500	0.0100	0.00500	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5067692

19-DEC-2016 11:21



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: <u>L16120521</u>	Run Date: <u>12/22/2016</u>	Sample ID: <u>WG594906-03</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>23:51</u>	Prep Method: <u>3015</u>
File ID: <u>T3.122216.235155</u>	Analyst: <u>JYH</u>	Method: <u>6010C</u>
Workgroup (AAB#): <u>WG595175</u>	Matrix: <u>Water</u>	Units: <u>mg/L</u>
QC Key: <u>WATERL00</u>	Lot#: <u>STD79117</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>

Analytes	Expected	Found	% Rec	LCS Limits			Q
Aluminum, Total	6.25	5.85	93.6	85	-	115	
Calcium, Total	6.25	5.93	94.9	85	-	115	
Iron, Total	2.50	2.38	95.3	85	-	115	
Magnesium, Total	6.25	6.17	98.8	85	-	115	
Manganese, Total	0.313	0.299	95.6	85	-	115	
Potassium, Total	31.3	28.8	92.2	85	-	115	
Silicon, Total	3.13	2.84	90.8	85	-	115	
Sodium, Total	31.3	28.9	92.6	85	-	115	

LCS - Modified 03/06/2008
 PDF File ID: 5080257
 Report generated: 12/30/2016 13:57



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG594906-03
Instrument ID: ICP-THERM03 Run Time: 07:10 Prep Method: 3015
File ID: T3.122916.071042 Analyst: JYH Method: 6010C
Workgroup (AAB#): WG595175 Matrix: Water Units: mg/L
QC Key: WATERL00 Lot#: STD79117 Cal ID: ICP-TH - 29-DEC-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Magnesium, Total	6.25	6.27	100	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 5080257
Report generated: 12/30/2016 13:57



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: <u>L16120521</u>	Run Date: <u>12/15/2016</u>	Sample ID: <u>WG594606-03</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>20:59</u>	Prep Method: <u>3015</u>
File ID: <u>T4.121516.205939</u>	Analyst: <u>KKB</u>	Method: <u>6010C</u>
Workgroup (AAB#): <u>WG594869</u>	Matrix: <u>Water</u>	Units: <u>mg/L</u>
QC Key: <u>WATERLOO</u>	Lot#: <u>STD79117</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>

Analytes	Expected	Found	% Rec	LCS Limits			Q
Aluminum, Total	6.25	6.33	101	85	-	115	
Calcium, Total	6.25	6.10	97.6	85	-	115	
Iron, Total	2.50	2.48	99.2	85	-	115	
Magnesium, Total	6.25	6.06	97.0	85	-	115	
Manganese, Total	0.313	0.310	99.2	85	-	115	
Potassium, Total	31.3	30.4	97.3	85	-	115	
Silicon, Total	3.13	3.05	97.4	85	-	115	
Sodium, Total	31.3	30.1	96.2	85	-	115	

LCS - Modified 03/06/2008
 PDF File ID: 5067693
 Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG594606-03
Instrument ID: ICP-THERM04 Run Time: 15:51 Prep Method: 3015
File ID: T4.121816.155128 Analyst: KKB Method: 6010C
Workgroup (AAB#): WG594869 Matrix: Water Units: mg/L
QC Key: WATERL00 Lot#: STD79117 Cal ID: ICP-TH -

Analytes	Expected	Found	% Rec	LCS Limits	Q
Iron, Total	2.50	2.24	89.7	85 - 115	
Magnesium, Total	6.25	5.58	89.2	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 5067693
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: <u>L16120521</u>	Cal ID: <u>ICP-THERMO3 -</u>	Worknum: <u>WG595175</u>
Instrument ID: <u>ICP-THERMO3</u>	Contract #: _____	Method: <u>6010C</u>
Parent ID: <u>WG594906-01</u>	File ID: <u>T3.122316.004211</u> Dil: <u>1</u>	Matrix: <u>WATER</u>
Sample ID: <u>WG594906-04 MS</u>	File ID: <u>T3.122316.005349</u> Dil: <u>1</u>	Units: <u>mg/L</u>
Sample ID: <u>WG594906-05 MSD</u>	File ID: <u>T3.122316.005727</u> Dil: <u>1</u>	

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum	ND	6.25	6.00	96.0	6.25	6.06	97.0	0.991	85 - 115	20	
Calcium	111	6.25	117	89.3	6.25	119	120	1.62	85 - 115	20	*
Iron	0.146	2.50	2.49	93.8	2.50	2.52	95.2	1.33	85 - 115	20	
Magnesium	6.00	6.25	11.9	94.6	6.25	12.1	98.2	1.91	85 - 115	20	
Manganese	0.0980	0.313	0.399	96.2	0.313	0.401	96.9	0.532	85 - 115	20	
Potassium	2.47	31.3	31.3	92.1	31.3	31.7	93.5	1.31	85 - 115	20	
Silicon	7.47	3.13	10.6	99.9	3.13	10.7	104	1.29	85 - 115	20	
Sodium	12.1	31.3	41.0	92.2	31.3	41.6	94.3	1.58	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L16120521 Cal ID: ICP-THERMO3 - Worknum: WG595175
 Instrument ID: ICP-THERMO3 Contract #: _____ Method: 6010C
 Parent ID: WG594906-01 File ID: T3.122916.071421 Dil: 1 Matrix: WATER
 Sample ID: WG594906-04 MS File ID: T3.122916.071815 Dil: 1 Units: mg/L
 Sample ID: WG594906-05 MSD File ID: T3.122916.072155 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Magnesium	5.85	6.25	12.0	98.1	6.25	12.0	98.5	0.210	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: <u>L16120521</u>	Cal ID: <u>ICP-THERM04 -</u>	Worknum: <u>WG594869</u>
Instrument ID: <u>ICP-THERM04</u>	Contract #: _____	Method: <u>6010C</u>
Parent ID: <u>WG594606-01</u>	File ID: <u>T4.121516.221917</u> Dil: <u>1</u>	Matrix: <u>WATER</u>
Sample ID: <u>WG594606-04 MS</u>	File ID: <u>T4.121516.223032</u> Dil: <u>1</u>	Units: <u>mg/L</u>
Sample ID: <u>WG594606-05 MSD</u>	File ID: <u>T4.121516.223409</u> Dil: <u>1</u>	

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	ND	6.25	6.27	100	6.25	6.34	102	1.23	85 - 115	20	
Calcium, Total	ND	6.25	6.20	99.2	6.25	6.23	99.6	0.362	85 - 115	20	
Iron, Total	0.131	2.50	2.53	95.8	2.50	2.61	99.0	3.13	85 - 115	20	
Magnesium, Total	ND	6.25	6.12	97.9	6.25	6.00	96.0	1.91	85 - 115	20	
Manganese, Total	ND	0.313	0.301	96.2	0.313	0.314	100	4.24	85 - 115	20	
Potassium, Total	ND	31.3	30.4	97.2	31.3	30.7	98.4	1.19	85 - 115	20	
Silicon, Total	ND	3.13	3.02	96.6	3.13	3.04	97.2	0.698	85 - 115	20	
Sodium, Total	ND	31.3	29.9	95.7	31.3	30.4	97.4	1.76	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac Laboratories Inc.
Serial Dilution Report

Login: L16120521 **Worknum:** WG595175
Instrument: ICP-THERMO3 **Method:** 6010C
Serial Dil: WG595175-02 **File ID:** T3.122916.074056 **Dil:** 50 **Units:** ug/L
Sample: L16120521-06 **File ID:** T3.122916.073323 **Dil:** 10

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	50.7		62.5		23.30	E
Calcium	131000		140000		7.13	
Iron	769		806		4.80	
Magnesium	66100		75600		14.40	E
Manganese	149		267		79.20	E
Potassium	3440		6460		87.90	E
Silicon	6900		6630		3.95	
Sodium	142000		157000		10.30	E

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 25 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 25 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 5080252

12/30/2016 13:57



Microbac Laboratories Inc.
Serial Dilution Report

Login: L16120521 **Worknum:** WG595175
Instrument: ICP-THERM03 **Method:** 6010C
Serial Dil: WG595175-02 **File ID:** T3.122316.002231 **Dil:** 5 **Units:** ug/L
Sample: L16120521-06 **File ID:** T3.122316.001512 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	12.5		1.45	X	88.40	E
Calcium	125000		131000		5.09	
Iron	677		581		14.20	E
Magnesium	65600		68300		4.06	
Manganese	138		150		8.50	
Potassium	3480		4270		22.70	E
Silicon	6950		6770		2.51	
Sodium	134000		138000		2.85	

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 25 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 25 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 5080252

12/30/2016 13:57



Microbac Laboratories Inc.
Serial Dilution Report

Login: L16120521 Worknum: WG594869
Instrument: ICP-THERM04 Method: 6010C
Serial Dil: WG594869-04 File ID: T4.121816.162231 Dil: 5 Units: ug/L

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 25 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 25 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 5067688

12/19/2016 11:21



Microbac Laboratories Inc.
Serial Dilution Report

Login: L16120521 **Worknum:** WG594869
Instrument: ICP-THERMO4 **Method:** 6010C
Serial Dil: WG594869-02 **File ID:** T4.121516.222643 **Dil:** 5 **Units:** ug/L
Sample: L16120641-04 **File ID:** T4.121516.221917 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	ND	U	ND	U		
Calcium	53.1		15.8		70.30	E
Iron	104		244		134.00	E
Magnesium	15.8		ND	U		
Manganese	ND	U	ND	U		
Potassium	151		430		185.00	E
Silicon	19.6		7.05	X	64.00	E
Sodium	175		142		18.70	E

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 25 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 25 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 5067688

12/19/2016 11:21



Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L16120521
Instrument ID: ICP-THERM03
Post Spike ID: WG595175-01
Sample ID: L16120521-06

Worknum: WG595175
Method: 6010C
Units: ug/L
Matrix: Water
File ID: T3.122316.001904 Dil: 1
File ID: T3.122316.001512 Dil: 1

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	4880		0	U	5000	97.6	75 - 125	
CALCIUM	117000		125000		5000	93.5	75 - 125	
IRON	2530		677		2000	96.2	75 - 125	
MAGNESIUM	63600		65600		5000	90.9	75 - 125	
MANGANESE	364		138		250	95.9	75 - 125	
POTASSIUM	27000		3480		25000	95.4	75 - 125	
SILICON	8710		6950		2500	98.4	75 - 125	
SODIUM	144000		134000		25000	92.6	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: 5080253
Report generated: 12/30/2016 13:57



Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L16120521
Instrument ID: ICP-THERM03
Post Spike ID: WG595175-01
Sample ID: L16120521-06

Worknum: WG595175
Method: 6010C
Units: ug/L
Matrix: Water
File ID: T3.122916.073717 Dil: 10
File ID: T3.122916.073323 Dil: 10

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	5150		0	U	5000	102.9	75 - 125	
CALCIUM	18500		13100		5000	108.6	75 - 125	
IRON	2080		76.9	F	2000	100.0	75 - 125	
MAGNESIUM	11900		6610		5000	106.8	75 - 125	
MANGANESE	268		14.9		250	101.2	75 - 125	
POTASSIUM	25600		0	U	25000	102.2	75 - 125	
SILICON	3300		690	F	2500	104.3	75 - 125	
SODIUM	39700		14200		25000	101.8	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: 5080253
Report generated: 12/30/2016 13:57



Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L16120521
Instrument ID: ICP-THERM04
Post Spike ID: WG594869-01
Sample ID: L16120641-04

Worknum: WG594869
Method: 6010C
File ID: T4.121516.222306 Dil: 1 Units: ug/L
File ID: T4.121516.221917 Dil: 1 Matrix: Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	5100		0	U	5000	102.0	75 - 125	
CALCIUM	4980		0	U	5000	99.6	75 - 125	
IRON	2030		104		2000	97.0	75 - 125	
MAGNESIUM	4890		0	U	5000	97.8	75 - 125	
MANGANESE	247		0	U	250	98.6	75 - 125	
POTASSIUM	24300		0	U	25000	97.4	75 - 125	
SILICON	2420		0	U	2500	97.0	75 - 125	
SODIUM	24200		0	U	25000	96.9	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: 5067689
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L16120521

Worknum: WG594869

Instrument ID: ICP-THERM04

Method: 6010C

Post Spike ID: WG594869-03

File ID: T4.121816.161821

Dil: 1

Units: ug/L

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: 5067689
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
Initial Calibration Summary

Login:	<u>L16120521</u>	Workgroup (AAB#):	<u>WG595175</u>
Analytical Method:	<u>6010C</u>	Instrument ID:	<u>ICP-THERM03</u>
ICAL Worknum:	<u>WG596231</u>	Initial Calibration Date:	<u>22-DEC-2016 16:14</u>

	WG596231-01		WG596231-02		WG596231-03		WG596231-04		WG596231-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.000860	.1	0.00160	.2	0.00245	10	0.0932	20	0.186	.999986	
CALCIUM	0	0.00149	.1	0.00434	.2	0.00890	10	0.430	20	0.861	.999945	
IRON	0	-0.000260	.04	0.000650	.08	0.00147	4	0.116	8	0.234	.999981	
MAGNESIUM	0	-0.000510	NA	NA	.2	0.000680	10	0.0728	20	0.146	.999999	
MANGANESE	0	0.0000700	.005	0.00210	.01	0.00531	.5	0.181	1	0.361	.998079	
POTASSIUM	0	0.0106	.5	0.0477	1	0.0749	50	3.48	100	6.93	.999782	
SILICON	0	0.00303	.05	0.00455	.1	0.00606	5	0.195	10	0.369	.999748	
SODIUM	0	-0.0248	.5	0.0577	1	0.134	50	9.53	100	19.0	.999981	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



Microbac Laboratories Inc.
Initial Calibration Summary

Login:	<u>L16120521</u>	Workgroup (AAB#):	<u>WG595175</u>
Analytical Method:	<u>6010C</u>	Instrument ID:	<u>ICP-THERM03</u>
ICAL Worknum:	<u>WG596943</u>	Initial Calibration Date:	<u>29-DEC-2016 06:36</u>

	WG596943-01		WG596943-02		WG596943-03		WG596943-04		WG596943-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.00100	.1	0.00181	.2	0.00262	10	0.0949	20	0.194	.999903	
CALCIUM	0	0.000430	.1	0.00641	.2	0.00873	10	0.436	20	0.902	.999207	
IRON	0	-0.000150	.04	0.00100	.08	0.00159	4	0.117	8	0.240	.999848	
MAGNESIUM	0	-0.000430	NA	NA	.2	0.000670	10	0.0729	20	0.150	.999909	
POTASSIUM	0	0.0155	.5	0.0479	1	0.0758	50	3.49	100	7.25	.999789	
SODIUM	0	-0.0305	.5	0.0502	1	0.140	50	9.34	100	19.4	.999821	

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: 5080261
Report generated: 30-DEC-2016 13:51



Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L16120521	Workgroup (AAB#):	WG594869
Analytical Method:	6010C	Instrument ID:	ICP-THERM04
ICAL Worknum:	WG595250	Initial Calibration Date:	15-DEC-2016 18:27

	WG595250-01		WG595250-02		WG595250-03		WG595250-04		WG595250-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.000960	.1	0.00190	.2	0.00283	10	0.106	20	0.205	.999838	
CALCIUM	0	0.000120	.1	0.00309	.2	0.00551	10	0.378	20	0.759	.999966	
IRON	0	-0.0000700	.04	0.000190	.08	0.000480	4	0.0320	8	0.0647	.999976	
MAGNESIUM	0	-0.000210	NA	NA	.2	0.000380	10	0.0211	20	0.0422	.998619	
MANGANESE	0	0.000780	.005	0.000900	.01	0.00122	.5	0.0421	1	0.0844	.999128	
POTASSIUM	0	0.00519	.5	0.0176	1	0.0317	50	1.59	100	3.19	.999993	
SILICON	0	0.000260	.05	0.00151	.1	0.00278	5	0.154	10	0.306	.999997	
SODIUM	0	-0.000320	.5	0.0377	1	0.0728	50	4.55	100	9.09	.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: 5067696
Report generated: 20-DEC-2016 08:11



Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L16120521	Workgroup (AAB#):	WG594869
Analytical Method:	6010C	Instrument ID:	ICP-THERM04
ICAL Worknum:	WG595477	Initial Calibration Date:	18-DEC-2016 11:25

	WG595477-01		WG595477-02		WG595477-03		WG595477-04		WG595477-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.00167	.1	0.00255	.2	0.00339	10	0.100	20	0.192	.999825	
CALCIUM	0	-0.0000600	.1	0.00327	.2	0.00587	10	0.356	20	0.711	.999957	
IRON	0	0.0000100	.04	0.000290	.08	0.000610	4	0.0319	8	0.0635	.999881	
MAGNESIUM	0	-0.000130	NA	NA	.2	-0.0000400	10	0.0205	20	0.0411	.998682	
MANGANESE	0	0.000460	.005	0.000990	.01	0.00130	.5	0.0429	1	0.0849	.998682	
POTASSIUM	0	0.00509	.5	0.0164	1	0.0278	50	1.41	100	2.82	.999999	
SILICON	0	0.000150	.05	0.00145	.1	0.00260	5	0.146	10	0.290	.99997	
SODIUM	0	0.00245	.5	0.0350	1	0.0707	50	4.14	100	8.22	.999994	

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: 5067696
Report generated: 20-DEC-2016 08:11



Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596231-07
Instrument ID: ICP-THERM03 Run Time: 16:21 Method: 6010C
File ID: T3.122216.162132 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-THERI - 22-DEC-16
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.08	.16	.08	U
CALCIUM	.2	.4	.2	U
IRON	.04	.08	.04	U
MAGNESIUM	.2	.4	.2	U
MANGANESE	.004	.008	.004	U
POTASSIUM	.4	.8	.4	U
SILICON	.4	.8	.4	U
SODIUM	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5080263
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596943-07
Instrument ID: ICP-THERM03 Run Time: 06:43 Method: 6010C
File ID: T3.122916.064343 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-THERI - 29-DEC-16
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.08	.16	.08	U
CALCIUM	.2	.4	.2	U
IRON	.04	.08	.04	U
MAGNESIUM	.2	.4	.2	U
MANGANESE	.004	.008	.004	U
POTASSIUM	.4	.8	.4	U
SILICON	.4	.8	.4	U
SODIUM	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5080263
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-07
Instrument ID: ICP-THERM04 Run Time: 18:34 Method: 6010C
File ID: T4.121516.183409 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-THERM - 15-DEC-16
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.08	.16	.08	U
CALCIUM	.2	.4	.2	U
IRON	.04	.08	.04	U
MAGNESIUM	.2	.4	.2	U
MANGANESE	.004	.008	.004	U
POTASSIUM	.4	.8	.4	U
SILICON	.4	.8	.4	U
SODIUM	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5067698
Report generated 12/20/2016 08:12



Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-07
Instrument ID: ICP-THERM04 Run Time: 11:33 Method: 6010C
File ID: T4.121816.113300 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-THERI - 18-DEC-16
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.08	.16	.08	U
CALCIUM	.2	.4	.2	U
IRON	.04	.08	.04	U
MAGNESIUM	.2	.4	.2	U
MANGANESE	.004	.008	.004	U
POTASSIUM	.4	.8	.4	U
SILICON	.4	.8	.4	U
SODIUM	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5067698
Report generated 12/20/2016 08:12



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596231-13
Instrument ID: ICP-THERM03 Run Time: 16:44 Method: 6010C
File ID: T3.122216.164412 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 22-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	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: 5080266
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596231-39
Instrument ID: ICP-THERM03 Run Time: 23:36 Method: 6010C
File ID: T3.122216.233615 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 22-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	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: 5080266
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596231-43
Instrument ID: ICP-THERM03 Run Time: 00:30 Method: 6010C
File ID: T3.122316.003012 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 22-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	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: 5080266
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596231-45
Instrument ID: ICP-THERM03 Run Time: 01:16 Method: 6010C
File ID: T3.122316.011628 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 22-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	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: 5080266
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596231-55
Instrument ID: ICP-THERM03 Run Time: 03:58 Method: 6010C
File ID: T3.122316.035807 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 22-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596231-61
Instrument ID: ICP-THERM03 Run Time: 04:21 Method: 6010C
File ID: T3.122316.042100 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 22-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596943-12
Instrument ID: ICP-THERM03 Run Time: 07:02 Method: 6010C
File ID: T3.122916.070247 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 29-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596943-14
Instrument ID: ICP-THERM03 Run Time: 07:48 Method: 6010C
File ID: T3.122916.074828 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 29-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596943-18
Instrument ID: ICP-THERM03 Run Time: 08:11 Method: 6010C
File ID: T3.122916.081124 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 29-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596943-25
Instrument ID: ICP-THERM03 Run Time: 10:35 Method: 6010C
File ID: T3.122916.103528 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 29-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596943-29
Instrument ID: ICP-THERM03 Run Time: 10:50 Method: 6010C
File ID: T3.122916.105038 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 29-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-13
Instrument ID: ICP-THERM04 Run Time: 19:02 Method: 6010C
File ID: T4.121516.190215 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0472	F
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-17
Instrument ID: ICP-THERM04 Run Time: 20:44 Method: 6010C
File ID: T4.121516.204422 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-21
Instrument ID: ICP-THERM04 Run Time: 21:37 Method: 6010C
File ID: T4.121516.213725 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	-0.00405	F
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-23
Instrument ID: ICP-THERM04 Run Time: 22:15 Method: 6010C
File ID: T4.121516.221527 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-25
Instrument ID: ICP-THERM04 Run Time: 22:41 Method: 6010C
File ID: T4.121516.224119 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0466	F
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/16/2016 Sample ID: WG595250-41
Instrument ID: ICP-THERM04 Run Time: 02:50 Method: 6010C
File ID: T4.121616.025051 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	1.07	*
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/16/2016 Sample ID: WG595250-47
Instrument ID: ICP-THERM04 Run Time: 03:13 Method: 6010C
File ID: T4.121616.031331 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-13
Instrument ID: ICP-THERM04 Run Time: 12:00 Method: 6010C
File ID: T4.121816.120006 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 18-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-23
Instrument ID: ICP-THERM04 Run Time: 15:43 Method: 6010C
File ID: T4.121816.154349 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 18-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00400	U
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-25
Instrument ID: ICP-THERM04 Run Time: 16:29 Method: 6010C
File ID: T4.121816.162952 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 18-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.0800	0.160	0.0800	U
Calcium	0.200	0.400	0.200	U
Iron	0.0400	0.0800	0.0400	U
Magnesium	0.200	0.400	0.200	U
Manganese	0.00400	0.00800	0.00477	F
Potassium	0.400	0.800	0.400	U
Silicon	0.400	0.800	0.400	U
Sodium	0.200	0.400	0.200	U

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

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INITIAL CALIBRATION VERIFICATION (ICV)
 (Alternate Source)

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-06</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>06:40</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.064007</u>	Analyst: <u>JYH</u>	Units: <u>mg/L</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
QC Key: <u>WATERL00</u>		

Analyte	Expected	Found	%REC	LIMITS	Q
Aluminum	10	9.87	98.7	90 - 110	
Calcium	10	9.97	99.7	90 - 110	
Iron	4	3.96	98.9	90 - 110	
Magnesium	10	9.91	99.1	90 - 110	
Manganese	.5	0.494	98.9	90 - 110	
Potassium	50	49.6	99.3	90 - 110	
Silicon	5	4.76	95.1	90 - 110	
Sodium	50	49.3	98.7	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
 PDF File ID: 5080262
 Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596231-06
Instrument ID: ICP-THERM03 Run Time: 16:18 Method: 6010C
File ID: T3.122216.161808 Analyst: JYH Units: mg/L
Workgroup (AAB#): WG595175 Cal ID: ICP-TH - 22-DEC-16
QC Key: WATERL00

Analyte	Expected	Found	%REC	LIMITS	Q
Aluminum	10	9.47	94.7	90 - 110	
Calcium	10	9.74	97.4	90 - 110	
Iron	4	3.86	96.5	90 - 110	
Magnesium	10	9.68	96.8	90 - 110	
Manganese	.5	0.482	96.3	90 - 110	
Potassium	50	48.2	96.4	90 - 110	
Silicon	5	4.67	93.5	90 - 110	
Sodium	50	48.2	96.4	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 5080262
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-06
Instrument ID: ICP-THERM04 Run Time: 11:29 Method: 6010C
File ID: T4.121816.112927 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 18-DEC-16
QC Key: WATERL00

Analyte	Expected	Found	%REC	LIMITS	Q
Aluminum	10	9.74	97.4	90 - 110	
Calcium	10	9.79	97.9	90 - 110	
Iron	4	3.84	96.1	90 - 110	
Magnesium	10	9.69	96.9	90 - 110	
Manganese	.5	0.479	95.8	90 - 110	
Potassium	50	48.0	96.0	90 - 110	
Silicon	5	4.79	95.8	90 - 110	
Sodium	50	48.3	96.6	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
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Report generated 12/20/2016 08:12



Microbac Laboratories Inc.
INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-06
Instrument ID: ICP-THERM04 Run Time: 18:30 Method: 6010C
File ID: T4.121516.183036 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
QC Key: WATERL00

Analyte	Expected	Found	%REC	LIMITS	Q
Aluminum	10	9.77	97.7	90 - 110	
Calcium	10	9.80	98.0	90 - 110	
Iron	4	3.84	96.0	90 - 110	
Magnesium	10	9.50	95.0	90 - 110	
Manganese	.5	0.483	96.5	90 - 110	
Potassium	50	48.2	96.4	90 - 110	
Silicon	5	4.84	96.7	90 - 110	
Sodium	50	48.0	96.0	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 5067697
Report generated 12/20/2016 08:12



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/22/2016</u>	Sample ID: <u>WG596231-12</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>16:40</u>	Method: <u>6010C</u>
File ID: <u>T3.122216.164038</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.76	mg/L	97.6	90 - 110		
Calcium		10.0	9.74	mg/L	97.4	90 - 110		
Iron		4.00	3.91	mg/L	97.8	90 - 110		
Magnesium		10.0	9.83	mg/L	98.3	90 - 110		
Manganese		0.500	0.483	mg/L	96.7	90 - 110		
Potassium		50.0	49.2	mg/L	98.4	90 - 110		
Silicon		5.00	4.81	mg/L	96.2	90 - 110		
Sodium		50.0	49.2	mg/L	98.5	90 - 110		

* Exceeds LIMITS Criteria

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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/22/2016</u>	Sample ID: <u>WG596231-38</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>23:32</u>	Method: <u>6010C</u>
File ID: <u>T3.122216.233240</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.90	mg/L	99.0	90 - 110		
Iron		4.00	4.02	mg/L	101	90 - 110		
Magnesium		10.0	10.4	mg/L	104	90 - 110		
Manganese		0.500	0.502	mg/L	100	90 - 110		
Potassium		50.0	49.2	mg/L	98.4	90 - 110		
Silicon		5.00	4.96	mg/L	99.3	90 - 110		
Sodium		50.0	49.4	mg/L	98.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5080265
Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/23/2016</u>	Sample ID: <u>WG596231-42</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>00:26</u>	Method: <u>6010C</u>
File ID: <u>T3.122316.002637</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Calcium		10.0	10.0	mg/L	100	90 - 110		
Iron		4.00	4.07	mg/L	102	90 - 110		
Magnesium		10.0	10.5	mg/L	105	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		
Potassium		50.0	49.1	mg/L	98.1	90 - 110		
Silicon		5.00	5.43	mg/L	109	90 - 110		
Sodium		50.0	49.1	mg/L	98.2	90 - 110		

* Exceeds LIMITS Criteria

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Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/23/2016</u>	Sample ID: <u>WG596231-44</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>01:12</u>	Method: <u>6010C</u>
File ID: <u>T3.122316.011254</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.84	mg/L	98.4	90 - 110		
Iron		4.00	3.98	mg/L	99.6	90 - 110		
Magnesium		10.0	10.2	mg/L	102	90 - 110		
Manganese		0.500	0.498	mg/L	99.5	90 - 110		
Potassium		50.0	48.1	mg/L	96.2	90 - 110		
Silicon		5.00	5.35	mg/L	107	90 - 110		
Sodium		50.0	48.1	mg/L	96.3	90 - 110		

* Exceeds LIMITS Criteria

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Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/23/2016</u>	Sample ID: <u>WG596231-54</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>03:54</u>	Method: <u>6010C</u>
File ID: <u>T3.122316.035432</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.98	mg/L	99.8	90 - 110		
Iron		4.00	4.06	mg/L	101	90 - 110		
Magnesium		10.0	10.6	mg/L	106	90 - 110		
Manganese		0.500	0.508	mg/L	102	90 - 110		
Potassium		50.0	48.6	mg/L	97.1	90 - 110		
Silicon		5.00	5.24	mg/L	105	90 - 110		
Sodium		50.0	48.9	mg/L	97.8	90 - 110		

* Exceeds LIMITS Criteria

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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/23/2016</u>	Sample ID: <u>WG596231-60</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>04:17</u>	Method: <u>6010C</u>
File ID: <u>T3.122316.041726</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.92	mg/L	99.2	90 - 110		
Iron		4.00	4.03	mg/L	101	90 - 110		
Magnesium		10.0	10.5	mg/L	105	90 - 110		
Manganese		0.500	0.502	mg/L	100	90 - 110		
Potassium		50.0	49.0	mg/L	97.9	90 - 110		
Silicon		5.00	4.97	mg/L	99.3	90 - 110		
Sodium		50.0	49.1	mg/L	98.2	90 - 110		

* Exceeds LIMITS Criteria

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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-11</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>06:59</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.065911</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.90	mg/L	99.0	90 - 110		
Calcium		10.0	9.95	mg/L	99.5	90 - 110		
Iron		4.00	3.98	mg/L	99.5	90 - 110		
Magnesium		10.0	10.1	mg/L	101	90 - 110		
Manganese		0.500	0.497	mg/L	99.4	90 - 110		
Potassium		50.0	49.6	mg/L	99.1	90 - 110		
Silicon		5.00	5.28	mg/L	106	90 - 110		
Sodium		50.0	49.3	mg/L	98.6	90 - 110		

* Exceeds LIMITS Criteria

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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-13</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>07:44</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.074453</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.6	mg/L	106	90 - 110		
Calcium		10.0	10.3	mg/L	103	90 - 110		
Iron		4.00	4.13	mg/L	103	90 - 110		
Magnesium		10.0	10.3	mg/L	103	90 - 110		
Manganese		0.500	0.518	mg/L	104	90 - 110		
Potassium		50.0	51.6	mg/L	103	90 - 110		
Silicon		5.00	5.58	mg/L	112	90 - 110		*
Sodium		50.0	51.6	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-17</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>08:07</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.080748</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.4	mg/L	104	90 - 110		
Calcium		10.0	10.2	mg/L	102	90 - 110		
Iron		4.00	4.16	mg/L	104	90 - 110		
Magnesium		10.0	10.3	mg/L	103	90 - 110		
Manganese		0.500	0.516	mg/L	103	90 - 110		
Potassium		50.0	51.4	mg/L	103	90 - 110		
Silicon		5.00	5.56	mg/L	111	90 - 110		*
Sodium		50.0	51.3	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-24</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>10:31</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.103153</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.6	mg/L	106	90 - 110		
Calcium		10.0	10.5	mg/L	105	90 - 110		
Iron		4.00	4.20	mg/L	105	90 - 110		
Magnesium		10.0	10.6	mg/L	106	90 - 110		
Manganese		0.500	0.525	mg/L	105	90 - 110		
Potassium		50.0	52.5	mg/L	105	90 - 110		
Silicon		5.00	5.50	mg/L	110	90 - 110		
Sodium		50.0	51.8	mg/L	104	90 - 110		

* Exceeds LIMITS Criteria

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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-28</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>10:47</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.104701</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.8	mg/L	108	90 - 110		
Calcium		10.0	10.7	mg/L	107	90 - 110		
Iron		4.00	4.30	mg/L	107	90 - 110		
Magnesium		10.0	10.8	mg/L	108	90 - 110		
Manganese		0.500	0.537	mg/L	107	90 - 110		
Potassium		50.0	53.4	mg/L	107	90 - 110		
Silicon		5.00	5.55	mg/L	111	90 - 110		*
Sodium		50.0	52.5	mg/L	105	90 - 110		

* Exceeds LIMITS Criteria

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PDF File ID: 5080265
Report generated 12/30/2016 13:51



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CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/15/2016</u>	Sample ID: <u>WG595250-12</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>18:58</u>	Method: <u>6010C</u>
File ID: <u>T4.121516.185843</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.99	mg/L	99.9	90 - 110		
Calcium		10.0	9.81	mg/L	98.1	90 - 110		
Iron		4.00	3.97	mg/L	99.3	90 - 110		
Magnesium		10.0	9.65	mg/L	96.5	90 - 110		
Manganese		0.500	0.493	mg/L	98.6	90 - 110		
Potassium		50.0	50.0	mg/L	99.9	90 - 110		
Silicon		5.00	4.91	mg/L	98.2	90 - 110		
Sodium		50.0	49.5	mg/L	99.1	90 - 110		

* Exceeds LIMITS Criteria

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Report generated 12/20/2016 08:19



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/15/2016</u>	Sample ID: <u>WG595250-16</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>20:40</u>	Method: <u>6010C</u>
File ID: <u>T4.121516.204050</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.2	mg/L	102	90 - 110		
Calcium		10.0	10.0	mg/L	100	90 - 110		
Iron		4.00	4.03	mg/L	101	90 - 110		
Magnesium		10.0	9.96	mg/L	99.6	90 - 110		
Manganese		0.500	0.503	mg/L	101	90 - 110		
Potassium		50.0	50.8	mg/L	102	90 - 110		
Silicon		5.00	4.98	mg/L	99.6	90 - 110		
Sodium		50.0	50.2	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5067700
Report generated 12/20/2016 08:19



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/15/2016</u>	Sample ID: <u>WG595250-20</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>21:33</u>	Method: <u>6010C</u>
File ID: <u>T4.121516.213352</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	9.96	mg/L	99.6	90 - 110		
Iron		4.00	3.98	mg/L	99.4	90 - 110		
Magnesium		10.0	9.90	mg/L	99.0	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		
Potassium		50.0	51.0	mg/L	102	90 - 110		
Silicon		5.00	4.96	mg/L	99.3	90 - 110		
Sodium		50.0	50.1	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/15/2016</u>	Sample ID: <u>WG595250-22</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>22:11</u>	Method: <u>6010C</u>
File ID: <u>T4.121516.221155</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.4	mg/L	104	90 - 110		
Calcium		10.0	10.1	mg/L	101	90 - 110		
Iron		4.00	3.99	mg/L	99.7	90 - 110		
Magnesium		10.0	9.88	mg/L	98.8	90 - 110		
Manganese		0.500	0.506	mg/L	101	90 - 110		
Potassium		50.0	51.5	mg/L	103	90 - 110		
Silicon		5.00	5.01	mg/L	100	90 - 110		
Sodium		50.0	50.4	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/15/2016</u>	Sample ID: <u>WG595250-24</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>22:37</u>	Method: <u>6010C</u>
File ID: <u>T4.121516.223747</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Calcium		10.0	10.1	mg/L	101	90 - 110		
Iron		4.00	3.98	mg/L	99.5	90 - 110		
Magnesium		10.0	9.92	mg/L	99.2	90 - 110		
Manganese		0.500	0.500	mg/L	100	90 - 110		
Potassium		50.0	51.8	mg/L	104	90 - 110		
Silicon		5.00	5.00	mg/L	99.9	90 - 110		
Sodium		50.0	50.6	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/16/2016</u>	Sample ID: <u>WG595250-40</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>02:47</u>	Method: <u>6010C</u>
File ID: <u>T4.121616.024718</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Calcium		10.0	10.3	mg/L	103	90 - 110		
Iron		4.00	3.83	mg/L	95.8	90 - 110		
Magnesium		10.0	9.87	mg/L	98.7	90 - 110		
Manganese		0.500	0.498	mg/L	99.6	90 - 110		
Potassium		50.0	54.5	mg/L	109	90 - 110		
Silicon		5.00	5.00	mg/L	99.9	90 - 110		
Sodium		50.0	52.7	mg/L	105	90 - 110		

* Exceeds LIMITS Criteria

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PDF File ID: 5067700
Report generated 12/20/2016 08:19



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/16/2016</u>	Sample ID: <u>WG595250-46</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>03:09</u>	Method: <u>6010C</u>
File ID: <u>T4.121616.030959</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.3	mg/L	103	90 - 110		
Calcium		10.0	10.3	mg/L	103	90 - 110		
Iron		4.00	3.87	mg/L	96.9	90 - 110		
Magnesium		10.0	9.68	mg/L	96.8	90 - 110		
Manganese		0.500	0.495	mg/L	98.9	90 - 110		
Potassium		50.0	55.3	mg/L	111	90 - 110		*
Silicon		5.00	5.01	mg/L	100	90 - 110		
Sodium		50.0	52.8	mg/L	106	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5067700
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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/18/2016</u>	Sample ID: <u>WG595477-12</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>11:56</u>	Method: <u>6010C</u>
File ID: <u>T4.121816.115614</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 18-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.95	mg/L	99.5	90 - 110		
Calcium		10.0	9.77	mg/L	97.7	90 - 110		
Iron		4.00	3.86	mg/L	96.6	90 - 110		
Magnesium		10.0	9.80	mg/L	98.0	90 - 110		
Manganese		0.500	0.481	mg/L	96.2	90 - 110		
Potassium		50.0	49.6	mg/L	99.2	90 - 110		
Silicon		5.00	4.88	mg/L	97.6	90 - 110		
Sodium		50.0	49.9	mg/L	99.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5067700
Report generated 12/20/2016 08:19



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/18/2016</u>	Sample ID: <u>WG595477-22</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>15:40</u>	Method: <u>6010C</u>
File ID: <u>T4.121816.154018</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 18-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.98	mg/L	99.8	90 - 110		
Calcium		10.0	9.93	mg/L	99.3	90 - 110		
Iron		4.00	3.60	mg/L	89.9	90 - 110		*
Magnesium		10.0	9.44	mg/L	94.4	90 - 110		
Manganese		0.500	0.438	mg/L	87.6	90 - 110		*
Potassium		50.0	51.4	mg/L	103	90 - 110		
Silicon		5.00	4.87	mg/L	97.4	90 - 110		
Sodium		50.0	51.1	mg/L	102	90 - 110		

* Exceeds LIMITS Criteria

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Report generated 12/20/2016 08:19



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: <u>L16120521</u>	Run Date: <u>12/18/2016</u>	Sample ID: <u>WG595477-24</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>16:26</u>	Method: <u>6010C</u>
File ID: <u>T4.121816.162619</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 18-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.1	mg/L	101	90 - 110		
Calcium		10.0	10.1	mg/L	101	90 - 110		
Iron		4.00	3.56	mg/L	88.9	90 - 110		*
Magnesium		10.0	9.33	mg/L	93.3	90 - 110		
Manganese		0.500	0.435	mg/L	87.0	90 - 110		*
Potassium		50.0	52.4	mg/L	105	90 - 110		
Silicon		5.00	4.91	mg/L	98.2	90 - 110		
Sodium		50.0	51.9	mg/L	104	90 - 110		

* Exceeds LIMITS Criteria

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Report generated 12/20/2016 08:19



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: <u>L16120521</u>	Run Date: <u>12/22/2016</u>	Sample ID: <u>WG596231-08</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>16:25</u>	Method: <u>6010C</u>
File ID: <u>T3.122216.162528</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.157	mg/L	98.3	70 - 130		
Calcium		0.400	0.386	mg/L	96.6	70 - 130		
Iron		0.0800	0.0778	mg/L	97.2	70 - 130		
Magnesium		0.400	0.469	mg/L	117	70 - 130		
Manganese		0.00800	0.00914	mg/L	114	70 - 130		
Potassium		0.800	0.972	mg/L	122	70 - 130		
Silicon		0.800	0.956	mg/L	119	70 - 130		
Sodium		0.400	0.432	mg/L	108	70 - 130		

* Exceeds LIMITS Criteria



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: <u>L16120521</u>	Run Date: <u>12/22/2016</u>	Sample ID: <u>WG596231-18</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>18:44</u>	Method: <u>6010C</u>
File ID: <u>T3.122216.184408</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.158	mg/L	98.9	70 - 130		
Calcium		0.400	0.394	mg/L	98.5	70 - 130		
Iron		0.0800	0.0691	mg/L	86.4	70 - 130		
Magnesium		0.400	0.434	mg/L	108	70 - 130		
Manganese		0.00800	0.0102	mg/L	127	70 - 130		
Potassium		0.800	0.853	mg/L	107	70 - 130		
Silicon		0.800	0.873	mg/L	109	70 - 130		
Sodium		0.400	0.413	mg/L	103	70 - 130		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: <u>L16120521</u>	Run Date: <u>12/23/2016</u>	Sample ID: <u>WG596231-48</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>01:51</u>	Method: <u>6010C</u>
File ID: <u>T3.122316.015117</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 22-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.168	mg/L	105	70 - 130		
Calcium		0.400	0.404	mg/L	101	70 - 130		
Iron		0.0800	0.0791	mg/L	98.9	70 - 130		
Magnesium		0.400	0.522	mg/L	131	70 - 130		*
Manganese		0.00800	0.00958	mg/L	120	70 - 130		
Potassium		0.800	0.885	mg/L	111	70 - 130		
Silicon		0.800	0.921	mg/L	115	70 - 130		
Sodium		0.400	0.404	mg/L	101	70 - 130		

* Exceeds LIMITS Criteria



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-08</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>06:47</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.064740</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.159	mg/L	99.5	70 - 130		
Calcium		0.400	0.426	mg/L	107	70 - 130		
Iron		0.0800	0.0834	mg/L	104	70 - 130		
Magnesium		0.400	0.389	mg/L	97.1	70 - 130		
Potassium		0.800	0.843	mg/L	105	70 - 130		
Sodium		0.400	0.405	mg/L	101	70 - 130		

* Exceeds LIMITS Criteria



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-19</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>08:15</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.081521</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.170	mg/L	106	70 - 130		
Calcium		0.400	0.407	mg/L	102	70 - 130		
Iron		0.0800	0.0747	mg/L	93.3	70 - 130		
Magnesium		0.400	0.397	mg/L	99.2	70 - 130		
Potassium		0.800	0.838	mg/L	105	70 - 130		
Sodium		0.400	0.450	mg/L	113	70 - 130		

* Exceeds LIMITS Criteria



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: <u>L16120521</u>	Run Date: <u>12/29/2016</u>	Sample ID: <u>WG596943-30</u>
Instrument ID: <u>ICP-THERM03</u>	Run Time: <u>10:54</u>	Method: <u>6010C</u>
File ID: <u>T3.122916.105435</u>	Analyst: <u>JYH</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG595175</u>	Cal ID: <u>ICP-TH - 29-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.164	mg/L	103	70 - 130		
Iron		0.0800	0.0846	mg/L	106	70 - 130		
Magnesium		0.400	0.420	mg/L	105	70 - 130		
Potassium		0.800	0.826	mg/L	103	70 - 130		
Sodium		0.400	0.436	mg/L	109	70 - 130		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-08
 Instrument ID: ICP-THERM04 Run Time: 18:37 Method: 6010C
 File ID: T4.121516.183757 Analyst: KKB QC Key: WATERL00
 Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
 Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.173	mg/L	108	70 - 130		
Calcium		0.400	0.400	mg/L	100	70 - 130		
Iron		0.0800	0.0716	mg/L	89.5	70 - 130		
Magnesium		0.400	0.385	mg/L	96.3	70 - 130		
Manganese		0.00800	0.00789	mg/L	98.6	70 - 130		
Potassium		0.800	0.771	mg/L	96.3	70 - 130		
Silicon		0.800	0.723	mg/L	90.4	70 - 130		
Sodium		0.400	0.410	mg/L	103	70 - 130		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595250-18
Instrument ID: ICP-THERM04 Run Time: 20:48 Method: 6010C
File ID: T4.121516.204814 Analyst: KKB QC Key: WATERL00
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 15-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.164	mg/L	103	70 - 130		
Calcium		0.400	0.394	mg/L	98.4	70 - 130		
Iron		0.0800	0.0932	mg/L	116	70 - 130		
Magnesium		0.400	0.284	mg/L	71.0	70 - 130		
Manganese		0.00800	0.00854	mg/L	107	70 - 130		
Potassium		0.800	0.783	mg/L	97.9	70 - 130		
Silicon		0.800	0.730	mg/L	91.2	70 - 130		
Sodium		0.400	0.391	mg/L	97.7	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5067702
Report generated 12/20/2016 08:50



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: <u>L16120521</u>	Run Date: <u>12/15/2016</u>	Sample ID: <u>WG595250-27</u>
Instrument ID: <u>ICP-THERM04</u>	Run Time: <u>22:48</u>	Method: <u>6010C</u>
File ID: <u>T4.121516.224859</u>	Analyst: <u>KKB</u>	QC Key: <u>WATERL00</u>
Workgroup (AAB#): <u>WG594869</u>	Cal ID: <u>ICP-TH - 15-DEC-16</u>	
Matrix: <u>WATER</u>		

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		0.160	0.164	mg/L	102	70 - 130		
Calcium		0.400	0.389	mg/L	97.1	70 - 130		
Iron		0.0800	0.0984	mg/L	123	70 - 130		
Magnesium		0.400	0.463	mg/L	116	70 - 130		
Manganese		0.00800	0.00882	mg/L	110	70 - 130		
Potassium		0.800	0.864	mg/L	108	70 - 130		
Silicon		0.800	0.728	mg/L	91.0	70 - 130		
Sodium		0.400	0.367	mg/L	91.7	70 - 130		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-08
Instrument ID: ICP-THERM04 Run Time: 11:36 Method: 6010C
File ID: T4.121816.113649 Analyst: KKB QC Key: WATERL00
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 18-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Sodium		0.400	0.380	mg/L	95.0	70 - 130		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-20
Instrument ID: ICP-THERM04 Run Time: 14:33 Method: 6010C
File ID: T4.121816.143342 Analyst: KKB QC Key: WATERL00
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 18-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Sodium		0.400	0.464	mg/L	116	70 - 130		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5067702
Report generated 12/20/2016 08:50



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/18/2016 Sample ID: WG595477-28
Instrument ID: ICP-THERM04 Run Time: 17:18 Method: 6010C
File ID: T4.121816.171830 Analyst: KKB QC Key: WATERL00
Workgroup (AAB#): WG594869 Cal ID: ICP-TH - 18-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Sodium		0.400	0.401	mg/L	100	70 - 130		

* Exceeds LIMITS Criteria

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Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-THERMO3
Sol. A : WG596231-10
Sol. AB : WG596231-11

File ID: T3.122216.163303
File ID: T3.122216.163656

Workgroup (AAB#): WG595175
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	256	102	250	259	104	
Calcium	250	234	93.6	250	231	92.4	
Iron	100	93.5	93.5	100	92.7	92.7	
Magnesium	250	246	98.4	250	241	96.4	
Manganese	NS	0.000960	NS	0.250	0.236	94.4	
Potassium	NS	0.0333	NS	5.00	5.02	100	
Silicon	NS	0.0366	NS	NS	-0.0428	NS	
Sodium	NS	-0.00510	NS	5.00	5.05	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: 5080264
Report generated 12/30/2016 13:51



**Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES**

Login number: L16120521
Instrument ID: ICP-THERMO3
Sol. A : WG596231-58
Sol. AB : WG596231-59

File ID: T3.122316.040949
File ID: T3.122316.041342

Workgroup (AAB#): WG595175
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	260	104	250	259	104	
Calcium	250	234	93.6	250	234	93.6	
Iron	100	93.1	93.1	100	93.2	93.2	
Magnesium	250	256	102	250	250	100	
Manganese	NS	0.00227	NS	0.250	0.247	98.8	
Potassium	NS	0.195	NS	5.00	5.07	101	
Silicon	NS	0.0445	NS	NS	-0.0413	NS	
Sodium	NS	0.00433	NS	5.00	5.10	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: 5080264
 Report generated 12/30/2016 13:51



Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-THERMO3
Sol. A : WG596943-09
Sol. AB : WG596943-10

File ID: T3.122916.065135
File ID: T3.122916.065529

Workgroup (AAB#): WG595175
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	263	105	250	258	103	
Calcium	250	236	94.4	250	232	92.8	
Iron	100	94.8	94.8	100	93.0	93.0	
Magnesium	250	249	99.6	250	242	96.8	
Manganese	NS	0.00170	NS	0.250	0.241	96.4	
Potassium	NS	0.0969	NS	5.00	5.14	103	
Silicon	NS	0.223	NS	NS	-0.0142	NS	
Sodium	NS	0.0741	NS	5.00	5.15	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: 5080264
Report generated 12/30/2016 13:51



**Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES**

Login number: L16120521
Instrument ID: ICP-THERMO3
Sol. A : WG596943-15
Sol. AB : WG596943-16

File ID: T3.122916.080013
File ID: T3.122916.080406

Workgroup (AAB#): WG595175
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	261	104	250	252	101	
Calcium	250	235	94.0	250	228	91.2	
Iron	100	93.4	93.4	100	91.1	91.1	
Magnesium	250	247	98.8	250	237	94.8	
Manganese	NS	0.00148	NS	0.250	0.237	94.8	
Potassium	NS	0.0779	NS	5.00	5.06	101	
Silicon	NS	0.223	NS	NS	-0.0137	NS	
Sodium	NS	0.0741	NS	5.00	5.11	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.

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Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-THERMO3
Sol. A : WG596943-26
Sol. AB : WG596943-27

File ID: T3.122916.103926
File ID: T3.122916.104319

Workgroup (AAB#): WG595175
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	276	110	250	270	108	
Calcium	250	247	98.8	250	241	96.4	
Iron	100	98.4	98.4	100	96.5	96.5	
Magnesium	250	261	104	250	253	101	
Manganese	NS	0.00224	NS	0.250	0.252	101	
Potassium	NS	0.104	NS	5.00	5.33	107	
Silicon	NS	0.248	NS	NS	-0.0123	NS	
Sodium	NS	0.0536	NS	5.00	5.37	107	

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.



**Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES**

Login number: L16120521
Instrument ID: ICP-THERMO4
Sol. A : WG595250-10
Sol. AB : WG595250-11

File ID: T4.121516.185114
File ID: T4.121516.185504

Workgroup (AAB#): WG594869
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	239	95.6	250	242	96.8	
Calcium	250	225	90.0	250	224	89.6	
Iron	100	96.0	96.0	100	96.5	96.5	
Magnesium	250	242	96.8	250	242	96.8	
Manganese	NS	0	NS	0.250	0.248	99.2	
Potassium	NS	0.0812	NS	5.00	5.21	104	
Silicon	NS	0.797	NS	NS	0.0143	NS	
Sodium	NS	0.0921	NS	5.00	5.10	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.

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INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-THERMO4
Sol. A : WG595250-44
Sol. AB : WG595250-45

File ID: T4.121616.030217
File ID: T4.121616.030611

Workgroup (AAB#): WG594869
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	241	96.4	250	243	97.2	
Calcium	250	231	92.4	250	231	92.4	
Iron	100	91.1	91.1	100	90.9	90.9	
Magnesium	250	232	92.8	250	234	93.6	
Manganese	NS	0.00531	NS	0.250	0.241	96.4	
Potassium	NS	0.204	NS	5.00	5.74	115	
Silicon	NS	0.794	NS	NS	0.0177	NS	
Sodium	NS	0.294	NS	5.00	5.47	109	

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.

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Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-THERMO4
Sol. A : WG595477-10
Sol. AB : WG595477-11

File ID: T4.121816.114425
File ID: T4.121816.114812

Workgroup (AAB#): WG594869
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	242	96.8	250	242	96.8	
Calcium	250	222	88.8	250	222	88.8	
Iron	100	95.0	95.0	100	94.9	94.9	
Magnesium	250	246	98.4	250	244	97.6	
Manganese	NS	0	NS	0.250	0.235	94.0	
Potassium	NS	0.136	NS	5.00	5.17	103	
Silicon	NS	0.00953	NS	NS	0.0159	NS	
Sodium	NS	0.00614	NS	5.00	5.13	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.

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Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-THERM04
Sol. A : WG595477-44
Sol. AB : WG595477-45

File ID: T4.121816.203630
File ID: T4.121816.204026

Workgroup (AAB#): WG594869
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Aluminum	250	241	96.4	250	242	96.8	
Calcium	250	227	90.8	250	227	90.8	
Iron	100	84.3	84.3	100	84.8	84.8	
Magnesium	250	226	90.4	250	224	89.6	
Manganese	NS	0.00280	NS	0.250	0.207	82.8	
Potassium	NS	0.0581	NS	5.00	5.66	113	
Silicon	NS	0.0131	NS	NS	0.0171	NS	
Sodium	NS	0.0402	NS	5.00	5.40	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.

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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM03

Date: 01/04/2016
Method: 6010C

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.0000410	0	0	0
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0.0115	0	-0.0000800
CALCIUM	422.60	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	261.10	0	0	0	0	0
LEAD	220.30	0	0.000260	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.00	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	-0.000289	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0	-0.0000490	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	407.70	0	0	0	0	0
THALLIUM	190.80	0	-0.0000120	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0.0000300	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM03

Date: 01/04/2016
Method: 6010C

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	308.20	0	0	0	-0.000820	0
ANTIMONY	206.80	0	0	0	0	0.0200
ARSENIC	189.00	0	0	0	0	-0.00190
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0.00343	0
CADMIUM	228.80	0	0	0	-0.00390	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	-0.000200
COPPER	224.70	0	0	0	0.0000770	-0.00100
IRON	261.10	0	0	0	0	-0.00100
LEAD	220.30	0	0	0	-0.0000130	-0.000132
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.00	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0.0000500
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	-0.000860	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
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0.00000500	0	0	0
THALLIUM	190.80	0	0	0	0.00240	0.000276
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	-0.00480
ZINC	206.20	0	0	0	0	-0.00180
ZIRCONIUM	339.10	0	0	0	0	0

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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM03

Date: 01/04/2016
Method: 6010C

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.0000560	0	0	0
ARSENIC	189.00	0	-0.0000500	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0.000300	0	0	0
CADMIUM	228.80	0	-0.0000190	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.0000500	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0.00160	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0.000609	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.00	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0.00000300
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0.0000420	0	0	0
PHOSPHORUS	214.90	-0.323	0.000900	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	-0.000270	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	-0.000400	0	0	0
VANADIUM	292.40	0	0.00000700	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	-0.0000300	0	0	0

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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM03

Date: 01/04/2016
Method: 6010C

Analyte	Wave Length	MN	MO	NA	NI	P
ALUMINUM	308.20	0	0.0163	0	0	0
ANTIMONY	206.80	0	-0.00310	0	-0.00350	0
ARSENIC	189.00	0	0.00120	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	-0.00190	0	0	0
CADMIUM	228.80	0	0.0000320	0	-0.000770	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0.000360	0	0	0	0
COBALT	228.60	0	-0.00200	0	0.000100	0
COPPER	224.70	0	0.00160	0	-0.0123	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	-0.00210	0	0.000110	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.00	-0.00290	-0.0230	0	0	0
MANGANESE	257.60	0	0.0000300	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0.00710	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0.000600	0.000580	0	0	0
SILICON	212.40	0	0.0187	0	0	0
SILVER	328.00	0	-0.0000430	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0.00100	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	-0.000153	0	0	0
VANADIUM	292.40	-0.000200	-0.00830	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

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INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM03

Date: 01/04/2016
Method: 6010C

Analyte	Wave Length	PB	SB	SE	SI	SN
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0	0	0	-0.0220
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0.00440	0	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.00	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	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
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM03

Date: 01/04/2016
Method: 6010C

Analyte	Wave Length	SR	TI	TL	V	ZN
ALUMINUM	308.20	0	0	0	0.0950	0
ANTIMONY	206.80	0	0.00110	0	-0.00360	0
ARSENIC	189.00	0	0	0	0.000107	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	-0.00000700	0	0.000990	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0.000102	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.0000550	0	0	0
COBALT	228.60	0	0.00210	0	0.0000200	0
COPPER	224.70	0	0.000269	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	-0.000126	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.00	0	-0.00290	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	-0.000110	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	-0.00100	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	-0.000720	0	-0.000260	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	-0.000800	0	-0.00490	0
TIN	189.90	0	-0.00190	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0.000820	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521

Date: 01/04/2016

Instrument ID: ICP-THERM03

Method: 6010C

Analyte	Wave Length	ZR
ALUMINUM	308.20	0
ANTIMONY	206.80	0
ARSENIC	189.00	0
BARIUM	455.40	0
BERYLLIUM	313.10	0
BORON	249.60	0
CADMIUM	228.80	0
CALCIUM	422.60	0
CHROMIUM	267.70	0
COBALT	228.60	0
COPPER	224.70	0
IRON	261.10	0
LEAD	220.30	0
LITHIUM	670.70	0
MAGNESIUM	279.00	0
MANGANESE	257.60	0
MOLYBDENUM	202.00	0
NICKEL	231.60	0
PHOSPHORUS	214.90	0
POTASSIUM	766.40	0
SELENIUM	196.00	0
SILICON	212.40	0
SILVER	328.00	0
SODIUM	589.50	0
STRONTIUM	407.70	0
THALLIUM	190.80	0
TIN	189.90	0
TITANIUM	337.20	0
VANADIUM	292.40	0
ZINC	206.20	0
ZIRCONIUM	339.10	0

CORR_FACTORS - Modified 03/05/2008
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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 07/25/2016
Method: 6010C

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.00000900	0	0	0
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0.00000100	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0.00200	0	-0.0000800
CALCIUM	422.60	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	261.10	0	0	0	0	0
LEAD	220.30	0	-0.000130	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	-0.000130	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	-0.0000490	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0.0000180	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0.0000180	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
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Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 07/25/2016
Method: 6010C

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	308.20	0	0	0	-0.000820	0
ANTIMONY	206.80	0	0	0	0	0.0138
ARSENIC	189.00	0	0	0	0	-0.00190
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0.00343	0
CADMIUM	228.80	0	0	0	-0.00210	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	-0.000200
COPPER	224.70	0	0	0	0.0000770	0
IRON	261.10	0	0	0	0	-0.00100
LEAD	220.30	0	0	0	-0.0000130	-0.000132
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	-0.0000920
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	-0.000500	0
PHOSPHORUS	214.90	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0.00000500	0	0	0
THALLIUM	190.80	0	0	0	0.00300	0.000276
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	-0.00138
ZINC	206.20	0	0	0	0	-0.000800
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5067695
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 07/25/2016
Method: 6010C

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.0000560	0	0	0
ARSENIC	189.00	0	0.0000120	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	-0.000619	0	0	0
CADMIUM	228.80	0	0.00000400	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.00000500	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0.000830	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0.000609	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0.00000300
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0.0000470	0	0	0
PHOSPHORUS	214.90	-0.323	-0.000530	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0.0000300	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	-0.0000100	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5067695
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 07/25/2016
Method: 6010C

Analyte	Wave Length	MN	MO	NA	NI	P
ALUMINUM	308.20	0	0.0163	0	0	0
ANTIMONY	206.80	0	0.000670	0	0	0
ARSENIC	189.00	0	0.000139	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	-0.00190	0	0	0
CADMIUM	228.80	0	0.0000320	0	-0.000128	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0.000330	0	0	0	0
COBALT	228.60	0	-0.000983	0	0.000175	0
COPPER	224.70	0	0.00200	0	-0.0120	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	-0.00280	0	0.000110	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	-0.00190	-0.0130	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0.00710	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0.000800	0.000156	0	0	0
SILICON	212.40	0	0.0187	0	0	0
SILVER	328.10	0	-0.0000440	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	-0.000153	0	0	0
VANADIUM	292.40	-0.000110	-0.00778	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5067695
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 07/25/2016
Method: 6010C

Analyte	Wave Length	PB	SB	SE	SI	SN
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0	0	0	-0.00840
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0.00300	0	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	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	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
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Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 07/25/2016
Method: 6010C

Analyte	Wave Length	SR	TI	TL	V	ZN
ALUMINUM	308.20	0	0	0	0.00300	0
ANTIMONY	206.80	0	-0.00400	0	-0.00138	0
ARSENIC	189.00	0	0	0	0.000107	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	-0.000770	0	0.000800	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0.000102	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.0000550	0	0	0
COBALT	228.60	0	0.00158	0	0.0000200	0
COPPER	224.70	0	0.000269	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	-0.000126	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	-0.00290	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	-0.000110	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	-0.00100	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	-0.00620	0	-0.00617	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	-0.000700	0	0.000660	0
TIN	189.90	0	-0.00260	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0.000600	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5067695
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 07/25/2016
Method: 6010C

Analyte	Wave Length	ZR
ALUMINUM	308.20	0
ANTIMONY	206.80	0
ARSENIC	189.00	0
BARIUM	455.40	0
BERYLLIUM	313.10	0
BORON	249.60	0
CADMIUM	228.80	0
CALCIUM	422.60	0
CHROMIUM	267.70	0
COBALT	228.60	0
COPPER	224.70	0
IRON	261.10	0
LEAD	220.30	0
LITHIUM	670.70	0
MAGNESIUM	279.10	0
MANGANESE	257.60	0
MOLYBDENUM	202.00	0
NICKEL	231.60	0
PHOSPHORUS	214.90	0
POTASSIUM	766.40	0
SELENIUM	196.10	0
SILICON	212.40	0
SILVER	328.10	0
SODIUM	589.50	0
STRONTIUM	407.70	0
THALLIUM	190.80	0
TIN	189.90	0
TITANIUM	337.20	0
VANADIUM	292.40	0
ZINC	206.20	0
ZIRCONIUM	339.10	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 5067695
Report generated: 12/19/2016 11:21



Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L16120521
Instrument ID: ICP-THERM03

Date: 07/29/2016
Method: 6010C

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	900.0
Antimony	20.00	45.0
Arsenic	10.00	45.0
Barium	10.00	45.0
Beryllium	10.00	1.8
Boron	20.00	45.0
Cadmium	20.00	4.5
Calcium	5.00	270.0
Chromium	20.00	36.0
Cobalt	20.00	45.0
Copper	20.00	90.0
Iron	5.00	720.0
Lead	20.00	225.0
Lithium	5.00	36.0
Magnesium	5.00	900.0
Manganese	10.00	36.0
Molybdenum	20.00	27.0
Nickel	20.00	90.0
Phosphorus	20.00	180.0
Potassium	5.00	450.0
Selenium	20.00	90.0
Silicon	20.00	36.0
Silver	10.00	9.0
Sodium	5.00	360.0
Strontium	5.00	9.0
Thallium	20.00	18.0
Tin	20.00	45.0
Titanium	5.00	45.0
Vanadium	20.00	36.0
Zinc	20.00	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: 5080259
Report generated: 12/30/2016 13:51



Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L16120521
Instrument ID: ICP-THERM04

Date: 10/25/0016
Method: 6010C

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Aluminum	10.00	900.0
Antimony	20.00	45.0
Arsenic	10.00	45.0
Barium	10.00	45.0
Beryllium	10.00	1.8
Boron	20.00	45.0
Cadmium	20.00	4.5
Calcium	8.00	270.0
Chromium	20.00	36.0
Cobalt	20.00	45.0
Copper	20.00	180.0
Iron	8.00	720.0
Lead	20.00	225.0
Lithium	8.00	36.0
Magnesium	8.00	900.0
Manganese	10.00	36.0
Molybdenum	20.00	27.0
Nickel	20.00	90.0
Phosphorus	20.00	180.0
Potassium	8.00	360.0
Selenium	20.00	90.0
Silicon	20.00	36.0
Silver	10.00	4.5
Sodium	8.00	270.0
Strontium	8.00	9.0
Thallium	20.00	18.0
Tin	20.00	45.0
Titanium	8.00	45.0
Vanadium	20.00	27.0
Zinc	20.00	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: 5067671
Report generated: 12/19/2016 11:21



2.1 Metals Data

2.1.2 Metals ICP-MS Data

2.1.2.1 Summary Data



Login Number: L16120521
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: WG594709 - All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: All acceptance criteria were met.

Narrative ID: 120405

Approved By: Maren Beery

Maren Beery

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:26
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: NI.121316.142626
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.169		0.00100	0.000500

Sample #: L16120521-02	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW36-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:06
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: NI.121316.150655
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.162		0.00100	0.000500

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:10
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: NI.121316.151000
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00219		0.00100	0.000500

Sample #: L16120521-04	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW37-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:13
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: NI.121316.151306
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00198		0.00100	0.000500

Certificate of Analysis

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:16
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: NI.121316.151611
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00896		0.00100	0.000500

Sample #: L16120521-06	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW35-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:19
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: NI.121316.151916
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00839		0.00100	0.000500

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:28
Collect Date: 12/08/2016 14:50	Dilution: 50	File ID: NI.121316.152836
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	4.10		0.0500	0.0250

Sample #: L16120521-08	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW21-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 15:31
Collect Date: 12/08/2016 14:50	Dilution: 50	File ID: NI.121316.153142
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	3.94		0.0500	0.0250

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:55
Collect Date: 12/08/2016 11:45	Dilution: 5	File ID: NI.121316.145545
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.0329		0.00500	0.00250

Sample #: L16120521-10	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW31-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:58
Collect Date: 12/08/2016 11:45	Dilution: 5	File ID: NI.121316.145850
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.0298		0.00500	0.00250

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 14:43
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: NI.121316.144304
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Total	7440-38-2	0.00948		0.00100	0.000500

Sample #: L16120521-12	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: MW24-120816	Prep Method: 3015	Prep Date: 12/13/2016 08:32
Matrix: Water	Analytical Method: 6020A	Cal Date: 12/13/2016 10:20
Workgroup #: WG594709	Analyst: JYH	Run Date: 12/13/2016 13:52
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: NI.121316.135219
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Arsenic, Dissolved	7440-38-2	0.00894		0.00100	0.000500

2.1.2.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer ELAN 6100

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and three standards.

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

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

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Final volume

Vi = Initial volume

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in (ug/L)

Example:

0.1

100

40

1

0.25

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

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

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Final volume

Vi = Initial volume

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in (ug/kg)

Example:

0.1

200

0.5

1

40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

$Cdry$ = Concentration calculated as dry weight (ug/kg)

Example:

40

80

50

50 ug/kg = 0.050 mg/kg

Perkin Elmer ELAN ICP/MS

STANDARDS KEY

QC Std 1 - ICV

QC Std 2 - ICB

QC Std 3 - LLICV

QC Std 4 - ICSA

QC Std 5 - ICSAB

QC Std 6 - CCV

QC Std 7 - CCB

QC Std 8 - LLCCV

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.0004	0.05	0.1
Sb	10	0	0.0004	0.05	0.1
As	10	0	0.0004	0.05	0.1
Ba	10	0	0.0004	0.05	0.1
Be	10	0	0.0004	0.05	0.1
Ca	1000	0	0.04	5	10
Cd	10	0	0.0004	0.05	0.1
Cr	10	0	0.0004	0.05	0.1
Co	10	0	0.0004	0.05	0.1
Cu	10	0	0.0004	0.05	0.1
Fe	1000	0	0.04	5	10
Pb	10	0	0.0004	0.05	0.1
Mg	1000	0	0.04	5	10
Mn	10	0	0.0004	0.05	0.1
Ni	10	0	0.0004	0.05	0.1
K	1000	0	0.04	5	10
Se	10	0	0.0004	0.05	0.1
Ag	10	0	0.0004	0.05	0.1
Na	1000	0	0.04	5	10
Tl	10	0	0.0004	0.05	0.1
V	10	0	0.0004	0.05	0.1
U	1000	0	0.0004	0.05	0.1
Zn	10	0	0.0004	0.05	0.1

**Microbac Laboratories Inc.
Microwave Digestion Log**

Workgroup: WG594620
Analyst: ERP
Spike Analyst: ERP
Run Date: 12/13/2016 08:32
Method: 3015
Balance: BAL019
Instrument: MW-1
Instrument Start: 12/13/2016 09:05

SOP: ME407 Revision 19
Spike Solution: STD78216
Spike Witness: REK
HNO3 Lot #: COA19324
40 & 50 ML. DIGESTION TUCOA19282
MS Filters- fisher-Lot#RRGT38288

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG594620-02	BLANK	1	20 mL	50 mL	184.602 g	184.601 g		
2	WG594620-03	LCS	1	20 mL	50 mL	182.637 g	182.637 g	.25 mL	
3	L16120520-02	SAMP	1	20 mL	50 mL	184.579 g	184.563 g		12/20/16
4	L16120520-03	SAMP	1	20 mL	50 mL	183.928 g	183.913 g		12/20/16
5	L16120520-04	SAMP	1	20 mL	50 mL	183.07 g	183.064 g		12/20/16
6	L16120520-11	SAMP	1	20 mL	50 mL	182.516 g	182.499 g		12/20/16
7	L16120521-01	SAMP	1	20 mL	50 mL	182.235 g	182.221 g		12/23/16
8	L16120521-02	SAMP	1	20 mL	50 mL	184.201 g	184.184 g		12/23/16
9	L16120521-03	SAMP	1	20 mL	50 mL	182.169 g	182.16 g		12/23/16
10	L16120521-04	SAMP	1	20 mL	50 mL	185.709 g	185.7 g		12/23/16
11	L16120521-05	SAMP	1	20 mL	50 mL	186.13 g	186.12 g		12/23/16
12	L16120521-06	SAMP	1	20 mL	50 mL	183.354 g	183.335 g		12/23/16
13	L16120521-07	SAMP	1	20 mL	50 mL	185.684 g	185.659 g		12/23/16
14	L16120521-08	SAMP	1	20 mL	50 mL	183.653 g	183.623 g		12/23/16
15	L16120521-09	SAMP	1	20 mL	50 mL	185.35 g	185.331 g		12/23/16
16	L16120521-10	SAMP	1	20 mL	50 mL	182.624 g	182.613 g		12/23/16
17	L16120521-11	SAMP	1	20 mL	50 mL	185.198 g	185.19 g		12/23/16
18	WG594620-01	REF	1	20 mL	50 mL	185.1 g	185.094 g		
19	L16120521-12	SAMP	1	20 mL	50 mL	185.1 g	185.094 g		12/23/16
20	L16120618-02	SAMP	1	20 mL	50 mL	185.986 g	185.976 g		12/20/16
21	L16120619-01	SAMP	1	20 mL	50 mL	180.888 g	180.88 g		12/16/16
22	L16120620-01	SAMP	1	20 mL	50 mL	184.489 g	184.475 g		12/16/16
23	L16120621-01	SAMP	1	20 mL	50 mL	185.081 g	185.07 g		12/16/16
24	WG594620-04	MS	1	20 mL	50 mL	185.788 g	185.772 g	.25 mL	
25	WG594620-05	MSD	1	20 mL	50 mL	187.01 g	187.005 g	.25 mL	

L16120521-07	filtered digestate
L16120521-08	filtered digestate
L16120521-09	filtered digestate
L16120521-10	filtered digestate
L16120618-02	filtered digestate
L16120619-01	filtered digestate
L16120620-01	filtered digestate
L16120621-01	filtered digestate



Microbac Laboratories Inc.
Microwave Digestion Log

Analyst: Eun P. Kim

SOP: _____
Spike Solution: SP
Review: _____
Spike Witness: _____

Method:
Balance:
Instrument:
Instrument Start:

MW_DIG - Modified 09/30/2009
PDF ID: 5059781
Report generated: 12/13/2016 09:51



Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 121316A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____

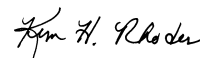
Calibration Std: STD78743 ICV Std: STD78745 Post Spike: STD76567
 ICSA: STD79065 ICSAB: STD79066 Int. Std: RGT38094
 CCV: STD78744 LLCCV: STD79064 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594627,594628,594709

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	NI.121316.100810	Blank	Blank		1		12/13/16 10:08
2	NI.121316.101116	WG594802-01	Calibration Point		1		12/13/16 10:11
3	NI.121316.101421	WG594802-02	Calibration Point		1		12/13/16 10:14
4	NI.121316.101727	WG594802-03	Calibration Point		1		12/13/16 10:17
5	NI.121316.102032	WG594802-04	Calibration Point		1		12/13/16 10:20
6	NI.121316.102339	WG594802-05	Initial Calibration Verification		1		12/13/16 10:23
7	NI.121316.102645	WG594802-06	Initial Calib Blank		1		12/13/16 10:26
8	NI.121316.102952	WG594802-07	Low Level Initial Calibration V		1		12/13/16 10:29
9	NI.121316.103300	WG594802-08	Interference Check		1		12/13/16 10:33
10	NI.121316.103606	WG594802-09	Interference Check		1		12/13/16 10:36
11	NI.121316.103912	WG594802-10	CCV		1		12/13/16 10:39
12	NI.121316.104217	WG594802-11	CCB		1		12/13/16 10:42
13	NI.121316.104524	WG594492-02	Method/Prep Blank	.25/100	1		12/13/16 10:45
14	NI.121316.104829	WG594492-03	Laboratory Control S	.25/100	1		12/13/16 10:48
15	NI.121316.105134	WG594492-01	Reference Sample		1	L16120563-01	12/13/16 10:51
16	NI.121316.105440	WG594492-04	Matrix Spike	.253/100	1	L16120563-01	12/13/16 10:54
17	NI.121316.105745	WG594492-05	Matrix Spike Duplica	.251/100	1	L16120563-01	12/13/16 10:57
18	NI.121316.110051	L16120474-01	J6L0278-01	.257/100	1		12/13/16 11:00
19	NI.121316.110355	L16120474-02	J6L0278-02	.256/100	1		12/13/16 11:03
20	NI.121316.110701	WG594627-01	Post Digestion Spike		1	L16120474-02	12/13/16 11:07
21	NI.121316.111006	WG594627-02	Serial Dilution		5	L16120474-02	12/13/16 11:10
22	NI.121316.111311	WG594627-02	Serial Dilution		25	L16120474-02	12/13/16 11:13
23	NI.121316.111618	WG594802-12	CCV		1		12/13/16 11:16
24	NI.121316.111923	WG594802-13	CCB		1		12/13/16 11:19
25	NI.121316.112230	L16120474-03	J6L0278-03		1		12/13/16 11:22
26	NI.121316.112535	L16120474-04	J6L0278-04		1		12/13/16 11:25
27	NI.121316.112839	L16120474-05	J6L0278-05		1		12/13/16 11:28
28	NI.121316.113145	L16120561-01	SCF-WS06-120816		1		12/13/16 11:31
29	NI.121316.113450	L16120562-01	SCF-WS05-120716		1		12/13/16 11:34
30	NI.121316.114531	L16120561-01	SCF-WS06-120816		5		12/13/16 11:45
31	NI.121316.114851	L16120474-03	J6L0278-03	.251/100	5		12/13/16 11:48
32	NI.121316.115156	L16120474-04	J6L0278-04	.251/100	5		12/13/16 11:51
33	NI.121316.115501	L16120474-05	J6L0278-05	.253/100	5		12/13/16 11:55
34	NI.121316.115808	WG594802-14	CCV		1		12/13/16 11:58

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 121316A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____

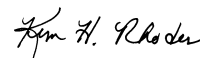
Calibration Std: STD78743 ICV Std: STD78745 Post Spike: STD76567
 ICSA: STD79065 ICSAB: STD79066 Int. Std: RGT38094
 CCV: STD78744 LLCCV: STD79064 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594627,594628,594709

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	NI.121316.120114	WG594802-15	CCB		1		12/13/16 12:01
36	NI.121316.120626	WG594802-16	CCV		1		12/13/16 12:06
37	NI.121316.120936	WG594802-17	CCB		1		12/13/16 12:09
38	NI.121316.121314	L16120561-01	SCF-WS06-120816	.253/100	5		12/13/16 12:13
39	NI.121316.121620	L16120562-01	SCF-WS05-120716	.259/100	1		12/13/16 12:16
40	NI.121316.121927	WG594802-18	CCV		1		12/13/16 12:19
41	NI.121316.122232	WG594802-19	CCB		1		12/13/16 12:22
42	NI.121316.122602	WG594802-20	Interference Check		1		12/13/16 12:26
43	NI.121316.123013	WG594802-21	Interference Check		1		12/13/16 12:30
44	NI.121316.123321	WG594802-22	CCV		1		12/13/16 12:33
45	NI.121316.123702	WG594802-23	CCB		1		12/13/16 12:37
46	NI.121316.124009	WG594494-01	Method/Prep Blank	.25/100	1		12/13/16 12:40
47	NI.121316.124314	WG594494-02	Laboratory Control S	.25/100	1		12/13/16 12:43
48	NI.121316.124619	WG594494-03	Laboratory Control S	.25/100	1		12/13/16 12:46
49	NI.121316.124925	L16120474-01	J6L0278-01	.255/100	1		12/13/16 12:49
50	NI.121316.125230	L16120474-02	J6L0278-02	.252/100	1		12/13/16 12:52
51	NI.121316.125536	L16120474-03	J6L0278-03	.255/100	1		12/13/16 12:55
52	NI.121316.125841	L16120474-04	J6L0278-04	.253/100	1		12/13/16 12:58
53	NI.121316.130146	L16120474-05	J6L0278-05	.255/100	1		12/13/16 13:01
54	NI.121316.130452	WG594628-01	Post Digestion Spike		1	L16120474-05	12/13/16 13:04
55	NI.121316.130758	WG594628-02	Serial Dilution		5	L16120474-05	12/13/16 13:07
56	NI.121316.131105	WG594802-24	CCV		1		12/13/16 13:11
57	NI.121316.131410	WG594802-25	CCB		1		12/13/16 13:14
58	NI.121316.132311	WG594802-26	Interference Check		1		12/13/16 13:23
59	NI.121316.132622	WG594802-27	Interference Check		1		12/13/16 13:26
60	NI.121316.132943	WG594802-28	CCV		1		12/13/16 13:29
61	NI.121316.133249	WG594802-29	CCB		1		12/13/16 13:32
62	NI.121316.134607	WG594620-02	Method/Prep Blank	20/50	1		12/13/16 13:46
63	NI.121316.134913	WG594620-03	Laboratory Control S	20/50	1		12/13/16 13:49
64	NI.121316.135219	WG594620-01	Reference Sample		1	L16120521-12	12/13/16 13:52
65	NI.121316.135524	WG594620-04	Matrix Spike	20/50	1	L16120521-12	12/13/16 13:55
66	NI.121316.135830	WG594620-05	Matrix Spike Duplica	20/50	1	L16120521-12	12/13/16 13:58
67	NI.121316.140136	L16120619-01	INS-WL01-120816	20/50	1		12/13/16 14:01
68	NI.121316.140440	L16120620-01	INS-WL02-120816	20/50	1		12/13/16 14:04

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Microbac Laboratories Inc.
Instrument Run Log

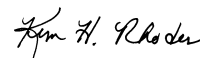
Instrument: ICP-MS2 Dataset: 121316A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD78743 ICV Std: STD78745 Post Spike: STD76567
 ICSA: STD79065 ICSAB: STD79066 Int. Std: RG738094
 CCV: STD78744 LLCCV: STD79064 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 594627,594628,594709

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	NI.121316.140746	WG594709-01	Post Digestion Spike		1	L16120620-01	12/13/16 14:07
70	NI.121316.141052	WG594709-02	Serial Dilution		5	L16120620-01	12/13/16 14:10
71	NI.121316.141357	WG594709-02	Serial Dilution		25	L16120620-01	12/13/16 14:13
72	NI.121316.141704	WG594802-30	CCV		1		12/13/16 14:17
73	NI.121316.142009	WG594802-31	CCB		1		12/13/16 14:20
74	NI.121316.142317	L16120621-01	INS-WL03-120816	20/50	1		12/13/16 14:23
75	NI.121316.142626	L16120521-01	MW36-120816	20/50	1		12/13/16 14:26
76	NI.121316.142933	L16120521-07	MW21-120816		10		12/13/16 14:29
77	NI.121316.143239	L16120521-08	MW21-120816		10		12/13/16 14:32
78	NI.121316.143653	L16120521-09	MW31-120816		50		12/13/16 14:36
79	NI.121316.143958	L16120521-10	MW31-120816		50		12/13/16 14:39
80	NI.121316.144304	L16120521-11	MW24-120816	20/50	1		12/13/16 14:43
81	NI.121316.144609	L16120618-02	SCF-WL01-120916	20/50	1		12/13/16 14:46
82	NI.121316.144915	WG594802-32	CCV		1		12/13/16 14:49
83	NI.121316.145220	WG594802-33	CCB		1		12/13/16 14:52
84	NI.121316.145545	L16120521-09	MW31-120816	20/50	5		12/13/16 14:55
85	NI.121316.145850	L16120521-10	MW31-120816	20/50	5		12/13/16 14:58
86	NI.121316.150655	L16120521-02	MW36-120816	20/50	1		12/13/16 15:06
87	NI.121316.151000	L16120521-03	MW37-120816	20/50	1		12/13/16 15:10
88	NI.121316.151306	L16120521-04	MW37-120816	20/50	1		12/13/16 15:13
89	NI.121316.151611	L16120521-05	MW35-120816	20/50	1		12/13/16 15:16
90	NI.121316.151916	L16120521-06	MW35-120816	20/50	1		12/13/16 15:19
91	NI.121316.152224	WG594802-34	CCV		1		12/13/16 15:22
92	NI.121316.152529	WG594802-35	CCB		1		12/13/16 15:25
93	NI.121316.152836	L16120521-07	MW21-120816	20/50	50		12/13/16 15:28
94	NI.121316.153142	L16120521-08	MW21-120816	20/50	50		12/13/16 15:31
95	NI.121316.154119	WG594059-03	Method/Prep Blank		1		12/13/16 15:41
96	NI.121316.154424	WG594802-36	Interference Check		1		12/13/16 15:44
97	NI.121316.154730	WG594802-37	Interference Check		1		12/13/16 15:47
98	NI.121316.155037	WG594802-38	CCV		1		12/13/16 15:50
99	NI.121316.155343	WG594802-39	CCB		1		12/13/16 15:53
100	NI.121316.155650	WG594802-40	Low Level Continuing Calibra		1		12/13/16 15:56

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 122316D.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____

Calibration Std: STD779254 ICV Std: STD79253 Post Spike: STD76567
 ICSA: N/A ICSAB: N/A Int. Std: RGT38094
 CCV: STD79255 LLCCV: _____ Tuning Sol : STD77874
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596227,594709,596329

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	NI.122316.152019	Blank	Blank		1		12/23/16 15:20
2	NI.122316.152324	WG596460-01	Calibration Point		1		12/23/16 15:23
3	NI.122316.152630	WG596460-02	Calibration Point		1		12/23/16 15:26
4	NI.122316.152936	WG596460-03	Calibration Point		1		12/23/16 15:29
5	NI.122316.153252	WG596460-04	Calibration Point		1		12/23/16 15:32
6	NI.122316.153559	WG596460-05	Initial Calibration Verification		1		12/23/16 15:35
7	NI.122316.153906	WG596460-06	Initial Calib Blank		1		12/23/16 15:39
8	NI.122316.154213	WG596460-07	Low Level Initial Calibration V		1		12/23/16 15:42
9	NI.122316.154518	WG596460-08	Interference Check		1		12/23/16 15:45
10	NI.122316.154823	WG596460-09	Interference Check		1		12/23/16 15:48
11	NI.122316.155131	WG596460-10	CCV		1		12/23/16 15:51
12	NI.122316.155436	WG596460-11	CCB		1		12/23/16 15:54
13	NI.122316.155858	WG595955-02	Method/Prep Blank	20/50	1		12/23/16 15:58
14	NI.122316.160204	WG595955-03	Laboratory Control S	20/50	1		12/23/16 16:02
15	NI.122316.160509	WG595955-01	Reference Sample		1	L16121183-09	12/23/16 16:05
16	NI.122316.160815	WG595955-04	Matrix Spike	20/50	1	L16121183-09	12/23/16 16:08
17	NI.122316.161120	WG595955-05	Matrix Spike Duplica	20/50	1	L16121183-09	12/23/16 16:11
18	NI.122316.161425	L16121183-01	FEW3-MW31I-0503	20/50	1		12/23/16 16:14
19	NI.122316.161730	L16121183-02	FEW3-MW31I-0503-FD	20/50	1		12/23/16 16:17
20	NI.122316.162035	WG596227-01	Post Digestion Spike		1	L16121183-02	12/23/16 16:20
21	NI.122316.162341	WG596227-02	Serial Dilution		5	L16121183-02	12/23/16 16:23
22	NI.122316.162646	WG596227-02	Serial Dilution		25	L16121183-02	12/23/16 16:26
23	NI.122316.162953	WG596460-12	CCV		1		12/23/16 16:29
24	NI.122316.163259	WG596460-13	CCB		1		12/23/16 16:32
25	NI.122316.163605	L16121183-03	FEW3-MW15I-0500	20/50	1		12/23/16 16:36
26	NI.122316.163911	L16121183-04	FEW3-MW55I-0505	20/50	1		12/23/16 16:39
27	NI.122316.164216	L16121183-05	FEW03-MW23I-0502	20/50	1		12/23/16 16:42
28	NI.122316.164522	L16121183-06	FEW03-MW58I-0508	20/50	1		12/23/16 16:45
29	NI.122316.164826	L16121183-07	FEW03-MW22I-0501	20/50	1		12/23/16 16:48
30	NI.122316.165131	L16121183-08	FEW03-MW57I-0507	20/50	1		12/23/16 16:51
31	NI.122316.165437	L16121183-12	FEW03-MW42I-0504	20/50	1		12/23/16 16:54
32	NI.122316.165744	WG596460-14	CCV		1		12/23/16 16:57
33	NI.122316.170050	WG596460-15	CCB		1		12/23/16 17:00
34	NI.122316.170357	L16121149-01	TANK 1	20/50	1		12/23/16 17:03

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 122316D.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____

Calibration Std: STD779254 ICV Std: STD79253 Post Spike: STD76567
 ICSA: N/A ICSAB: N/A Int. Std: RG738094
 CCV: STD79255 LLCCV: _____ Tuning Sol : STD77874
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596227,594709,596329

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	NI.122316.170703	L16121149-02	TANK 2		1		12/23/16 17:07
36	NI.122316.171008	L16121149-03	TANK 3		1		12/23/16 17:10
37	NI.122316.171314	L16121149-04	TANK 4	20/50	1		12/23/16 17:13
38	NI.122316.171621	WG596460-16	CCV		1		12/23/16 17:16
39	NI.122316.171926	WG596460-17	CCB		1		12/23/16 17:19
40	NI.122316.172232	WG594620-02	Method/Prep Blank	20/50	1		12/23/16 17:22
41	NI.122316.172538	WG594620-03	Laboratory Control S	20/50	1		12/23/16 17:25
42	NI.122316.172843	WG594620-01	Reference Sample		1	L16120521-12	12/23/16 17:28
43	NI.122316.173149	WG594620-04	Matrix Spike	20/50	1	L16120521-12	12/23/16 17:31
44	NI.122316.173454	WG594620-05	Matrix Spike Duplica	20/50	1	L16120521-12	12/23/16 17:34
45	NI.122316.173759	L16120520-02	A08-MW03-Y1S4	20/50	1		12/23/16 17:37
46	NI.122316.174105	L16120520-03	A08-MW09-Y1S4	20/50	1		12/23/16 17:41
47	NI.122316.174410	WG594709-03	Post Digestion Spike		1	L16120520-03	12/23/16 17:44
48	NI.122316.174716	WG594709-04	Serial Dilution		5	L16120520-03	12/23/16 17:47
49	NI.122316.175022	WG594709-04	Serial Dilution		25	L16120520-03	12/23/16 17:50
50	NI.122316.175329	WG596460-18	CCV		1		12/23/16 17:53
51	NI.122316.175634	WG596460-19	CCB		1		12/23/16 17:56
52	NI.122316.175942	L16120520-04	A08-MW10-Y1S4	20/50	1		12/23/16 17:59
53	NI.122316.180247	L16120520-11	A08-TM01-Y1S4	20/50	1		12/23/16 18:02
54	NI.122316.180554	WG596460-20	CCV		1		12/23/16 18:05
55	NI.122316.180859	WG596460-21	CCB		1		12/23/16 18:08
56	NI.122316.181206	WG596279-01	Method/Prep Blank	10/100	1		12/23/16 18:12
57	NI.122316.181511	WG596279-02	Laboratory Control S	10/100	1		12/23/16 18:15
58	NI.122316.181817	WG596279-03	Laboratory Control S	10/100	1		12/23/16 18:18
59	NI.122316.182122	L16121247-01	BFB-16-098	10.04/100	1		12/23/16 18:21
60	NI.122316.182427	L16121247-03	BFB-16-099	0.011/100	1		12/23/16 18:24
61	NI.122316.182733	L16121247-05	BFB-16-100	0.049/100	1		12/23/16 18:27
62	NI.122316.183038	L16121247-07	BFB-16-101	0.037/100	1		12/23/16 18:30
63	NI.122316.183344	L16121247-09	BFB-16-102	0.042/100	1		12/23/16 18:33
64	NI.122316.183649	L16121247-11	BFB-16-103	0.044/100	1		12/23/16 18:36
65	NI.122316.183954	WG596329-01	Post Digestion Spike		1	L16121247-11	12/23/16 18:39
66	NI.122316.184302	WG596460-22	CCV		1		12/23/16 18:43
67	NI.122316.184607	WG596460-23	CCB		1		12/23/16 18:46
68	NI.122316.184914	WG596329-02	Serial Dilution		5	L16121247-11	12/23/16 18:49

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Microbac Laboratories Inc.
Instrument Run Log

Instrument: ICP-MS2 Dataset: 122316D.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD779254 ICV Std: STD79253 Post Spike: STD76567
 ICSA: N/A ICSAB: N/A Int. Std: RGT38094
 CCV: STD79255 LLCCV: _____ Tuning Sol : STD77874
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596227,594709,596329

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	NI.122316.185221	WG596460-24	CCV		1		12/23/16 18:52
70	NI.122316.185526	WG596460-25	CCB		1		12/23/16 18:55

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 122916E.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____

Calibration Std: STD79556 ICV Std: STD79554 Post Spike: STD76567
 ICSA: STD79552 ICSAB: STD79553 Int. Std: RGT38094
 CCV: STD79555 LLCCV: STD79550 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596535,594709,596227,596004,596789,596289

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	NI.122916.073416	Blank	Blank		1		12/29/16 07:34
2	NI.122916.073722	WG596744-01	Calibration Point		1		12/29/16 07:37
3	NI.122916.074027	WG596744-02	Calibration Point		1		12/29/16 07:40
4	NI.122916.074333	WG596744-03	Calibration Point		1		12/29/16 07:43
5	NI.122916.074638	WG596744-04	Calibration Point		1		12/29/16 07:46
6	NI.122916.074946	WG596744-05	Initial Calibration Verification		1		12/29/16 07:49
7	NI.122916.075253	WG596744-06	Initial Calib Blank		1		12/29/16 07:52
8	NI.122916.075559	WG596744-07	Low Level Initial Calibration V		1		12/29/16 07:55
9	NI.122916.075904	WG596744-08	Interference Check		1		12/29/16 07:59
10	NI.122916.080209	WG596744-09	Interference Check		1		12/29/16 08:02
11	NI.122916.080515	WG596744-10	CCV		1		12/29/16 08:05
12	NI.122916.080821	WG596744-11	CCB		1		12/29/16 08:08
13	NI.122916.081128	WG596404-02	Method/Prep Blank	.25/100	1		12/29/16 08:11
14	NI.122916.081433	WG596404-03	Laboratory Control S	.25/100	1		12/29/16 08:14
15	NI.122916.081740	WG596404-01	Reference Sample		1	L16121255-15	12/29/16 08:17
16	NI.122916.082045	WG596404-04	Matrix Spike	.253/100	1	L16121255-15	12/29/16 08:20
17	NI.122916.082351	WG596404-05	Matrix Spike Duplica	.253/100	1	L16121255-15	12/29/16 08:23
18	NI.122916.082656	L16121247-02	BFB-16-098	.253/100	1		12/29/16 08:26
19	NI.122916.083002	L16121247-04	BFB-16-099	.251/100	1		12/29/16 08:30
20	NI.122916.083308	WG596535-01	Post Digestion Spike		1	L16121247-04	12/29/16 08:33
21	NI.122916.083613	WG596535-02	Serial Dilution		5	L16121247-04	12/29/16 08:36
22	NI.122916.083918	WG596535-02	Serial Dilution		25	L16121247-04	12/29/16 08:39
23	NI.122916.084225	WG596744-12	CCV		1		12/29/16 08:42
24	NI.122916.084531	WG596744-13	CCB		1		12/29/16 08:45
25	NI.122916.084837	L16121247-06	BFB-16-100	.25/100	1		12/29/16 08:48
26	NI.122916.085142	L16121247-08	BFB-16-101	.252/100	1		12/29/16 08:51
27	NI.122916.085448	L16121247-10	BFB-16-102	.254/100	1		12/29/16 08:54
28	NI.122916.085753	L16121247-12	BFB-16-103	.253/100	1		12/29/16 08:57
29	NI.122916.090059	L16121255-01	MC10-01	.25/100	1		12/29/16 09:00
30	NI.122916.090404	L16121255-02	MC10-02	.255/100	1		12/29/16 09:04
31	NI.122916.090709	L16121255-03	MC10-03	.251/100	1		12/29/16 09:07
32	NI.122916.091014	L16121255-04	MC10-04	.253/100	1		12/29/16 09:10
33	NI.122916.091320	L16121255-05	MC10-05	.251/100	1		12/29/16 09:13
34	NI.122916.091626	L16121255-06	MC10-06	.251/100	1		12/29/16 09:16

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 122916E.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____

Calibration Std: STD79556 ICV Std: STD79554 Post Spike: STD76567
 ICSA: STD79552 ICSAB: STD79553 Int. Std: RGT38094
 CCV: STD79555 LLCCV: STD79550 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596535,594709,596227,596004,596789,596289

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	NI.122916.091933	WG596744-14	CCV		1		12/29/16 09:19
36	NI.122916.092237	WG596744-15	CCB		1		12/29/16 09:22
37	NI.122916.092544	L16121255-07	MC10-07	.251/100	1		12/29/16 09:25
38	NI.122916.092849	L16121255-08	MC10-08	.25/100	1		12/29/16 09:28
39	NI.122916.093154	L16121255-09	MC10-09	.255/100	1		12/29/16 09:31
40	NI.122916.093459	L16121255-10	MC10-10	.253/100	1		12/29/16 09:34
41	NI.122916.093804	L16121255-11	MC10-11	.255/100	1		12/29/16 09:38
42	NI.122916.094110	L16121255-12	MC10-12	.253/100	1		12/29/16 09:41
43	NI.122916.094504	L16121255-14	MC10B-01	.251/100	1		12/29/16 09:45
44	NI.122916.094809	WG596744-16	CCV		1		12/29/16 09:48
45	NI.122916.095115	WG596744-17	CCB		1		12/29/16 09:51
46	NI.122916.095518	WG594620-02	Method/Prep Blank	20/50	1		12/29/16 09:55
47	NI.122916.095824	WG594620-03	Laboratory Control S	20/50	1		12/29/16 09:58
48	NI.122916.100129	WG594620-01	Reference Sample		1	L16120521-12	12/29/16 10:01
49	NI.122916.100434	WG594620-04	Matrix Spike	20/50	1	L16120521-12	12/29/16 10:04
50	NI.122916.100739	WG594620-05	Matrix Spike Duplica	20/50	1	L16120521-12	12/29/16 10:07
51	NI.122916.101045	L16120520-02	A08-MW03-Y1S4	20/50	1		12/29/16 10:10
52	NI.122916.101350	L16120520-03	A08-MW09-Y1S4		1		12/29/16 10:13
53	NI.122916.101656	WG594709-03	Post Digestion Spike		1	L16120520-02	12/29/16 10:16
54	NI.122916.103344	WG594709-04	Serial Dilution		25	L16120520-02	12/29/16 10:33
55	NI.122916.103652	WG596744-18	CCV		1		12/29/16 10:36
56	NI.122916.103957	WG596744-19	CCB		1		12/29/16 10:39
57	NI.122916.104304	L16120520-03	A08-MW09-Y1S4	20/50	1		12/29/16 10:43
58	NI.122916.104609	L16120520-04	A08-MW10-Y1S4	20/50	1		12/29/16 10:46
59	NI.122916.104915	L16120520-11	A08-TM01-Y1S4	20/50	1		12/29/16 10:49
60	NI.122916.105222	WG596744-20	CCV		1		12/29/16 10:52
61	NI.122916.105528	WG596744-21	CCB		1		12/29/16 10:55
62	NI.122916.105903	WG595955-02	Method/Prep Blank	20/50	1		12/29/16 10:59
63	NI.122916.110208	WG595955-03	Laboratory Control S	20/50	1		12/29/16 11:02
64	NI.122916.110514	WG595955-01	Reference Sample		1	L16121183-09	12/29/16 11:05
65	NI.122916.110819	WG595955-04	Matrix Spike	20/50	1	L16121183-09	12/29/16 11:08
66	NI.122916.111125	WG595955-05	Matrix Spike Duplica	20/50	1	L16121183-09	12/29/16 11:11
67	NI.122916.111430	L16121183-01	FEW3-MW311-0503	20/50	1		12/29/16 11:14
68	NI.122916.111735	L16121183-02	FEW3-MW311-0503-FD	20/50	1		12/29/16 11:17

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 122916E.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____

Calibration Std: STD79556 ICV Std: STD79554 Post Spike: STD76567
 ICSA: STD79552 ICSAB: STD79553 Int. Std: RGT38094
 CCV: STD79555 LLCCV: STD79550 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596535,594709,596227,596004,596789,596289

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	NI.122916.112041	WG596227-01	Post Digestion Spike		1	L16121183-02	12/29/16 11:20
70	NI.122916.112346	WG596227-02	Serial Dilution		5	L16121183-02	12/29/16 11:23
71	NI.122916.112652	WG596227-02	Serial Dilution		25	L16121183-02	12/29/16 11:26
72	NI.122916.112959	WG596744-22	CCV		1		12/29/16 11:29
73	NI.122916.113304	WG596744-23	CCB		1		12/29/16 11:33
74	NI.122916.113612	L16121183-03	FEW3-MW15I-0500	20/50	1		12/29/16 11:36
75	NI.122916.113917	L16121183-04	FEW3-MW55I-0505	20/50	1		12/29/16 11:39
76	NI.122916.114223	L16121183-05	FEW03-MW23I-0502	20/50	1		12/29/16 11:42
77	NI.122916.114528	L16121183-06	FEW03-MW58I-0508	20/50	1		12/29/16 11:45
78	NI.122916.114833	L16121183-07	FEW03-MW22I-0501	20/50	1		12/29/16 11:48
79	NI.122916.115138	L16121183-08	FEW03-MW57I-0507	20/50	1		12/29/16 11:51
80	NI.122916.115444	L16121183-12	FEW03-MW42I-0504	20/50	1		12/29/16 11:54
81	NI.122916.115749	L16121183-08	FEW03-MW57I-0507	20/50	50		12/29/16 11:57
82	NI.122916.120056	WG596744-24	CCV		1		12/29/16 12:00
83	NI.122916.120402	WG596744-25	CCB		1		12/29/16 12:04
84	NI.122916.120709	L16121149-01	TANK 1	20/50	1		12/29/16 12:07
85	NI.122916.121015	L16121149-02	TANK 2	20/50	100		12/29/16 12:10
86	NI.122916.121320	L16121149-03	TANK 3	20/50	100		12/29/16 12:13
87	NI.122916.121626	L16121149-04	TANK 4	20/50	1		12/29/16 12:16
88	NI.122916.121933	WG596744-26	CCV		1		12/29/16 12:19
89	NI.122916.122238	WG596744-27	CCB		1		12/29/16 12:22
90	NI.122916.123512	WG596744-28	CCV		1		12/29/16 12:35
91	NI.122916.123830	WG596744-29	CCB		1		12/29/16 12:38
92	NI.122916.130301	WG594796-02	Method/Prep Blank	20/50	1		12/29/16 13:03
93	NI.122916.130607	WG594796-03	Laboratory Control S	20/50	1		12/29/16 13:06
94	NI.122916.130913	WG594796-01	Reference Sample		1	L16120568-01	12/29/16 13:09
95	NI.122916.131218	WG594796-04	Matrix Spike	20/50	1	L16120568-01	12/29/16 13:12
96	NI.122916.131523	WG594796-05	Matrix Spike Duplica	20/50	1	L16120568-01	12/29/16 13:15
97	NI.122916.131829	L16120425-19	PZ03-120716	20/50	1		12/29/16 13:18
98	NI.122916.132134	L16120425-20	PZ03-120716	20/50	1		12/29/16 13:21
99	NI.122916.132439	WG596004-03	Post Digestion Spike		1	L16120425-20	12/29/16 13:24
100	NI.122916.132745	WG596004-04	Serial Dilution		5	L16120425-20	12/29/16 13:27
101	NI.122916.133050	WG596004-04	Serial Dilution		25	L16120425-20	12/29/16 13:30
102	NI.122916.133358	WG596744-30	CCV		1		12/29/16 13:33

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Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 122916E.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD79556 ICV Std: STD79554 Post Spike: STD76567
 ICSA: STD79552 ICSAB: STD79553 Int. Std: RGT38094
 CCV: STD79555 LLCCV: STD79550 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596535,594709,596227,596004,596789,596289

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	NI.122916.133702	WG596744-31	CCB		1		12/29/16 13:37
104	NI.122916.134009	L16120564-01	MW34-GW-120816	20/50	1		12/29/16 13:40
105	NI.122916.134314	L16120564-02	SW01-120816	20/50	1		12/29/16 13:43
106	NI.122916.134619	L16120564-03	MW31-GW-120916	20/50	1		12/29/16 13:46
107	NI.122916.134924	L16120564-04	MW32-GW-120916	20/50	1		12/29/16 13:49
108	NI.122916.135230	L16120564-04	MW32-GW-120916		50		12/29/16 13:52
109	NI.122916.135537	WG596744-32	CCV		1		12/29/16 13:55
110	NI.122916.135842	WG596744-33	CCB		1		12/29/16 13:58
111	NI.122916.140148	WG596240-03	Method/Prep Blank	20/50	1		12/29/16 14:01
112	NI.122916.140454	WG596240-04	Laboratory Control S	20/50	1		12/29/16 14:04
113	NI.122916.140759	WG596240-01	Reference Sample		1	L16120857-02	12/29/16 14:07
114	NI.122916.141104	WG596240-05	Matrix Spike	20/50	1	L16120857-02	12/29/16 14:11
115	NI.122916.141410	WG596240-06	Matrix Spike Duplica	20/50	1	L16120857-02	12/29/16 14:14
116	NI.122916.141715	L16120857-05	AG4618	20/50	1		12/29/16 14:17
117	NI.122916.142021	L16120857-06	AG4619	20/50	1		12/29/16 14:20
118	NI.122916.142326	WG596789-01	Post Digestion Spike		1	L16120857-06	12/29/16 14:23
119	NI.122916.142632	WG596789-02	Serial Dilution		5	L16120857-06	12/29/16 14:26
120	NI.122916.142938	WG596789-02	Serial Dilution		25	L16120857-06	12/29/16 14:29
121	NI.122916.143244	WG596744-34	CCV		1		12/29/16 14:32
122	NI.122916.143549	WG596744-35	CCB		1		12/29/16 14:35
123	NI.122916.143856	L16120857-07	AG4623	20/50	1		12/29/16 14:38
124	NI.122916.144202	L16120857-08	AG4624	20/50	1		12/29/16 14:42
125	NI.122916.144508	L16120857-09	AG4625	20/50	1		12/29/16 14:45
126	NI.122916.144813	L16120857-10	AG4626	20/50	1		12/29/16 14:48
127	NI.122916.145118	L16120857-11	AG4627	20/50	1		12/29/16 14:51
128	NI.122916.145424	L16120857-12	AG4628	20/50	1		12/29/16 14:54
129	NI.122916.145729	L16121255-13	MC10W-01	20/50	1		12/29/16 14:57
130	NI.122916.150034	L16121276-02	MW2A-328-14	20/50	1		12/29/16 15:00
131	NI.122916.150339	WG596240-02	Reference Sample		1	L16121276-07	12/29/16 15:03
132	NI.122916.150646	WG596744-36	CCV		1		12/29/16 15:06
133	NI.122916.150952	WG596744-37	CCB		1		12/29/16 15:09
134	NI.122916.151259	WG596240-07	Matrix Spike	20/50	1	L16121276-07	12/29/16 15:12
135	NI.122916.151604	WG596240-08	Matrix Spike Duplica	20/50	1	L16121276-07	12/29/16 15:16
136	NI.122916.151909	L16121276-14	MW4A-328-14	20/50	1		12/29/16 15:19

Page: 4 Approved: December 30, 2016

Maren Beery



Microbac Laboratories Inc. **Instrument Run Log**

Instrument: ICP-MS2 Dataset: 122916E.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____

Calibration Std: STD79556 ICV Std: STD79554 Post Spike: STD76567
 ICSA: STD79552 ICSAB: STD79553 Int. Std: RGT38094
 CCV: STD79555 LLCCV: STD79550 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596535,594709,596227,596004,596789,596289

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
137	NI.122916.152215	L16121276-17	MW5A-328-14	20/50	1		12/29/16 15:22
138	NI.122916.152520	L16121276-20	OW1A-328-14	20/50	1		12/29/16 15:25
139	NI.122916.152826	L16121276-23	OW1A2-328-14	20/50	1		12/29/16 15:28
140	NI.122916.153131	L16121276-26	OW2A-328-14	20/50	1		12/29/16 15:31
141	NI.122916.153436	L16121276-29	OW3A-328-14	20/50	1		12/29/16 15:34
142	NI.122916.153743	WG596744-38	CCV		1		12/29/16 15:37
143	NI.122916.154048	WG596744-39	CCB		1		12/29/16 15:40
144	NI.122916.154354	WG595903-02	Method/Prep Blank	20/50	1		12/29/16 15:43
145	NI.122916.154659	WG595903-03	Laboratory Control S	20/50	1		12/29/16 15:46
146	NI.122916.155005	L16120975-13	18CPTMW14F-121516		1	WG595903-01	12/29/16 15:50
147	NI.122916.155310	WG595903-04	Matrix Spike	20/50	1	L16120975-13	12/29/16 15:53
148	NI.122916.155615	WG595903-05	Matrix Spike Duplica	20/50	1	L16120975-13	12/29/16 15:56
149	NI.122916.155921	L16120782-01	MW19-121316	20/50	1		12/29/16 15:59
150	NI.122916.160226	L16120782-02	MW19-121316	20/50	1		12/29/16 16:02
151	NI.122916.160531	WG596289-01	Post Digestion Spike		1	L16120782-02	12/29/16 16:05
152	NI.122916.160837	WG596289-02	Serial Dilution		5	L16120782-02	12/29/16 16:08
153	NI.122916.161142	WG596289-02	Serial Dilution		25	L16120782-02	12/29/16 16:11
154	NI.122916.161448	WG596744-40	CCV		1		12/29/16 16:14
155	NI.122916.161754	WG596744-41	CCB		1		12/29/16 16:17
156	NI.122916.162059	L16120782-03	TW01-121316	20/50	1		12/29/16 16:20
157	NI.122916.162405	L16120782-04	TW01-121316	20/50	1		12/29/16 16:24
158	NI.122916.162711	L16120782-05	PZ04-121316	20/50	1		12/29/16 16:27
159	NI.122916.163016	L16120782-06	PZ04-121316	20/50	1		12/29/16 16:30
160	NI.122916.163322	L16120782-07	PZ07R-121316	20/50	1		12/29/16 16:33
161	NI.122916.163627	L16120782-08	PZ07R-121316	20/50	1		12/29/16 16:36
162	NI.122916.163932	L16120782-09	DUP-GW-121316	20/50	1		12/29/16 16:39
163	NI.122916.164238	L16120782-10	DUP-GW-121316	20/50	1		12/29/16 16:42
164	NI.122916.164543	L16120975-02	AWD4F-121316	20/50	1		12/29/16 16:45
165	NI.122916.164849	L16120975-04	AWD4FDF-121316	20/50	1		12/29/16 16:48
166	NI.122916.165155	WG596744-42	CCV		1		12/29/16 16:51
167	NI.122916.165501	WG596744-43	CCB		1		12/29/16 16:55
168	NI.122916.165808	L16120975-06	18CPTMW24-121316	20/50	1		12/29/16 16:58
169	NI.122916.170114	L16120975-07	MW8-121516	20/50	1		12/29/16 17:01
170	NI.122916.170420	L16120975-08	MW8FD-121516	20/50	1		12/29/16 17:04

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Maren Beery



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 122916E.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD79556 ICV Std: STD79554 Post Spike: STD76567
 ICSA: STD79552 ICSAB: STD79553 Int. Std: RGT38094
 CCV: STD79555 LLCCV: STD79550 Tuning Sol : STD78941
 Stannous : _____ Hydroxylamine : _____

Workgroups: 596535,594709,596227,596004,596789,596289

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
171	NI.122916.170724	L16120975-10	MW18F-121516	20/50	1		12/29/16 17:07
172	NI.122916.171030	L16120975-11	18WW20-121516	20/50	1		12/29/16 17:10
173	NI.122916.171336	L16120975-15	18CPTMW18F-121516	20/50	1		12/29/16 17:13
174	NI.122916.171642	WG596744-44	CCV		1		12/29/16 17:16
175	NI.122916.171948	WG596744-45	CCB		1		12/29/16 17:19
176	NI.122916.172254	L16120975-15	18CPTMW18F-121516	20/50	50		12/29/16 17:22
177	NI.122916.172601	WG596744-46	Interference Check		1		12/29/16 17:26
178	NI.122916.172905	WG596744-47	Interference Check		1		12/29/16 17:29
179	NI.122916.173212	WG596744-48	CCV		1		12/29/16 17:32
180	NI.122916.173518	WG596744-49	CCB		1		12/29/16 17:35
181	NI.122916.173824	WG596744-50	Low Level Continuing Calibra		1		12/29/16 17:38

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Maren Beery



Microbac Laboratories Inc.

Data Checklist

Date: 13-DEC-2016

Analyst: JYH

Analyst: NA

Method: 6020/6020A

Instrument: ICP-MS2

Curve Workgroup: 594802

Runlog ID: 79212

Analytical Workgroups: 594627,594628,594709

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	474,561,562,563,521,618,619,620,621
Client Forms	X
Level X	
Level 3	561,562,563,618,619,620,621
Level 4	521
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	KHR
Comments	

Primary Reviewer:

Secondary Reviewer:
15-DEC-2016

CHECKLIST1 - Modified 03/05/2008

Generated: DEC-15-2016 10:42:15



Microbac Laboratories Inc.

Data Checklist

Date: 23-DEC-2016

Analyst: JYH

Analyst: NA

Method: 6020/6020A

Instrument: ICP-MS2

Curve Workgroup: 596460

Runlog ID: 79469

Analytical Workgroups: 596227,594709,596329

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	1247
Level 4	1183,520
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	MMB
Comments	

Primary Reviewer:

Secondary Reviewer:
28-DEC-2016

CHECKLIST1 - Modified 03/05/2008

Generated: DEC-28-2016 10:13:07



Microbac Laboratories Inc.

Data Checklist

Date: 29-DEC-2016

Analyst: JYH

Analyst: NA

Method: 6020/6020A

Instrument: ICP-MS2

Curve Workgroup: 596744

Runlog ID: 79522

Analytical Workgroups: 596535,594709

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	1149,1183,564,857,782,975
Client Forms	X
Level X	
Level 3	1247,564,425
Level 4	520,1183,857,782,975
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
29-DEC-2016

Secondary Reviewer:
30-DEC-2016

CHECKLIST1 - Modified 03/05/2008

Generated: DEC-30-2016 15:06:13



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 6020A

AAB#: WG594709

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/13/2016	4.9	180		12/13/16	5.1	180	
MW36-120816	02	12/08/16					12/13/2016	4.9	180		12/13/16	5.2	180	
MW37-120816	03	12/08/16					12/13/2016	4.9	180		12/13/16	5.2	180	
MW37-120816	04	12/08/16					12/13/2016	4.9	180		12/13/16	5.2	180	
MW35-120816	05	12/08/16					12/13/2016	4.7	180		12/13/16	5	180	
MW35-120816	06	12/08/16					12/13/2016	4.7	180		12/13/16	5	180	
MW21-120816	07	12/08/16					12/13/2016	4.7	180		12/13/16	5	180	
MW21-120816	08	12/08/16					12/13/2016	4.7	180		12/13/16	5	180	
MW31-120816	09	12/08/16					12/13/2016	4.9	180		12/13/16	5.1	180	
MW31-120816	10	12/08/16					12/13/2016	4.9	180		12/13/16	5.1	180	
MW24-120816	11	12/08/16					12/13/2016	4.9	180		12/13/16	5.2	180	
MW24-120816	12	12/08/16					12/13/2016	4.9	180		12/13/16	5.1	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5062817
Report generated 12/30/2016 16:42



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG594709</u>
Blank File ID: <u>NI.121316.134607</u>	Blank Sample ID: <u>WG594620-02</u>
Prep Date: <u>12/13/16 08:32</u>	Instrument ID: <u>ICP-MS2</u>
Analyzed Date: <u>12/13/16 13:46</u>	Method: <u>6020A</u>
Analyst: <u>JYH</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594620-03	NI.121316.134913	12/13/16 13:49	01
MW24-120816	L16120521-12	NI.121316.135219	12/13/16 13:52	01
MW36-120816	L16120521-01	NI.121316.142626	12/13/16 14:26	01
MW24-120816	L16120521-11	NI.121316.144304	12/13/16 14:43	01
MW31-120816	L16120521-09	NI.121316.145545	12/13/16 14:55	DL01
MW31-120816	L16120521-10	NI.121316.145850	12/13/16 14:58	DL01
MW36-120816	L16120521-02	NI.121316.150655	12/13/16 15:06	01
MW37-120816	L16120521-03	NI.121316.151000	12/13/16 15:10	01
MW37-120816	L16120521-04	NI.121316.151306	12/13/16 15:13	01
MW35-120816	L16120521-05	NI.121316.151611	12/13/16 15:16	01
MW35-120816	L16120521-06	NI.121316.151916	12/13/16 15:19	01
MW21-120816	L16120521-07	NI.121316.152836	12/13/16 15:28	DL01
MW21-120816	L16120521-08	NI.121316.153142	12/13/16 15:31	DL01
LCS	WG594620-03	NI.122316.172538	12/23/16 17:25	02
MW24-120816	L16120521-12	NI.122316.172843	12/23/16 17:28	02

Report Name: BLANK_SUMMARY
 PDF File ID: 5062818
 Report generated 12/28/2016 07:28



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: NI.122316.172232
 Prep Date: 12/13/16 08:32
 Analyzed Date: 12/23/16 17:22
 Analyst: JYH

Work Group: WG594709
 Blank Sample ID: WG594620-02
 Instrument ID: ICP-MS2
 Method: 6020A

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594620-03	NI.121316.134913	12/13/16 13:49	01
MW24-120816	L16120521-12	NI.121316.135219	12/13/16 13:52	01
MW36-120816	L16120521-01	NI.121316.142626	12/13/16 14:26	01
MW24-120816	L16120521-11	NI.121316.144304	12/13/16 14:43	01
MW31-120816	L16120521-09	NI.121316.145545	12/13/16 14:55	DL01
MW31-120816	L16120521-10	NI.121316.145850	12/13/16 14:58	DL01
MW36-120816	L16120521-02	NI.121316.150655	12/13/16 15:06	01
MW37-120816	L16120521-03	NI.121316.151000	12/13/16 15:10	01
MW37-120816	L16120521-04	NI.121316.151306	12/13/16 15:13	01
MW35-120816	L16120521-05	NI.121316.151611	12/13/16 15:16	01
MW35-120816	L16120521-06	NI.121316.151916	12/13/16 15:19	01
MW21-120816	L16120521-07	NI.121316.152836	12/13/16 15:28	DL01
MW21-120816	L16120521-08	NI.121316.153142	12/13/16 15:31	DL01
LCS	WG594620-03	NI.122316.172538	12/23/16 17:25	02
MW24-120816	L16120521-12	NI.122316.172843	12/23/16 17:28	02

Report Name: BLANK_SUMMARY
 PDF File ID: 5062818
 Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/13/16 08:32 Sample ID: WG594620-02
Instrument ID: ICP-MS2 Run Date: 12/13/16 13:46 Prep Method: 3015
File ID: NI.121316.134607 Analyst: JYH Method: 6020A
Workgroup (AAB#): WG594709 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: ICP-MS - 13-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Arsenic, Total	0.000500	0.00100	0.000500	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5062819

28-DEC-2016 07:28



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/13/16 08:32 Sample ID: WG594620-02
Instrument ID: ICP-MS2 Run Date: 12/23/16 17:22 Prep Method: 3015
File ID: NI.122316.172232 Analyst: JYH Method: 6020A
Workgroup (AAB#): WG594709 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: ICP-MS - 23-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Arsenic, Total	0.000500	0.00100	0.000500	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5062819

28-DEC-2016 07:28



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594620-03
Instrument ID: ICP-MS2 Run Time: 13:49 Prep Method: 3015
File ID: NI.121316.134913 Analyst: JYH Method: 6020A
Workgroup (AAB#): WG594709 Matrix: Water Units: mg/L
QC Key: WATERL00 Lot#: STD78216 Cal ID: ICP-MS - 13-DEC-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, Total	0.125	0.122	97.5	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 5062820
Report generated: 12/28/2016 07:28



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG594620-03
Instrument ID: ICP-MS2 Run Time: 17:25 Prep Method: 3015
File ID: NI.122316.172538 Analyst: JYH Method: 6020A
Workgroup (AAB#): WG594709 Matrix: Water Units: mg/L
QC Key: WATERL00 Lot#: STD78216 Cal ID: ICP-MS - 23-DEC-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, Total	0.125	0.123	98.2	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 5062820
Report generated: 12/28/2016 07:28



MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L16120521 Cal ID: ICP-MS2 - Worknum: WG594709
 Instrument ID: ICP-MS2 Contract #: _____ Method: 6020A
 Parent ID: WG594620-01 File ID: NI.121316.135219 Dil: 1 Matrix: WATER
 Sample ID: WG594620-04 MS File ID: NI.121316.135524 Dil: 1 Units: mg/L
 Sample ID: WG594620-05 MSD File ID: NI.121316.135830 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, Dissolved	0.00894	0.125	0.138	103	0.125	0.137	103	0.247	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

Loginnum: L16120521 Cal ID: ICP-MS2 - Worknum: WG594709
 Instrument ID: ICP-MS2 Contract #: _____ Method: 6020A
 Parent ID: WG594620-01 File ID: NI.122316.172843 Dil: 1 Matrix: WATER
 Sample ID: WG594620-04 MS File ID: NI.122316.173149 Dil: 1 Units: mg/L
 Sample ID: WG594620-05 MSD File ID: NI.122316.173454 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, Dissolved	0.00887	0.125	0.139	104	0.125	0.140	105	0.472	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac Laboratories Inc.
Serial Dilution Report

Login: L16120521 Worknum: WG594709
Instrument: ICP-MS2 Method: 6020A
Serial Dil: WG594709-02 File ID: NI.121316.141052 Dil: 5 Units: ug/L
Sample: L16120620-01 File ID: NI.121316.140440 Dil: 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	1.99	X	1.91	F	4.06	

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: 5062815

12/28/2016 07:28



Microbac Laboratories Inc.
Serial Dilution Report

Login: L16120521 Worknum: WG594709
Instrument: ICP-MS2 Method: 6020A
Serial Dil: WG594709-04 File ID: NI.122316.174716 Dil: 5 Units: ug/L
Sample: L16120520-03 File ID: NI.122316.174105 Dil: 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	ND	U	ND	U		

U = Result is below MDL.

F = Result is greater than or equal to MDL and less than the RL.

X = Result is greater than or equal to RL and less than 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: 5062815

12/28/2016 07:28



Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L16120521
Instrument ID: ICP-MS2
Post Spike ID: WG594709-01
Sample ID: L16120620-01

Worknum: WG594709
Method: 6020A
Units: ug/L
Matrix: Water
File ID: NI.121316.140746 Dil: 1
File ID: NI.121316.140440 Dil: 1

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	51.1		1.99		50	98.3	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: 5062816
Report generated: 12/28/2016 07:28



Microbac Laboratories Inc.
POST SPIKE REPORT

Sample Login ID: L16120521
Instrument ID: ICP-MS2
Post Spike ID: WG594709-03
Sample ID: L16120520-03

Worknum: WG594709
Method: 6020A
Units: ug/L
Matrix: Water
File ID: NI.122316.174410 Dil: 1
File ID: NI.122316.174105 Dil: 1

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	55.7		0	U	50	111.4	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: 5062816
Report generated: 12/28/2016 07:28



Microbac Laboratories Inc.
Initial Calibration Summary

Login:	<u>L16120521</u>	Workgroup (AAB#):	<u>WG594709</u>
Analytical Method:	<u>6020A</u>	Instrument ID:	<u>ICP-MS2</u>
ICAL Worknum:	<u>WG594802</u>	Initial Calibration Date:	<u>13-DEC-2016 10:20</u>

	WG594802-01		WG594802-02		WG594802-03		WG594802-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	-103	.4	-23.6	50	80300	100	161000	.999952	

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: 5062824
Report generated: 28-DEC-2016 07:28



Microbac Laboratories Inc.
Initial Calibration Summary

Login:	<u>L16120521</u>	Workgroup (AAB#):	<u>WG594709</u>
Analytical Method:	<u>6020A</u>	Instrument ID:	<u>ICP-MS2</u>
ICAL Worknum:	<u>WG596460</u>	Initial Calibration Date:	<u>23-DEC-2016 15:32</u>

	WG596460-01		WG596460-02		WG596460-03		WG596460-04		R	Q
	Conc	INT	Conc	INT	Conc	INT	Conc	INT		
ARSENIC	0	-79.9	.4	-43.8	50	66300	100	140000	.999995	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995



Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-06
Instrument ID: ICP-MS2 Run Time: 10:26 Method: 6020A
File ID: NI.121316.102645 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS2 - 13-DEC-16
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5062826
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-06
Instrument ID: ICP-MS2 Run Time: 15:39 Method: 6020A
File ID: NI.122316.153906 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS2 - 23-DEC-16
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.2	.4	.2	U

ICB - Modified 07/14/2009
PDF File ID: 5062826
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-11
Instrument ID: ICP-MS2 Run Time: 10:42 Method: 6020A
File ID: NI.121316.104217 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	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: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-19
Instrument ID: ICP-MS2 Run Time: 12:22 Method: 6020A
File ID: NI.121316.122232 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	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: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-23
Instrument ID: ICP-MS2 Run Time: 12:37 Method: 6020A
File ID: NI.121316.123702 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

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

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PDF File ID: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-25
Instrument ID: ICP-MS2 Run Time: 13:14 Method: 6020A
File ID: NI.121316.131410 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

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

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PDF File ID: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-29
Instrument ID: ICP-MS2 Run Time: 13:32 Method: 6020A
File ID: NI.121316.133249 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

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

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PDF File ID: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-31
Instrument ID: ICP-MS2 Run Time: 14:20 Method: 6020A
File ID: NI.121316.142009 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	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: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-33
Instrument ID: ICP-MS2 Run Time: 14:52 Method: 6020A
File ID: NI.121316.145220 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

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

CCB - Modified 03/05/2008
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Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-35
Instrument ID: ICP-MS2 Run Time: 15:25 Method: 6020A
File ID: NI.121316.152529 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	U

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

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PDF File ID: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-39
Instrument ID: ICP-MS2 Run Time: 15:53 Method: 6020A
File ID: NI.121316.155343 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	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: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-11
Instrument ID: ICP-MS2 Run Time: 15:54 Method: 6020A
File ID: NI.122316.155436 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	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: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-17
Instrument ID: ICP-MS2 Run Time: 17:19 Method: 6020A
File ID: NI.122316.171926 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	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: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-19
Instrument ID: ICP-MS2 Run Time: 17:56 Method: 6020A
File ID: NI.122316.175634 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.200	0.400	0.200	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: 5062829
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-05
Instrument ID: ICP-MS2 Run Time: 10:23 Method: 6020A
File ID: NI.121316.102339 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
QC Key: WATERL00

Analyte	Expected	Found	%REC	LIMITS	Q
Arsenic	50	50.3	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 5062825
Report generated 12/30/2016 16:40



Microbac Laboratories Inc.
INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596744-05
Instrument ID: ICP-MS2 Run Time: 07:49 Method: 6020A
File ID: NI.122916.074946 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 29-DEC-16
QC Key: WATERL00

Analyte	Expected	Found	%REC	LIMITS	Q
Arsenic	50	49.3	98.5	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 5062825
Report generated 12/30/2016 16:40



Microbac Laboratories Inc.
INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-05
Instrument ID: ICP-MS2 Run Time: 15:35 Method: 6020A
File ID: NI.122316.153559 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
QC Key: WATERL00

Analyte	Expected	Found	%REC	LIMITS	Q
Arsenic	50	48.6	97.2	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 5062825
Report generated 12/30/2016 16:40



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-10
Instrument ID: ICP-MS2 Run Time: 10:39 Method: 6020A
File ID: NI.121316.103912 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0515	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-18
Instrument ID: ICP-MS2 Run Time: 12:19 Method: 6020A
File ID: NI.121316.121927 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0474	mg/L	94.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-22
Instrument ID: ICP-MS2 Run Time: 12:33 Method: 6020A
File ID: NI.121316.123321 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0473	mg/L	94.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-24
Instrument ID: ICP-MS2 Run Time: 13:11 Method: 6020A
File ID: NI.121316.131105 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0479	mg/L	95.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-28
Instrument ID: ICP-MS2 Run Time: 13:29 Method: 6020A
File ID: NI.121316.132943 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0479	mg/L	95.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-30
Instrument ID: ICP-MS2 Run Time: 14:17 Method: 6020A
File ID: NI.121316.141704 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0489	mg/L	97.7	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-32
Instrument ID: ICP-MS2 Run Time: 14:49 Method: 6020A
File ID: NI.121316.144915 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0496	mg/L	99.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-34
Instrument ID: ICP-MS2 Run Time: 15:22 Method: 6020A
File ID: NI.121316.152224 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0479	mg/L	95.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-38
Instrument ID: ICP-MS2 Run Time: 15:50 Method: 6020A
File ID: NI.121316.155037 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0481	mg/L	96.2	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-10
Instrument ID: ICP-MS2 Run Time: 15:51 Method: 6020A
File ID: NI.122316.155131 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0492	mg/L	98.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-16
Instrument ID: ICP-MS2 Run Time: 17:16 Method: 6020A
File ID: NI.122316.171621 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0484	mg/L	96.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-18
Instrument ID: ICP-MS2 Run Time: 17:53 Method: 6020A
File ID: NI.122316.175329 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.0500	0.0490	mg/L	98.0	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 5062828
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-07
Instrument ID: ICP-MS2 Run Time: 10:29 Method: 6020A
File ID: NI.121316.102952 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.390	ug/L	97.5	50 - 150		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5090126
Report generated 12/30/2016 16:47



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/13/2016 Sample ID: WG594802-40
Instrument ID: ICP-MS2 Run Time: 15:56 Method: 6020A
File ID: NI.121316.155650 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 13-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.345	ug/L	86.3	50 - 150		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5090126
Report generated 12/30/2016 16:47



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596460-07
Instrument ID: ICP-MS2 Run Time: 15:42 Method: 6020A
File ID: NI.122316.154213 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 23-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.446	ug/L	111	50 - 150		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5090126
Report generated 12/30/2016 16:47



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596744-07
Instrument ID: ICP-MS2 Run Time: 07:55 Method: 6020A
File ID: NI.122916.075559 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 29-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.430	ug/L	108	50 - 150		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5090126
Report generated 12/30/2016 16:47



Microbac Laboratories Inc.
LOW LEVEL CALIBRATION VERIFICATION

Login Number: L16120521 Run Date: 12/29/2016 Sample ID: WG596744-50
Instrument ID: ICP-MS2 Run Time: 17:38 Method: 6020A
File ID: NI.122916.173824 Analyst: JYH QC Key: WATERL00
Workgroup (AAB#): WG594709 Cal ID: ICP-MS - 29-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.370	ug/L	92.6	50 - 150		

* Exceeds LIMITS Criteria

LLCCV - Modified 1/7/2010
PDF File ID: 5090126
Report generated 12/30/2016 16:47



Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-MS2
Sol. A : WG594802-08
Sol. AB : WG594802-09

File ID: NI.121316.103300
File ID: NI.121316.103606

Workgroup (AAB#): WG594709
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Arsenic	NS	0.0265	NS	100	94.5	94.5	

NS = Not spiked

* = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.

= Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

+ = 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.



Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-MS2
Sol. A : WG594802-20
Sol. AB : WG594802-21

File ID: NI.121316.122602
File ID: NI.121316.123013

Workgroup (AAB#): WG594709
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Arsenic	NS	-0.0109	NS	100	93.4	93.4	

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.

**Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES**

Login number: L16120521
Instrument ID: ICP-MS2
Sol. A : WG594802-26
Sol. AB : WG594802-27

File ID: NI.121316.132311
File ID: NI.121316.132622

Workgroup (AAB#): WG594709
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Arsenic	NS	-0.0191	NS	100	95.8	95.8	

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.



**Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES**

Login number: L16120521
Instrument ID: ICP-MS2
Sol. A : WG594802-36
Sol. AB : WG594802-37

File ID: NI.121316.154424
File ID: NI.121316.154730

Workgroup (AAB#): WG594709
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Arsenic	NS	-0.0304	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: 5062827
Report generated 12/28/2016 07:28



Microbac Laboratories Inc.
INTERFERENCE CHECK SAMPLES

Login number: L16120521
Instrument ID: ICP-MS2
Sol. A : WG596460-08
Sol. AB : WG596460-09

File ID: NI.122316.154518
File ID: NI.122316.154823

Workgroup (AAB#): WG594709
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Arsenic	NS	0.0955	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: 5062827
Report generated 12/28/2016 07:28



INTERNAL STANDARD REPORT

Login: L16120521 Analytical Method: 6020
 Analytical Workgroup: WG594709 Matrix: 1
 Instrument: ICP-MS2 Analyst: JYH
 ICAL Date: 13-DEC-2016 10:11

Sample	Type	Run Date	BISMUTH	GERMANIUM	INDIUM
			% Rec	% Rec	% Rec
L16120521-01	SAMP	13-DEC-2016 14:26	90.65	87.004	83.547
L16120521-02	SAMP	13-DEC-2016 15:06	97.143	95.642	92.179
L16120521-03	SAMP	13-DEC-2016 15:10	89.057	85.463	83.643
L16120521-04	SAMP	13-DEC-2016 15:13	91.252	87.909	84.489
L16120521-05	SAMP	13-DEC-2016 15:16	92.865	87.737	85.569
L16120521-06	SAMP	13-DEC-2016 15:19	94.275	89.245	86.646
L16120521-07	SAMP	13-DEC-2016 15:28	88.598	80.365	78.657
L16120521-08	SAMP	13-DEC-2016 15:31	89.415	80.874	79.518
L16120521-09	SAMP	13-DEC-2016 14:55	88.402	83.264	81.078
L16120521-10	SAMP	13-DEC-2016 14:58	89.381	82.482	81.833
L16120521-11	SAMP	13-DEC-2016 14:43	91.279	89.355	85.71
L16120521-12	SAMP	13-DEC-2016 13:52	83.116	79.137	76.751
L16120620-01	SAMP	13-DEC-2016 14:04	89.501	80.426	79.563
WG594620-02	BLANK	13-DEC-2016 13:46	82.217	75.143	75.513
WG594620-03	LCS	13-DEC-2016 13:49	88.71	80.773	80.277
WG594620-04	MS	13-DEC-2016 13:55	87.162	82.512	81.307
WG594620-05	MSD	13-DEC-2016 13:58	88.624	82.913	81.558
WG594709-01	PSPK	13-DEC-2016 14:07	91.83	82.812	80.593
WG594709-02	SERIAL	13-DEC-2016 14:10	90.158	76.891	78.067
WG594802-05	ICV	13-DEC-2016 10:23	104.89	99.663	100.064
WG594802-06	ICB	13-DEC-2016 10:26	97.299	93.651	91.356
WG594802-07	LLICV	13-DEC-2016 10:29	93.727	85.707	86.046
WG594802-08	ICS	13-DEC-2016 10:33	99.163	96.688	95.067
WG594802-09	ICS	13-DEC-2016 10:36	104.785	101.947	98.732
WG594802-10	CCV	13-DEC-2016 10:39	98.236	95.928	95.962
WG594802-11	CCB	13-DEC-2016 10:42	93	90.023	88.403
WG594802-18	CCV	13-DEC-2016 12:19	112.858	113.049	109.516
WG594802-19	CCB	13-DEC-2016 12:22	112.926	109.413	105.911
WG594802-20	ICS	13-DEC-2016 12:26	105.307	103.742	98.56
WG594802-21	ICS	13-DEC-2016 12:30	102.13	100.801	96.162
WG594802-22	CCV	13-DEC-2016 12:33	98.038	94.212	92.278
WG594802-23	CCB	13-DEC-2016 12:37	93.357	88.363	85.825
WG594802-24	CCV	13-DEC-2016 13:11	<u>120.717</u>	116.143	113.251
WG594802-25	CCB	13-DEC-2016 13:14	119.932	115.245	112.045
WG594802-26	ICS	13-DEC-2016 13:23	110.079	107.218	104.988
WG594802-27	ICS	13-DEC-2016 13:26	105.514	97.871	97.362
WG594802-28	CCV	13-DEC-2016 13:29	94.827	87.864	86.508
WG594802-29	CCB	13-DEC-2016 13:32	89.941	82.119	81.775
WG594802-30	CCV	13-DEC-2016 14:17	93.487	86.686	86.178
WG594802-31	CCB	13-DEC-2016 14:20	96.062	89.726	88.567

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: 5062823
 Report generated: 12/14/2016 10:58



INTERNAL STANDARD REPORT

Login: L16120521 Analytical Method: 6020
 Analytical Workgroup: WG594709 Matrix: 1
 Instrument: ICP-MS2 Analyst: JYH
 ICAL Date: 13-DEC-2016 10:11

Sample	Type	Run Date	BISMUTH	GERMANIUM	INDIUM
			% Rec	% Rec	% Rec
WG594802-32	CCV	13-DEC-2016 14:49	100.193	93.916	92.437
WG594802-33	CCB	13-DEC-2016 14:52	90.058	81.91	80.79
WG594802-34	CCV	13-DEC-2016 15:22	98.514	92.647	89.742
WG594802-35	CCB	13-DEC-2016 15:25	94.863	87.411	86.494
WG594802-36	ICS	13-DEC-2016 15:44	94.503	89.133	87.55
WG594802-37	ICS	13-DEC-2016 15:47	96.789	87.155	85.792
WG594802-38	CCV	13-DEC-2016 15:50	100.67	96.12	92.786
WG594802-39	CCB	13-DEC-2016 15:53	94.553	87.888	86.04
WG594802-40	LLCCV	13-DEC-2016 15:56	89.972	82.548	80.049

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: 5062823
 Report generated: 12/14/2016 10:58



Microbac Laboratories Inc.
LINEAR RANGE (QUARTERLY)

Login Number: L16120521

Date: 10/24/2016

Instrument ID: ICP-MS2

Method: 6020A

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: 5062822
Report generated: 12/28/2016 07:28



2.2 General Chemistry Data

2.2.1 Method 9056

2.2.1.1 Summary Data



Login Number: L16120521
Department: General Chromatography
Analyst: Craig Smith

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO₂ and NO₃ are 48 hours and the hold times for F, Cl, Br, and SO₄ are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source 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.

Matrix Spikes: The MS/MSD results were not associated with this sample delivery group.

SAMPLES

Samples: Samples 01, 03, 05, 07, 09, and 11 were analyzed at dilutions only due to their pre-run screen results for CL and/or SO₄ which were greater than 200 ppm. Any sample that has a single anion load greater than 200 ppm will be diluted in order to prevent damage to the ion chromatograph, which is caused by repeated overloading of the analytical column and oversaturation of the conductivity suppressor and/or detector.

MANUAL INTEGRATION: Sample 09 was manually integrated. 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.

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: 120917

Approved By: Eric Lawson

A handwritten signature in black ink, appearing to read "Eric C. Lawson", is written over a light gray rectangular background.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: IC3
Client ID: MW36-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 18:00
Collect Date: 12/08/2016 11:20	Dilution: 4	File ID: I3_122216-07
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	205	E	0.800	0.400
Sulfate	14808-79-8	233		4.00	2.00
E	Semiquantitative result (out of calibration range)				

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: IC3
Client ID: MW36-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 18:20
Collect Date: 12/08/2016 11:20	Dilution: 20	File ID: I3_122216-08
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	215		4.00	2.00
Sulfate	14808-79-8	227		20.0	10.0

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: IC3
Client ID: MW37-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 18:41
Collect Date: 12/08/2016 09:55	Dilution: 10	File ID: I3_122216-09
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	994	E	2.00	1.00
Sulfate	14808-79-8	836		10.0	5.00
E	Semiquantitative result (out of calibration range)				

Certificate of Analysis

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: IC3
Client ID: MW37-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 19:01
Collect Date: 12/08/2016 09:55	Dilution: 100	File ID: I3_122216-10
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	1220		20.0	10.0
Sulfate	14808-79-8	829		100	50.0

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: IC3
Client ID: MW35-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 19:22
Collect Date: 12/08/2016 14:45	Dilution: 5	File ID: I3_122216-11
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	398	E	1.00	0.500
Sulfate	14808-79-8	166		5.00	2.50
E	Semiquantitative result (out of calibration range)				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: IC3
Client ID: MW35-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 19:42
Collect Date: 12/08/2016 14:45	Dilution: 50	File ID: I3_122216-12
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	453		10.0	5.00
Sulfate	14808-79-8	162		50.0	25.0

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: IC3
Client ID: MW21-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 20:23
Collect Date: 12/08/2016 14:50	Dilution: 50	File ID: I3_122216-14
Sample Tag: DL01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	308		10.0	5.00
Sulfate	14808-79-8	1040		50.0	25.0

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: IC3
Client ID: MW31-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 21:24
Collect Date: 12/08/2016 11:45	Dilution: 5	File ID: I3_122216-17
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	522	E	1.00	0.500
Sulfate	14808-79-8	380		5.00	2.50
E	Semiquantitative result (out of calibration range)				

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: IC3
Client ID: MW31-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 21:44
Collect Date: 12/08/2016 11:45	Dilution: 50	File ID: I3_122216-18
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	608		10.0	5.00
Sulfate	14808-79-8	370		50.0	25.0

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: IC3
Client ID: MW24-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 22:04
Collect Date: 12/08/2016 10:25	Dilution: 10	File ID: I3_122216-19
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	282	E	2.00	1.00
Sulfate	14808-79-8	975		10.0	5.00
E	Semiquantitative result (out of calibration range)				

Certificate of Analysis

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: IC3
Client ID: MW24-120816	Prep Method: 300.0	Prep Date: 12/22/2016 16:39
Matrix: Water	Analytical Method: 300.0	Cal Date: 12/01/2016 17:22
Workgroup #: WG596186	Analyst: CAS	Run Date: 12/22/2016 22:25
Collect Date: 12/08/2016 10:25	Dilution: 40	File ID: I3_122216-20
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Chloride	16887-00-6	281		8.00	4.00
Sulfate	14808-79-8	961		40.0	20.0

2.2.1.2 QC Summary Data

The concentrations (ppm) of the calibration standards and the resulting area counts are used to determine the equation of a linear or quadratic plot.

The slope and y-intercept of that line are used to calculate the quantity of the analyzed unknown samples.

$\text{Amount(ppm)} = [(\text{slope})(\text{area count of unknown}) + \text{y-intercept}](\text{dilution})$

(The slope is the amt/area also identified as the CF or calibration factor)

Microbac Laboratories Inc.
Instrument Run Log

Instrument: IC3 Dataset: 120116 IC3 ICAL.SEQ_OL
 Analyst1: CAS Analyst2: NA
 Method: 300/9056 SOP: IC01 Rev: 19

Maintenance Log ID: Syringe Filter Lot#: 160109254
 Eluent ID#: RGT385836

Workgroups: Column 1 ID: AG14A-4MM Column 2 ID: AS14A-4MM
 Analytical WGs: 593355 (LOD/LOQ Waters) 593356 (LOD/LOQ Soils)
 Internal STD: NA Surrogate STD: NA Calibration STD STD77046 01-DEC-2016
 CCV STD: STD77046 LCS STD: STD79166 MS/MSD STD: NA

Comments: System Backpressure: 2166 psi

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I3_120116-01	ELUENT	1	1		12/01/16 15:00
2	I3_120116-02	DI WATER	1	1		12/01/16 15:20
3	I3_120116-03	WG593545-01 STD	1	1	STD77046	12/01/16 15:40
4	I3_120116-04	WG593545-02 STD	1	1	STD77046	12/01/16 16:01
5	I3_120116-05	WG593545-03 STD	1	1	STD77046	12/01/16 16:21
6	I3_120116-06	WG593545-04 STD	1	1	STD77046	12/01/16 16:41
7	I3_120116-07	WG593545-05 STD	1	1	STD77046	12/01/16 17:02
8	I3_120116-08	WG593545-06 STD	1	1	STD77046	12/01/16 17:22
9	I3_120116-09	WG593545-07 SSCV	1	1	STD79166	12/01/16 17:43
10	I3_120116-10	LCRV @ Lvl 6	1	1	STD79166	12/01/16 18:03
11	I3_120116-11	LCRV @ Lvl 4	1	1	STD79166	12/01/16 18:23
12	I3_120116-12	LCRV @ Lvl 2	1	1	STD79166	12/01/16 18:44
13	I3_120116-13	LCRV @ Lvl 0	1	1		12/01/16 19:04
14	I3_120116-14	WG593357-01 ANION CCV	1	1	STD77046	12/01/16 19:24
15	I3_120116-15	WG593357-02 ANION CCB	1	1		12/01/16 19:45
16	I3_120116-16	WG593355-01 ANION BLANK	1	1		12/01/16 20:05
17	I3_120116-17	WG593355-02 ANION LCS	1	1	STD79166	12/01/16 20:25
18	I3_120116-18	WG593355-03 ANION LCS2	1	1	STD79166	12/01/16 20:46
19	I3_120116-19	L16100002-01 LOD (F,CL,BR,SO4)	1	1		12/01/16 21:06
20	I3_120116-20	L16100002-01 LOD (NO2,NO3)	1	1		12/01/16 21:27
21	I3_120116-21	L16100004-01 LOQ (F,CL,BR,SO4)	1	1		12/01/16 21:47
22	I3_120116-22	L16100004-01 LOQ (NO2,NO3)	1	1		12/01/16 22:07
23	I3_120116-23	L16100004-09 LOQ (F,CL,BR,SO4)	1	1		12/01/16 22:28
24	I3_120116-24	L16100004-09 LOQ (NO2,NO3)	1	1		12/01/16 22:48
25	I3_120116-25	WG593357-03 ANION CCV	1	1	STD77046	12/01/16 23:08
26	I3_120116-26	WG593357-04 ANION CCB	1	1		12/01/16 23:29
27	I3_120116-27	WG593356-01 ANION BLANK-SOIL	7	1		12/01/16 23:49
28	I3_120116-28	WG593356-02 ANION LCS-SOIL	7	1	STD79166	12/02/16 00:09
29	I3_120116-29	WG593356-03 ANION LCS2-SOIL	7	1	STD79166	12/02/16 00:30
30	I3_120116-30	L16100003-01 LOD (F,CL,BR,SO4)	7	1		12/02/16 00:50
31	I3_120116-31	L16100003-01 LOD (NO2,NO3)	7	1		12/02/16 01:11
32	I3_120116-32	L16100005-01 LOQ (F,CL,BR,SO4)	7	1		12/02/16 01:31
33	I3_120116-33	L16100005-01 LOQ (NO2,NO3)	7	1		12/02/16 01:51

Page: 1

Approved: 05-DEC-16




Microbac Laboratories Inc.
Instrument Run Log

Instrument: IC3 Dataset: 120116 IC3 ICAL.SEQ_OL
 Analyst1: CAS Analyst2: NA
 Method: 300/9056 SOP: IC01 Rev: 19

Maintenance Log ID: _____ Syringe Filter Lot#: 160109254
 Eluent ID#: RGT385836

Workgroups: Column 1 ID: AG14A-4MM Column 2 ID: AS14A-4MM
 Analytical WGs: 593355 (LOD/LOQ Waters) 593356 (LOD/LOQ Soils)
 Internal STD: NA Surrogate STD: NA STD77046 01-DEC-2016
 CCV STD: STD77046 LCS STD: STD79166 NA

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
34	I3_120116-34	L16100005-10 LOQ (F,CL,BR,SO4)	7	1		12/02/16 02:12
35	I3_120116-35	L16100005-10 LOQ (NO2,NO3)	7	1		12/02/16 02:32
36	I3_120116-36	WG593357-05 ANION CCV	1	1	STD77046	12/02/16 02:52
37	I3_120116-37	WG593357-06 ANION CCB	1	1		12/02/16 03:13
38	I3_120116-38	END	1	1		12/02/16 03:33

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 2

Approved: 05-DEC-16




Microbac Laboratories Inc.

Instrument Run Log

Instrument: IC3 Dataset: 122216 IC3.SEQ
 Analyst1: CAS Analyst2: NA
 Method: 300/9056 SOP: IC01 Rev: 19

Maintenance Log ID: Syringe Filter Lot#: 160109254
 Eluent ID#: RGT38762

Workgroups: Column 1 ID: AG14A-4MM Column 2 ID: AS14A-4MM
 Analytical WG596186
 Internal STD: NA Surrogate STD: NA Calibration STD STD77046 01-DEC-2016
 CCV STD: STD77046 LCS STD: STD79166 MS/MSD STD: STD79166

Comments: System Backpressure: 2105 psi

Samples L16120521 (-01,03,11) and L16120929 (-01,04,05) were analyzed at dilutions only due to their pre-run screen results for chloride and sulfate, which were greater than 200 ppm.

Sample L16121008-01 was analyzed at a dilution only due to its pre-run screen result for chloride, which was greater than the ICAL max.

Samples L16120521 (-05,07,09) were analyzed at dilutions only due to their pre-run screen results for chloride, which were greater than 200 ppm.

Samples L16120929 (-02,03) were analyzed at dilutions only due to their initial matrix. In order for a sample to be analyzed it must first pass through a 0.45 um PTFE Filter. These samples would not do so as neat. The minimum required dilution in order to achieve filtration was a 10x.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I3_122216-01	ELUENT	1	1		12/22/16 15:58
2	I3_122216-02	DI WATER	1	1		12/22/16 16:18
3	I3_122216-03	WG596187-01 ANION CCV	1	1	STD77046	12/22/16 16:39
4	I3_122216-04	WG596187-02 ANION CCB	1	1		12/22/16 16:59
5	I3_122216-05	WG596186-01 ANION BLANK	1	1		12/22/16 17:19
6	I3_122216-06	WG596186-02 ANION LCS	1	1	STD79166	12/22/16 17:40
7	I3_122216-07	L16120521-01 (CL,SO4) 4x	1	4		12/22/16 18:00
8	I3_122216-08	L16120521-01 RR CL 20x	1	20		12/22/16 18:20
9	I3_122216-09	L16120521-03 (CL,SO4) 10x	1	10		12/22/16 18:41
10	I3_122216-10	L16120521-03 RR CL 100x	1	100		12/22/16 19:01
11	I3_122216-11	L16120521-05 (CL,SO4) 5x	1	5		12/22/16 19:22
12	I3_122216-12	L16120521-05 RR CL 50x	1	50		12/22/16 19:42
13	I3_122216-13	L16120521-07 (CL,SO4) 5x (NR)	1	5		12/22/16 20:02
14	I3_122216-14	L16120521-07 RR CL,SO4 50x	1	50		12/22/16 20:23
15	I3_122216-15	WG596187-03 ANION CCV	1	1	STD77046	12/22/16 20:43
16	I3_122216-16	WG596187-04 ANION CCB	1	1		12/22/16 21:03
17	I3_122216-17	L16120521-09 (CL,SO4) 5x	1	5		12/22/16 21:24
18	I3_122216-18	L16120521-09 RR CL 50x	1	50		12/22/16 21:44
19	I3_122216-19	L16120521-11 (CL,SO4) 10x	1	10		12/22/16 22:04
20	I3_122216-20	L16120521-11 RR CL 40x	1	40		12/22/16 22:25
21	I3_122216-21	L16120929-01 (CL,SO4) 5x	2	5		12/22/16 22:45
22	I3_122216-22	L16120929-01 RR CL 50x	2	50		12/22/16 23:05
23	I3_122216-23	L16120929-02 (CL,SO4) REF (10x)	2	10		12/22/16 23:26
24	I3_122216-24	WG596186-04 DUP 0929-02 (10x)	2	10		12/22/16 23:46
25	I3_122216-25	WG596186-05 MS 0929-02 (10x)	2	10	STD79166	12/23/16 00:07
26	I3_122216-26	WG596186-06 MSD 0929-02 (10x)	2	10	STD79166	12/23/16 00:27

Page: 1

Approved: 23-DEC-16




Microbac Laboratories Inc.
Instrument Run Log

Instrument:	IC3	Dataset:	122216 IC3.SEQ
Analyst1:	CAS	Analyst2:	NA
Method:	300/9056	SOP:	IC01
			Rev: 19

Maintenance Log ID: _____ Syringe Filter Lot#: 160109254
Eluent ID#: RGT38762

Workgroups:	Column 1 ID: <u>AG14A-4MM</u>	Column 2 ID: <u>AS14A-4MM</u>
Internal STD:	<u>Analytical WG596186</u>	
CCV STD:	<u>NA</u>	<u>Surrogate STD: NA</u>
	<u>STD77046</u>	<u>STD77046 01-DEC-2016</u>
	<u>LCS STD: STD79166</u>	<u>STD79166</u>

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
27	I3_122216-27	WG596187-05 ANION CCV	1	1	STD77046	12/23/16 00:47
28	I3_122216-28	WG596187-06 ANION CCB	1	1		12/23/16 01:08
29	I3_122216-29	L16120929-03 (CL,SO4) 10x	2	10		12/23/16 01:28
30	I3_122216-30	L16120929-04 (CL,SO4) 25x	2	25		12/23/16 01:48
31	I3_122216-31	L16120929-04 RR CL 250x	2	250		12/23/16 02:09
32	I3_122216-32	L16120929-05 (CL,SO4) 40x	2	40		12/23/16 02:29
33	I3_122216-33	L16120929-05 RR CL 400x	2	400		12/23/16 02:49
34	I3_122216-34	L16121008-01 (CL) 50x REF	2	50		12/23/16 03:10
35	I3_122216-35	WG596186-08 DUP 1008-01	2	50		12/23/16 03:30
36	I3_122216-36	WG596187-07 ANION CCV	1	1	STD77046	12/23/16 03:51
37	I3_122216-37	WG596187-08 ANION CCB	1	1		12/23/16 04:11
38	I3_122216-38	END	1	1		12/23/16 04:31

Comments

Seq.	Rerun	Dil.	Reason	Analytes
13	X	50	Over Calibration Range	CL, SO4
			L16120521-07 5x: Not reported.	
25				
			WG596186-05 MS (10x) had a recovery below the advisory limit for chloride and sulfate.	

Microbac Laboratories Inc.

Data Checklist

Date: 01-DEC-2016

Analyst: CAS

Analyst: NA

Method: 300/9056

Instrument: IC3

Curve Workgroup: WG593545

Runlog ID: 79020

Analytical Workgroups: L16100002, L16100003, L16100004, L16100005

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	2166PSI
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	NA
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	CAS
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
05-DEC-2016



Secondary Reviewer:
05-DEC-2016



CHECKLIST1 - Modified 03/05/2008

Generated: DEC-05-2016 16:27:53



Microbac Laboratories Inc.

Data Checklist

Date: 22-DEC-2016
 Analyst: CAS
 Analyst: NA
 Method: 300/9056
 Instrument: IC3
 Curve Workgroup: NA
 Runlog ID: 79440
 Analytical Workgroups: L16120521, L16120929, L16121008

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	2105 PSI
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	CAS
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
23-DEC-2016



Secondary Reviewer:
23-DEC-2016



CHECKLIST1 - Modified 03/05/2008

Generated: DEC-23-2016 11:26:16



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 300.0

AAB#: WG596186

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/22/2016	14.2	2	*	12/22/16	14.3	2	*
MW36-120816	01	12/08/16					12/22/2016	14.2	2	*	12/22/16	14.3	2	*
MW37-120816	03	12/08/16					12/22/2016	14.3	2	*	12/22/16	14.4	2	*
MW37-120816	03	12/08/16					12/22/2016	14.3	2	*	12/22/16	14.4	2	*
MW35-120816	05	12/08/16					12/22/2016	14.1	2	*	12/22/16	14.2	2	*
MW35-120816	05	12/08/16					12/22/2016	14.1	2	*	12/22/16	14.2	2	*
MW21-120816	07	12/08/16					12/22/2016	14.1	2	*	12/22/16	14.2	2	*
MW31-120816	09	12/08/16					12/22/2016	14.2	2	*	12/22/16	14.4	2	*
MW31-120816	09	12/08/16					12/22/2016	14.2	2	*	12/22/16	14.4	2	*
MW24-120816	11	12/08/16					12/22/2016	14.3	2	*	12/22/16	14.5	2	*
MW24-120816	11	12/08/16					12/22/2016	14.3	2	*	12/22/16	14.5	2	*

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
 PDF File ID: 5080698
 Report generated 12/23/2016 11:44



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG596186</u>
Blank File ID: <u>I3_122216-05</u>	Blank Sample ID: <u>WG596186-01</u>
Prep Date: <u>12/22/16 16:39</u>	Instrument ID: <u>IC3</u>
Analyzed Date: <u>12/22/16 17:19</u>	Method: <u>300.0</u>
Analyst: <u>CAS</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG596186-02	I3_122216-06	12/22/16 17:40	01
MW36-120816	L16120521-01	I3_122216-07	12/22/16 18:00	DL01
MW36-120816	L16120521-01	I3_122216-08	12/22/16 18:20	DL02
MW37-120816	L16120521-03	I3_122216-09	12/22/16 18:41	DL01
MW37-120816	L16120521-03	I3_122216-10	12/22/16 19:01	DL02
MW35-120816	L16120521-05	I3_122216-11	12/22/16 19:22	DL01
MW35-120816	L16120521-05	I3_122216-12	12/22/16 19:42	DL02
MW21-120816	L16120521-07	I3_122216-14	12/22/16 20:23	DL01
MW31-120816	L16120521-09	I3_122216-17	12/22/16 21:24	DL01
MW31-120816	L16120521-09	I3_122216-18	12/22/16 21:44	DL02
MW24-120816	L16120521-11	I3_122216-19	12/22/16 22:04	DL01
MW24-120816	L16120521-11	I3_122216-20	12/22/16 22:25	DL02
DUP	WG596186-04	I3_122216-24	12/22/16 23:46	DL01
DUP	WG596186-08	I3_122216-35	12/23/16 03:30	DL01

Report Name: BLANK_SUMMARY
 PDF File ID: 5080699
 Report generated 12/23/2016 11:44



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/22/16 16:39 Sample ID: WG596186-01
Instrument ID: IC3 Run Date: 12/22/16 17:19 Prep Method: 300.0
File ID: I3 122216-05 Analyst: CAS Method: 300.0
Workgroup (AAB#): WG596186 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: IC3 - 01-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Chloride	0.100	0.200	0.100	1	U
Sulfate	0.500	1.00	0.500	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5080700

23-DEC-2016 11:44



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596186-02
Instrument ID: IC3 Run Time: 17:40 Prep Method: 300.0
File ID: I3 122216-06 Analyst: CAS Method: 300.0
Workgroup (AAB#): WG596186 Matrix: Water Units: mg/L
QC Key: WATERL00 Lot#: STD79166 Cal ID: IC3 - 01-DEC-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chloride	8.00	8.03	100	90 - 110	
Sulfate	40.0	40.8	102	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 5080701
Report generated: 12/23/2016 11:44



Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

Login Number: L16120521
Analytical Method: 300.0
ICAL Workgroup: WG593545

Instrument ID: IC3
Initial Calibration Date: 01-DEC-16 17:22
Column ID: F

Analyte		AVG RF	% RSD	LINEAR (R)	QUAD (R ²)
Chloride		5.791	5.91		1.00000
Sulfate		7.754	8.18		1.00000

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

INT_CAL - Modified 03/06/2008
PDF File ID: 5080926
Report generated 12/23/2016 11:44



Microbac Laboratories Inc.
INITIAL CALIBRATION DATA

Login Number: L16120521
Analytical Method: 300.0

Instrument ID: IC3
Initial Calibration Date: 01-DEC-16 17:22
Column ID: F

Analyte	WG593545-01			WG593545-02			WG593545-03		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	0.200	0.0343000000 0	5.831	1.00	0.162700000	6.146	4.00	0.663600000	6.028
Sulfate	1.00	0.121500000	8.230	5.00	0.598000000	8.361	20.0	2.48560000	8.046

INT_CAL - Modified 03/06/2008
PDF File ID: 5080926
Report generated 12/23/2016 11:44



Login Number: L16120521
Analytical Method: 300.0

Instrument ID: IC3
Initial Calibration Date: 01-DEC-16 17:22
Column ID: F

Analyte	WG593545-04			WG593545-05			WG593545-06		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloride	8.00	1.36840000	5.846	12.0	2.11410000	5.676	24.0	4.60140000	5.216
Sulfate	40.0	5.18840000	7.710	60.0	8.07990000	7.426	120	17.7738000	6.752

INT_CAL - Modified 03/06/2008
PDF File ID: 5080926
Report generated 12/23/2016 11:44



Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

Login Number: L16120521 Run Date: 12/01/2016 Sample ID: WG593545-07
Instrument ID: IC3 Run Time: 17:43 Method: 300.0
File ID: I3 120116-09 Analyst: CAS QC Key: WATERL00
ICal Workgroup: WG593545 Cal ID: IC3 - 01-DEC-16

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloride		8.00	8.01	mg/L	5.85	0.100	10	
Sulfate		40.0	40.2	mg/L	7.71	0.500	10	

* Exceeds %D Limit

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 5080927
Report generated 12/23/2016 11:45



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596187-02
Instrument ID: IC3 Run Time: 16:59 Method: 300.0
File ID: I3 122216-04 Analyst: CAS Units: mg/L
Workgroup (AAB#): WG596186 Cal ID: IC3 - 01-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Chloride	0.100	0.200	0.100	U
Sulfate	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: 5080703
Report generated 12/23/2016 11:45



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596187-04
Instrument ID: IC3 Run Time: 21:03 Method: 300.0
File ID: I3 122216-16 Analyst: CAS Units: mg/L
Workgroup (AAB#): WG596186 Cal ID: IC3 - 01-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Chloride	0.100	0.200	0.100	U
Sulfate	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: 5080703
Report generated 12/23/2016 11:45



Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596187-06
Instrument ID: IC3 Run Time: 01:08 Method: 300.0
File ID: I3 122216-28 Analyst: CAS Units: mg/L
Workgroup (AAB#): WG596186 Cal ID: IC3 - 01-DEC-16
Matrix: WATER QAPP: WATERLOO

Analytes	MDL	RDL	Concentration	Qualifier
Chloride	0.100	0.200	0.100	U
Sulfate	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: 5080703
Report generated 12/23/2016 11:45



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596187-01
Instrument ID: IC3 Run Time: 16:39 Method: 300.0
File ID: I3 122216-03 Analyst: CAS QC Key: WATERL00
Workgroup (AAB#): WG596186 Cal ID: IC3 - 01-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		8.00	8.14	mg/L	5.75	1.78	15	
Sulfate		40.0	41.0	mg/L	7.55	2.41	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 5080702
Report generated 12/23/2016 11:45



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/22/2016 Sample ID: WG596187-03
Instrument ID: IC3 Run Time: 20:43 Method: 300.0
File ID: I3 122216-15 Analyst: CAS QC Key: WATERL00
Workgroup (AAB#): WG596186 Cal ID: IC3 - 01-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		8.00	8.08	mg/L	5.80	0.988	15	
Sulfate		40.0	41.1	mg/L	7.53	2.72	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 5080702
Report generated 12/23/2016 11:45



Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

Login Number: L16120521 Run Date: 12/23/2016 Sample ID: WG596187-05
Instrument ID: IC3 Run Time: 00:47 Method: 300.0
File ID: I3 122216-27 Analyst: CAS QC Key: WATERL00
Workgroup (AAB#): WG596186 Cal ID: IC3 - 01-DEC-16
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloride		8.00	8.16	mg/L	5.73	2.04	15	
Sulfate		40.0	41.0	mg/L	7.54	2.53	15	

* Exceeds %D Criteria

CCV - Modified 03/05/2008
PDF File ID: 5080702
Report generated 12/23/2016 11:45



2.2 General Chemistry Data

2.2.2 Alkalinity Data

2.2.2.1 Summary Data



Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis EPA 310.2 (Alkalinity)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: Sample fractions 07 and 09 were diluted to reduce color/matrix interference. The reporting limits are elevated accordingly.

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: 120403
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:48
Collect Date: 12/08/2016 11:20	Dilution: 2	File ID: S2161212004.024
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	398		40.0	20.0

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:49
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: S2161212004.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	266		20.0	10.0

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:49
Collect Date: 12/08/2016 14:45	Dilution: 2	File ID: S2161212004.026
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	322		40.0	20.0

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:50
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: S2161212004.027
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	13300		2000	1000

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:51
Collect Date: 12/08/2016 11:45	Dilution: 100	File ID: S2161212004.028
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	4510		2000	1000

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 310.2	Prep Date: N/A
Matrix: Water	Analytical Method: 310.2	Cal Date: 12/12/2016 12:37
Workgroup #: WG594496	Analyst: DCM	Run Date: 12/12/2016 12:52
Collect Date: 12/08/2016 10:25	Dilution: 4	File ID: S2161212004.029
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Alkalinity, Total (as CaCO3)	11-43-8	809		80.0	40.0

2.2.2.2 QC Summary Data

Example Alkalinity (Colormetric) Calculations

$$(\text{absorbance} - \text{intercept}) / (\text{slope} * \text{dilution}) = \text{mg/L}$$

where:

absorbance = reading from the spectrophotometer

intercept = calculated from calibration standard absorbencies

slope = calculated from calibration standard absorbencies

dilution = dilution of the distillate in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 12-DEC-2016

Analyst: DCM

Analyst: NA

Method: ALK

Instrument: SC2

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594451 WG594496 WG594416

Calibration/Linearity	12-12-2016
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
13-DEC-2016



Secondary Reviewer:
15-DEC-2016




Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 310.2

AAB#: WG594496

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/12/2016	4.1	14		12/12/16	4.1	14	
MW37-120816	03	12/08/16					12/12/2016	4.1	14		12/12/16	4.1	14	
MW35-120816	05	12/08/16					12/12/2016	3.9	14		12/12/16	3.9	14	
MW21-120816	07	12/08/16					12/12/2016	3.9	14		12/12/16	3.9	14	
MW31-120816	09	12/08/16					12/12/2016	4	14		12/12/16	4	14	
MW24-120816	11	12/08/16					12/12/2016	4.1	14		12/12/16	4.1	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5062975
Report generated 12/14/2016 11:07



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: S2161212004.012
 Prep Date: 12/12/16 12:40
 Analyzed Date: 12/12/16 12:40
 Analyst: DCM

Work Group: WG594496
 Blank Sample ID: WG594496-01
 Instrument ID: SMARTCHEM2
 Method: 310.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594496-02	S2161212004.013	12/12/16 12:40	01
LCS2	WG594496-03	S2161212004.014	12/12/16 12:41	01
MW36-120816	L16120521-01	S2161212004.024	12/12/16 12:48	DL01
MW37-120816	L16120521-03	S2161212004.025	12/12/16 12:49	01
MW35-120816	L16120521-05	S2161212004.026	12/12/16 12:49	DL01
MW21-120816	L16120521-07	S2161212004.027	12/12/16 12:50	DL01
MW31-120816	L16120521-09	S2161212004.028	12/12/16 12:51	DL01
MW24-120816	L16120521-11	S2161212004.029	12/12/16 12:52	DL01
DUP	WG594496-05	S2161212004.031	12/12/16 12:53	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5062976
 Report generated 12/14/2016 11:07



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/12/16 12:40 Sample ID: WG594496-01
Instrument ID: SMARTCHEM2 Run Date: 12/12/16 12:40 Prep Method: 310.2
File ID: S2161212004.012 Analyst: DCM Method: 310.2
Workgroup (AAB#): WG594496 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: SMARTC - 12-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Alkalinity, Total (as CaCO3)	10.0	20.0	10.0	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5062977

14-DEC-2016 11:07



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: DCM Prep Method: 310.2
 Instrument ID: SMARTCHEM2 Matrix: Water Method: 310.2
 Workgroup (AAB#): WG594496 Units: mg/L
 QC Key: WATERLOO Lot #: STD79201
 Sample ID: WG594496-02 LCS File ID: S2161212004.013 Run Date: 12/12/2016 12:40
 Sample ID: WG594496-03 LCS2 File ID: S2161212004.014 Run Date: 12/12/2016 12:41

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Alkalinity, Total (as CaCO ₃)	200	194	96.9	200	194	97.1	0.173	85 - 115	25	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5062978
 Report generated: 12/14/2016 11:07



2.2.2.3 Raw Data

SMARTCHEM RUN LOG

(smartchem2, smartchem3)

WORKGROUP: WG594416

594451

594496

Daily Check

- ☒ Lamp On
- ☒ Probe Rinse Full
- ☒ DI Water > 1/2 Full
- ☒ Wash Solution > 1/2 Full
- ☐ NO3 Reagent bottle connected / purged
- ☐ NO3 pH adj to pH 5-9
- Syringe filter lot # _____
- pH paper Lot #: HCL681919

- ☒ WBL Run
- ☒ Reagents Full
- ☐ Dilution H2O Full
- ☐ Waste Container Check

- 1) Workgroup _____
Plan # 20161212001
- 2) Workgroup _____
Plan # 20161212002
- 3) Workgroup _____
Plan # 20161212004
- Instrument: SC1 ☐ SC2 ☒

Analyte	1	2	3
Alk			
Dilution			
SC Prepared Curve			
Position			
1-1	ICV		
1-2	Blk		
1-3	LCS		
1-4	LCS Dup		
1-5	12-484-c1	12-424-c7	
* 1-6	12-484-c2		BC
1-7	C3	12-520-c2	
1-8	C4	C3	
* 1-9	12-484-c5	C	BC
1-10	C9	12-520-c4	
1-11	H	11	
1-12	H	12-425-c1	
1-13	12-342-c2		
1-14	C3		
1-15	C4		
1-16	12-540-c2	1/4	color
1-17	C3	1/4	color
1-18	C5	1/4	color
1-19	C6	1/4	color
1-20	C8	1/4	color
1-21	C9	1/4	color
1-22	12-424-c2		
2-1	C3		
2-2	MS C4		
2-3	MSD C5		

Position	Analyte	1	2	3
2-4	12-424-c6	1/2		
2-5	DUP 12-424-c6	1/2		
2-6				
2-7				
2-8	ICV			
2-9	Blk			
2-10	LCS			
2-11	LCS Dup			
2-12	12-425-c1	1/4		
2-13	12-520-11			
2-14	12-342-c2			
2-15	C3			
2-16	C4			
2-17	12-540-c2	1/4		color
2-18	C3	1/4		color
2-19	C5	1/4		color
2-20	C6	1/4		color
2-21	C8	1/4		color
2-22	C9	1/4		color
2-23	12-424-c2			
2-24	C3			
2-25	MS C4			
2-26	MSD C5			
3-20	C6	1/2		
3-21	C7			
122	12-352-c1	1/20		

NOTES: * Run NO2 std on NO3 runs
* LCS must be run if no MS or Duplicate
*MS(10% sample): NO3, TKN, NH3, PHOS

* pH < 8.3
oil Layer

DCN#122658



SMARTCHEM RUN LOG

(smartchem2, smartchem3)

	Analyte	1	2	3
Position				
3-1 1	12-352-07	1/5		
3-1 2	15			
3-1 3	DUP 12-424-02			
3-1 4				
3-1 5				
3-1 6				
3-1 7				
3-1 8	ICV			
3-1 9	BA			
3-1 10	LCS			
3-1 11	LCS DUP			
3-1 12	12-424-07			
3-1 13	12-352-01	1/10		
3-1 14	07	1/5		
3-1 15	15			

Chloride	EPA 325.2/SM 4500-Cl E-2000
Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F-2000
✓ Alkalinity	EPA 310.2
Sulfate	EPA 375.4/SM 426C (15 th)/ SM4500-504 E-1997

	Analyte	1	2	3
Position				
3-16 9	12-425-05	1/2		
3-17 10	09	1/5		
3-18 11	19	1/2		
3-19 12	12-521-01	1/2		
3-20 13	03			
3-21 14	05	1/2		
3-22 15	07	1/100		color
3-23 16	09	1/100		color
3-24 17	11	1/4		
3-25 18	12-568-01			
3-26 19	DUP 12-568-01			
3-27 20	12-352-07			
3-28				

Ammonia	EPA 350.1/SM 4500-NH3 B-1997
TKN	EPA 351.2
Phos	EPA 365.4

Analyte	Alk	Reagents
SOP & Revision	K3102 R 17	REG 38674
Curve Stock (SC made)	std 79040	
NO2 STD		
ICV	Std 79200	
CCV	Std 79059	
LCS	Std 79201	
MS	Std 78273 Dilution $\frac{0.4(2500)}{10} = 100$	

Comments: _____

Analyst: David MorilleDate: 12/12/16

DCN#122658



MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WALK -Unit [mg/L] -ALKALINITY EPA 310.2

Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.0	0.5291	0.00		7:52:06 AM
DIL-1	RBL	0.0	0.5345	0.00		7:52:24 AM
DIL-1	RBL	0.0	0.5320	0.00		7:53:18 AM
DIL-1	Std-1	0.0	0.0041	0.00	INV	7:53:36 AM
SR5-1	Std-2	10.0	-0.0128	0.00		7:54:30 AM
SR5-2	Std-3	20.0	-0.0265	0.00		7:54:48 AM
SR5-3	Std-4	50.0	-0.0510	0.00		7:55:42 AM
SR5-4	Std-5	100.0	-0.1029	0.00		7:56:36 AM
SR5-5	Std-6	200.0	-0.2234	0.00		7:56:54 AM
SR5-6	Std-7	250.0	-0.2785	0.00		7:57:48 AM
SR5-7	Std-8	300.0	-0.3346	0.00		7:58:42 AM
ST-3	1CCV (150 mg/L)	152.1	-0.1659	101.37		7:59:00 AM
ST-2	2CCB (0 mg/L)	-5.2	0.0061	0.00	INV,><,LL	7:59:54 AM
1	ICV	253.8	-0.2820	0.00		8:00:12 AM
2	WG594416-01 BLK	2.3	-0.0019	0.00		8:01:06 AM
3	WG594416-02 LCS	201.4	-0.2217	0.00		8:02:00 AM
4	WG594416-03 LCSDUP	201.6	-0.2220	0.00		8:02:18 AM
5	L16120424-07	41.3	-0.0439	0.00		8:03:12 AM
6	L16120484-02	X-80.0	0.0851	0.00	INV,><,LL	8:04:06 AM
7	L16120520-02	16.7	-0.0173	0.00		8:04:24 AM
8	L16120520-03	25.1	-0.0263	0.00		8:05:36 AM
9	L16120484-05	X-41.6	0.0448	0.00	INV,><,LL	8:05:54 AM
10	L16120520-04	25.5	-0.0268	0.00		8:06:48 AM
ST-3	1CCV (150 mg/L)	158.8	-0.1735	105.88		8:07:42 AM
ST-2	2CCB (0 mg/L)	9.1	-0.0092	0.00		8:08:00 AM
11	L16120520-11	X 27.7	-0.0291	0.00		8:09:12 AM
12	L16120425-01	X 389.9	-0.4442	0.00	><,LH	8:09:30 AM
13	L16120342-02	X 30.6	-0.0323	0.00		8:10:24 AM
14	L16120342-03	X 106.9	-0.1156	0.00		8:10:42 AM
15	L16120342-04	X 34.7	-0.0367	0.00		8:11:54 AM
16	L16120540-02 (4)	X 154.6	-0.1687	0.00		8:12:12 AM
17	L16120540-03 (4)	X 76.4	-0.0821	0.00		8:13:06 AM

Report Date :12/12/2016 Run Date :12/12/2016 Operator : SMARTCHEM2 Plan # :20161212001
 Plan Description : ALK-A2-DCM/12/12/2016

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WALK -Unit [mg/L] -ALKALINITY EPA 310.2

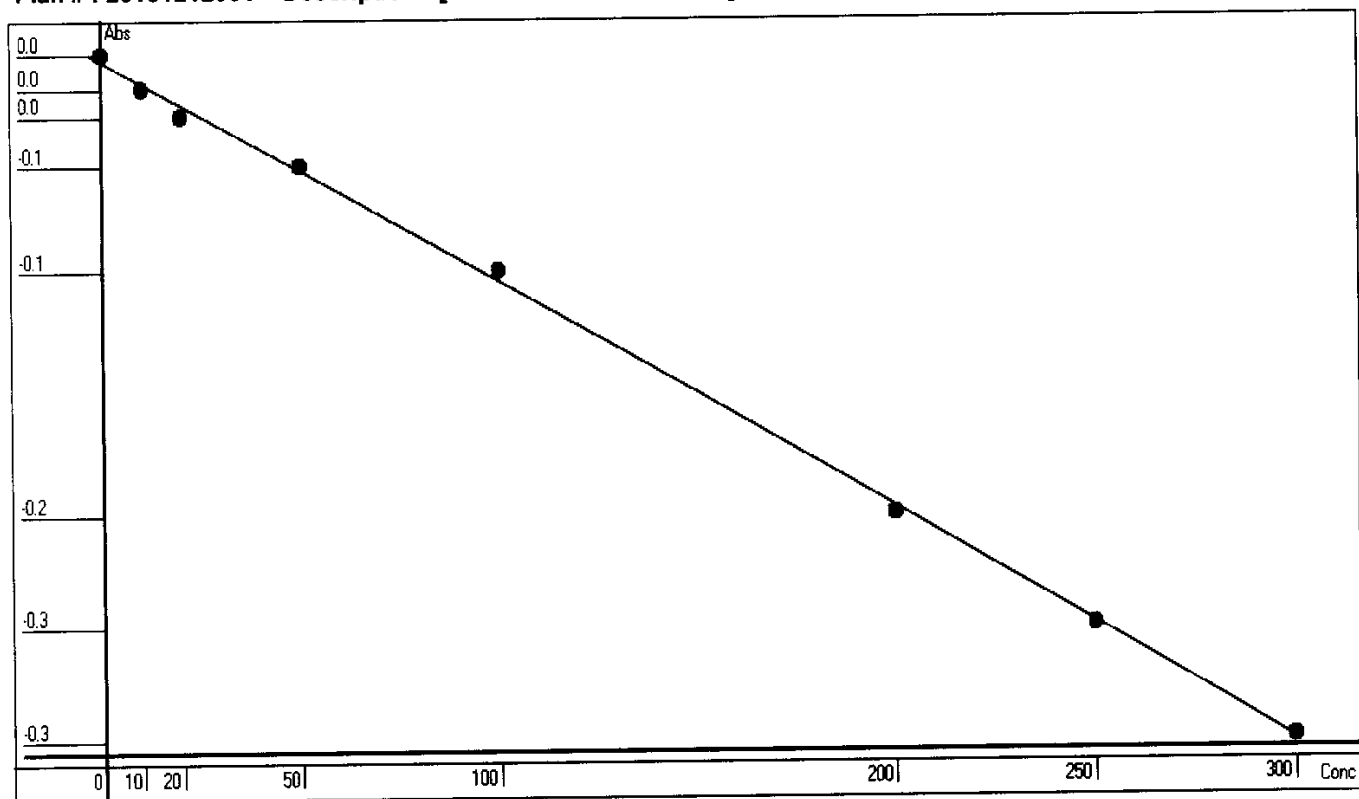
Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
18	L16120540-05 (4)	✓ 132.9	-0.1445	0.00		8:14:00 AM
19	L16120540-06 (4)	✗ 50.3	-0.0536	0.00		8:14:18 AM
20	L16120540-08 (4)	✗ 135.6	-0.1475	0.00		8:15:12 AM
ST-3	1CCV (150 mg/L)	166.6	-0.1823	111.09		8:15:30 AM
ST-2	2CCB (0 mg/L)	20.5	-0.0214	0.00		8:16:42 AM
21	L16120540-09 (4)	✗ 75.1	-0.0806	0.00		8:17:00 AM
22	L16120424-02	✗ 66.6	-0.0713	0.00		8:18:12 AM
23	L16120424-03	✗ 42.6	-0.0452	0.00		8:19:06 AM
24	L16120424-04 MS	✓ 138.6	-0.1508	0.00		8:20:00 AM
25	L16120424-05 MSD	✗ 135.2	-0.1470	0.00		8:21:48 AM
26	L16120424-06 (2) ✓ 85.4	-0.0919	0.00			8:22:07 AM
27	WG594416-08 (2) DUP	93.2	-0.1005	0.00		8:23:01 AM
28	ID 28	53.4	-0.0570	0.00		8:23:19 AM
ST-3	1CCV (150 mg/L)	175.8	-0.1926	117.17		8:24:13 AM
ST-2	2CCB (0 mg/L)	32.1	-0.0339	0.00		8:24:30 AM
29	ID 29	54.3	-0.0579	0.00		8:25:24 AM
30	ID 30	61.6	-0.0659	0.00		8:25:42 AM
31	ID 31	57.7	-0.0616	0.00		8:26:36 AM
32	ID 32	52.3	-0.0558	0.00		8:27:31 AM
33	ID 33	61.1	-0.0654	0.00		8:27:48 AM
34	ID 34	55.0	-0.0587	0.00		8:28:42 AM
35	ID 35	60.1	-0.0643	0.00		8:29:37 AM
ST-3	1CCV (150 mg/L)	184.0	-0.2019	122.65		8:29:55 AM
ST-2	2CCB (0 mg/L)	42.1	-0.0447	0.00		8:30:49 AM
12-[1/2]	L16120425-01	✗ 599.2	-0.3357	0.00	><,LH	8:38:29 AM
ST-3	1CCV (150 mg/L)	187.4	-0.2058	124.94		8:38:29 AM
ST-2	2CCB (0 mg/L)	48.1	-0.0512	0.00		8:39:22 AM

Report Date :12/12/2016 Run Date :12/12/2016 Operator : SMARTCHEM2 Plan # :20161212001
 Plan Description : ALK-A2-DCM/12/12/2016

Calibrant Report - WALK -

Calib Lot #:010104 Exp Date:6/21/2020 User:MICROBAC

Plan # : 20161212001 Description : [ALK-A2-DCM/12/12/2016] Unit



Point	OD	Conc	Recalc Conc	% Error
1	0.0041	0	-3.2398	-323.98
2	-0.0128	10	12.5451	25.45
3	-0.0265	20	25.2858	26.43
4	-0.0510	50	47.9464	-4.11
5	-0.1029	100	95.4255	-4.57
6	-0.2234	200	202.9138	1.46
7	-0.2785	250	250.7845	0.31
8	-0.3346	300	298.6989	-0.43

Conc= -132.2483*Abso^2 -935.1718*Abso +0.5966 R²=0.9992

RBL
0.5333
0

Report Date 12/12/2016 Run Date 12/12/2016

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WALK -Unit [mg/L] -ALKALINITY EPA 310.2

Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.0	0.4249	0.00		9:26:40 AM
DIL-1	RBL	0.0	0.4263	0.00		9:26:58 AM
DIL-1	RBL	0.0	0.4268	0.00		9:27:52 AM
DIL-1	Std-1	0.0	-0.0037	0.00		9:28:10 AM
SR5-1	Std-2	10.0	-0.0037	0.00		9:29:04 AM
SR5-2	Std-3	20.0	-0.0199	0.00		9:29:22 AM
SR5-3	Std-4	50.0	-0.0385	0.00		9:30:16 AM
SR5-4	Std-5	100.0	-0.0861	0.00		9:31:10 AM
SR5-5	Std-6	200.0	-0.1874	0.00		9:31:28 AM
SR5-6	Std-7	250.0	-0.2355	0.00		9:32:22 AM
SR5-7	Std-8	300.0	-0.2778	0.00		9:33:16 AM
ST-3	1CCV (150 mg/L)	151.0	-0.1375	100.67		9:33:35 AM
ST-2	2CCB (0 mg/L)	-6.8	0.0080	0.00	INV,><,LL	9:34:28 AM
1	ICV	249.1	-0.2314	0.00		9:34:46 AM
2	WG594451-01 BLK	-5.8	0.0071	0.00	INV,><,LL	9:35:40 AM
3	WG594451-02 LCS	194.2	-0.1785	0.00		9:36:34 AM
4	WG594451-03 LCSDUP	197.3	-0.1815	0.00		9:36:52 AM
5	L16120425-01 (4)	140.8	-0.1279	0.00		9:37:46 AM
6	L16120520-11	20.3	-0.0166	0.00		9:38:40 AM
7	L16120342-02	20.4	-0.0166	0.00		9:38:58 AM
8	L16120342-03	96.3	-0.0863	0.00		9:40:10 AM
9	L16120342-04	23.7	-0.0197	0.00		9:40:28 AM
10	L16120540-02 (4)	137.9	-0.1252	0.00		9:41:22 AM
ST-3	1CCV (150 mg/L)	158.4	-0.1445	105.61		9:42:16 AM
ST-2	2CCB (0 mg/L)	7.3	-0.0048	0.00		9:42:34 AM
11	L16120540-03 (4)	60.1	-0.0529	0.00		9:43:46 AM
12	L16120540-05 (4)	122.6	-0.1108	0.00		9:44:04 AM
13	L16120540-06 (4)	38.6	-0.0333	0.00		9:44:58 AM
14	L16120540-08 (4)	116.9	-0.1055	0.00		9:45:16 AM
15	L16120540-09 (4)	57.0	-0.0500	0.00		9:46:28 AM
16	L16120424-02	-7.7	0.0087	0.00	INV,><,LL	9:46:46 AM
17	L16120424-03	34.1	-0.0292	0.00		9:47:40 AM

Report Date :12/12/2016 Run Date :12/12/2016 Operator : SMARTCHEM2 Plan # :20161212002
 Plan Description : ALK-B2-DCM/12/12/2016

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WALK -Unit [mg/L] - ALKALINITY EPA 310.2

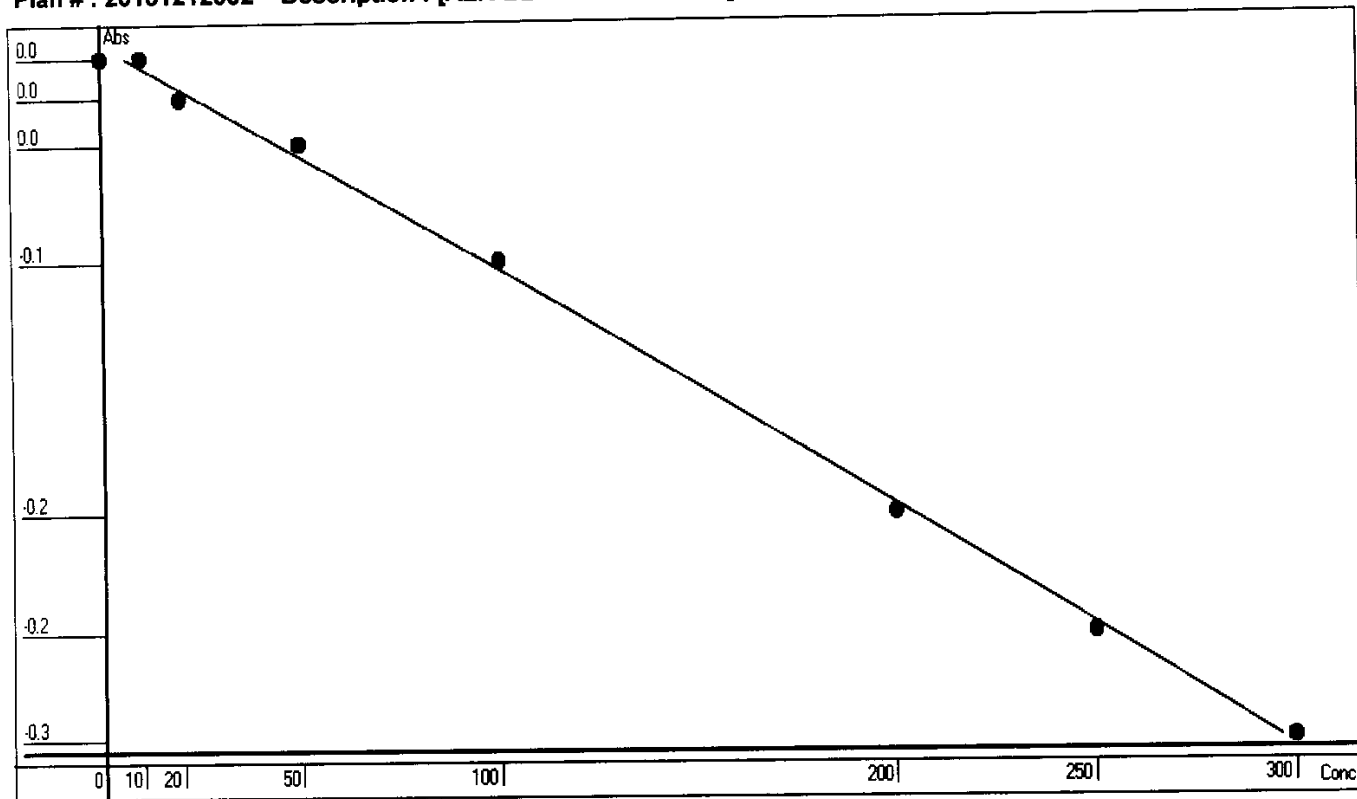
Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
18	L16120424-04 MS	126.5	-0.1145	0.00		9:48:34 AM
19	L16120424-05 MSD	124.6	-0.1127	0.00		9:48:52 AM
20	L16120424-06 (2)	70.5	-0.0624	0.00		9:49:47 AM
ST-3	1CCV (150 mg/L)	163.0	-0.1488	108.65		9:50:04 AM
ST-2	2CCB (0 mg/L)	14.3	-0.0112	0.00		9:51:16 AM
21	L16120424-07	X 63.4	-0.0560	0.00		9:51:34 AM
22	L16120352-01 (20)	X 69.1	-0.0612	0.00		9:52:46 AM
23	L16120352-07 (5)	X 212.2	-0.1957	0.00		9:53:40 AM
24	L16120352-15	X 209.3	-0.1930	0.00		9:54:34 AM
25	WG594451-08 DUP	11.2	-0.0084	0.00		9:56:23 AM
26	ID 26	***	0.4784	0.00	SS	9:56:40 AM
26	ID 26	35.9	-0.0308	0.00		10:00:52 AM
ST-3	1CCV (150 mg/L)	169.0	-0.1545	112.66		9:57:34 AM
ST-2	2CCB (0 mg/L)	21.1	-0.0173	0.00		9:57:52 AM

Report Date :12/12/2016 Run Date :12/12/2016 Operator : SMARTCHEM2 Plan # :20161212002
 Plan Description : ALK-B2-DCM/12/12/2016

Calibrant Report - WALK -

Calib Lot #:010104 Exp Date:6/21/2020 User:MICROBAC

Plan # : 20161212002 Description : [ALK-B2-DCM/12/12/2016] Unit



Point	OD	Conc	Recalc Conc	% Error
1	-0.0037	0	6.0973	609.73
2	-0.0037	10	6.0973	-39.03
3	-0.0199	20	23.9722	19.86
4	-0.0385	50	44.3852	-11.23
5	-0.0861	100	96.0897	-3.91
6	-0.1874	200	203.5619	1.78
7	-0.2354	250	253.2689	1.31
8	-0.2777	300	296.4242	-1.19

Conc= -169.9066*Abso^2 -1107.399*Abso +2.0022 R²=0.9985

RBL
0.4266
0

Report Date 12/12/2016 Run Date 12/12/2016

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WALK -Unit [mg/L] -ALKALINITY EPA 310.2

Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.0	0.3921	0.00		12:31:00 PM
DIL-1	RBL	0.0	0.3951	0.00		12:31:18 PM
DIL-1	RBL	0.0	0.3933	0.00		12:32:12 PM
DIL-1	Std-1	0.0	0.0018	0.00	INV	12:32:30 PM
SR5-1	Std-2	10.0	-0.0047	0.00		12:33:24 PM
SR5-2	Std-3	20.0	-0.0129	0.00		12:33:42 PM
SR5-3	Std-4	50.0	-0.0406	0.00		12:34:36 PM
SR5-4	Std-5	100.0	-0.0825	0.00		12:35:30 PM
SR5-5	Std-6	200.0	-0.1761	0.00		12:35:48 PM
SR5-6	Std-7	250.0	-0.2225	0.00		12:36:42 PM
SR5-7	Std-8	300.0	-0.2617	0.00		12:37:36 PM
ST-3	1CCV (150 mg/L)	150.4	-0.1304	100.28		12:37:54 PM
ST-2	2CCB (0 mg/L)	-10.9	0.0137	0.00	INV,><,LL	12:38:48 PM
1	ICV	242.5	-0.2128	0.00		12:39:06 PM
2	WG594496-01 BLK	-7.9	0.0111	0.00	INV,><,LL	12:40:00 PM
3	WG594496-02 LCS	193.8	-0.1692	0.00		12:40:54 PM
4	WG594496-03 LCSDUP	194.1	-0.1695	0.00		12:41:12 PM
5	L16120424-07	12.1	-0.0068	0.00		12:42:06 PM
6	L16120352-01 (10)	77.5	-0.0652	0.00		12:43:00 PM
7	L16120352-07 (5)	X 49.8	-0.0405	0.00		12:43:18 PM
8	L16120352-15	185.9	-0.1621	0.00		12:44:30 PM
9	L16120425-05 (2)	215.7	-0.1888	0.00		12:44:48 PM
10	L16120425-09 (5)	112.6	-0.0966	0.00		12:45:42 PM
ST-3	1CCV (150 mg/L)	152.3	-0.1321	101.54		12:46:36 PM
ST-2	2CCB (0 mg/L)	-7.2	0.0104	0.00	INV,><,LL	12:46:54 PM
11	L16120425-19 (2)	202.3	-0.1768	0.00		12:48:06 PM
12	L16120521-01 (2)	199.2	-0.1740	0.00		12:48:24 PM
13	L16120521-03	265.7	-0.2335	0.00		12:49:18 PM
14	L16120521-05 (2)	160.8	-0.1397	0.00		12:49:36 PM
15	L16120521-07 (100)	132.5	-0.1144	0.00		12:50:48 PM
16	L16120521-09 (100)	45.1	-0.0363	0.00		12:51:06 PM
17	L16120521-11 (4)	202.3	-0.1768	0.00		12:52:00 PM

Report Date :12/12/2016 Run Date :12/12/2016 Operator : SMARTCHEM2 Plan # :20161212004
 Plan Description : ALK-C2-DCM12/12/2016

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WALK -Unit [mg/L] -ALKALINITY EPA 310.2

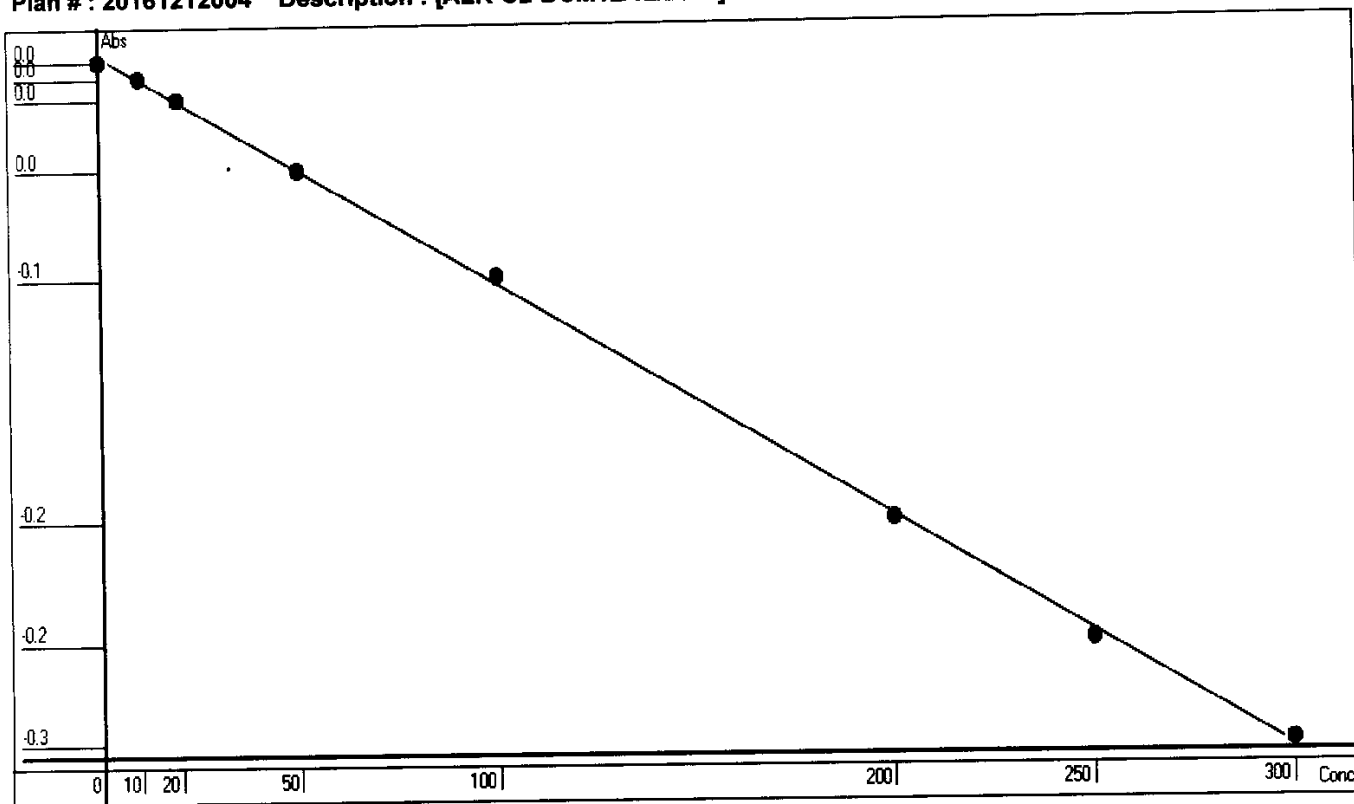
Smp#[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
18	L16120568-01	16.7	-0.0109	0.00		12:52:54 PM
19	WG594496-05 DUP	16.7	-0.0109	0.00		12:53:12 PM
20	ID 20 / 2-352-07	214.5	-0.1877	0.00		12:54:06 PM
ST-3	1CCV (150 mg/L)	156.2	-0.1356	104.15		12:54:24 PM
ST-2	2CCB (0 mg/L)	6.2	-0.0015	0.00		12:55:36 PM

Report Date :12/12/2016 Run Date :12/12/2016 Operator : SMARTCHEM2 Plan # :20161212004
 Plan Description : ALK-C2-DCM12/12/2016

Calibrant Report - WALK -

Calib Lot #:010104 Exp Date:6/21/2020 User:MICROBAC

Plan # : 20161212004 Description : [ALK-C2-DCM12/12/2016] Unit



Point	OD	Conc	Recalc Conc	% Error
1	0.0018	0	2.4706	247.06
2	-0.0047	10	9.7484	-2.52
3	-0.0129	20	18.9291	-5.35
4	-0.0406	50	49.9372	-0.13
5	-0.0825	100	96.8277	-3.17
6	-0.1761	200	201.5167	0.76
7	-0.2225	250	253.3837	1.35
8	-0.2617	300	297.1866	-0.94

Conc= -4.6557*Abso^2 -1119.677*Abso +4.486 R²=0.9996

RBL
0.3927
0

Report Date 12/12/2016 Run Date 12/12/2016

2.2 General Chemistry Data

2.2.3 Ammonia Data

2.2.3.1 Summary Data



Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis EPA 350.1/SM4500-NH3 B(NH3)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: 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: 120847
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:45
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: S2161216001.024
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.216		0.100	0.0500

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:47
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: S2161216001.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7		U	0.100	0.0500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:47
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: S2161216001.026
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.0822	J	0.100	0.0500
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:49
Collect Date: 12/08/2016 14:50	Dilution: 4	File ID: S2161216001.027
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	11.9		0.400	0.200

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 09:42
Collect Date: 12/08/2016 11:45	Dilution: 2	File ID: S2161216001.065
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	4.10		0.200	0.100

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 12/16/2016 08:28
Workgroup #: WG595181	Analyst: DCM	Run Date: 12/16/2016 08:50
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: S2161216001.029
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Ammonia	7664-41-7	0.759		0.100	0.0500

2.2.3.2 QC Summary Data

Example Ammonia Calculations

$$(\text{absorbance} - \text{intercept}) / (\text{slope} * \text{dilution}) = \text{mg/L}$$

where:

absorbance = reading from the spectrophotometer

intercept = calculated from calibration standard absorbencies

slope = calculated from calibration standard absorbencies

dilution = dilution of the distillate in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 16-DEC-2016

Analyst: DCM

Analyst: NA

Method: NH3

Instrument: SC2

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG595181 WG595183 WG595184

Calibration/Linearity	12-16-2016
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
16-DEC-2016



Secondary Reviewer:
19-DEC-2016




Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 350.1
Login Number: L16120521

AAB#: WG595181

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/16/2016	7.9	28		12/16/16	7.9	28	
MW37-120816	03	12/08/16					12/16/2016	8	28		12/16/16	8	28	
MW35-120816	05	12/08/16					12/16/2016	7.8	28		12/16/16	7.8	28	
MW21-120816	07	12/08/16					12/16/2016	7.7	28		12/16/16	7.7	28	
MW31-120816	09	12/08/16					12/16/2016	7.9	28		12/16/16	7.9	28	
MW24-120816	11	12/08/16					12/16/2016	7.9	28		12/16/16	7.9	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5071711
Report generated 12/19/2016 11:47



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: S2161216001.011
 Prep Date: 12/16/16 08:32
 Analyzed Date: 12/16/16 08:32
 Analyst: DCM

Work Group: WG595181
 Blank Sample ID: WG595181-01
 Instrument ID: SMARTCHEM2
 Method: 350.1

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
MW36-120816	L16120521-01	S2161216001.024	12/16/16 08:45	01
MW37-120816	L16120521-03	S2161216001.025	12/16/16 08:47	01
MW35-120816	L16120521-05	S2161216001.026	12/16/16 08:47	01
MW21-120816	L16120521-07	S2161216001.027	12/16/16 08:49	DL01
MW24-120816	L16120521-11	S2161216001.029	12/16/16 08:50	01
DUP	WG595181-04	S2161216001.037	12/16/16 09:00	01
LCS	WG595181-02	S2161216001.059	12/16/16 09:21	01
MW31-120816	L16120521-09	S2161216001.065	12/16/16 09:42	DL01

Report Name: BLANK_SUMMARY
 PDF File ID: 5071712
 Report generated 12/19/2016 11:47



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/16/16 08:32 Sample ID: WG595181-01
Instrument ID: SMARTCHEM2 Run Date: 12/16/16 08:32 Prep Method: 350.1
File ID: S2161216001.011 Analyst: DCM Method: 350.1
Workgroup (AAB#): WG595181 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: SMARTC - 16-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.100	-0.0769	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5071713

19-DEC-2016 11:47



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/16/2016 Sample ID: WG595181-02
Instrument ID: SMARTCHEM2 Run Time: 09:21 Prep Method: 350.1
File ID: S2161216001.059 Analyst: DCM Method: 350.1
Workgroup (AAB#): WG595181 Matrix: Water Units: mg/L
QC Key: WATERL00 Lot#: STD77841 Cal ID: SMARTC - 16-DEC-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	1.86	93.2	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 5071714
Report generated: 12/19/2016 11:47



2.2 General Chemistry Data

2.2.4 Nitrate Data

2.2.4.1 Summary Data



Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis EPA 353.2/SM4500-NO₃ F (Nitrate)

HOLDING TIMES

Sample Analysis: The instrument used for the analysis of nitrate only analyzes for nitrate-nitrite (NO₃NO₂) which is the amount of total nitrate (NO₃) and nitrite (NO₂) combined. The NO₃ concentration is determined by analyzing for NO₃NO₂ and NO₂ and calculating NO₃ by the difference. An unpreserved bottle only has a 48 hour hold time for NO₃ and NO₂ separately. However if the bottle is preserved with sulfuric acid, the hold time for NO₃NO₂ is 28 days. The NO₂ was analyzed within 48 hours. The NO₃NO₂ was analyzed from a preserved container within 28 days..

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: 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: 120850
Approved By: Deanna Hesson

Dannat/sson

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:20	Dilution: 4	File ID: S216121610520001
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		0.844		0.200	0.100

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW36-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:20	Dilution: 4	File ID: S216121610481101
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	0.844		0.200	0.100

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 09:55	Dilution: 4	File ID: S216121610521701
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	0.696		0.200	0.100

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW37-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 09:55	Dilution: 4	File ID: S216121610523401
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		0.696		0.200	0.100

Certificate of Analysis

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:45	Dilution: 4	File ID: S216121610530701
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		0.804		0.200	0.100

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW35-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:45	Dilution: 4	File ID: S216121610525501
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	0.804		0.200	0.100

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: S216121610532901
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	13.9		5.00	2.50

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW21-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: S216121610534301
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		14.3		5.00	2.50

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:45	Dilution: 100	File ID: S216121610540301
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	16.2		5.00	2.50

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW31-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 11:45	Dilution: 100	File ID: S216121610552001
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		16.8		5.00	2.50

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 10:25	Dilution: 20	File ID: S216121610554001
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate (as N)	14797-55-8	2.22		1.00	0.500

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: MW24-120816	Prep Method: 353.2	Prep Date: N/A
Matrix: Water	Analytical Method: 353.2	Cal Date: 12/14/2016 08:10
Workgroup #: WG594800	Analyst: DCM	Run Date: 12/14/2016 10:26
Collect Date: 12/08/2016 10:25	Dilution: 20	File ID: S216121610555401
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrate-Nitrite (as N)		2.22		1.00	0.500

2.2.4.2 QC Summary Data

Example Nitrate Calculations

$$(\text{absorbance} - \text{intercept}) / (\text{slope} * \text{dilution}) = \text{mg/L}$$

where:

absorbance = reading from the spectrophotometer

intercept = calculated from calibration standard absorbencies

slope = calculated from calibration standard absorbencies

dilution = dilution of the distillate in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 14-DEC-2016

Analyst: DCM

Analyst: NA

Method: NO3

Instrument: SC2

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594800

Calibration/Linearity	12-14-2016
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
15-DEC-2016



Secondary Reviewer:
16-DEC-2016




Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 353.2

AAB#: WG594800

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/14/2016	6	2	*	12/14/16	6	2	*
MW37-120816	03	12/08/16					12/14/2016	6	2	*	12/14/16	6	2	*
MW35-120816	05	12/08/16					12/14/2016	5.8	2	*	12/14/16	5.8	2	*
MW21-120816	07	12/08/16					12/14/2016	5.8	2	*	12/14/16	5.8	2	*
MW31-120816	09	12/08/16					12/14/2016	5.9	2	*	12/14/16	5.9	2	*
MW24-120816	11	12/08/16					12/14/2016	6	2	*	12/14/16	6	2	*

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5067932
Report generated 12/16/2016 12:28



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 353.2

AAB#: WG594800

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/14/2016	6	28		12/14/16	6	28	
MW37-120816	03	12/08/16					12/14/2016	6	28		12/14/16	6	28	
MW35-120816	05	12/08/16					12/14/2016	5.8	28		12/14/16	5.8	28	
MW21-120816	07	12/08/16					12/14/2016	5.8	28		12/14/16	5.8	28	
MW31-120816	09	12/08/16					12/14/2016	5.9	28		12/14/16	5.9	28	
MW24-120816	11	12/08/16					12/14/2016	6	28		12/14/16	6	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5067936
Report generated 12/16/2016 12:28



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG594800</u>
Blank File ID: <u>S216121610444201</u>	Blank Sample ID: <u>WG594800-01</u>
Prep Date: <u>12/14/16 10:26</u>	Instrument ID: <u>SMARTCHEM2</u>
Analyzed Date: <u>12/14/16 10:26</u>	Method: <u>353.2</u>
Analyst: <u>DCM</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
MW24-120816	L16120521-11	S216121610555401	12/14/16 10:26	
MW21-120816	L16120521-07	S216121610534301	12/14/16 10:26	
MW37-120816	L16120521-03	S216121610521701	12/14/16 10:26	
MW35-120816	L16120521-05	S216121610530701	12/14/16 10:26	
MW31-120816	L16120521-09	S216121610540301	12/14/16 10:26	
MW24-120816	L16120521-11	S216121610554001	12/14/16 10:26	
DUP	WG594800-05	S216121610453901	12/14/16 10:26	
MW37-120816	L16120521-03	S216121610523401	12/14/16 10:26	
LCS2	WG594800-03	S216121610451201	12/14/16 10:26	
MW36-120816	L16120521-01	S216121610520001	12/14/16 10:26	
MW35-120816	L16120521-05	S216121610525501	12/14/16 10:26	
LCS	WG594800-02	S216121610445601	12/14/16 10:26	
MW21-120816	L16120521-07	S216121610532901	12/14/16 10:26	
MW31-120816	L16120521-09	S216121610552001	12/14/16 10:26	
MW36-120816	L16120521-01	S216121610481101	12/14/16 10:26	

Report Name: BLANK_SUMMARY
 PDF File ID: 5067933
 Report generated 12/16/2016 12:28



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG594800</u>
Blank File ID: <u>S216121610444201</u>	Blank Sample ID: <u>WG594800-01</u>
Prep Date: <u>12/14/16 10:26</u>	Instrument ID: <u>SMARTCHEM2</u>
Analyzed Date: <u>12/14/16 10:26</u>	Method: <u>353.2</u>
Analyst: <u>DCM</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
MW24-120816	L16120521-11	S216121610555401	12/14/16 10:26	
MW21-120816	L16120521-07	S216121610534301	12/14/16 10:26	
MW37-120816	L16120521-03	S216121610521701	12/14/16 10:26	
MW35-120816	L16120521-05	S216121610530701	12/14/16 10:26	
MW31-120816	L16120521-09	S216121610540301	12/14/16 10:26	
MW24-120816	L16120521-11	S216121610554001	12/14/16 10:26	
DUP	WG594800-05	S216121610453901	12/14/16 10:26	
MW37-120816	L16120521-03	S216121610523401	12/14/16 10:26	
LCS2	WG594800-03	S216121610451201	12/14/16 10:26	
MW36-120816	L16120521-01	S216121610520001	12/14/16 10:26	
MW35-120816	L16120521-05	S216121610525501	12/14/16 10:26	
LCS	WG594800-02	S216121610445601	12/14/16 10:26	
MW21-120816	L16120521-07	S216121610532901	12/14/16 10:26	
MW31-120816	L16120521-09	S216121610552001	12/14/16 10:26	
MW36-120816	L16120521-01	S216121610481101	12/14/16 10:26	

Report Name: BLANK_SUMMARY
 PDF File ID: 5067937
 Report generated 12/16/2016 12:28



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/14/16 10:26 Sample ID: WG594800-01
Instrument ID: SMARTCHEM2 Run Date: 12/14/16 10:26 Prep Method: 353.2
File ID: S216121610444201 Analyst: DCM Method: 353.2
Workgroup (AAB#): WG594800 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: SMARTC - 14-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Nitrate (as N)	0.0250	0.0500	0.0250	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5067934

16-DEC-2016 12:28



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/14/16 10:26 Sample ID: WG594800-01
Instrument ID: SMARTCHEM2 Run Date: 12/14/16 10:26 Prep Method: 353.2
File ID: S216121610444201 Analyst: DCM Method: 353.2
Workgroup (AAB#): WG594800 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: SMARTC - 14-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Nitrate-Nitrite (as N)	0.0250	0.0500	0.0250	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5067938

16-DEC-2016 12:28



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: DCM Prep Method: 353.2
 Instrument ID: SMARTCHEM2 Matrix: Water Method: 353.2
 Workgroup (AAB#): WG594800 Units: mg/L
 QC Key: WATERLOO Lot #: STD79077
 Sample ID: WG594800-02 LCS File ID: S216121610445601 Run Date: 12/14/2016 10:26
 Sample ID: WG594800-03 LCS2 File ID: S216121610451201 Run Date: 12/14/2016 10:26

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Nitrate (as N)	1.00	0.959	95.9	1.00	1.03	103	6.85	90 - 110	15	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5067935
 Report generated: 12/16/2016 12:28



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: DCM Prep Method: 353.2
 Instrument ID: SMARTCHEM2 Matrix: Water Method: 353.2
 Workgroup (AAB#): WG594800 Units: mg/L
 QC Key: WATERLOO Lot #: STD79077
 Sample ID: WG594800-02 LCS File ID: S216121610445601 Run Date: 12/14/2016 10:26
 Sample ID: WG594800-03 LCS2 File ID: S216121610451201 Run Date: 12/14/2016 10:26

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Nitrate-Nitrite (as N)	1.00	0.959	95.9	1.00	1.03	103	6.85	90 - 110	15	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5067939
 Report generated: 12/16/2016 12:28



2.2.4.3 Raw Data

SMARTCHEM RUN LOG

(smartchem2, smartchem3)

WORKGROUP: WG594800

Daily Check

☒ Lamp On	☒ WBL Run
☒ Probe Rinse Full	☒ Reagents Full
☒ DI Water > 1/2 Full	☒ Dilution H ₂ O Full
☒ Wash Solution > 1/2 Full	☒ Waste Container Check

- ☒ NO₃ Reagent bottle connected / purged
☒ NO₃ pH adj to pH 5-9

Syringe filter lot # 6022-0660
 pH paper Lot #: HC681919

- 1) Workgroup _____
 Plan # 20161214002
 2) Workgroup _____
 Plan # _____
 3) Workgroup _____
 Plan # _____
 Instrument: SC1 ☐ SC2 ☒

Analyte		1	2	3
Dilution				
SC Prepared Curve				
Position				
1-1	ICV			
1-2	BLK			
1-3	LC5			
1-4	LCSDUP			
1-5	NO ₂			
1-6	12-518-c2	1/10		
* 1-7	12-521-c1	1/4		
* 1-8	03	1/4		
* 1-9	05	1/4		
* 1-10	07	1/100		
* 1-11	09	1/100		
* 1-12	11	1/20		
1-13	12-613-c1	* dm		
1-14	12-623-c1	* 0.116		
1-15	12-522-c9	1/2		
1-16	12-643-c1			
1-17	02			
1-18	03			
1-19	04			
1-20	05			
1-21	12-645-c1			
1-22	12-706-c1			
2-1	12-739-c1			
2-2	02			
2-3	03			

NOTES:

- * Run NO₂ std on NO₃ runs
- * LCSD must be run if no MS or Duplicate
- * MS(10% sample): NO₃, TKN, NH₃, PHOS

* Diluted for matrix interference
 kills column

Analyte		1	2	3
Position				
2-4	12-739-c3			
2-5	12-739-c3			
2-6	12-739-c2			
2-7				
2-8	NO ₂			
2-9				
2-10				
2-11				
2-12				
2-13				
2-14				
2-15				
2-16				
2-17				
2-18				
2-19				
2-20				
2-21				
2-22				
2-23				
2-24				
2-25				
2-26				
3-1				
3-2				

DCN#122722



SMARTCHEM RUN LOG

(smartchem2, smartchem3)

WORKGROUP: WG594800

	Analyte	1	2	3
Position				
3-3				
3-4				
3-5				
3-6				
3-7				
3-8				
3-9				
3-10				
3-11				
3-12				
3-13				
3-14				
3-15				

	Analyte	1	2	3
Position				
3-16				
3-17				
3-18				
3-19				
3-20				
3-21				
3-22				
3-23				
3-24				
3-25				
3-26				
3-27				
3-28				

	Chloride	EPA 325.2/SM 4500-Cl E-2000
✓	Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F-2000
	Alkalinity	EPA 310.2
	Sulfate	EPA 375.4/SM 426C (15 th)/ SM4500-504 E-1997

	Ammonia	EPA 350.1/SM 4500-NH3 B-1997
	TKN	EPA 351.2
	Phos	EPA 365.4

Analyte	NO3	Reagents
SOP & Revision	K3532 R22	RET 38612
Curve Stock (SC made)	Std 79074	RET 38174
NO2 STD	Std 79305	
ICV	Std 79076	
CCV	Std 79075	
LCS	Std 79077	
MS	Std 77087 0.1(25) Dilution 5 = 0.5	

Comments: _____

Analyst: David Morfale

Date: 12/14/16

DCN#122722



MICROBAC (OVD)
SMARTCHEM200 INST2 (VER3.1.14)
NH3, TKN, NO3NO2 (MG/L N)
ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNO3 -Unit [mg/L] - EPA 353.2 Nitrate-Nitrite

Smp#[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.000	0.0596	0.00		10:07:29 AM
DIL-1	RBL	0.000	0.0353	0.00		10:08:41 AM
DIL-1	RBL	0.000	0.0307	0.00		10:09:52 AM
DIL-1	RBL	0.000	0.0306	0.00		10:11:41 AM
DIL-1	Std-1	0.000	-0.0071	0.00	INV	10:13:28 AM
SR5-1	Std-2	0.040	0.0014	0.00		10:15:16 AM
SR5-2	Std-3	0.100	0.0173	0.00		10:16:28 AM
SR5-3	Std-4	0.500	0.1423	0.00		10:18:17 AM
SR5-4	Std-5	1.000	0.2883	0.00		10:19:29 AM
ST-1	Std-6	2.000	0.6266	0.00		10:20:41 AM
ST-3	1CCV (1 mg/L)	0.967	0.2921	96.65		10:21:53 AM
ST-2	2CCB (0 mg/L)	-0.006	-0.0160	0.00	INV,><,LL	10:23:41 AM
1	ICV	1.439	0.4417	0.00		10:24:53 AM
2	WG594800-01 BLK	-0.009	-0.0169	0.00	INV,><,LL	10:26:05 AM
3	WG594800-02 LCS	0.959	0.2898	0.00		10:27:17 AM
4	WG594800-03 LCSDUP	1.027	0.3111	0.00		10:28:28 AM
5	NO2	1.356	0.4155	0.00		10:29:41 AM
6	L16120518-02 (10)	0.873	0.2626	0.00	0.13425	10:31:28 AM
7	L16120521-01 (4)	0.211	0.0528	0.00	0	10:32:40 AM
8	L16120521-03 (4)	0.174	0.0412	0.00	0	10:33:52 AM
9	L16120521-05 (4)	0.201	0.0497	0.00	0	10:35:05 AM
10	L16120521-07 (100)	0.143	0.0313	0.00	0.38712	10:37:28 AM
ST-3	1CCV (1 mg/L)	0.982	0.2969	98.17		10:38:41 AM
ST-2	2CCB (0 mg/L)	-0.015	-0.0189	0.00	INV,><,LL	10:39:53 AM
11	L16120521-09 (100)	0.168	0.0392	0.00	0.58172	10:41:04 AM
12	L16120521-11 (20)	0.111	0.0211	0.00	0	10:42:53 AM
13	L16120613-01	X 4.970	1.5599	0.00	><,LH	10:44:40 AM
14	L16120623-01	1.184	0.3610	0.00	0.042572	10:46:28 AM
15	L16120522-09 (2)	1.242	0.3793	0.00		10:47:40 AM
16	L16120643-01	0.164	0.0378	0.00		10:49:29 AM
17	L16120643-02	0.210	0.0526	0.00		10:50:41 AM
18	L16120643-03	0.158	0.0361	0.00		10:51:53 AM

Report Date :12/14/2016 Run Date :12/14/2016 Operator : SMARTCHEM2 Plan # :20161214002
Plan Description : NO3-A2-DCM/12/14/2016

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNO3 -Unit [mg/L] - EPA 353.2 Nitrate-Nitrite

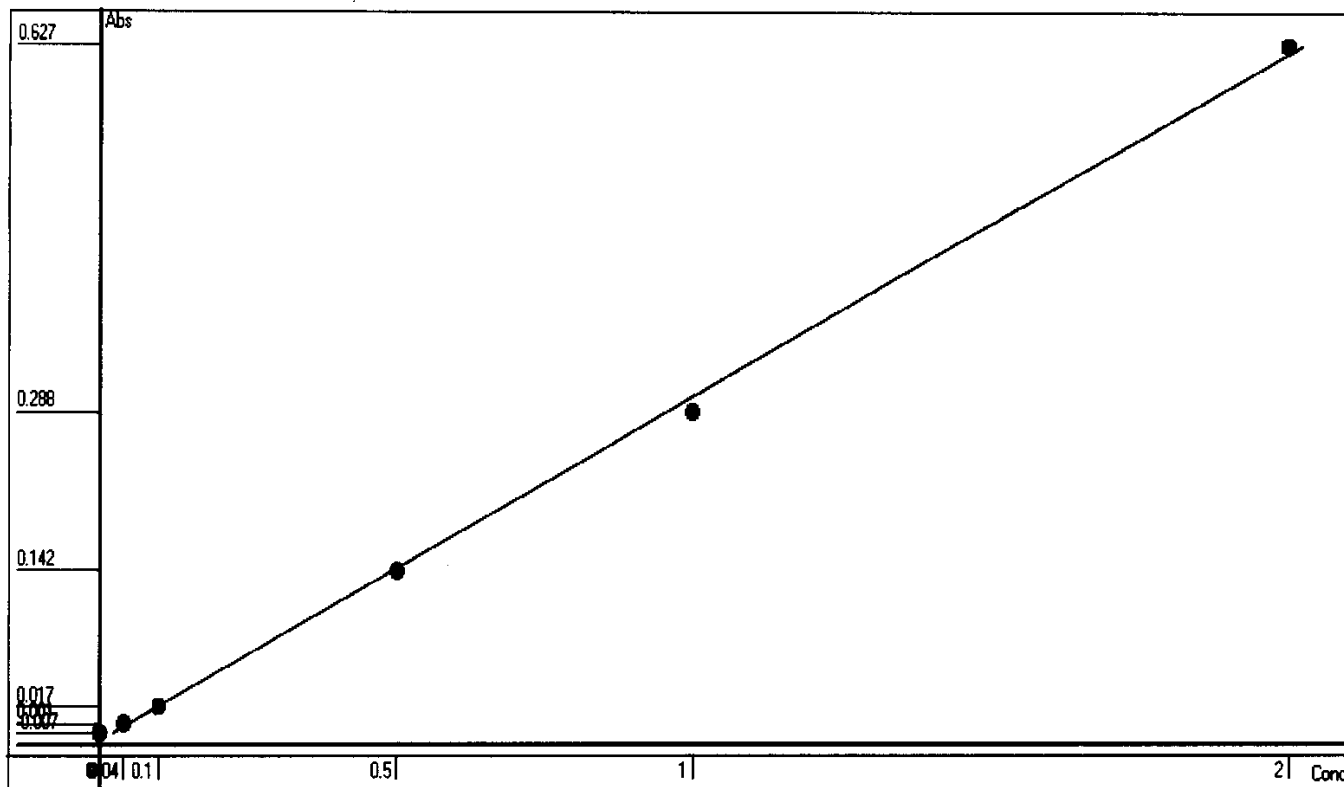
Smp#[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
19	L16120643-04	0.567	0.1656	0.00		10:53:05 AM
20	L16120643-05	0.185	0.0447	0.00		10:54:53 AM
ST-3	1CCV (1 mg/L)	1.003	0.3035	100.25		10:56:05 AM
ST-2	2CCB (0 mg/L)	-0.013	-0.0182	0.00	INV,><,LL	10:57:17 AM
21	L16120645-01	0.171	0.0400	0.00		10:58:29 AM
22	^{dcn} ₁₂₍₁₅₎₁₆ L16120609-01	1.729	0.5335	0.00		10:59:40 AM
23	L16120739-01	0.341	0.0940	0.00		11:00:53 AM
24	L16120739-02	0.811	0.2427	0.00		11:02:40 AM
25	L16120739-03	1.320	0.4041	0.00		11:03:52 AM
26	WG594800-05 DUP	1.267	0.3873	0.00		11:05:04 AM
27	WG594800-06 MS	1.913	0.5917	0.00		11:06:17 AM
28	WG594800-08 MS	1.399	0.4292	0.00		11:08:40 AM
29	ID 29	0.956	0.2887	0.00		11:09:53 AM
30	ID 30 ^{NO2}	1.137	0.3460	0.00		11:11:05 AM
ST-3	1CCV (1 mg/L)	1.002	0.3033	100.19		11:12:16 AM
ST-2	2CCB (0 mg/L)	-0.012	-0.0177	0.00	INV,><,LL	11:14:04 AM
31	ID 31	0.137	0.0294	0.00		11:15:52 AM
32	ID 32	-0.009	-0.0167	0.00	INV,><,LL	11:17:40 AM
ST-3	1CCV (1 mg/L)	1.029	0.3119	102.90		11:18:52 AM
ST-2	2CCB (0 mg/L)	-0.010	-0.0171	0.00	INV,><,LL	11:20:40 AM
13-[1/4]	L16120613-01	5.018	0.3833	0.00 △	LH	11:29:50 AM
ST-3	1CCV (1 mg/L)	1.057	0.3209	105.74		11:31:20 AM
ST-2	2CCB (0 mg/L)	-0.017	-0.0193	0.00	INV,><,LL	11:33:26 AM

Report Date :12/14/2016 Run Date :12/14/2016 Operator : SMARTCHEM2 Plan # :20161214002
 Plan Description : NO3-A2-DCM/12/14/2016

Calibrant Report - WNO3 -

Calib Lot #:010104 Exp Date:6/17/2020 User:MICROBAC

Plan #: 20161214002 Description : [NO3-A2-DCM/12/14/2016] Unit



Point	OD	Conc	Recalc Conc	% Error
1	-0.0071	0	0.0218	2.18
2	0.0014	0.04	0.0486	21.50
3	0.0173	0.1	0.0988	-1.20
4	0.1423	0.5	0.4935	-1.30
5	0.2883	1	0.9545	-4.55
6	0.6266	2	2.0226	1.13
Conc= +3.1574*Abso +0.0442 R²=0.9990				RBL 0.033 0

Report Date 12/14/2016 Run Date 12/14/2016

2.2 General Chemistry Data

2.2.5 Phosphorus Data

2.2.5.1 Summary Data



Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis EPA 365.4 (Phosphorus)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: 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: 120848
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over the printed name.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW36-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:24
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: SC161215002.018
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW37-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:25
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: SC161215002.021
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW35-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:26
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: SC161215002.022
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW21-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:26
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: SC161215002.023
Sample Tag: DL01	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0	14.5		2.00	1.00

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW31-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:27
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: SC161215002.024
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0	4.91		2.00	1.00

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW24-120816	Prep Method: 365.4	Prep Date: N/A
Matrix: Water	Analytical Method: 365.4	Cal Date: 12/15/2016 09:17
Workgroup #: WG595005	Analyst: DCM	Run Date: 12/15/2016 09:28
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: SC161215002.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Phosphorus, Total	7723-14-0	0.101	J	0.200	0.100
J	The analyte was positively identified, but the quantitation was below the RL.				

2.2.5.2 QC Summary Data

Example Phosphorus Calculations

$$(\text{absorbance} - \text{intercept}) / (\text{slope} * \text{dilution}) = \text{mg/L}$$

where:

absorbance = reading from the spectrophotometer

intercept = calculated from calibration standard absorbencies

slope = calculated from calibration standard absorbencies

dilution = dilution of the distillate in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 15-DEC-2016

Analyst: DCM

Analyst: NA

Method: PHOS

Instrument: SC

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG595005

Calibration/Linearity	12-15-2016
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
15-DEC-2016



Secondary Reviewer:
16-DEC-2016




Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 365.4

AAB#: WG595005

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/15/2016	6.9	28		12/15/16	6.9	28	
MW37-120816	03	12/08/16					12/15/2016	7	28		12/15/16	7	28	
MW35-120816	05	12/08/16					12/15/2016	6.8	28		12/15/16	6.8	28	
MW21-120816	07	12/08/16					12/15/2016	6.8	28		12/15/16	6.8	28	
MW31-120816	09	12/08/16					12/15/2016	6.9	28		12/15/16	6.9	28	
MW24-120816	11	12/08/16					12/15/2016	7	28		12/15/16	7	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5067515
Report generated 12/16/2016 09:25



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: SC161215002.010
 Prep Date: 12/15/16 09:19
 Analyzed Date: 12/15/16 09:19
 Analyst: DCM

Work Group: WG595005
 Blank Sample ID: WG595005-01
 Instrument ID: SMARTCHEM
 Method: 365.4

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG595005-02	SC161215002.011	12/15/16 09:19	01
MW36-120816	L16120521-01	SC161215002.018	12/15/16 09:24	01
MW37-120816	L16120521-03	SC161215002.021	12/15/16 09:25	01
MW35-120816	L16120521-05	SC161215002.022	12/15/16 09:26	01
MW21-120816	L16120521-07	SC161215002.023	12/15/16 09:26	DL01
MW31-120816	L16120521-09	SC161215002.024	12/15/16 09:27	DL01
MW24-120816	L16120521-11	SC161215002.025	12/15/16 09:28	01
DUP	WG595005-04	SC161215002.034	12/15/16 09:33	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5067516
 Report generated 12/16/2016 09:25



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/15/16 09:19 Sample ID: WG595005-01
Instrument ID: SMARTCHEM Run Date: 12/15/16 09:19 Prep Method: 365.4
File ID: SC161215002.010 Analyst: DCM Method: 365.4
Workgroup (AAB#): WG595005 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: SMARTC - 15-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Phosphorus, Total	0.100	0.200	0.100	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5067517

16-DEC-2016 09:25



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG595005-02
Instrument ID: SMARTCHEM Run Time: 09:19 Prep Method: 365.4
File ID: SC161215002.011 Analyst: DCM Method: 365.4
Workgroup (AAB#): WG595005 Matrix: Water Units: mg/L
QC Key: WATERL00 Lot#: STD79329 Cal ID: SMARTC - 15-DEC-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Phosphorus, Total	1.00	0.908	90.8	70 - 130	

LCS - Modified 03/06/2008
PDF File ID: 5067518
Report generated: 12/16/2016 09:25



2.2.5.3 Raw Data

SMARTCHEM RUN LOG

(smartchem2, smartchem3)

Daily Check

- ☒ Lamp On
☒ Probe Rinse Full
☒ DI Water > 1/2 Full
☒ Wash Solution > 1/2 Full
☐ NO3 Reagent bottle connected / purged
☐ NO3 pH adj to pH 5-9
 Syringe filter lot # _____
 pH paper Lot #: _____

- ☒ WBL Run
☒ Reagents Full
☒ Dilution H₂O Full
☐ Waste Container Check

 1) Workgroup _____
 Plan # 2011R215002

 2) Workgroup _____
 Plan # _____

 3) Workgroup _____
 Plan # _____

 Instrument: SC1 ☒ SC2 ☐

Analyte		1	2	3
Dilution				
SC Prepared Curve				
Position				
1-1	ICV			
1-2	BLK			
1-3	LCS			
1-4	12-643-C1			
1-5	02			
1-6	03			
1-7	04			
1-8	05			
1-9	12-645-C1			
1-10	12-521-C1			
1-11	03			
1-12	05			
1-13	07	1mV/10		
1-14	09	1mV/10		
1-15	11			
1-16	12-739-C1			
1-17	02			
1-18	03			
1-19	12-756-C1			
1-20	12-757-C1			
1-21	12-775-C3	1mV/200		
1-22	DUP 12-18305			
2-1	MS 12-64305			
2-2	MS 12-64304			
2-3				

Analyte		1	2	3
Position				
2-4				
2-5				
2-6				
2-7				
2-8				
2-9				
2-10				
2-11				
2-12				
2-13				
2-14				
2-15				
2-16				
2-17				
2-18				
2-19				
2-20				
2-21				
2-22				
2-23				
2-24				
2-25				
2-26				
3-1				
3-2				

NOTES: * Run NO2 std on NO3 runs
 * LCSD must be run if no MS or Duplicate
 *MS(10% sample): NO3, TKN, NH3, PHOS

DCN#122746



SMARTCHEM RUN LOG

(smartchem2, smartchem3)

	Analyte	1	2	3
Position				
3-3				
3-4				
3-5				
3-6				
3-7				
3-8				
3-9				
3-10				
3-11				
3-12				
3-13				
3-14				
3-15				

	Analyte	1	2	3
Position				
3-16				
3-17				
3-18				
3-19				
3-20				
3-21				
3-22				
3-23				
3-24				
3-25				
3-26				
3-27				
3-28				

Chloride	EPA 325.2/SM 4500-Cl E-2000
Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F-2000
Alkalinity	EPA 310.2
Sulfate	EPA 375.4/SM 426C (15 th)/ SM4500-504 E-1997

Ammonia	EPA 350.1/SM 4500-NH3 B-1997
TKN	EPA 351.2
✓ Phos	EPA 365.4

Analyte	DHCS		Reagents
SOP & Revision	K 3654 R19		RCR 38162
Curve Stock (SC made)			RCR 37402
NO2 STD			RCR 38164
ICV	see Dist		
CCV	Log		
LCS			
MS			
	Dilution		

Comments: _____

Analyst: David MochliDate: 12/15/16

DCN#122746



TKN/Phosphorus Digestion Log

TKN WG: _____
 TKN Std: Std 79382
 TKN CCV: 1/2 (Std 79382)
 TKN ICV: Std 79115
 TKN LCS: Std 79020

Phos WG: _____
 Phos Std: Std 79382
 Phos CCV: 1/2 (Std 79382)
 Phos ICV: Std 79302
 Phos LCS: Std 79329

MS/MSD: Std 76885

Daily Dilution: 11.25/25 = 1

Block Digester Temperature: 380 °C

Digest Reagent: Reagent 38642

	Sample	Volume	TKN Dilution	Phos Dilution		Sample	Volume	TKN Dilution	Phos Dilution
1	Std				26	12-757-C1		✓	✓
2	Std				27	12-775-03	1/250		✓
3	ICVT				28	DUP 12-643-05		✓	✓
4	ICVP				29	MS 12-643-05		✓	✓
5	LCST				30	MS 12-643-09		✓	✓
6	LCSP				31	Blk			
7	12-643-C1		✓	✓	32				
8	02		✓	✓	33				
9	03		✓	✓	34				
10	04		✓	✓	35				
11	05		✓	✓	36				
12	12-645-C1		✓	✓	37				
13	12-703-C2	1/50	✓		38				
14	05	1/50	✓		39				
15	12-706-C1		✓		40				
16	12-521-C1		✓	✓	41				
17	03		✓	✓	42				
* 18	05	1/10 ^{den 12/15/16}	✓	✓	43				
* 19	07	1/10	✓	✓	44				
* 20	09	1/10	✓	✓	45				
21	11		✓	✓	46				
22	12-739-C1		✓	✓	47				
23	02		✓	✓	48				
24	03		✓	✓	49				
25	12-756-C1		✓	✓	50				

den
12/16/16

* Diluted for matrix interference

Analyst: David Muehle Date: 12/14/16

MICROBAC (OVD)
 SMARTCHEM200 INST1 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WTPH -Unit [mg/L] - EPA 365.4 TOTAL PHOSPHORUS

Smp#[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.000	0.0528	0.00	R	9:12:11 AM
DIL-1	RBL	0.000	0.0568	0.00	R	9:12:29 AM
DIL-1	RBL	0.000	0.0617	0.00	R	9:13:23 AM
SR5-1	Std-1	0.010	0.0129	0.00		9:13:41 AM
SR5-2	Std-2	0.200	0.0335	0.00		9:14:35 AM
SR5-3	Std-3	0.500	0.0714	0.00		9:14:54 AM
SR5-4	Std-4	1.000	0.1486	0.00		9:15:48 AM
SR5-5	Std-5	1.500	0.2160	0.00		9:16:05 AM
ST-1	Std-6	2.000	0.2844	0.00	EPL	9:17:00 AM
ST-3	1CCV (1 mg/L)	1.073	0.1562	107.30		9:17:17 AM
ST-2	2CCB (0 mg/L)	-0.028	0.0034	0.00	><,LL	9:18:11 AM
1	ICV	1.464	0.2104	0.00		9:18:29 AM
2	WG595005-01 BLK	-0.013	0.0055	0.00	><,LL	9:19:23 AM
3	WG595005-02 LCS	0.908	0.1333	0.00		9:19:41 AM
4	L16120643-01	0.094	0.0204	0.00		9:20:35 AM
5	L16120643-02	-0.004	0.0067	0.00	><,LL	9:20:53 AM
6	L16120643-03	0.070	0.0170	0.00		9:21:48 AM
7	L16120643-04	0.048	0.0140	0.00		9:22:05 AM
8	L16120643-05	0.009	0.0086	0.00	><	9:22:59 AM
9	L16120645-01	0.120	0.0240	0.00		9:23:17 AM
10	L16120521-01	0.025	0.0108	0.00	><	9:24:12 AM
ST-3	1CCV (1 mg/L)	1.067	0.1553	106.65		9:24:29 AM
ST-2	2CCB (0 mg/L)	-0.051	0.0002	0.00	><,LL	9:25:24 AM
11	L16120521-03	0.035	0.0122	0.00	><	9:25:41 AM
12	L16120521-05	-0.010	0.0060	0.00	EPL,><,LL	9:26:36 AM
13	L16120521-07 (10)	1.453	0.2089	0.00		9:26:53 AM
14	L16120521-09 (10)	0.491	0.0754	0.00	EPL	9:27:48 AM
15	L16120521-11	0.102	0.0214	0.00		9:28:05 AM
16	L16120739-01	0.074	0.0176	0.00	EPL	9:29:00 AM
17	L16120739-02	0.107	0.0221	0.00		9:29:18 AM
18	L16120739-03	-0.038	0.0020	0.00	><,LL	9:30:12 AM
19	L16120756-01	0.272	0.0451	0.00		9:30:29 AM

Report Date :12/15/2016 Run Date :12/15/2016 Operator : SMARTCHEM1 Plan # :20161215002
 Plan Description : PHOS-A1-DCM/12/15/2016

MICROBAC (OVD)
 SMARTCHEM200 INST1 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WTPH -Unit [mg/L] - EPA 365.4 TOTAL PHOSPHORUS

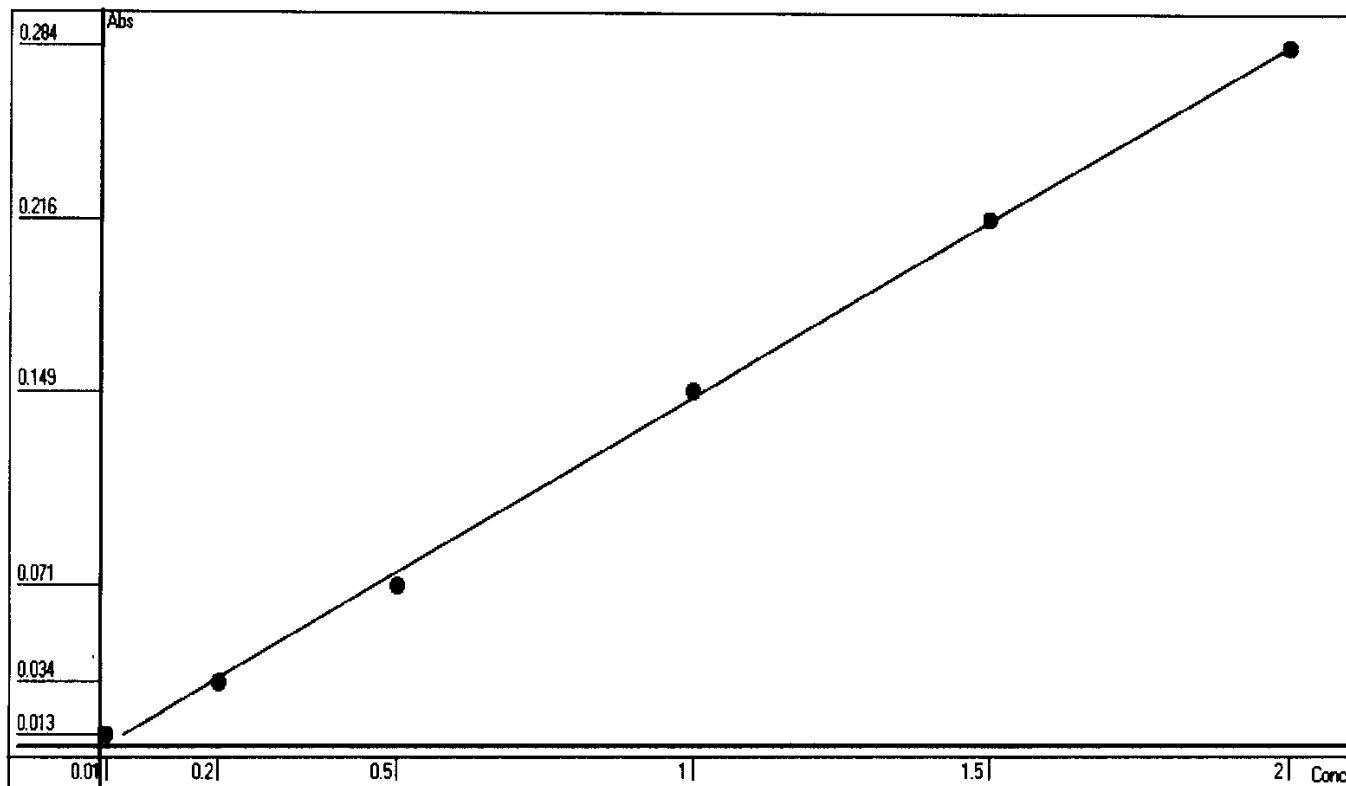
Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
20	L16120757-01	0.026	0.0109	0.00	><	9:31:24 AM
ST-3	1CCV (1 mg/L)	1.059	0.1543	105.93		9:31:42 AM
ST-2	2CCB (0 mg/L)	0.011	0.0088	0.00	><	9:32:36 AM
21	L16120775-03 (250)	1.193	0.1728	0.00		9:32:53 AM
22	WG595005-04 DUP	0.091	0.0199	0.00		9:33:47 AM
23	WG595005-05 MS	0.979	0.1431	0.00	EPL	9:34:05 AM
24	WG595005-07 MS	1.036	0.1510	0.00		9:35:00 AM
25	ID 25	0.017	0.0097	0.00	><	9:35:17 AM
26	ID 26	0.801	0.1184	0.00		9:36:11 AM
27	ID 27	0.947	0.1387	0.00		9:36:29 AM
ST-3	1CCV (1 mg/L)	1.026	0.1497	102.62		9:37:23 AM
ST-2	2CCB (0 mg/L)	0.068	0.0167	0.00	EPL	9:37:41 AM

Report Date :12/15/2016 Run Date :12/15/2016 Operator : SMARTCHEM1 Plan # :20161215002
 Plan Description : PHOS-A1-DCM/12/15/2016

Calibrant Report - WTPH -

Calib Lot #:010104 Exp Date:6/18/2020 User:MICROBAC

Plan # : 20161215002 Description : [PHOS-A1-DCM/12/15/2016] Unit



Point	OD	Conc	Recalc Conc	% Error
1	0.0129	0.01	0.0403	303.00
2	0.0335	0.2	0.1887	-5.65
3	0.0714	0.5	0.4619	-7.62
4	0.1486	1	1.0183	1.83
5	0.2160	1.5	1.5040	0.27
6	0.2844	2	1.9970	-0.15
				RBL 0.0548 0

Conc= +7.2071*Abso -0.0527 R²=0.9991

Report Date 12/15/2016 Run Date 12/15/2016

2.2 General Chemistry Data

2.2.6 Orthophosphate Data

2.2.6.1 Summary Data



Login Number: L16120521
Department: Conventional
Analyst: Dorothy Payne

METHOD

Analysis EPA 365.2/SM4500-P E (Orthophosphate)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: Sample fractions 07 and 09 were diluted to reduce color/matrix interference. The reporting limits are elevated accordingly.

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: 120393
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW36-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: 00.1612091600-06
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	0.0279	J	0.0500	0.0250
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW37-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: 00.1612091600-07
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	0.0517		0.0500	0.0250

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW35-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: 00.1612091600-08
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	0.0454	J	0.0500	0.0250
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW21-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 14:50	Dilution: 200	File ID: 00.1612091600-09
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	23.0		10.0	5.00

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW31-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 11:45	Dilution: 200	File ID: 00.1612091600-10
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2	9.07	J	10.0	5.00
J	The analyte was positively identified, but the quantitation was below the RL.				

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: V-1200
Client ID: MW24-120816	Prep Method: SM4500-P-E-1999	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-P-E-1999	Cal Date: 12/08/2016 13:51
Workgroup #: WG594346	Analyst: DLP	Run Date: 12/09/2016 16:00
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: 00.1612091600-11
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Orthophosphate	14265-44-2		U	0.0500	0.0250
U	Not detected at or above adjusted sample detection limit.				

2.2.6.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
b = intercept from the linear equation
y = instrument response as absorbance or OD
x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$Cx = (x)(D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, Cy:	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

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

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

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

Step 3: Solve for analyte concentration in sample, Cy

$$Cy = (y)(D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, Cy:	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 09-DEC-2016

Analyst: DLP

Analyst: NA

Method: PO4

Instrument: V-1200

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594346

Calibration/Linearity	12-08-16
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
09-DEC-2016



Secondary Reviewer:
14-DEC-2016



CHECKLIST1 - Modified 03/05/2008

Generated: DEC-14-2016 09:45:23



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: SM4500-P-E-1999
 Login Number: L16120521

AAB#: WG594346

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/09/2016	1.2	2		12/09/16	1.2	2	
MW37-120816	03	12/08/16					12/09/2016	1.3	2		12/09/16	1.3	2	
MW35-120816	05	12/08/16					12/09/2016	1.1	2		12/09/16	1.1	2	
MW21-120816	07	12/08/16					12/09/2016	1	2		12/09/16	1	2	
MW31-120816	09	12/08/16					12/09/2016	1.2	2		12/09/16	1.2	2	
MW24-120816	11	12/08/16					12/09/2016	1.2	2		12/09/16	1.2	2	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
 PDF File ID: 5062467
 Report generated 12/14/2016 09:40



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG594346</u>
Blank File ID: <u>00.1612091600-02</u>	Blank Sample ID: <u>WG594346-01</u>
Prep Date: <u>12/09/16 16:00</u>	Instrument ID: <u>V-1200</u>
Analyzed Date: <u>12/09/16 16:00</u>	Method: <u>SM4500-P-E-1999</u>
Analyst: <u>DLP</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594346-02	00.1612091600-03	12/09/16 16:00	
LCS2	WG594346-03	00.1612091600-04	12/09/16 16:00	
MW36-120816	L16120521-01	00.1612091600-06	12/09/16 16:00	
MW37-120816	L16120521-03	00.1612091600-07	12/09/16 16:00	
MW35-120816	L16120521-05	00.1612091600-08	12/09/16 16:00	
MW21-120816	L16120521-07	00.1612091600-09	12/09/16 16:00	
MW31-120816	L16120521-09	00.1612091600-10	12/09/16 16:00	
MW24-120816	L16120521-11	00.1612091600-11	12/09/16 16:00	
DUP	WG594346-05	00.1612091600-12	12/09/16 16:00	

Report Name: BLANK_SUMMARY
 PDF File ID: 5062468
 Report generated 12/14/2016 09:40



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/09/16 16:00 Sample ID: WG594346-01
Instrument ID: V-1200 Run Date: 12/09/16 16:00 Prep Method: SM4500-P-E-1999
File ID: 00.1612091600-02 Analyst: DLP Method: SM4500-P-E-1999
Workgroup (AAB#): WG594346 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: V-1200 - 08-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Orthophosphate	0.0250	0.0500	0.0250	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5062469

14-DEC-2016 09:40



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: DLP Prep Method: SM4500-P-E-1999
 Instrument ID: V-1200 Matrix: Water Method: SM4500-P-E-1999
 Workgroup (AAB#): WG594346 Units: mg/L
 QC Key: WATERL00 Lot #: STD79302
 Sample ID: WG594346-02 LCS File ID: 00.1612091600-03 Run Date: 12/09/2016 16:00
 Sample ID: WG594346-03 LCS2 File ID: 00.1612091600-04 Run Date: 12/09/2016 16:00

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Orthophosphate	1.00	0.968	96.8	1.00	0.973	97.3	0.491	90 - 110	20	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5062470
 Report generated: 12/14/2016 09:40



2.2.6.3 Raw Data

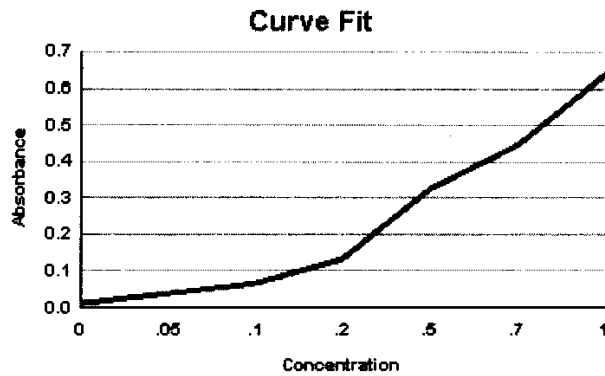
Microbac Laboratories Inc.
INITIAL CALIBRATION

Workgroup: WG594149
Analytical Method: 300
Instrument ID: V-1200

Analyst: ADG
Initial Calibration Date: 12/08/2016

Analyte: ORTHOPHOSPHATE
Number of Points: 7
Slope: 0.629785
Y-Intercept: 0.00643548
Coef. Of Correlation (R^2): 0.999821
Coef. Of Correlation (R): 0.999911

Concentration X	Absorbance Y	X ²	X * Y	Y-Fitted (mX^2+B)
0.00	0.0100	0.00	0.00	0.00643548
0.0500	0.0380	0.00250	0.00190	0.0379247
0.100	0.0660	0.0100	0.00660	0.0694140
0.200	0.131	0.0400	0.0262	0.132392
0.500	0.325	0.250	0.163	0.321328
0.700	0.443	0.490	0.310	0.447285
1.00	0.638	1.00	0.638	0.636220



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 12/08/2016 14:38



Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

Workgroup #: WG594149
File ID: 00.1612081351-08
CCV ID: WG594149-08
Units: mg/L
Analyte: ORTHOPHOSPHATE

Instrument ID: V-1200
Run Date: 12/08/2016
Run Time: 13:51
Analyst: ADG
Cal ID: V-1200 - 08-DEC-16 13:51:07

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	1	0.995	0.633	0.5	

* Exceeds %D Limit

CCC Calibration Check Compounds

SPCC System Performance Check Compounds

WBT_WG_SSCV - Modified 03/06/2008
Report generated 12/08/2016 14:38



Orthophosphate

(orthophosphate1)

EPA 365.2 / SM4500-P E
SOP K3653 Rev. 17

CCV: 51079303

LCS: 51079302

Spike: 51079302

Daily Dilution: 515/100

Daily Dilution: 1010/100

Daily Dilution: 210/50

Daily Dilution: 0.5

Daily Dilution: 1.0

Daily Dilution: 0.4

Color Reagent Chemicals

RGT 38640

RGT 37208

RGT 38086

COA 17313

Spectrophotometer 1-1200

Curve ID: 26594149

pH paper Lot #: 15A112

12-08-16

MDL 1(10)/500 = 0.05

SAMPLE	VOLUME	PH < 8.2	DILUTION	ABSORBANCE @ 880 nm
CCV: 0.5 mg/L	50	✓		0.314
BLK:	50	✓		0.020
LCS: 1.0 ppm	50	✓		0.616
LCSD: 1.0 ppm	50	✓		0.619
12-001-07	50	✓		0.036
12-521-01	50	✓		0.024
-03	50	✓		0.039
-05	50	✓		0.035
-07	50	✓	1/200	0.079 0.079
-09	50	✓	1/200	0.035
11	50			0.006
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
DUP 12-521-01	50	✓		0.024
MS: (521-01	50	✓		0.269
MSD: ()	50			
CCV: (0.5	0	✓		0.316

Analyst: Christy PayerDate / Time: 12-09-16 , 1600

* Samples were diluted because of color

DCN#122652



Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG594346
Analyte: ORTHOPHOSPHATE

Analyst: DLP
Date: 12/09/2016

Sample ID	I Vol	F Vol	Response	Slope	Y Intercept	Anal. Conc.	Rep. Conc.	Dil	Units
WG594346-01	50	50	0	0.6298	0.006435	-0.010219	-0.010219	1	mg/L
WG594346-02	50	50	0.616	0.6298	0.006435	0.96789	0.96789	1	mg/L
WG594346-03	50	50	0.619	0.6298	0.006435	0.97266	0.97266	1	mg/L
L16120001-07	50	50	0.0360	0.6298	0.006435	0.046944	0.046944	1	mg/L
L16120521-01	50	50	0.0240	0.6298	0.006435	0.027890	0.027890 F	1	mg/L
WG594346-04	50	50	0.0240	0.6298	0.006435	0.027890	0.027890	1	mg/L
L16120521-03	50	50	0.0390	0.6298	0.006435	0.051707	0.051707	1	mg/L
L16120521-05	50	50	0.0350	0.6298	0.006435	0.045356	0.045356 F	1	mg/L
L16120521-07	50	50	0.0790	0.6298	0.006435	0.11522	23.044	200	mg/L
L16120521-09	50	50	0.0350	0.6298	0.006435	0.045356	9.0712 F	200	mg/L
L16120521-11	50	50	0.00600	0.6298	0.006435	-0.00069148	ND	1	mg/L
WG594346-05	50	50	0.0240	0.6298	0.006435	0.027890	0.027890	1	mg/L
WG594346-06	50	50	0.269	0.6298	0.006435	0.41691	0.41691	1	mg/L

UV_SAMPLE_REPORT - Modified 03/06/2008

Report generated 12/09/2016 18:07



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

Workgroup #: WG594398

Instrument ID: V-1200

File ID: 00.1612091600-01

Run Date: 12/09/2016

CCV ID: WG594398-01

Run Time: 16:00

Units: mg/L

Analyst: DLP

Analyte: ORTHOPOSPHATE

Cal ID: V-1200 - 08-DEC-16

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.488	0.628	2.4	

* Exceeds %D Limit

CCC Calibration Check Compounds

SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 12/09/2016 18:04



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

Workgroup #: WG594398

File ID: 00.1612091600-14

CCV ID: WG594398-02

Units: mg/L

Analyte: ORTHOPHOSPHATE

Instrument ID: V-1200

Run Date: 12/09/2016

Run Time: 16:00

Analyst: DLP

Cal ID: V-1200 - 08-DEC-16

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.492	0.632	1.6	

* Exceeds %D Limit

CCC Calibration Check Compounds

SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 12/09/2016 18:04



2.2 General Chemistry Data

2.2.7 Sulfide Data

2.2.7.1 Summary Data



Login Number: L16120521
Department: Conventionals
Analyst: Todd Boyle

METHOD

Analysis SW-846 9030/EPA 376.1/SM4500-S(-2) F (Sulfide)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

SAMPLES

Samples: 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: 120852
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over the printed name.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: BURET
Client ID: MW36-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: ET.1612121630-10
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: BURET
Client ID: MW37-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: ET.1612121630-11
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: BURET
Client ID: MW35-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: ET.1612121630-12
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: BURET
Client ID: MW21-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 14:50	Dilution: 1	File ID: ET.1612121630-13
Sample Tag:	Units: mg/L	

Certificate of Analysis

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8	37.2		1.00	0.500

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: BURET
Client ID: MW31-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 11:45	Dilution: 1	File ID: ET.1612121630-14
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8	35.1		1.00	0.500

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: BURET
Client ID: MW24-120816	Prep Method: SM4500-S-(-2)-F-2000	Prep Date: N/A
Matrix: Water	Analytical Method: SM4500-S-(-2)-F-2000	Cal Date:
Workgroup #: WG594576	Analyst: TB	Run Date: 12/12/2016 16:30
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: ET.1612121630-15
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Sulfide	18496-25-8		U	1.00	0.500
U	Not detected at or above adjusted sample detection limit.				

2.2.7.2 QC Summary Data

Example Total Sulfide(Liquid) Calculations

$$[\text{mL Iodine} * \text{N Iodide}] - (\text{mL titrant} * \text{N titrant}) * 16000 / (\text{volume} * \text{dilution}) = \text{mg/L Sulfide}$$

where:

mL Iodine = mL of Iodine used

N Iodine = normality of Iodine

mL titrant = mL of titrant used

N titrant = normality of titrant

16000 = factor: 1mL of 0.025 N iodine reacts with 0.4mg sulfide

volume = mL filtered of mL titrated(if not filtered)

dilution = dilution in decimal form ($1/5 = 0.2$)

Example Total Sulfide(Soil) Calculations

$$[(\text{mL Iodine} * \text{N Iodine}) - (\text{mL titrant} * \text{N titrant})] * 16.03 / \text{weight} = \text{mg/kg sulfide}$$

where:

mL Iodine = mL of Iodine used

N Iodine = normality of Iodine

mL titrant = normality of titrant

16.03 = 32.06 grams per 2 equivalents

weight = kg of sample used

Microbac Laboratories Inc.

Data Checklist

Date: 12-DEC-2016

Analyst: TB

Analyst: NA

Method: S

Instrument: BURET

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594576

Calibration/Linearity	12/12/2016
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	TB
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
12-DEC-2016

Todd Boyle

Secondary Reviewer:
15-DEC-2016

Dennard Johnson



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: SM4500-S-(-2)-F-
Login Number: L16120521

AAB#: WG594576

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/12/2016	4.2	7		12/12/16	4.2	7	
MW37-120816	03	12/08/16					12/12/2016	4.3	7		12/12/16	4.3	7	
MW35-120816	05	12/08/16					12/12/2016	4.1	7		12/12/16	4.1	7	
MW21-120816	07	12/08/16					12/12/2016	4.1	7		12/12/16	4.1	7	
MW31-120816	09	12/08/16					12/12/2016	4.2	7		12/12/16	4.2	7	
MW24-120816	11	12/08/16					12/12/2016	4.3	7		12/12/16	4.3	7	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5064067
Report generated 12/14/2016 14:57



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG594576</u>
Blank File ID: <u>ET.1612121630-01</u>	Blank Sample ID: <u>WG594576-01</u>
Prep Date: <u>12/12/16 16:30</u>	Instrument ID: <u>BURET</u>
Analyzed Date: <u>12/12/16 16:30</u>	Method: <u>SM4500-S-(-2)-F-</u>
Analyst: <u>TB</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594576-02	ET.1612121630-02	12/12/16 16:30	
LCS2	WG594576-03	ET.1612121630-03	12/12/16 16:30	
MW36-120816	L16120521-01	ET.1612121630-10	12/12/16 16:30	
MW37-120816	L16120521-03	ET.1612121630-11	12/12/16 16:30	
MW35-120816	L16120521-05	ET.1612121630-12	12/12/16 16:30	
MW21-120816	L16120521-07	ET.1612121630-13	12/12/16 16:30	
MW31-120816	L16120521-09	ET.1612121630-14	12/12/16 16:30	
MW24-120816	L16120521-11	ET.1612121630-15	12/12/16 16:30	

Report Name: BLANK_SUMMARY
 PDF File ID: 5064068
 Report generated 12/14/2016 14:57



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/12/16 16:30 Sample ID: WG594576-01
Instrument ID: BURET Run Date: 12/12/16 16:30 Prep Method: SM4500-S-(-2)-F
File ID: ET.1612121630-01 Analyst: TB Method: SM4500-S-(-2)-F
Workgroup (AAB#): WG594576 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: BURET -

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Sulfide	0.500	1.00	0.500	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5064069

14-DEC-2016 14:57



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: TB Prep Method: SM4500-S-(-2)-F
Instrument ID: BURET Matrix: Water Method: SM4500-S-(-2)-F
Workgroup (AAB#): WG594576 Units: mg/L
QC Key: WATERL00 Lot #: STD79394
Sample ID: WG594576-02 LCS File ID: ET.1612121630-02 Run Date: 12/12/2016 16:30
Sample ID: WG594576-03 LCS2 File ID: ET.1612121630-03 Run Date: 12/12/2016 16:30

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Sulfide	16.9	16.8	99.3	16.9	16.8	99.3	0.00	85 - 115	10	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5064070
Report generated: 12/14/2016 14:57



2.2.7.3 Raw Data

SULFIDE
(sulfidel)

WORKGROUP: WG594576

Water:
EPA 376.1 / SM4500-S(-2)-F
SOP K3761 Revision #: 47
Soil:
SM846 9030B/9034
SOP K9030 Revision #: _____

Instrument: Buret

LCS: SH 79394

Iodine standardization (0.025N) COA: 19159
mL 0.025N titrant: 10.0
Volume I: 10.0 mL
Normality I: 0.025

(0.1 N I) COA: 18931
mL 0.025 N titrant: 12.0
Volume I: 3.0 mL
Normality I: 0.100

Stock standardization (in duplicate) 5.0 mL stock
mL I 1) 10.0 2) 10.0
N I 1) 0.10 2) 0.10
mL 0.025 titrant 1) 25.9 2) 25.9
LCS daily dilution: $\frac{3(1128)}{200} = 16.9$ mg/L

pH paper lot #: 25 15A103
1128 12/12/16
= stock conc (mg/L)

Titrant: T- H77-2-01

SAMPLE	Volume Filtered mL	mL Iodine	N Iodine	0.025 N Sodium Thiosulfate (mL)
BLANK	200	15.0	0.025	15.0
LCS (mL)	200	15.0	0.025	6.6
LCSDUP (mL)	200	15.0	0.025	6.6
12-413-02	520	15.0	0.025	14.6
414-02	550	15.0	0.025	15.0
415-02	550	15.0	0.025	15.0
416-02	550	15.0	0.025	14.8
417-02	550	15.0	0.025	14.8
418-02	530	15.0	0.025	15.0
521-01	540	15.0	0.025	14.9
03	530	15.0	0.025	14.7
05	510	15.0	0.025	15.0
07	500	50.0	0.025	3.5
09	490	50.0	0.025	7.0
11	480	15.0	0.025	15.0

Analyst: Tommy Date/Time: 1630 12/12/16

DCN#122673



Microbac Laboratories Inc.
TITRAMETRIC REPORT

Workgroup (AAB#):WG594576

Product: EPA 376.1\9034

Analyte: Sulfide

Analyst:TB

Run Date:12/12/2016 16:30

SAMPLE NUMBER	Volume	Vol I	Nor I	Vol T	Nor T	Dil	Analytical	Reported	Units
WG594576-01	200.0	15	.025	15	.025	1	0	0	mg/L
WG594576-02	200.0	15	.025	6.6	.025	1	16.8	16.80	mg/L
WG594576-03	200.0	15	.025	6.6	.025	1	16.8	16.80	mg/L
L16120413-02	520.0	15	.025	14.6	.025	1	0.308	ND	mg/L
L16120414-02	550.0	15	.025	15	.025	1	0	ND	mg/L
L16120415-02	550.0	15	.025	15	.025	1	0	ND	mg/L
L16120416-02	550.0	15	.025	14.8	.025	1	0.145	ND	mg/L
L16120417-02	550.0	15	.025	14.8	.025	1	0.145	ND	mg/L
L16120418-02	530.0	15	.025	15	.025	1	0	ND	mg/L
L16120521-01	540.0	15	.025	14.9	.025	1	0.0741	ND	mg/L
L16120521-03	530.0	15	.025	14.7	.025	1	0.226	ND	mg/L
L16120521-05	510.0	15	.025	15	.025	1	0	ND	mg/L
L16120521-07	500.0	50	.025	3.5	.025	1	37.2	37.20	mg/L
L16120521-09	490.0	50	.025	7	.025	1	35.1	35.10	mg/L
L16120521-11	480.0	15	.025	15	.025	1	0	ND	mg/L

SULFIDE_REPORT - Modified 03/06/2008

Report generated 12/12/2016 17:29

2.2 General Chemistry Data

2.2.8 Total Dissolved Solids Data

2.2.8.1 Summary Data



Login Number: L16120521
Department: Conventionals
Analyst: April Greene

METHOD

Analysis EPA 160.1/SM2540 C(Total Dissolved Solids)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: 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: 120853
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over the printed name.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW36-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594355	Analyst: AWE	Run Date: 12/09/2016 16:05
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: EN.1612091605-20
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		1040		20.0	10.0

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW37-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594355	Analyst: AWE	Run Date: 12/09/2016 16:05
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: EN.1612091605-21
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		3300		20.0	10.0

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW35-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594355	Analyst: AWE	Run Date: 12/09/2016 16:05
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: EN.1612091605-22
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		1330		20.0	10.0

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW21-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594631	Analyst: ADG	Run Date: 12/13/2016 09:42
Collect Date: 12/08/2016 14:50	Dilution: 1	File ID: EN.1612130942-25
Sample Tag: 1	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		16000		500	250

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW31-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594437	Analyst: AWE	Run Date: 12/12/2016 10:57
Collect Date: 12/08/2016 11:45	Dilution: 1	File ID: EN.1612121057-04
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		3550		500	250

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: OVEN
Client ID: MW24-120816	Prep Method: 160.1/SM2540C	Prep Date: N/A
Matrix: Water	Analytical Method: SM2540-C-1997	Cal Date:
Workgroup #: WG594437	Analyst: AWE	Run Date: 12/12/2016 10:57
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: EN.1612121057-05
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Dissolved Solids		2470		20.0	10.0

2.2.8.2 QC Summary Data

Example Total Dissolved Solids Calculations

$$[(WT2 - WT1) * 1000000]/\text{volume} = \text{mg/L}$$

where:

WT1 = weight (grams) of empty container.

WT2 = weight (grams) of dried sample and container.

1000000 = factor to get to mg/L.

volume = mL of sample used.

Microbac Laboratories Inc.

Data Checklist

Date: 09-DEC-2016

Analyst: AWE

Analyst: NA

Method: TDS

Instrument: OVEN

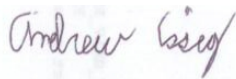
Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594355

Calibration/Linearity	12/09/16
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	AWE
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
12-DEC-2016



Secondary Reviewer:
15-DEC-2016



CHECKLIST1 - Modified 03/05/2008

Generated: DEC-15-2016 08:46:32



Microbac Laboratories Inc.

Data Checklist

Date: 12-DEC-2016

Analyst: AWE

Analyst: NA

Method: TDS

Instrument: OVEN

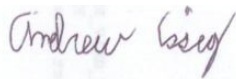
Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594437

Calibration/Linearity	12/12/16
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	AWE
Secondary Reviewer	SAV
Comments	

Primary Reviewer:
13-DEC-2016



Secondary Reviewer:
13-DEC-2016



CHECKLIST1 - Modified 03/05/2008

Generated: DEC-13-2016 16:02:57



Microbac Laboratories Inc.

Data Checklist

Date: 13-DEC-2016

Analyst: ADG

Analyst: NA

Method: TDS

Instrument: OVEN

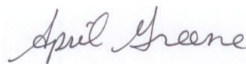
Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594631

Calibration/Linearity	12/13/16
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	ADG
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
16-DEC-2016



Secondary Reviewer:
16-DEC-2016



CHECKLIST1 - Modified 03/05/2008

Generated: DEC-16-2016 11:18:03



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: SM2540-C-1997
Login Number: L16120521

AAB#: WG594355

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/09/2016	1.2	7		12/09/16	1.2	7	
MW37-120816	03	12/08/16					12/09/2016	1.3	7		12/09/16	1.3	7	
MW35-120816	05	12/08/16					12/09/2016	1.1	7		12/09/16	1.1	7	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5061357
Report generated 12/16/2016 10:48



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: SM2540-C-1997
 Login Number: L16120521

AAB#: WG594437

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW31-120816	09	12/08/16					12/12/2016	4	7		12/12/16	4	7	
MW24-120816	11	12/08/16					12/12/2016	4	7		12/12/16	4	7	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
 PDF File ID: 5061357
 Report generated 12/16/2016 10:48



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: SM2540-C-1997
Login Number: L16120521

AAB#: WG594631

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW21-120816	07	12/08/16					12/13/2016	4.8	7		12/13/16	4.8	7	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5061357
Report generated 12/16/2016 10:48



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: EN.1612091605-01
 Prep Date: 12/09/16 16:05
 Analyzed Date: 12/09/16 16:05
 Analyst: AWE

Work Group: WG594355
 Blank Sample ID: WG594355-01
 Instrument ID: OVEN
 Method: SM2540-C-1997

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594355-02	EN.1612091605-02	12/09/16 16:05	
LCS2	WG594355-03	EN.1612091605-03	12/09/16 16:05	
MW36-120816	L16120521-01	EN.1612091605-20	12/09/16 16:05	
MW37-120816	L16120521-03	EN.1612091605-21	12/09/16 16:05	
MW35-120816	L16120521-05	EN.1612091605-22	12/09/16 16:05	
DUP	WG594355-05	EN.1612091605-24	12/09/16 16:05	
DUP	WG594355-07	EN.1612091605-25	12/09/16 16:05	

Report Name: BLANK_SUMMARY
 PDF File ID: 5061358
 Report generated 12/16/2016 10:48



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: EN.1612121057-01
 Prep Date: 12/12/16 10:57
 Analyzed Date: 12/12/16 10:57
 Analyst: AWE

Work Group: WG594437
 Blank Sample ID: WG594437-01
 Instrument ID: OVEN
 Method: SM2540-C-1997

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594437-02	EN.1612121057-02	12/12/16 10:57	
LCS2	WG594437-03	EN.1612121057-03	12/12/16 10:57	
MW31-120816	L16120521-09	EN.1612121057-04	12/12/16 10:57	
MW24-120816	L16120521-11	EN.1612121057-05	12/12/16 10:57	
DUP	WG594437-05	EN.1612121057-24	12/12/16 10:57	
DUP	WG594437-07	EN.1612121057-25	12/12/16 10:57	

Report Name: BLANK_SUMMARY
 PDF File ID: 5061358
 Report generated 12/16/2016 10:48



METHOD BLANK SUMMARY

Login Number: <u>L16120521</u>	Work Group: <u>WG594631</u>
Blank File ID: <u>EN.1612130942-01</u>	Blank Sample ID: <u>WG594631-01</u>
Prep Date: <u>12/13/16 09:42</u>	Instrument ID: <u>OVEN</u>
Analyzed Date: <u>12/13/16 09:42</u>	Method: <u>SM2540-C-1997</u>
Analyst: <u>ADG</u>	

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG594631-02	EN.1612130942-02	12/13/16 09:42	
LCS2	WG594631-03	EN.1612130942-03	12/13/16 09:42	
DUP	WG594631-07	EN.1612130942-23	12/13/16 09:42	
DUP	WG594631-05	EN.1612130942-24	12/13/16 09:42	1
MW21-120816	L16120521-07	EN.1612130942-25	12/13/16 09:42	1

Report Name: BLANK_SUMMARY
 PDF File ID: 5061358
 Report generated 12/16/2016 10:48



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/09/16 16:05 Sample ID: WG594355-01
Instrument ID: OVEN Run Date: 12/09/16 16:05 Prep Method: 160.1/SM2540C
File ID: EN.1612091605-01 Analyst: AWE Method: SM2540-C-1997
Workgroup (AAB#): WG594355 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: OVEN -

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5061359

16-DEC-2016 10:48



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/12/16 10:57 Sample ID: WG594437-01
Instrument ID: OVEN Run Date: 12/12/16 10:57 Prep Method: 160.1/SM2540C
File ID: EN.1612121057-01 Analyst: AWE Method: SM2540-C-1997
Workgroup (AAB#): WG594437 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: OVEN -

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	-7.00	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5061359

16-DEC-2016 10:48



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/13/16 09:42 Sample ID: WG594631-01
Instrument ID: OVEN Run Date: 12/13/16 09:42 Prep Method: 160.1/SM2540C
File ID: EN.1612130942-01 Analyst: ADG Method: SM2540-C-1997
Workgroup (AAB#): WG594631 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: OVEN -

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Total Dissolved Solids	5.00	10.0	5.00	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5061359

16-DEC-2016 10:48



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: AWE Prep Method: 160.1/SM2540C
Instrument ID: OVEN Matrix: Water Method: SM2540-C-1997
Workgroup (AAB#): WG594355 Units: mg/L
QC Key: WATERL00 Lot #: STD79315
Sample ID: WG594355-02 LCS File ID: EN.1612091605-02 Run Date: 12/09/2016 16:05
Sample ID: WG594355-03 LCS2 File ID: EN.1612091605-03 Run Date: 12/09/2016 16:05

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	478	95.6	500	472	94.4	1.26	80 - 120	25	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5061360
Report generated: 12/16/2016 10:48



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: AWE Prep Method: 160.1/SM2540C
Instrument ID: OVEN Matrix: Water Method: SM2540-C-1997
Workgroup (AAB#): WG594437 Units: mg/L
QC Key: WATERL00 Lot #: STD79315
Sample ID: WG594437-02 LCS File ID: EN.1612121057-02 Run Date: 12/12/2016 10:57
Sample ID: WG594437-03 LCS2 File ID: EN.1612121057-03 Run Date: 12/12/2016 10:57

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	482	96.4	500	496	99.2	2.86	80 - 120	25	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5061360
Report generated: 12/16/2016 10:48



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: ADG Prep Method: 160.1/SM2540C
Instrument ID: OVEN Matrix: Water Method: SM2540-C-1997
Workgroup (AAB#): WG594631 Units: mg/L
QC Key: WATERL00 Lot #: STD79315
Sample ID: WG594631-02 LCS File ID: EN.1612130942-02 Run Date: 12/13/2016 09:42
Sample ID: WG594631-03 LCS2 File ID: EN.1612130942-03 Run Date: 12/13/2016 09:42

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Dissolved Solids	500	494	98.8	500	516	103	4.36	80 - 120	25	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5061360
Report generated: 12/16/2016 10:48



2.2.8.3 Raw Data

TOTAL DISSOLVED SOLIDS

WORKGROUP: WG594355

Oven: TDS MICS1

☐ EPA 160.1 / SM2540C

LCS: 793/5

Daily Dilution: $5(5000)/50=500$

Balance: AND GR-202 / Other

Matrix Spike:

Daily Dilution:

Filter Lot #: 9727603

On Temp/Time:			104 11605	180 10703	180 11005	1
SAMPLE	#	VOLUME (mL)	INITIAL WEIGHT WT1 (g)	DRY WEIGHT WT2A (g)	DRY WEIGHT WT2B (g)	DRY WEIGHT WT2C (g)
BLANK	BLK	100				
LCS: mg/L	LCS1	50				
LCSDUP: mg/L	LCS2	50				
120459-01	1	50				
120485-01	2	50				
-02	3	50				
-03	4 ^{AWE} 12916	50				
-04	5	50				
120489-01	6	50				
-02	7	50				
120492-01	8	50				
-06	9	50				
-07	10	50				
-08	11	50				
-09	12	50				
120494-01	13	50				
120495-01	14	50				
120519-05	15	50				
-06	16	50				
120521-01	17	50				
-03	18	50				
-05	19	50				
-07	20	50				
DUP: 120489-01	Dup1	50				
DUP: 120519-06	Dup2	50				
Off Temp/Time:			104 10703	180 10906	180 11107	1

ANALYST: Andrew Loring

* Duplicate required on 10% of samples

DATE/TIME: (on) 12-9-16 1605

DATE/TIME: (on) 12-12-16

DATE/TIME: (on) 12-12-16

DATE/TIME: (off)

DCN#122655



Microbac Laboratories Inc.
GRAVIMETRIC REPORT

Workgroup (AAB#): WG594355

Method: 160.1/SM2540C

Analyst: AWE

SOP: Revision

Analyte: TOTAL DISSOLVED SOLIDS

Spike Solution: STD79315

Balance: BAL018

Daily Dilution: _____

SAMPLE NUMBER	Method	OVER	INITIAL VOL	INITIAL WT	DRY WT A	DRY WT B	DRY WT C	Anal. Conc	Rep. Conc.	Units
WG594355-01	B		100	80.2651	80.2655	80.265		-1.000	-1.000	mg/L
WG594355-02	L		50	63.8764	63.8998	63.9003		478.0	478.0	mg/L
WG594355-03	L2		50	57.6047	57.6282	57.6283		472.0	472.0	mg/L
L16120459-01	1		50	58.9913	59.1713	59.1718		3610	3610	mg/L
L16120485-01	2		50	64.9146	64.9377	64.9376		460.0	460.0	mg/L
L16120485-02	3		50	59.1884	59.2068	59.2073		378.0	378.0	mg/L
L16120485-03	4		50	61.0446	61.0627	61.0627		362.0	362.0	mg/L
L16120485-04	5		50	63.0478	63.0632	63.0631		306.0	306.0	mg/L
L16120489-01	6		50	63.0144	63.0251	63.025		212.0	212.0	mg/L
WG594355-04	6		50	63.0144	63.0251	63.025		212.0	212.0	mg/L
L16120489-02	7		50	60.1799	60.1895	60.1894		190.0	190.0	mg/L
L16120492-01	8		50	63.2838	63.4434	63.4433		3190	3190	mg/L
L16120492-06	9		50	67.8273	67.9785	67.9782		3018	3018	mg/L
L16120492-07	10		50	59.9093	59.9323	59.9321		456.0	456.0	mg/L
L16120492-08	11		50	56.6946	56.7243	56.7241		590.0	590.0	mg/L
L16120492-09	12		50	62.7234	62.7416	62.7412		356.0	356.0	mg/L
L16120494-01	13		50	63.6348	63.6461	63.6461		226.0	226.0	mg/L
L16120495-01	14		50	60.3403	60.3543	60.3545		284.0	284.0	mg/L
L16120519-05	15		50	61.7106	61.7303	61.7299		386.0	386.0	mg/L
L16120519-06	16		50	64.397	64.4512	64.4507		1074	1074	mg/L
WG594355-06	16		50	64.397	64.4512	64.4507		1074	1074	mg/L
L16120521-01	17		50	57.3211	57.3728	57.3729		1036	1036	mg/L
L16120521-03	18		50	53.3296	53.495	53.4948		3304	3304	mg/L
L16120521-05	19		50	57.7553	57.8221	57.8217		1328	1328	mg/L
WG594355-05	D		50	60.3821	60.3934	60.393		218.0	218.0	mg/L
WG594355-07	D2		50	63.4839	63.5384	63.538		1082	1082	mg/L

Analyst: Andrew Gies

*Duplicate required on 10% of samples

Date/Time (on) : 12/09/2016 16:05
 Date/Time (off) : 12/12/2016 09:06
 Date/Time (off) : 12/12/2016 11:07
 Date/Time (off) : _____

CONT_GRAV_REPORT - Modified 02/18/2011
 PDF ID: 5056667
 Report generated: 12/12/2016 12:02



TOTAL DISSOLVED SOLIDS

(tds)

Oven: TDS MICS1

☐ EPA 160.1 / SM2540C

LCS: 79315

Daily Dilution: $5(5000)/50=500$

Balance: AND GR-202 / Other

Matrix Spike:

Daily Dilution:

Filter Lot #: 9727603

On Temp/Time:			104 / 1057	180 / 1060	180 / 1127	1
SAMPLE	#	VOLUME (mL)	INITIAL WEIGHT WT1 (g)	DRY WEIGHT WT2A (g)	DRY WEIGHT WT2B (g)	DRY WEIGHT WT2C (g)
BLANK	BLK E	100				
LCS: mg/L	LCS1	50				
LCSDUP: mg/L	LCS2	50				
120521-09	1	2				
-11	2	50				
120522-01	3	50				
-03	4	50				
-05	5	50				
-07	6	50				
-10	7	50				
120523-01	8	50				
120524-05	9	50				
120528-02	10	50				
-04	11	50				
120530-03	12	50				
120533-01	13	50				
-03	14	50				
-05	15	50				
-07	16	50				
120535-01	17	50				
120536-02	18	50				
-04	19	50				
-06	20	50				
DUP: 120522-01	Dup1	50				
DUP: 120536-02	Dup2	50				
Off Temp/Time:			104 / 1060	180 / 11025	180 / 11229	1

ANALYST: Andrew Ewing

* Duplicate required on 10% of samples

DATE/TIME: (on) 12-12-16 1057

DATE/TIME: (off) 12-13-16

DATE/TIME: (on) 12-13-16

DATE/TIME: (off)

DCN#122662



Microbac Laboratories Inc.
GRAVIMETRIC REPORT

Workgroup (AAB#): WG594437

Method: 160.1/SM2540C

Analyst: AWE

SOP: Revision

Analyte: TOTAL DISSOLVED SOLIDS

Spike Solution: STD79315

Balance: BAL018

Daily Dilution: _____

SAMPLE ID	Instrument	OVER	INITIAL VOL	INITIAL WT	DRY WT A	DRY WT B	DRY WT C	Anal. Conc	Rep. Conc.	Units
WG594437-01	B		100	101.1764	101.1759	101.1757		-7.000	-7.000	mg/L
WG594437-02	L		50	69.3816	69.4054	69.4057		482.0	482.0	mg/L
WG594437-03	L2		50	67.1089	67.1332	67.1337		496.0	496.0	mg/L
L16120521-09	1	2		66.9035	66.9102	66.9106		3550	3550	mg/L
L16120521-11	2		50	59.4035	59.5272	59.5272		2474	2474	mg/L
L16120522-01	3		50	68.5795	68.6155	68.616		730.0	730.0	mg/L
WG594437-04	3		50	68.5795	68.6155	68.616		730.0	730.0	mg/L
L16120522-03	4		50	58.129	58.1546	58.1547		514.0	514.0	mg/L
L16120522-05	5		50	55.5686	55.5841	55.5841		310.0	310.0	mg/L
L16120522-07	6		50	56.3435	56.3601	56.3605		340.0	340.0	mg/L
L16120522-10	7		50	54.0485	54.0587	54.0589		208.0	208.0	mg/L
L16120523-01	8		50	64.4943	64.5201	64.5203		520.0	520.0	mg/L
L16120524-05	9		50	64.0423	64.0521	64.0521		196.0	196.0	mg/L
L16120528-02	10		50	63.081	63.0979	63.0978		336.0	336.0	mg/L
L16120528-04	11		50	55.6572	55.6616	55.6615		86.00	86.00	mg/L
L16120530-03	12		50	56.4839	56.5074	56.5076		474.0	474.0	mg/L
L16120533-01	13		50	55.7464	55.7821	55.7821		714.0	714.0	mg/L
L16120533-03	14		50	60.8913	60.9126	60.9127		428.0	428.0	mg/L
L16120533-05	15		50	62.0497	62.0851	62.0852		710.0	710.0	mg/L
L16120533-07	16		50	71.0841	71.1077	71.1079		476.0	476.0	mg/L
L16120535-01	17		50	60.3232	60.343	60.3433		402.0	402.0	mg/L
L16120536-02	18		50	61.222	61.2419	61.2419		398.0	398.0	mg/L
L16120536-04	19		50	58.0393	58.0554	58.0554		322.0	322.0	mg/L
L16120536-06	20		50	63.4205	63.4438	63.4439		468.0	468.0	mg/L
WG594437-06	20		50	63.4205	63.4438	63.4439		468.0	468.0	mg/L
WG594437-05	D		50	61.5337	61.5707	61.5704		734.0	734.0	mg/L
WG594437-07	D2		50	69.9077	69.9308	69.9306		458.0	458.0	mg/L

Analyst: Andrew Gies

*Duplicate required on 10% of samples

Date/Time (on) : 12/12/2016 10:57

Date/Time (off) : 12/13/2016 10:25

Date/Time (off) : 12/13/2016 12:29

Date/Time (off) : _____

CONT_GRAV_REPORT - Modified 02/18/2011

PDF ID: 5058008

Report generated: 12/13/2016 14:14



TOTAL DISSOLVED SOLIDS

WORKGROUP: WG594631

(tds1)

Oven: TDS MICS1

☐ EPA 160.1 / SM2540C

LCS: 79315

Daily Dilution: 50000 / 50-500

Balance: AND GR-202 / Other

Matrix Spike:

Daily Dilution:

Filter Lot #: 9727605

		On Temp/Time:		104 / 1045	180 / 1528	180 / 1750	1
SAMPLE	#	VOLUME (mL)	INITIAL WEIGHT WT1 (g)	DRY WEIGHT WT2A (g)	DRY WEIGHT WT2B (g)	DRY WEIGHT WT2C (g)	
BLANK	BLK 0	100					
LCS:	mg/L LCS1	50					
LCSDUP:	mg/L LCS2	50					
120521-07	1	2 50	12-13-16				
12-0631-01	2	50					
-03	3	50					
-05	4	50					
-07	5	50					
12-0632-01	6	50					
-03	7	50					
-05	8	50					
-07	9	50					
12-0633-01	10	50					
12-0635-01	11	50					
-03	12	50					
-05	13	50					
-07	14	50					
12-0636-01	15	50					
-03	16	50					
12-0637-01	17	50					
12-0638-01	18	50					
12-0653-01	19	50					
12-0654-01	20	50					
DUP: 12521-07	Dup1	50 2	12-13-14 R2				
DUP: 12654-01	Dup2	50	0				
		Off Temp/Time:		104 / 1578	180 / 10645	180 / 0904	1

ANALYST: April Greene

* Duplicate required on 10% of samples

DATE/TIME: (on) 12/13/14 0942

DATE/TIME: (off) 12/14/16

DATE/TIME: (off)

DATE/TIME: (off)

DCN#122694



Microbac Laboratories Inc.
GRAVIMETRIC REPORT

Workgroup (AAB#): WG594631

Analyst: ADG

Analyte: TOTAL DISSOLVED SOLIDS

Balance: BAL018

Method: 160.1/SM2540C

SOP: Revision

Spike Solution: STD79315

Daily Dilution: _____

SAMPLE IDENTIFICATION	OVER	INITIAL VOL	INITIAL WT	DRY WT A	DRY WT B	DRY WT C	Anal. Conc	Rep. Conc.	Units
WG594631-01	B	100	79.4007	79.4007	79.4006		-1.000	-1.000	mg/L
WG594631-02	L	50	65.3687	65.3933	65.3934		494.0	494.0	mg/L
WG594631-03	L2	50	66.8782	66.9041	66.904		516.0	516.0	mg/L
L16120631-01	2	50	56.3518	56.3544	56.3544		52.00	52.00	mg/L
L16120631-03	3	50	63.0896	63.0911	63.0909		26.00	26.00	mg/L
L16120631-05	4	50	55.7014	55.7073	55.7075		122.0	122.0	mg/L
L16120631-07	5	50	61.7616	61.7658	61.7659		86.00	86.00	mg/L
L16120632-01	6	50	64.4272	64.4735	64.4738		932.0	932.0	mg/L
L16120632-03	7	50	64.5147	64.5729	64.5727		1160	1160	mg/L
L16120632-05	8	50	60.0003	60.0264	60.0265		524.0	524.0	mg/L
L16120632-07	9	50	60.4579	60.4611	60.4615		72.00	72.00	mg/L
L16120633-01	10	50	58.9221	59.0095	59.0096		1750	1750	mg/L
L16120635-01	11	50	65.9151	65.9357	65.9355		408.0	408.0	mg/L
L16120635-03	12	50	65.6555	65.7179	65.7184		1258	1258	mg/L
L16120635-05	13	50	60.2366	60.2792	60.2796		860.0	860.0	mg/L
L16120635-07	14	50	65.5154	65.5473	65.5476		644.0	644.0	mg/L
L16120636-01	15	50	65.8309	65.8973	65.8973		1328	1328	mg/L
L16120636-03	16	50	62.0858	62.1012	62.1014		312.0	312.0	mg/L
L16120637-01	17	50	65.2543	65.2553	65.2557		28.00	28.00	mg/L
L16120638-01	18	50	64.5733	64.5755	64.5757		48.00	48.00	mg/L
L16120653-01	19	50	72.1252	72.1639	72.1642		780.0	780.0	mg/L
L16120654-01	20	50	66.7809	66.8188	66.8192		766.0	766.0	mg/L
WG594631-06	20	50	66.7809	66.8188	66.8192		766.0	766.0	mg/L
WG594631-07	D2	50	66.7773	66.8192	66.8187		828.0	828.0	mg/L
WG594631-05	D	2	58.5578	58.59	58.5901		16150	16150	mg/L
L16120521-07	1	2	60.2624	60.2941	60.2943		15950	15950	mg/L
WG594631-04	1	2	60.2624	60.2941	60.2943		15950	15950	mg/L

Analyst: April Greene

*Duplicate required on 10% of samples

Date/Time (on) : 12/13/2016 09:42

Date/Time (off) : 12/14/2016 07:45

Date/Time (off) : 12/14/2016 10:24

Date/Time (off) : _____

CONT_GRAV_REPORT - Modified 02/18/2011

PDF ID: 5059790

Report generated: 12/15/2016 07:28

Microbac Laboratories Inc.
GRAVIMETRIC REPORT

Workgroup (AAB#): WG594355

Method: 160.1/SM2540C

Analyst: AWE

SOP: Revision

Analyte: TOTAL DISSOLVED SOLIDS

Spike Solution: STD79315

Balance: BAL018

Daily Dilution: _____

SAMPLE ID	Instrument#	OVEN	INITIAL VOL	INITIAL WT	DRY WT A	DRY WT B	DRY WT C	Anal. Conc	Rep. Conc.	Units
WG594355-01	B		100	80.2651	80.2655	80.265		-1.000	-1.000	mg/L
WG594355-02	L		50	63.8764	63.8998	63.9003		478.0	478.0	mg/L
WG594355-03	L2		50	57.6047	57.6282	57.6283		472.0	472.0	mg/L
L16120459-01	1		50	58.9913	59.1713	59.1718		3610	3610	mg/L
L16120485-01	2		50	64.9146	64.9377	64.9376		460.0	460.0	mg/L
L16120485-02	3		50	59.1884	59.2068	59.2073		378.0	378.0	mg/L
L16120485-03	4		50	61.0446	61.0627	61.0627		362.0	362.0	mg/L
L16120485-04	5		50	63.0478	63.0632	63.0631		306.0	306.0	mg/L
L16120489-01	6		50	63.0144	63.0251	63.025		212.0	212.0	mg/L
WG594355-04	6		50	63.0144	63.0251	63.025		212.0	212.0	mg/L
L16120489-02	7		50	60.1799	60.1895	60.1894		190.0	190.0	mg/L
L16120492-01	8		50	63.2838	63.4434	63.4433		3190	3190	mg/L
L16120492-06	9		50	67.8273	67.9785	67.9782		3018	3018	mg/L
L16120492-07	10		50	59.9093	59.9323	59.9321		456.0	456.0	mg/L
L16120492-08	11		50	56.6946	56.7243	56.7241		590.0	590.0	mg/L
L16120492-09	12		50	62.7234	62.7416	62.7412		356.0	356.0	mg/L
L16120494-01	13		50	63.6348	63.6461	63.6461		226.0	226.0	mg/L
L16120495-01	14		50	60.3403	60.3543	60.3545		284.0	284.0	mg/L
L16120519-05	15		50	61.7106	61.7303	61.7299		386.0	386.0	mg/L
L16120519-06	16		50	64.397	64.4512	64.4507		1074	1074	mg/L
WG594355-06	16		50	64.397	64.4512	64.4507		1074	1074	mg/L
L16120521-01	17		50	57.3211	57.3728	57.3729		1036	1036	mg/L
L16120521-03	18		50	53.3296	53.495	53.4948		3304	3304	mg/L
L16120521-05	19		50	57.7553	57.8221	57.8217		1328	1328	mg/L
WG594355-05	D		50	60.3821	60.3934	60.393		218.0	218.0	mg/L
WG594355-07	D2		50	63.4839	63.5384	63.538		1082	1082	mg/L

Analyst: _____

Andrew Siegf

Date/Time (on) : 12/09/2016 16:05

Date/Time (off): 12/12/2016 09:06

Date/Time (off): 12/12/2016 11:07

Date/Time (off): _____

*Duplicate required on 10% of samples

CONT_GRAV_REPORT - Modified 02/18/2011

PDF ID: 5056667

Report generated: 12/12/2016 12:02



Microbac Laboratories Inc.
GRAVIMETRIC REPORT

Workgroup (AAB#): **WG594437**

Method: **160.1/SM2540C**

Analyst: **AWE**

SOP: **Revison**

Analyte: **TOTAL DISSOLVED SOLIDS**

Spike Solution: **STD79315**

Balance: **BAL018**

Daily Dilution:

SAMPLE ID	Instrument#	OVEN	INITIAL VOL	INITIAL WT	DRY WT A	DRY WT B	DRY WT C	Anal. Conc	Rep. Conc.	Units
WG594437-01	B		100	101.1764	101.1759	101.1757		-7.000	-7.000	mg/L
WG594437-02	L		50	69.3816	69.4054	69.4057		482.0	482.0	mg/L
WG594437-03	L2		50	67.1089	67.1332	67.1337		496.0	496.0	mg/L
L16120521-09	1		2	66.9035	66.9102	66.9106		3550	3550	mg/L
L16120521-11	2		50	59.4035	59.5272	59.5272		2474	2474	mg/L
L16120522-01	3		50	68.5795	68.6155	68.616		730.0	730.0	mg/L
WG594437-04	3		50	68.5795	68.6155	68.616		730.0	730.0	mg/L
L16120522-03	4		50	58.129	58.1546	58.1547		514.0	514.0	mg/L
L16120522-05	5		50	55.5686	55.5841	55.5841		310.0	310.0	mg/L
L16120522-07	6		50	56.3435	56.3601	56.3605		340.0	340.0	mg/L
L16120522-10	7		50	54.0485	54.0587	54.0589		208.0	208.0	mg/L
L16120523-01	8		50	64.4943	64.5201	64.5203		520.0	520.0	mg/L
L16120524-05	9		50	64.0423	64.0521	64.0521		196.0	196.0	mg/L
L16120528-02	10		50	63.081	63.0979	63.0978		336.0	336.0	mg/L
L16120528-04	11		50	55.6572	55.6616	55.6615		86.00	86.00	mg/L
L16120530-03	12		50	56.4839	56.5074	56.5076		474.0	474.0	mg/L
L16120533-01	13		50	55.7464	55.7821	55.7821		714.0	714.0	mg/L
L16120533-03	14		50	60.8913	60.9126	60.9127		428.0	428.0	mg/L
L16120533-05	15		50	62.0497	62.0851	62.0852		710.0	710.0	mg/L
L16120533-07	16		50	71.0841	71.1077	71.1079		476.0	476.0	mg/L
L16120535-01	17		50	60.3232	60.343	60.3433		402.0	402.0	mg/L
L16120536-02	18		50	61.222	61.2419	61.2419		398.0	398.0	mg/L
L16120536-04	19		50	58.0393	58.0554	58.0554		322.0	322.0	mg/L
L16120536-06	20		50	63.4205	63.4438	63.4439		468.0	468.0	mg/L
WG594437-06	20		50	63.4205	63.4438	63.4439		468.0	468.0	mg/L
WG594437-05	D		50	61.5337	61.5707	61.5704		734.0	734.0	mg/L
WG594437-07	D2		50	69.9077	69.9308	69.9306		458.0	458.0	mg/L

Analyst: Andrew Siegf

Date/Time (on) : **12/12/2016 10:57**

Date/Time (off) : **12/13/2016 10:25**

Date/Time (off) : **12/13/2016 12:29**

Date/Time (off) :

*Duplicate required on 10% of samples

CONT_GRAV_REPORT - Modified 02/18/2011

PDF ID: 5058006

Report generated: 12/13/2016 14:14



Microbac Laboratories Inc.
GRAVIMETRIC REPORT

Workgroup (AAB#): WG594631

Method: 160.1/SM2540C

Analyst: ADG

SOP: Revision

Analyte: TOTAL DISSOLVED SOLIDS

Spike Solution: STD79315

Balance: BAL018

Daily Dilution: _____

SAMPLE ID	Instrument#	OVEN	INITIAL VOL	INITIAL WT	DRY WT A	DRY WT B	DRY WT C	Anal. Conc	Rep. Conc.	Units
WG594631-01	B		100	79.4007	79.4007	79.4006		-1.000	-1.000	mg/L
WG594631-02	L		50	65.3687	65.3933	65.3934		494.0	494.0	mg/L
WG594631-03	L2		50	66.8782	66.9041	66.904		516.0	516.0	mg/L
L16120631-01	2		50	56.3518	56.3544	56.3544		52.00	52.00	mg/L
L16120631-03	3		50	63.0896	63.0911	63.0909		26.00	26.00	mg/L
L16120631-05	4		50	55.7014	55.7073	55.7075		122.0	122.0	mg/L
L16120631-07	5		50	61.7616	61.7658	61.7659		86.00	86.00	mg/L
L16120632-01	6		50	64.4272	64.4735	64.4738		932.0	932.0	mg/L
L16120632-03	7		50	64.5147	64.5729	64.5727		1160	1160	mg/L
L16120632-05	8		50	60.0003	60.0264	60.0265		524.0	524.0	mg/L
L16120632-07	9		50	60.4579	60.4611	60.4615		72.00	72.00	mg/L
L16120633-01	10		50	58.9221	59.0095	59.0096		1750	1750	mg/L
L16120635-01	11		50	65.9151	65.9357	65.9355		408.0	408.0	mg/L
L16120635-03	12		50	65.6555	65.7179	65.7184		1258	1258	mg/L
L16120635-05	13		50	60.2366	60.2792	60.2796		860.0	860.0	mg/L
L16120635-07	14		50	65.5154	65.5473	65.5476		644.0	644.0	mg/L
L16120636-01	15		50	65.8309	65.8973	65.8973		1328	1328	mg/L
L16120636-03	16		50	62.0858	62.1012	62.1014		312.0	312.0	mg/L
L16120637-01	17		50	65.2543	65.2553	65.2557		28.00	28.00	mg/L
L16120638-01	18		50	64.5733	64.5755	64.5757		48.00	48.00	mg/L
L16120653-01	19		50	72.1252	72.1639	72.1642		780.0	780.0	mg/L
L16120654-01	20		50	66.7809	66.8188	66.8192		766.0	766.0	mg/L
WG594631-06	20		50	66.7809	66.8188	66.8192		766.0	766.0	mg/L
WG594631-07	D2		50	66.7773	66.8192	66.8187		828.0	828.0	mg/L
WG594631-05	D		2	58.5578	58.59	58.5901		16150	16150	mg/L
L16120521-07	1		2	60.2624	60.2941	60.2943		15950	15950	mg/L
WG594631-04	1		2	60.2624	60.2941	60.2943		15950	15950	mg/L

Analyst: April Greene

*Duplicate required on 10% of samples

Date/Time (on) : 12/13/2016 09:42

Date/Time (off): 12/14/2016 07:45

Date/Time (off): 12/14/2016 10:24

Date/Time (off): _____

CONT_GRAV_REPORT - Modified 02/18/2011

PDF ID: 5059790

Report generated: 12/15/2016 07:28



2.2 General Chemistry Data

2.2.9 TKN Data

2.2.9.1 Summary Data



Login Number: L16120521
Department: Conventionals
Analyst: David Merckle

METHOD

Analysis EPA 351.2(TKN)

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: 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: 120849
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW36-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:32
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: SC161215001.024
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	0.222		0.200	0.100

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW37-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:32
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: SC161215001.025
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW35-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:34
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: SC161215001.026
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9		U	0.200	0.100
U	Not detected at or above adjusted sample detection limit.				

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW21-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:34
Collect Date: 12/08/2016 14:50	Dilution: 10	File ID: SC161215001.027
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	23.0		2.00	1.00

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW31-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:45
Collect Date: 12/08/2016 11:45	Dilution: 10	File ID: SC161215001.039
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	7.77		2.00	1.00

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: MW24-120816	Prep Method: 351.2	Prep Date: N/A
Matrix: Water	Analytical Method: 351.2	Cal Date: 12/15/2016 08:16
Workgroup #: WG594990	Analyst: DCM	Run Date: 12/15/2016 08:36
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: SC161215001.028
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Nitrogen, Total Kjeldahl	7727-37-9	0.922		0.200	0.100

2.2.9.2 QC Summary Data

Example TKN Calculations

$$(\text{absorbance} - \text{intercept}) / (\text{slope} * \text{dilution}) = \text{mg/L}$$

where:

absorbance = reading from the spectrophotometer

intercept = calculated from calibration standard absorbencies

slope = calculated from calibration standard absorbencies

dilution = dilution of the distillate in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 15-DEC-2016

Analyst: DCM

Analyst: NA

Method: TKN

Instrument: SC

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG594990

Calibration/Linearity	12-15-2016
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
15-DEC-2016



Secondary Reviewer:
16-DEC-2016




Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: 351.2

AAB#: WG594990

Login Number: L16120521

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/15/2016	6.9	28		12/15/16	6.9	28	
MW37-120816	03	12/08/16					12/15/2016	6.9	28		12/15/16	6.9	28	
MW35-120816	05	12/08/16					12/15/2016	6.7	28		12/15/16	6.7	28	
MW21-120816	07	12/08/16					12/15/2016	6.7	28		12/15/16	6.7	28	
MW31-120816	09	12/08/16					12/15/2016	6.9	28		12/15/16	6.9	28	
MW24-120816	11	12/08/16					12/15/2016	6.9	28		12/15/16	6.9	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5067460
Report generated 12/16/2016 09:22



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: SC161215001.011
 Prep Date: 12/15/16 08:20
 Analyzed Date: 12/15/16 08:20
 Analyst: DCM

Work Group: WG594990
 Blank Sample ID: WG594990-01
 Instrument ID: SMARTCHEM
 Method: 351.2

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
MW36-120816	L16120521-01	SC161215001.024	12/15/16 08:32	01
MW37-120816	L16120521-03	SC161215001.025	12/15/16 08:32	01
MW35-120816	L16120521-05	SC161215001.026	12/15/16 08:34	01
MW21-120816	L16120521-07	SC161215001.027	12/15/16 08:34	DL01
MW24-120816	L16120521-11	SC161215001.028	12/15/16 08:36	01
DUP	WG594990-04	SC161215001.036	12/15/16 08:43	01
MW31-120816	L16120521-09	SC161215001.039	12/15/16 08:45	DL01
LCS	WG594990-02	SC161215001.040	12/15/16 08:46	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5067462
 Report generated 12/16/2016 09:22



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/15/16 08:20 Sample ID: WG594990-01
Instrument ID: SMARTCHEM Run Date: 12/15/16 08:20 Prep Method: 351.2
File ID: SC161215001.011 Analyst: DCM Method: 351.2
Workgroup (AAB#): WG594990 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: SMARTC - 15-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Nitrogen, Total Kjeldahl	0.100	0.200	-0.159	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5067463

16-DEC-2016 09:23



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Run Date: 12/15/2016 Sample ID: WG594990-02
Instrument ID: SMARTCHEM Run Time: 08:46 Prep Method: 351.2
File ID: SC161215001.040 Analyst: DCM Method: 351.2
Workgroup (AAB#): WG594990 Matrix: Water Units: mg/L
QC Key: WATERLOO Lot#: STD79020 Cal ID: SMARTC - 15-DEC-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Total Kjeldahl	1.00	0.938	93.8	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 5067464
Report generated: 12/16/2016 09:22



2.2.9.3 Raw Data

SMARTCHEM RUN LOG

(smartchem2, smartchem3)

WORKGROUP: WG594990

Daily Check

☒ Lamp On	☒ WBL Run
☒ Probe Rinse Full	☒ Reagents Full
☒ DI Water > 1/2 Full	☒ Dilution H ₂ O Full
☒ Wash Solution > 1/2 Full	☒ Waste Container Check
☐ NO ₃ Reagent bottle connected / purged	
☐ NO ₃ pH adj to pH 5-9	
Syringe filter lot # _____	
pH paper Lot #: _____	

- 1) Workgroup _____
Plan # 2410R15001
- 2) Workgroup _____
Plan # _____
- 3) Workgroup _____
Plan # _____
- Instrument: SC1 ☒ SC2 ☐

Analyte		1	2	3
TKN				
Dilution				
SC Prepared Curve				
Position				
1-1	ICV			
1-2	Blk			
1-3	LCS			
1-4	12-643-01			
1-5	02			
1-6	03			
1-7	04			
1-8	05			
1-9	12-645-01			
1-10	12-703-02	1m/50		
1-11	05	1m/50		
1-12	12-706-01			
1-13	12-521-01			
1-14	03			
1-15	05	1m/10		
1-16	07	1m/10	at cur 12/15/16	
1-17	11	1m/10		
1-18	12-759-01			
1-19	02			
1-20	03			
1-21	12-750-01			
1-22	12-757-01			
2-1	DUP 12-643-05			
2-2	MS 12-643-05			
2-3	MS 12-643-04			

Analyte		1	2	3
Position				
2-4	12-521-09	1m/10		
2-5	LCS			
2-6				
2-7				
2-8				
2-9				
2-10				
2-11				
2-12				
2-13				
2-14				
2-15				
2-16				
2-17				
2-18				
2-19				
2-20				
2-21				
2-22				
2-23				
2-24				
2-25				
2-26				
3-1				
3-2				

NOTES:

- * Run NO₂ std on NO₃ runs
- * LCSD must be run if no MS or Duplicate
- * MS(10% sample): NO₃, TKN, NH₃, PHOS

DCN#122742



SMARTCHEM RUN LOG

(smartchem2, smartchem3)

WORKGROUP: WG594990

Analyte	1	2	3
Position			
3-3			
3-4			
3-5			
3-6			
3-7			
3-8			
3-9			
3-10			
3-11			
3-12			
3-13			
3-14			
3-15			

Analyte	1	2	3
Position			
3-16			
3-17			
3-18			
3-19			
3-20			
3-21			
3-22			
3-23			
3-24			
3-25			
3-26			
3-27			
3-28			

Chloride	EPA 325.2/SM 4500-Cl E-2000
Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F-2000
Alkalinity	EPA 310.2
Sulfate	EPA 375.4/SM 426C (15 th)/ SM4500-504 E-1997

Ammonia	EPA 350.1/SM 4500-NH3 B-1997
TKN	EPA 351.2
Phos	EPA 365.4

Analyte	TKN	Reagents
SOP & Revision	1/3512 RAD	RET 38562
Curve Stock (SC made)		RET 38684
NO2 STD		RET 38710
ICV	see Digest	
CCV	log	
LCS		
MS	Dilution	

Comments: _____

Analyst: David Morfitt

Date: 12/15/16

DCN#122742



TKN/Phosphorus Digestion Log

TKN WG: _____ Phos WG: _____
 TKN Std: Std 79382 Phos Std: Std 79382
 TKN CCV: 1/2 (Std 79382) Phos CCV: 1/2 (Std 79382)
 TKN ICV: Std 79115 Phos ICV: Std 79302
 TKN LCS: Std 79020 Phos LCS: Std 79329

MS/MSD: Std 76885

Daily Dilution: 112.5/25 = 1

Block Digester Temperature: 380 °C

Digest Reagent: REL 38642

	Sample	Volume	TKN Dilution	Phos Dilution		Sample	Volume	TKN Dilution	Phos Dilution
1	Std				26	12-757-01		✓	✓
2	Std				27	12-775-03	1/250		✓
3	ICVT				28	DUP 12-643-05		✓	✓
4	ICVP				29	MS 12-643-05		✓	✓
5	LCST				30	MS 12-643-09		✓	✓
6	LCSP				31	Blk			
7	12-643-01		✓	✓	32				
8	02		✓	✓	33				
9	03		✓	✓	34				
10	04		✓	✓	35				
11	05		✓	✓	36				
12	12-645-01		✓	✓	37				
13	12-703-02	1/50	✓		38				
14	05	1/50	✓		39				
15	12-706-01		✓		40				
16	12-521-01		✓	✓	41				
17	03	dcn	✓	✓	42				
18	05	12/15/16	✓	✓	43				
19	07	1/10	✓	✓	44				
20	09	1/10	✓	✓	45				
21	11		✓	✓	46				
22	12-739-01		✓	✓	47				
23	02		✓	✓	48				
24	03		✓	✓	49				
25	12-756-01		✓	✓	50				

* Diluted for matrix interference
 Dark Color

Analyst: David Muehl Date: 12/14/16

MICROBAC (OVD)
 SMARTCHEM200 INST1 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WTKN -Unit [mg/L] - EPA 351.2 TKN

Smp#/[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.000	0.2518	0.00		8:09:06 AM
DIL-1	RBL	0.000	0.2512	0.00		8:09:24 AM
DIL-1	RBL	0.000	0.2543	0.00		8:10:54 AM
DIL-1	Std-1	0.000	0.0024	0.00		8:11:12 AM
SR5-1	Std-2	0.100	0.0131	0.00		8:12:43 AM
SR5-2	Std-3	0.250	0.0348	0.00		8:13:00 AM
SR5-3	Std-4	0.500	0.0616	0.00		8:14:31 AM
SR5-4	Std-5	1.000	0.1222	0.00		8:14:48 AM
SR5-5	Std-6	2.500	0.3027	0.00		8:16:18 AM
ST-1	Std-7	5.000	0.6099	0.00	EPL	8:16:39 AM
ST-3	1CCV (2.5 mg/L)	2.460	0.3003	98.41		8:18:06 AM
ST-2	2CCB (0 mg/L)	-0.133	-0.0145	0.00	INV,><,LL	8:18:24 AM
1	ICV	1.823	0.2230	0.00		8:19:54 AM
2	WG594990-01 BLK	-0.159	-0.0176	0.00	INV,EPL,><	8:20:12 AM
3	WG594990-02 LCS	0.853	0.1052	0.00		8:21:42 AM
4	L16120643-01	0.569	0.0707	0.00		8:22:00 AM
5	L16120643-02	0.329	0.0416	0.00		8:23:30 AM
6	L16120643-03	0.353	0.0445	0.00		8:23:48 AM
7	L16120643-04	0.377	0.0474	0.00		8:25:18 AM
8	L16120643-05	0.287	0.0365	0.00		8:25:37 AM
9	L16120645-01	3.831	0.4667	0.00		8:27:07 AM
10	L16120703-02 (50)	1.604	0.1964	0.00		8:27:25 AM
ST-3	1CCV (2.5 mg/L)	2.468	0.3013	98.74		8:28:55 AM
ST-2	2CCB (0 mg/L)	-0.128	-0.0138	0.00	INV,><,LL	8:29:13 AM
11	L16120703-05 (50)	2.300	0.2809	0.00		8:30:43 AM
12	L16120706-01	2.023	0.2472	0.00		8:31:01 AM
13	L16120521-01	0.222	0.0286	0.00		8:32:31 AM
14	L16120521-03	0.046	0.0073	0.00	EPL	8:32:49 AM
15	L16120521-05 (10)	0.069	0.0100	0.00		8:34:19 AM
16	L16120521-07 (10)	2.302	0.2811	0.00		8:34:37 AM
17	L16120521-11	0.922	0.1136	0.00		8:36:07 AM
18	L16120739-01	0.190	0.0247	0.00		8:36:25 AM

Report Date :12/15/2016 Run Date :12/15/2016 Operator : SMARTCHEM1 Plan # :20161215001
 Plan Description : TKN-A1-DCM/12/15/2016

MICROBAC (OVD)
 SMARTCHEM200 INST1 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

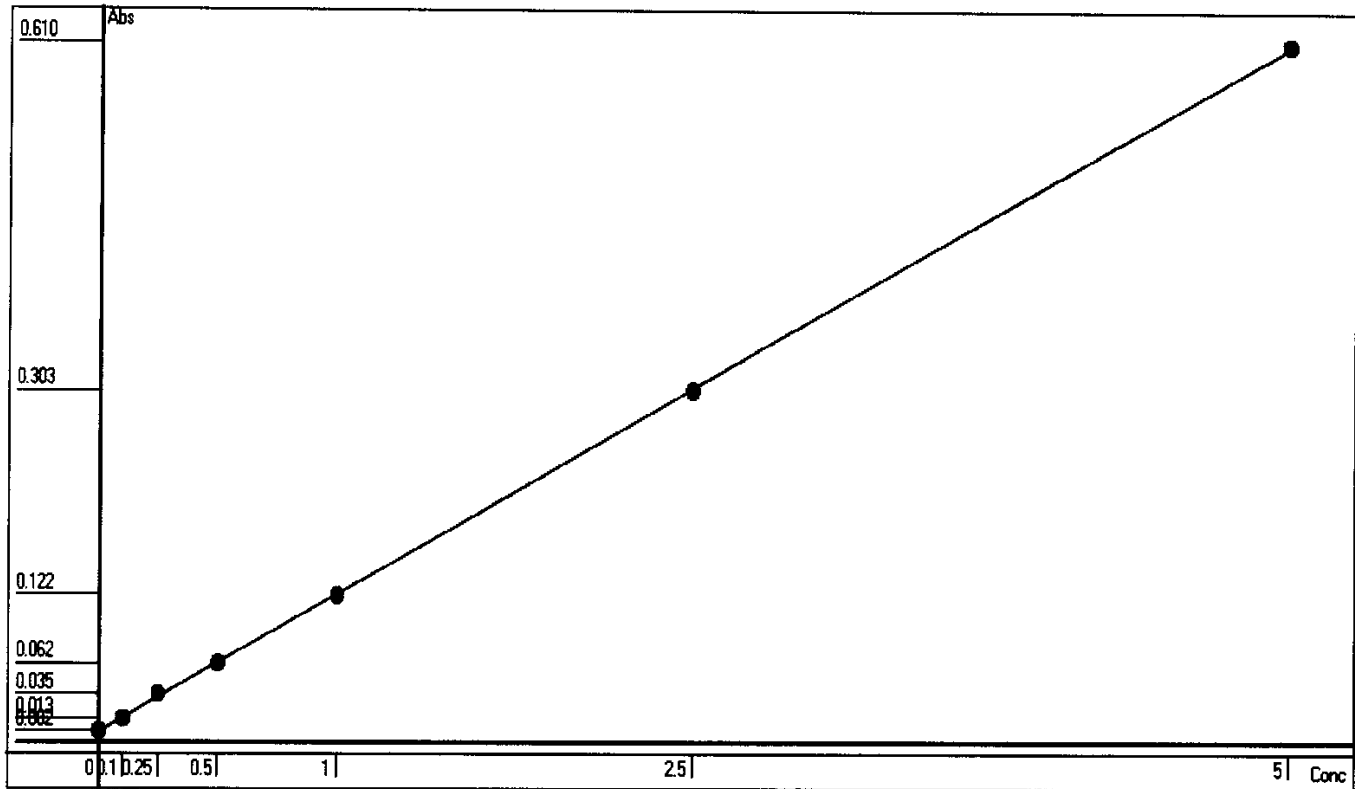
		Method : WTKN -Unit [mg/L] - EPA 351.2 TKN				
Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
19	L16120739-02	0.612	0.0760	0.00		8:37:55 AM
20	L16120739-03	0.015	0.0035	0.00		8:38:13 AM
ST-3	1CCV (2.5 mg/L)	2.435	0.2972	97.38		8:39:43 AM
ST-2	2CCB (0 mg/L)	-0.157	-0.0174	0.00	INV,><,LL	8:40:01 AM
21	L16120756-01	2.006	0.2452	0.00		8:41:31 AM
22	L16120757-01	0.522	0.0650	0.00		8:41:49 AM
23	WG594990-04 DUP	0.139	0.0186	0.00		8:43:19 AM
24	WG594990-05 MS	1.186	0.1456	0.00		8:43:37 AM
25	WG594990-07 MS	1.173	0.1441	0.00		8:45:07 AM
26	L16120521-09 (10)	0.777	0.0960	0.00		8:45:25 AM
27	ID 27 (CS)	0.938	0.1155	0.00		8:46:55 AM
28	ID 28	0.798	0.0986	0.00		8:47:13 AM
29	ID 29	0.817	0.1008	0.00		8:48:43 AM
ST-3	1CCV (2.5 mg/L)	2.427	0.2963	97.09		8:49:01 AM
ST-2	2CCB (0 mg/L)	-0.171	-0.0191	0.00	INV,><,LL	8:50:31 AM

Report Date :12/15/2016 Run Date :12/15/2016 Operator : SMARTCHEM1 Plan # :20161215001
 Plan Description : TKN-A1-DCM/12/15/2016

Calibrant Report - WTKN -

Calib Lot #:010104 Exp Date:6/18/2020 User:MICROBAC

Plan # : 20161215001 Description : [TKN-A1-DCM/12/15/2016] Unit



Point	OD	Conc	Recalc Conc	% Error
1	0.0024	0	0.0059	0.59
2	0.0131	0.1	0.0940	-6.00
3	0.0348	0.25	0.2728	9.12
4	0.0616	0.5	0.4936	-1.28
5	0.1222	1	0.9929	-0.71
6	0.3027	2.5	2.4799	-0.80
7	0.6099	5	5.0108	0.22
Conc = +8.2386*Abso -0.0139 R²=0.9999				RBL 0.2515 0

Report Date 12/15/2016 Run Date 12/15/2016

2.2 General Chemistry Data

2.2.10 Total Organic Carbon Data

2.2.10.1 Summary Data



Login Number: L16120521
Department: Conventional
Analyst: David Merckle

METHOD

Analysis Water: EPA 415.1/SM5310C/SW846 9060 (Total Organic Carbon)
Soil: Lloyd-Khan Methodology

HOLDING TIMES

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Duplicates: All acceptance criteria were met.

Matrix Spikes: All acceptance criteria were met.

SAMPLES

Samples: 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: 120851
Approved By: Deanna Hesson

A handwritten signature in black ink, appearing to read "Deanna Hesson", is written over a horizontal line.

Certificate of Analysis

Sample #: L16120521-01	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW36-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 22:51
Collect Date: 12/08/2016 11:20	Dilution: 1	File ID: TC12152016.055
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.97		1.00	0.500

Sample #: L16120521-03	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW37-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:05
Collect Date: 12/08/2016 09:55	Dilution: 1	File ID: TC12152016.056
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	2.02		1.00	0.500

Sample #: L16120521-05	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW35-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:18
Collect Date: 12/08/2016 14:45	Dilution: 1	File ID: TC12152016.057
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	1.53		1.00	0.500

Sample #: L16120521-07	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW21-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:30
Collect Date: 12/08/2016 14:50	Dilution: 100	File ID: TC12152016.058
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	729		100	50.0

Certificate of Analysis

Sample #: L16120521-09	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW31-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595004	Analyst: DCM	Run Date: 12/15/2016 23:43
Collect Date: 12/08/2016 11:45	Dilution: 25	File ID: TC12152016.059
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	255		25.0	12.5

Sample #: L16120521-11	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: MW24-120816	Prep Method: SM5310-C-2011	Prep Date: N/A
Matrix: Water	Analytical Method: SM5310-C-2011	Cal Date:
Workgroup #: WG595482	Analyst: DIH	Run Date: 12/19/2016 23:58
Collect Date: 12/08/2016 10:25	Dilution: 1	File ID: TC12192016.040
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	RL	MDL
Total Organic Carbon	TOC	10.0		1.00	0.500

2.2.10.2 QC Summary Data

**Total Organic Carbon Example Calculations
(Direct Readout Parameter)**

$$(\text{Readout})/(\text{dilution}) = \text{mg/L}$$

where:

Readout = direct readout from the instrument

dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 15-DEC-2016

Analyst: DCM

Analyst: NA

Method: TOC

Instrument: TOC-VWP

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG595003 WG595004

Calibration/Linearity	10-31-2015
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
16-DEC-2016



Secondary Reviewer:
19-DEC-2016



CHECKLIST1 - Modified 03/05/2008

Generated: DEC-19-2016 13:33:20



Microbac Laboratories Inc.

Data Checklist

Date: 19-DEC-2016

Analyst: DIH

Analyst: NA

Method: TOC

Instrument: TOC

Curve Workgroup: NA

Runlog ID: _____

Analytical Workgroups: WG595480 WG595482 WG595485

Calibration/Linearity	10/31/2015
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DIH
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
21-DEC-2016



Secondary Reviewer:
21-DEC-2016




Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: SM5310-C-2011
 Login Number: L16120521

AAB#: WG595004

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW36-120816	01	12/08/16					12/15/2016	7.5	28		12/15/16	7.5	28	
MW37-120816	03	12/08/16					12/15/2016	7.5	28		12/15/16	7.5	28	
MW35-120816	05	12/08/16					12/15/2016	7.4	28		12/15/16	7.4	28	
MW21-120816	07	12/08/16					12/15/2016	7.4	28		12/15/16	7.4	28	
MW31-120816	09	12/08/16					12/15/2016	7.5	28		12/15/16	7.5	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
 PDF File ID: 5072286
 Report generated 12/20/2016 15:42



Microbac Laboratories Inc.
HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

Analytical Method: SM5310-C-2011
Login Number: L16120521

AAB#: WG595482

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
MW24-120816	11	12/08/16					12/19/2016	11.6	28		12/19/16	11.6	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5072286
Report generated 12/20/2016 15:42



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: TC12152016.033
 Prep Date: 12/15/16 18:19
 Analyzed Date: 12/15/16 18:19
 Analyst: DCM

Work Group: WG595004
 Blank Sample ID: WG595004-01
 Instrument ID: TOC-VWP
 Method: SM5310-C-2011

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG595004-02	TC12152016.034	12/15/16 18:30	01
LCS2	WG595004-03	TC12152016.035	12/15/16 18:42	01
MW36-120816	L16120521-01	TC12152016.055	12/15/16 22:51	01
MW37-120816	L16120521-03	TC12152016.056	12/15/16 23:05	01
MW35-120816	L16120521-05	TC12152016.057	12/15/16 23:18	01
MW21-120816	L16120521-07	TC12152016.058	12/15/16 23:30	DL01
MW31-120816	L16120521-09	TC12152016.059	12/15/16 23:43	DL01
DUP	WG595004-05	TC12152016.060	12/15/16 23:55	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5072287
 Report generated 12/20/2016 15:42



METHOD BLANK SUMMARY

Login Number: L16120521
 Blank File ID: TC12192016.023
 Prep Date: 12/19/16 20:17
 Analyzed Date: 12/19/16 20:17
 Analyst: DIH

Work Group: WG595482
 Blank Sample ID: WG595482-01
 Instrument ID: TOC-VWP
 Method: SM5310-C-2011

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG595482-02	TC12192016.024	12/19/16 20:29	01
LCS2	WG595482-03	TC12192016.025	12/19/16 20:41	01
MW24-120816	L16120521-11	TC12192016.040	12/19/16 23:58	01
DUP	WG595482-05	TC12192016.045	12/20/16 01:01	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5072287
 Report generated 12/20/2016 15:42



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/15/16 18:19 Sample ID: WG595004-01
Instrument ID: TOC-VWP Run Date: 12/15/16 18:19 Prep Method: SM5310-C-2011
File ID: TC12152016.033 Analyst: DCM Method: SM5310-C-2011
Workgroup (AAB#): WG595004 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: TOC-VW - 20-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5072288

20-DEC-2016 15:42



Microbac Laboratories Inc.
METHOD BLANK REPORT

Login Number: L16120521 Prep Date: 12/19/16 20:17 Sample ID: WG595482-01
Instrument ID: TOC-VWP Run Date: 12/19/16 20:17 Prep Method: SM5310-C-2011
File ID: TC12192016.023 Analyst: DIH Method: SM5310-C-2011
Workgroup (AAB#): WG595482 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: TOC-VW - 20-DEC-16

Analytes	MDL	RL	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	1.00	0.500	1	U

MDL Method Detection Limit

RL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name: BLANK

PDF ID: 5072288

20-DEC-2016 15:42



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: DIH Prep Method: SM5310-C-2011
 Instrument ID: TOC-VWP Matrix: Water Method: SM5310-C-2011
 Workgroup (AAB#): WG595482 Units: mg/L
 QC Key: WATERL00 Lot #: STD77870
 Sample ID: WG595482-02 LCS File ID: TC12192016.024 Run Date: 12/19/2016 20:29
 Sample ID: WG595482-03 LCS2 File ID: TC12192016.025 Run Date: 12/19/2016 20:41

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	27.0	108	25.0	27.4	110	1.51	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5072289
 Report generated: 12/20/2016 15:42



Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

Login Number: L16120521 Analyst: DCM Prep Method: SM5310-C-2011
Instrument ID: TOC-VWP Matrix: Water Method: SM5310-C-2011
Workgroup (AAB#): WG595004 Units: mg/L
QC Key: WATERL00 Lot #: STD77870
Sample ID: WG595004-02 LCS File ID: TC12152016.034 Run Date: 12/15/2016 18:30
Sample ID: WG595004-03 LCS2 File ID: TC12152016.035 Run Date: 12/15/2016 18:42

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	27.3	109	25.0	26.9	107	1.59	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 5072289
Report generated: 12/20/2016 15:42



2.2.10.3 Raw Data

Total Organic Carbon

595482

595485

CCV (TOC): <u>STD 79381</u> (5/200)(1000) = 25mg/L		LCS (TOC): <u>STD 77870</u> (5/200)(1000) = 25mg/L	
CCV (TIC): <u>STD 78236</u> (5/200)(1000) = 25mg/L		MS (TOC): <u>0.4/40(1000) = 10</u>	
Calibration Curve Date: <u>10/31/15</u>		Reagent: <u>RGT 38598</u> <u>37673</u>	
☒ <u>SM5310-e</u> : Matrix 2 WG <u>595480</u> ☐ EPA 415.1/9060A(mod): Matrix 1 WG <u>595482</u> SOP: K <u>4151</u> Rev. <u>18</u> WG <u>595485</u> Instrument: Shimadza TOC-VWP/ASI			

☒ drain reservoir filled
☒ ASI water bottle full
☒ dilution water bottle full

DAILY CHECK
☒ 3rd bottle full
☒ sufficient gas
☒ sufficient persulfate

☒ sufficient acid
☒ waste container

Position	Sample ID	Dilution
1	TIC 25	
2	TOC/TIC	
3	CCV 25	
4	BIK	
5	LCS 25	
6	LCS DUP	
7	12-990-01	
8	02	
9	12-1011-01	1/200*
10	12-873-01	1/10
11	02	1/25
12	12-949-01	1/25
13	12-979-09	
14	CCV	
15	CCB	
16	12-1004-01	
17	02	
18	03	
19	04	
20	12-1005-01	
21	DUP	
22	MS	
23	BIK	
24	LCS 25	
25	LCS DUP	

Position	Sample ID	Dilution
26	CCV	
27	CCB	
28	12-858-01	
29	02	
30	12-856-01	
31	02	
32	03	
33	04	
34	05	
35	06	
36	07	
37	08	
38	CCV	
39	CCB	
40	12-521-11	
41	12-568-01	
42	12-617-02	
43	03	
44	04	
45	DUP 04	
46	MS 05	
47	MSD 06	
48	08	
49	09	1/2
50	CCV	

Position	Sample ID	Dilution
51	CCB	
52	12-691-03	
53	12-959-01	
54	12-1003-01	
55	BIK	
56	LCS 25	
57	LCS DUP	
58	12-974-02	
59	03	
60	06	
61	07	
62	CCV	
63	CCB	
64	12-974-08	
65	09	
66	12-1006-01	
67	02	
68	03	
69	04	
70	12-755-03	1/3
71	09	1/2
72	17	
73	18	1/3
74	CCV	
75	CCB	

Analyst: Deanne D. BrownDate/Time: 12/19/16

pg1

DCN#122807

* polymer - diluted due to
viscosity of sample

Total Organic Carbon

MAKE DAILY

CCV (TOC): _____
(5/200)(1000) = 25mg/LLCS (TOC): _____
(5/200)(1000) = 25mg/LCCV (TIC): _____
(5/200)(1000) = 25mg/LMS (TOC): _____

Calibration Curve Date: _____

Reagent: _____
_____

SM5310-C : Matrix 2 WG _____



EPA 415.1/9060A(mod): Matrix 1 WG _____ SOP: K _____ Rev. _____

WG _____

Instrument: Shimadza TOC-VWP/ASI



drain reservoir filled



ASI water bottle full



dilution water bottle full



DAILY CHECK

3rd bottle full

sufficient gas



sufficient persulfate



sufficient acid



waste container

Position	Sample ID	Dilution
151	12-782-05	1/3
155	07	
163	12-857-02	1/3
138	DUP 02	1/3
550	MS 03	1/3
862	MSO 04	1/3
25 714	CCV 07	
857	CCB 12	
814	CCV	
100	CCB	
11	12-949-01	1/50
12	12-1004-03	1/3
13	12-1073-01	
14	12-856-03	1/2
15	04	1/3
16	06	1/3
17	12-617-09	
18	12-959-01	1/5
19	12-755-03	
20	09	
21	CCV	
22	CCB	
23	12-857-02	
24	DUP 02	
25	MS 03	

Position	Sample ID	Dilution
26	MSD 04	
27	12-1129-01	
28	459-01	1/10
29	CCV	
30	CCB	
329	CCV	
320	CCB	
33		
34		
35		
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37		
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50		

Position	Sample ID	Dilution
51		
52		
53		
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72		
73		
74		
75		

Analyst: Deanna BrownDate/Time: 12/19/16

Pg2

DCN#122807



	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	TIC 25	TOC:3.263mg/L TC:29.60mg/L IC:26.34mg/L	Complete	12/19/2016 1:12:30 PM	1
2	TOC	TOC/TIC	TOC:28.48mg/L TC:36.05mg/L IC:7.566mg/L	Complete	12/19/2016 1:25:21 PM	2
3	TOC	CCV 25	TOC:27.00mg/L TC:27.04mg/L IC:0.03346mg/L	Complete	12/19/2016 1:37:30 PM	3
4	TOC	WG595480-01 BLK	TOC:0.02329mg/L TC:0.1161mg/L IC:0.09280mg/L	Complete	12/19/2016 1:53:53 PM	0
5	TOC	WG595480-02 LCS	TOC:26.76mg/L TC:26.79mg/L IC:0.02880mg/L	Complete	12/19/2016 2:14:48 PM	5
6	TOC	WG595480-03 LCSDUP	TOC:26.70mg/L TC:26.74mg/L IC:0.03990mg/L	Complete	12/19/2016 2:35:51 PM	6
7	TOC	L16120990-01	TOC:3.939mg/L TC:4.179mg/L IC:0.2396mg/L	Complete	12/19/2016 2:56:23 PM	7
8	TOC	L16120990-02	TOC:3.308mg/L TC:3.837mg/L IC:0.5291mg/L	Complete	12/19/2016 3:20:29 PM	8
9	TOC	L16121011-01 (200)	TOC:9.240mg/L TC:9.402mg/L IC:0.1621mg/L	Complete	12/19/2016 3:43:56 PM	9
10	TOC	L16120873-01 (10)	TOC:15.20mg/L TC:17.89mg/L IC:2.694mg/L	Complete	12/19/2016 4:08:47 PM	10
11	TOC	L16120873-02 (25)	TOC:26.07mg/L TC:28.05mg/L IC:1.984mg/L	Complete	12/19/2016 4:35:01 PM	11
12	TOC	<Untitled>	TOC:53.08mg/L TC:53.46mg/L IC:0.3735mg/L	Complete	12/19/2016 4:58:00 PM	12
13	TOC	L16120979-09	TOC:3.374mg/L TC:9.644mg/L IC:6.270mg/L	Complete	12/19/2016 5:19:08 PM	13
14	TOC	CCV	TOC:27.44mg/L TC:27.53mg/L IC:0.08922mg/L	Complete	12/19/2016 5:31:21 PM	14
15	TOC	CCB	TOC:0.02203mg/L TC:0.1185mg/L IC:0.09646mg/L	Complete	12/19/2016 5:40:19 PM	0
16	TOC	L16121004-01	TOC:5.018mg/L TC:18.24mg/L IC:13.22mg/L	Complete	12/19/2016 6:01:51 PM	16
17	TOC	L16121004-02	TOC:2.161mg/L TC:6.958mg/L IC:4.797mg/L	Complete	12/19/2016 6:22:46 PM	17
18	TOC		TOC:3.255mg/L TC:66.65mg/L IC:63.40mg/L	Complete	12/19/2016 6:48:31 PM	18
19	TOC	L16121004-04	TOC:1.356mg/L TC:4.678mg/L IC:3.322mg/L	Complete	12/19/2016 7:09:02 PM	19
20	TOC	L16121005-01	TOC:3.880mg/L TC:7.647mg/L IC:3.767mg/L	Complete	12/19/2016 7:30:09 PM	20
21	TOC	WG595480-05 DUP	TOC:3.726mg/L TC:7.038mg/L IC:3.311mg/L	Complete	12/19/2016 7:52:01 PM	21
22	TOC	WG595480-06 MS	TOC:14.34mg/L TC:17.38mg/L IC:3.045mg/L	Complete	12/19/2016 8:12:54 PM	22
23	TOC	WG595482-01 BLK	TOC:0.01288mg/L TC:0.1335mg/L IC:0.1206mg/L	Complete	12/19/2016 8:21:54 PM	0
24	TOC	WG595482-02 LCS	TOC:27.00mg/L TC:27.09mg/L IC:0.08435mg/L	Complete	12/19/2016 8:34:06 PM	24
25	TOC	WG595482-03 LCSDUP	TOC:27.41mg/L TC:27.50mg/L IC:0.08764mg/L	Complete	12/19/2016 8:46:19 PM	5
26	TOC	CCV	TOC:27.47mg/L TC:27.53mg/L IC:0.05317mg/L	Complete	12/19/2016 8:58:49 PM	26
27	TOC	CCB	TOC:0.01779mg/L TC:0.1237mg/L IC:0.1059mg/L	Complete	12/19/2016 9:07:44 PM	0
28	TOC	L16120858-01	TOC:4.626mg/L TC:8.299mg/L IC:3.673mg/L	Complete	12/19/2016 9:20:01 PM	28
29	TOC	L16120858-02	TOC:3.187mg/L TC:5.239mg/L IC:2.052mg/L	Complete	12/19/2016 9:32:01 PM	29
30	TOC	L16120856-01	TOC:4.280mg/L TC:18.49mg/L IC:14.21mg/L	Complete	12/19/2016 9:45:54 PM	30
31	TOC	L16120856-02	TOC:8.176mg/L TC:39.41mg/L IC:31.24mg/L	Complete	12/19/2016 10:00:25 PM	31
32	TOC		TOC:7.104mg/L TC:50.61mg/L IC:43.50mg/L	Complete	12/19/2016 10:15:20 PM	32
33	TOC		!!Error!! TOC:-3.036mg/L TC:77.39mg/L IC:80.42mg/L	Complete	12/19/2016 10:30:31 PM	33
34	TOC	L16120856-05	TOC:2.352mg/L TC:11.16mg/L IC:8.813mg/L	Complete	12/19/2016 10:43:57 PM	34
35	TOC		!!Error!! TOC:-5.016mg/L TC:76.69mg/L IC:81.71mg/L	Complete	12/19/2016 10:59:08 PM	35
36	TOC	L16120856-07	TOC:5.255mg/L TC:24.53mg/L IC:19.28mg/L	Complete	12/19/2016 11:14:01 PM	36
37	TOC	L16120856-08	TOC:6.110mg/L TC:26.81mg/L IC:20.70mg/L	Complete	12/19/2016 11:28:04 PM	37
38	TOC	CCV	TOC:27.57mg/L TC:27.73mg/L IC:0.1620mg/L	Complete	12/19/2016 11:40:32 PM	3
39	TOC	CCB	TOC:0.01357mg/L TC:0.1432mg/L IC:0.1296mg/L	Complete	12/19/2016 11:49:30 PM	0
40	TOC	L16120521-11	TOC:10.01mg/L TC:16.31mg/L IC:6.300mg/L	Complete	12/20/2016 12:02:56 AM	40
41	TOC	L16120568-01	TOC:0.4199mg/L TC:0.5466mg/L IC:0.1267mg/L	Complete	12/20/2016 12:14:22 AM	41
42	TOC	L16120617-02	TOC:7.961mg/L TC:37.38mg/L IC:29.42mg/L	Complete	12/20/2016 12:27:32 AM	42
43	TOC	L16120617-03	TOC:7.840mg/L TC:37.64mg/L IC:29.80mg/L	Complete	12/20/2016 12:40:42 AM	43
44	TOC	L16120617-04	TOC:14.07mg/L TC:46.47mg/L IC:32.40mg/L	Complete	12/20/2016 12:53:57 AM	44
45	TOC	WG595482-05 DUP	TOC:14.20mg/L TC:47.47mg/L IC:33.27mg/L	Complete	12/20/2016 1:07:08 AM	45
46	TOC	L16120617-05 MS	TOC:21.87mg/L TC:42.72mg/L IC:20.86mg/L	Complete	12/20/2016 1:20:01 AM	46
47	TOC	L16120617-06 MSD	TOC:22.34mg/L TC:44.09mg/L IC:21.74mg/L	Complete	12/20/2016 1:33:03 AM	47
48	TOC	L16120617-08	TOC:9.545mg/L TC:35.64mg/L IC:26.09mg/L	Complete	12/20/2016 1:46:21 AM	48
49	TOC	L16120617-09 (2)	TOC:3.867mg/L TC:9.724mg/L IC:5.857mg/L	Complete	12/20/2016 1:58:41 AM	49
50	TOC	CCV	TOC:27.39mg/L TC:27.50mg/L IC:0.1124mg/L	Complete	12/20/2016 2:11:01 AM	14
51	TOC	CCB	TOC:0.01703mg/L TC:0.1422mg/L IC:0.1252mg/L	Complete	12/20/2016 2:19:58 AM	0
52	TOC	L16120691-03	TOC:29.28mg/L TC:33.61mg/L IC:4.328mg/L	Complete	12/20/2016 2:33:36 AM	52
53	TOC		!!Error!! TOC:-11.68mg/L TC:107.8mg/L IC:119.5mg/L	Complete	12/20/2016 2:51:02 AM	53
54	TOC	L16121003-01	TOC:20.93mg/L TC:24.46mg/L IC:3.527mg/L	Complete	12/20/2016 3:04:32 AM	54
55	TOC	WG595485-01 BLK	!!Error!! TOC:-0.03899mg/L TC:0.2187mg/L IC:0.257	Complete	12/20/2016 3:13:31 AM	0
56	TOC	WG595485-02 LCS	TOC:27.33mg/L TC:27.47mg/L IC:0.1407mg/L	Complete	12/20/2016 3:25:48 AM	56
57	TOC	WG595485-03 LCSDUP	TOC:27.57mg/L TC:27.68mg/L IC:0.1121mg/L	Complete	12/20/2016 3:38:14 AM	6
58	TOC	L16120974-02	TOC:3.361mg/L TC:11.97mg/L IC:8.610mg/L	Complete	12/20/2016 3:52:11 AM	58
59	TOC	L16120974-03	TOC:0.6252mg/L TC:2.900mg/L IC:2.275mg/L	Complete	12/20/2016 4:04:30 AM	59
60	TOC	L16120974-06	TOC:3.330mg/L TC:9.283mg/L IC:5.953mg/L	Complete	12/20/2016 4:18:52 AM	60
61	TOC	L16120974-07	TOC:2.916mg/L TC:7.116mg/L IC:4.200mg/L	Complete	12/20/2016 4:32:59 AM	61
62	TOC	CCV	TOC:27.48mg/L TC:27.58mg/L IC:0.09536mg/L	Complete	12/20/2016 4:45:29 AM	26
63	TOC	CCB	TOC:0.01237mg/L TC:0.1432mg/L IC:0.1308mg/L	Complete	12/20/2016 4:54:26 AM	0
64	TOC	L16120974-08	TOC:3.152mg/L TC:7.642mg/L IC:4.490mg/L	Complete	12/20/2016 5:08:25 AM	64
65	TOC	L16120974-09	TOC:2.770mg/L TC:7.129mg/L IC:4.358mg/L	Complete	12/20/2016 5:21:56 AM	65
66	TOC	L16121006-01	TOC:5.381mg/L TC:5.958mg/L IC:0.5766mg/L	Complete	12/20/2016 5:34:23 AM	66
67	TOC	L16121006-02	TOC:34.97mg/L TC:39.18mg/L IC:4.209mg/L	Complete	12/20/2016 5:47:25 AM	67

12/20/2016 3:07:07 PM

1/2

	Analysis	Sample Name	Result	Status	Date / Time	Vial
68	TOC	L16121006-03	TOC:15.39mg/L TC:18.63mg/L IC:3.242mg/L	Complete	12/20/2016 6:00:02 AM	68
69	TOC	L16121006-04	TOC:5.965mg/L TC:8.364mg/L IC:2.399mg/L	Complete	12/20/2016 6:12:13 AM	4
70	TOC	L16120755-03 (3)	TOC:3.697mg/L TC:7.878mg/L IC:4.182mg/L	Complete	12/20/2016 6:24:26 AM	15
71	TOC	L16120755-09 (2)	TOC:6.878mg/L TC:7.997mg/L IC:1.118mg/L	Complete	12/20/2016 6:36:37 AM	23
72	TOC	L16120755-17	TOC:9.218mg/L TC:12.97mg/L IC:3.757mg/L	Complete	12/20/2016 6:49:00 AM	27
73	TOC	L16120755-18 (3)	TOC:6.908mg/L TC:12.44mg/L IC:5.528mg/L	Complete	12/20/2016 7:01:27 AM	39
74	TOC	CCV	TOC:27.60mg/L TC:27.70mg/L IC:0.1047mg/L	Complete	12/20/2016 7:13:50 AM	3
75	TOC	CCB	TOC:0.02283mg/L TC:0.1435mg/L IC:0.1206mg/L	Complete	12/20/2016 7:22:47 AM	0
76	TOC	L16120782-05 (3)	TOC:7.336mg/L TC:12.63mg/L IC:5.295mg/L	Complete	12/20/2016 7:35:29 AM	51
77	TOC	L16120782-07	TOC:8.237mg/L TC:11.08mg/L IC:2.838mg/L	Complete	12/20/2016 7:50:10 AM	55
78	TOC	L16120857-02 (3)	TOC:5.844mg/L TC:7.118mg/L IC:1.275mg/L	Complete	12/20/2016 8:02:25 AM	63
79	TOC	WG595485-05 (3) DUP	TOC:5.735mg/L TC:7.540mg/L IC:1.804mg/L	Complete	12/20/2016 8:14:34 AM	38
80	TOC	L16120857-03 (3)	TOC:9.402mg/L TC:11.13mg/L IC:1.727mg/L	Complete	12/20/2016 8:26:52 AM	50
81	TOC	L16120857-04 (3)	TOC:9.140mg/L TC:10.17mg/L IC:1.026mg/L	Complete	12/20/2016 8:39:12 AM	62
82	TOC	L16120857-07	TOC:15.56mg/L TC:26.40mg/L IC:10.84mg/L	Complete	12/20/2016 8:52:14 AM	25
83	TOC	L16120857-12	TOC:10.79mg/L TC:18.37mg/L IC:7.587mg/L	Complete	12/20/2016 9:05:05 AM	57
84	TOC	CCV	TOC:27.47mg/L TC:27.60mg/L IC:0.1293mg/L	Complete	12/20/2016 9:39:49 AM	10
85	TOC	CCB	TOC:0.01088mg/L TC:0.1204mg/L IC:0.1095mg/L	Complete	12/20/2016 9:48:46 AM	0
86	TOC	L16120949-01 (50)	TOC:24.78mg/L TC:25.12mg/L IC:0.3394mg/L	Complete	12/20/2016 10:10:28 AM	11
87	TOC	L16121004-03 (3)	TOC:6.047mg/L TC:28.92mg/L IC:22.88mg/L	Complete	12/20/2016 10:32:19 AM	12
88	TOC	L16121073-01	TOC:6.815mg/L TC:16.94mg/L IC:10.12mg/L	Complete	12/20/2016 10:55:30 AM	13
89	TOC	L16120856-03 (2)	TOC:5.728mg/L TC:35.25mg/L IC:29.53mg/L	Complete	12/20/2016 11:09:04 AM	14
90	TOC	L16120856-04 (3)	TOC:6.682mg/L TC:48.27mg/L IC:41.59mg/L	Complete	12/20/2016 11:22:41 AM	15
91	TOC	L16120856-06 (3)	TOC:1.935mg/L TC:59.80mg/L IC:57.86mg/L	Complete	12/20/2016 11:36:37 AM	16
92	TOC		!!Error!! TOC:-1.517mg/L TC:68.19mg/L IC:69.71mg/L	Complete	12/20/2016 11:50:39 AM	17
93	TOC		!!Error!! TOC:-3.300mg/L TC:67.58mg/L IC:70.88mg/L	Complete	12/20/2016 12:04:54 PM	18
94	TOC		TOC:13.19mg/L TC:53.05mg/L IC:39.85mg/L	Complete	12/20/2016 12:18:06 PM	19
95	TOC		TOC:13.07mg/L TC:61.57mg/L IC:48.50mg/L	Complete	12/20/2016 12:31:46 PM	20
96	TOC	CCV	TOC:27.06mg/L TC:27.37mg/L IC:0.3151mg/L	Complete	12/20/2016 12:44:07 PM	21
97	TOC	CCB	!!Error!! TOC:-0.00290mg/L TC:0.1324mg/L IC:0.135	Complete	12/20/2016 12:53:03 PM	0
98	TOC		TOC:16.28mg/L TC:63.88mg/L IC:47.60mg/L	Complete	12/20/2016 1:06:45 PM	23
99	TOC		TOC:16.10mg/L TC:64.81mg/L IC:48.71mg/L	Complete	12/20/2016 1:20:19 PM	24
100	TOC		TOC:27.16mg/L TC:64.83mg/L IC:37.67mg/L	Complete	12/20/2016 1:33:58 PM	25
101	TOC		TOC:29.67mg/L TC:59.95mg/L IC:30.28mg/L	Complete	12/20/2016 1:47:19 PM	26
102	TOC	L16121129-01	TOC:4.900mg/L TC:16.69mg/L IC:11.79mg/L	Complete	12/20/2016 2:12:39 PM	27
103	TOC	L16120959-01 (10)	TOC:4.974mg/L TC:33.23mg/L IC:28.25mg/L	Complete	12/20/2016 2:25:34 PM	28
104	TOC	CCV	TOC:27.04mg/L TC:27.19mg/L IC:0.1527mg/L	Complete	12/20/2016 2:51:18 PM	29
105	TOC	CCB	!!Error!! TOC:-0.00014mg/L TC:0.1178mg/L IC:0.117	Complete	12/20/2016 3:00:16 PM	0

Instr. Information

System
DetectorTOCVW ASI
Wet Chemical

Sample

Sample Name: TIC 25
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

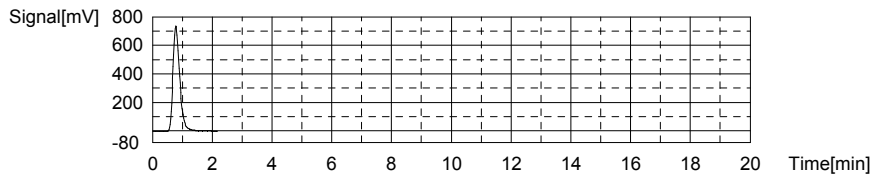
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.263mg/L TC:29.60mg/L IC:26.34mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1158	29.60mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 1:07:05 PM

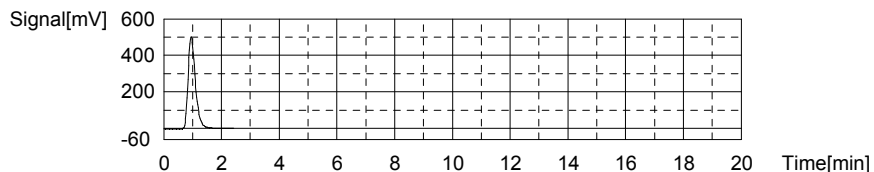
Mean Area 1158
Mean Conc. 29.60mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	886.4	26.34mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 1:12:30 PM

Mean Area 886.4
Mean Conc. 26.34mg/L



Sample

Sample Name: TOC/TIC
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

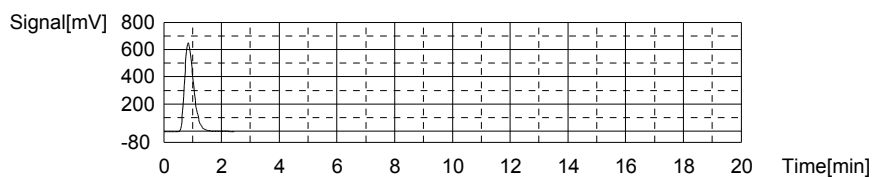
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:28.48mg/L TC:36.05mg/L IC:7.566mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1409	36.05mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 1:20:23 PM

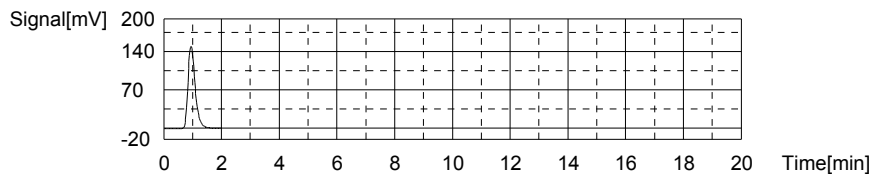
Mean Area 1409
Mean Conc. 36.05mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	258.8	7.566mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 1:25:21 PM

Mean Area 258.8
Mean Conc. 7.566mg/L



Sample

Sample Name: CCV 25
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

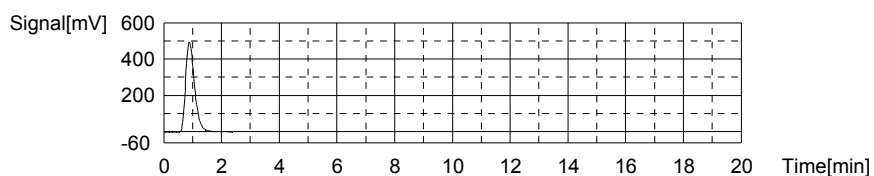
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.00mg/L TC:27.04mg/L IC:0.03346mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1058	27.04mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 1:33:10 PM

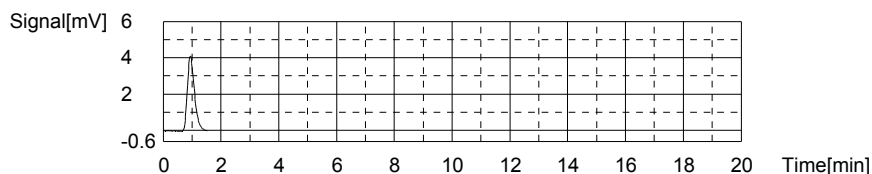
Mean Area 1058
Mean Conc. 27.04mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.045	0.03346mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 1:37:30 PM

Mean Area 7.045
Mean Conc. 0.03346mg/L



Sample

Sample Name: WG595480-01 BLK
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

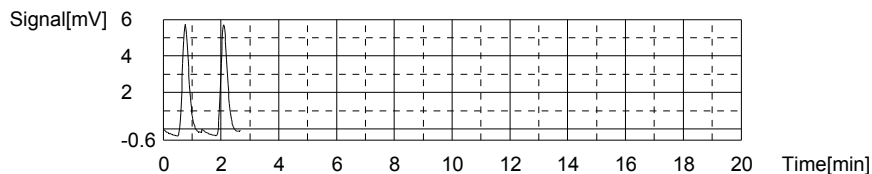
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02329mg/L TC:0.1161mg/L IC:0.09280mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.585	0.1190mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 1:42:28 PM
2	9.362	0.1132mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 1:45:57 PM

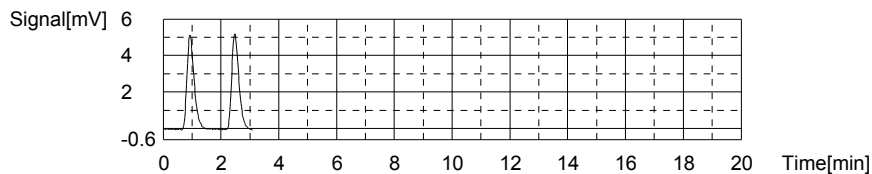
Mean Area 9.474
Mean Conc. 0.1161mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.961	0.09078mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 1:49:55 PM
2	9.096	0.09482mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 1:53:53 PM

Mean Area 9.029
Mean Conc. 0.09280mg/L



Sample

Sample Name: WG595480-02 LCS
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

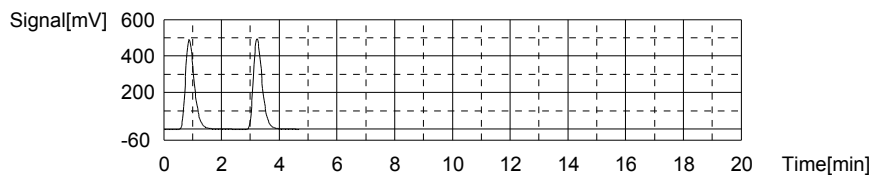
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.76mg/L TC:26.79mg/L IC:0.02880mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1046	26.73mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 2:01:41 PM
2	1051	26.86mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 2:06:17 PM

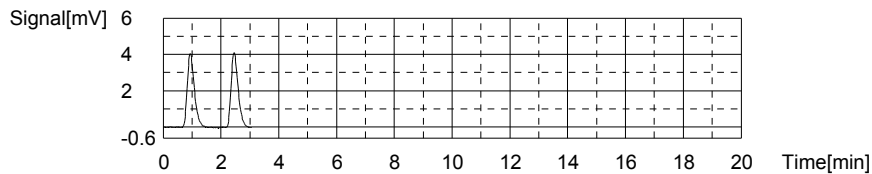
Mean Area 1049
Mean Conc. 26.79mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.870	0.02822mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 01	12/19/2016 2:10:37 PM
2	6.909	0.02939mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 01	12/19/2016 2:14:48 PM

Mean Area 6.890
Mean Conc. 0.02880mg/L



Sample

Sample Name: WG595480-03 LCSDUP
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

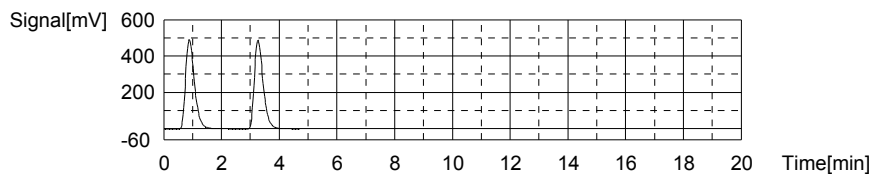
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.70mg/L TC:26.74mg/L IC:0.03990mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1052	26.88mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 2:22:38 PM
2	1041	26.60mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 2:27:13 PM

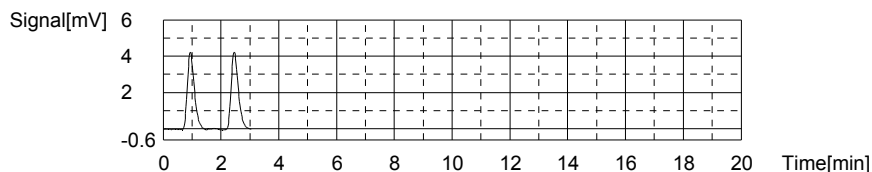
Mean Area 1047
Mean Conc. 26.74mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.252	0.03965mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 2:31:36 PM
2	7.269	0.04016mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 2:35:51 PM

Mean Area 7.261
Mean Conc. 0.03990mg/L



Sample

Sample Name: L16120990-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

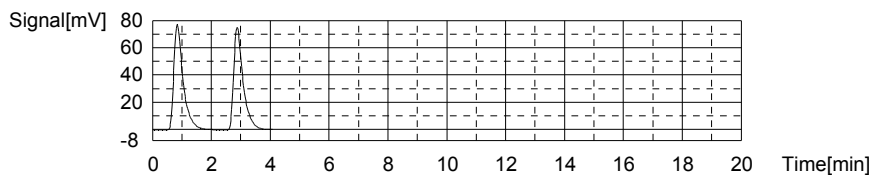
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.939mg/L TC:4.179mg/L IC:0.2396mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	168.9	4.209mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 2:43:20 PM
2	166.5	4.148mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 2:47:38 PM

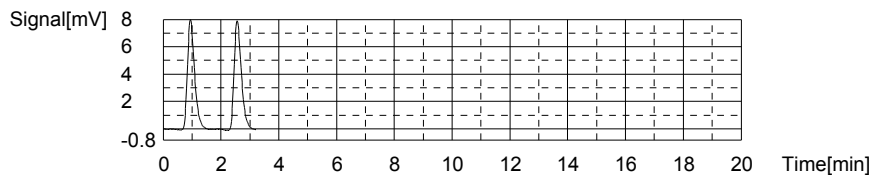
Mean Area 167.7
Mean Conc. 4.179mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.95	0.2400mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 2:52:06 PM
2	13.92	0.2391mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 2:56:23 PM

Mean Area 13.94
Mean Conc. 0.2396mg/L



Sample

Sample Name: L16120990-02
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

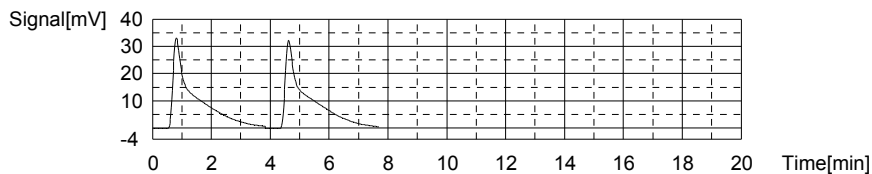
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.308mg/L TC:3.837mg/L IC:0.5291mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	153.9	3.824mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 3:05:38 PM
2	154.9	3.850mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 3:11:46 PM

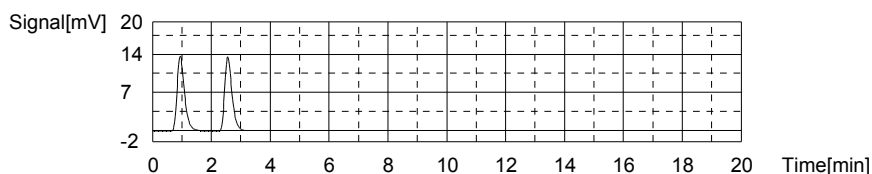
Mean Area 154.4
Mean Conc. 3.837mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	23.63	0.5297mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 01	12/19/2016 3:16:12 PM
2	23.59	0.5285mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 01	12/19/2016 3:20:29 PM

Mean Area 23.61
Mean Conc. 0.5291mg/L



Sample

Sample Name: L16121011-01 (200)
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

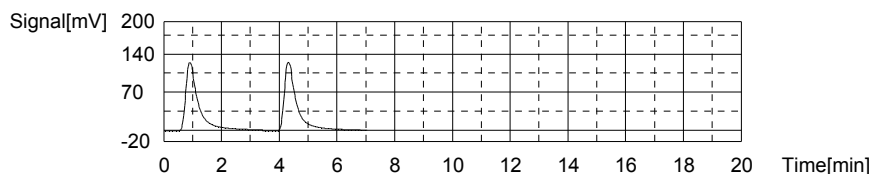
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.240mg/L TC:9.402mg/L IC:0.1621mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	371.9	9.422mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 3:29:21 PM
2	370.4	9.383mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 3:35:23 PM

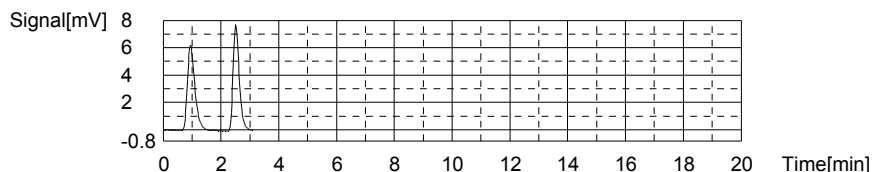
Mean Area 371.2
Mean Conc. 9.402mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.17	0.1569mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 3:39:50 PM
2	11.52	0.1673mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 3:43:56 PM

Mean Area 11.35
Mean Conc. 0.1621mg/L



Sample

Sample Name: L16120873-01 (10)
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

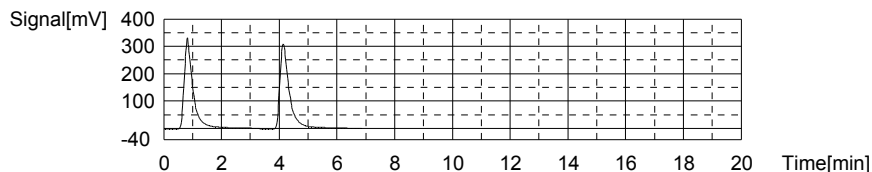
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.20mg/L TC:17.89mg/L IC:2.694mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	692.9	17.66mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 3:52:42 PM
2	710.5	18.12mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 3:59:36 PM

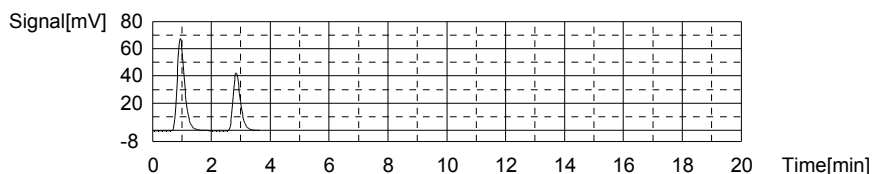
Mean Area 701.7
Mean Conc. 17.89mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	117.8	3.347mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 4:04:22 PM
2	74.11	2.040mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 4:08:47 PM

Mean Area 95.96
Mean Conc. 2.694mg/L



Sample

Sample Name: L16120873-02 (25)
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

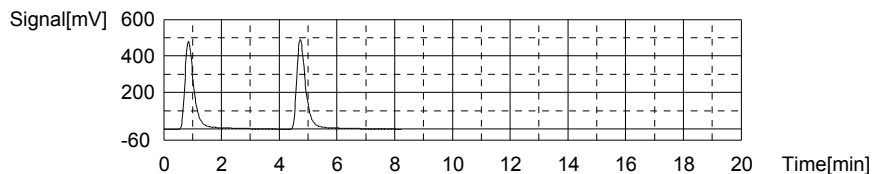
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.07mg/L TC:28.05mg/L IC:1.984mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1080	27.60mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 4:18:05 PM
2	1115	28.50mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 4:25:48 PM

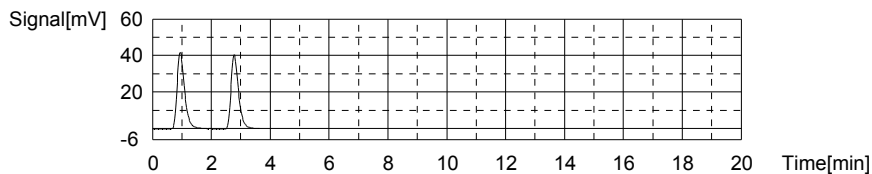
Mean Area 1098
Mean Conc. 28.05mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	73.45	2.020mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 4:30:33 PM
2	71.00	1.947mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 4:35:01 PM

Mean Area 72.22
Mean Conc. 1.984mg/L



Sample

Sample Name: <Untitled>
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

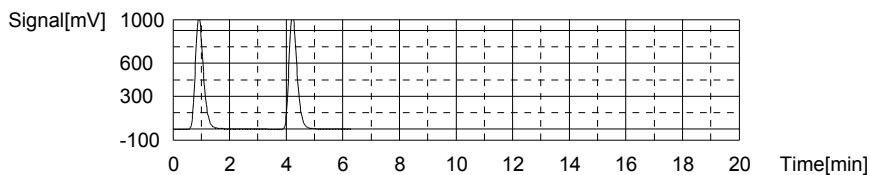
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:53.08mg/L TC:53.46mg/L IC:0.3735mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2069	53.00mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 4:43:46 PM
2	2105	53.92mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 4:49:10 PM

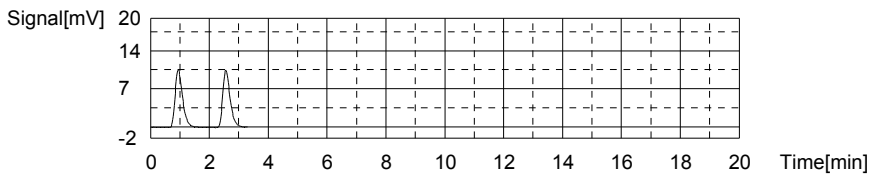
Mean Area 2087
Mean Conc. 53.46mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	18.48	0.3756mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 4:53:40 PM
2	18.34	0.3714mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 4:58:00 PM

Mean Area 18.41
Mean Conc. 0.3735mg/L



Sample

Sample Name: L16120979-09
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

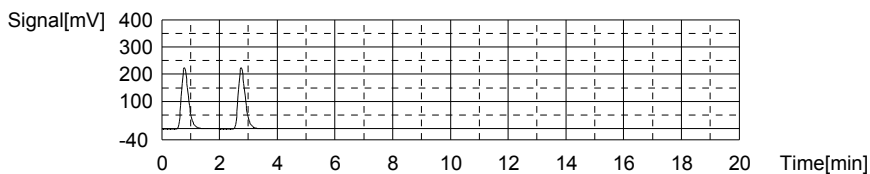
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.374mg/L TC:9.644mg/L IC:6.270mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	380.5	9.642mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 5:05:25 PM
2	380.6	9.645mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 5:09:34 PM

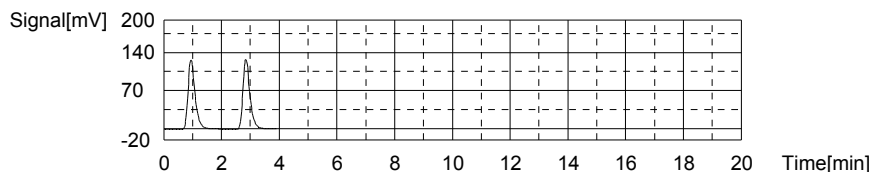
Mean Area 380.6
Mean Conc. 9.644mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	213.9	6.222mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	12/19/2016 5:14:26 PM
2	217.1	6.318mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	12/19/2016 5:19:08 PM

Mean Area 215.5
Mean Conc. 6.270mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

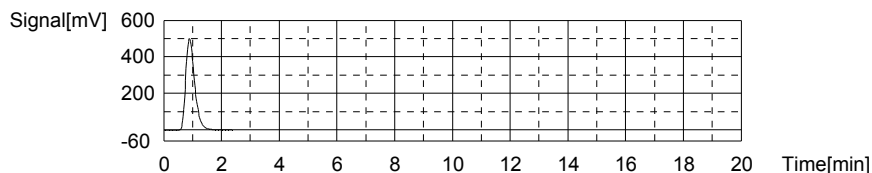
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.44mg/L TC:27.53mg/L IC:0.08922mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1077	27.53mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/19/2016 5:26:56 PM

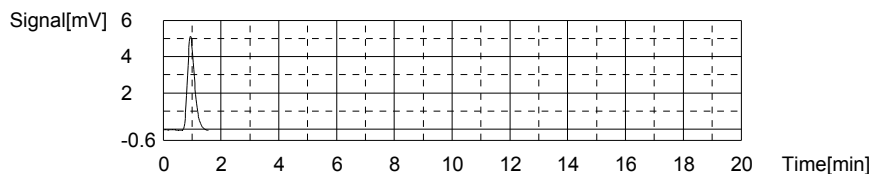
Mean Area 1077
Mean Conc. 27.53mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.909	0.08922mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	12/19/2016 5:31:21 PM

Mean Area 8.909
Mean Conc. 0.08922mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

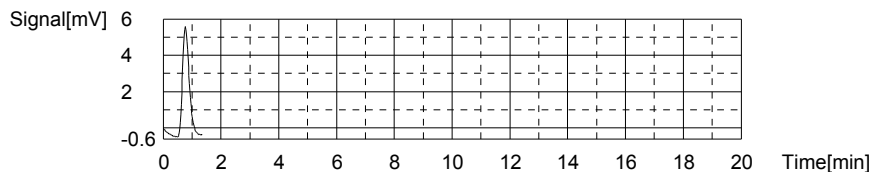
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02203mg/L TC:0.1185mg/L IC:0.09646mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.567	0.1185mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 5:36:21 PM

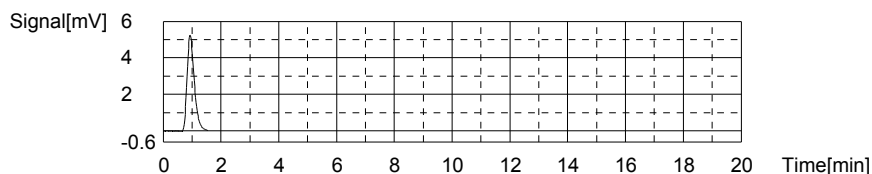
Mean Area 9.567
Mean Conc. 0.1185mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.151	0.09646mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 5:40:19 PM

Mean Area 9.151
Mean Conc. 0.09646mg/L



Sample

Sample Name: L16121004-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

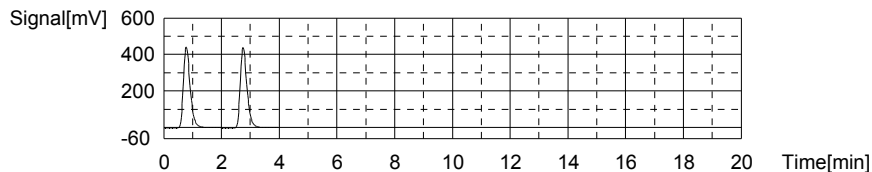
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.018mg/L TC:18.24mg/L IC:13.22mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	716.2	18.26mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 5:47:44 PM
2	714.7	18.22mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 5:51:59 PM

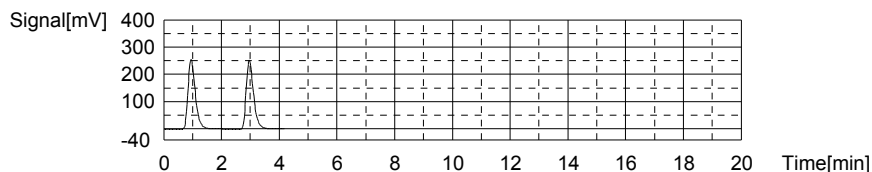
Mean Area 715.5
Mean Conc. 18.24mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	449.3	13.27mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 5:56:56 PM
2	446.6	13.18mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 6:01:51 PM

Mean Area 448.0
Mean Conc. 13.22mg/L



Sample

Sample Name: L16121004-02
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

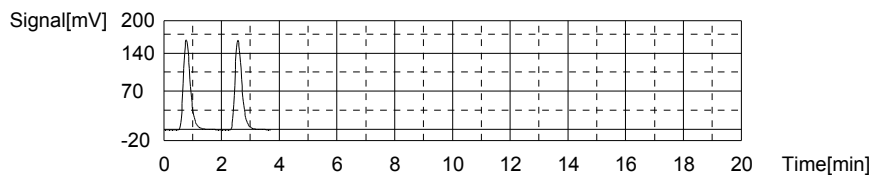
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.161mg/L TC:6.958mg/L IC:4.797mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	275.7	6.952mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 6:09:05 PM
2	276.2	6.964mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 6:13:16 PM

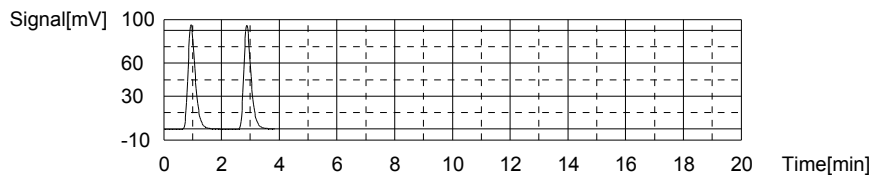
Mean Area 275.9
Mean Conc. 6.958mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	167.1	4.822mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 6:18:07 PM
2	165.4	4.771mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 6:22:46 PM

Mean Area 166.3
Mean Conc. 4.797mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

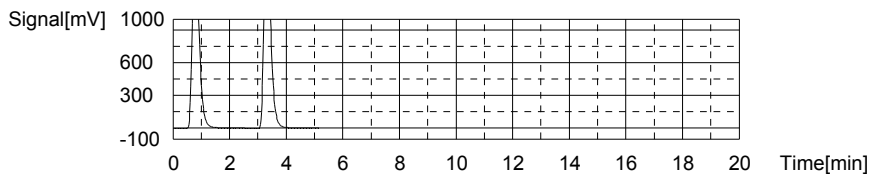
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.255mg/L TC:66.65mg/L IC:63.40mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2593	66.45mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 6:30:44 PM
2	2609	66.86mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 6:36:30 PM

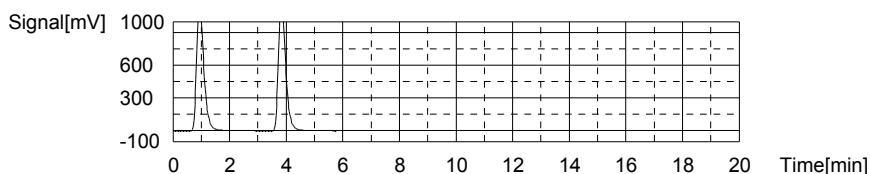
Mean Area 2601
Mean Conc. 66.65mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2118	63.19mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 6:42:30 PM
2	2132	63.61mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 6:48:31 PM

Mean Area 2125
Mean Conc. 63.40mg/L



Sample

Sample Name: L16121004-04
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

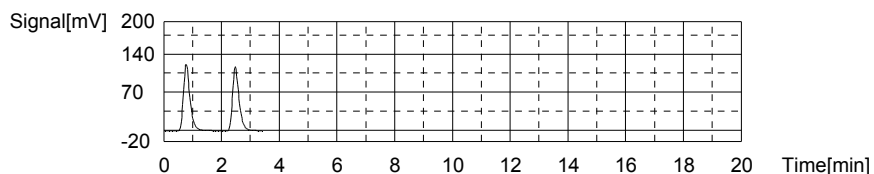
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.356mg/L TC:4.678mg/L IC:3.322mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	191.5	4.790mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 6:55:39 PM
2	182.8	4.566mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 6:59:37 PM

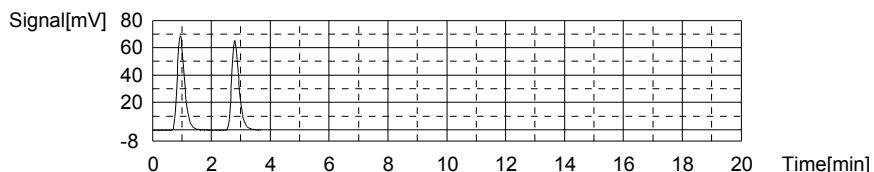
Mean Area 187.2
Mean Conc. 4.678mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	119.8	3.407mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 7:04:31 PM
2	114.1	3.236mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 7:09:02 PM

Mean Area 117.0
Mean Conc. 3.322mg/L



Sample

Sample Name: L16121005-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

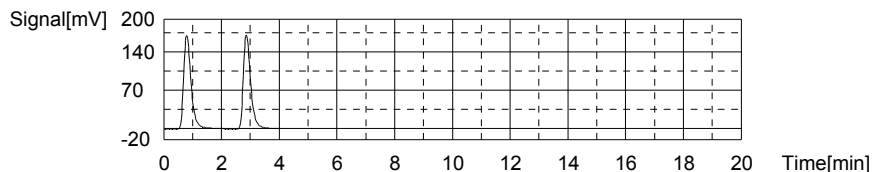
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.880mg/L TC:7.647mg/L IC:3.767mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	302.5	7.640mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 7:16:33 PM
2	303.1	7.655mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 7:20:48 PM

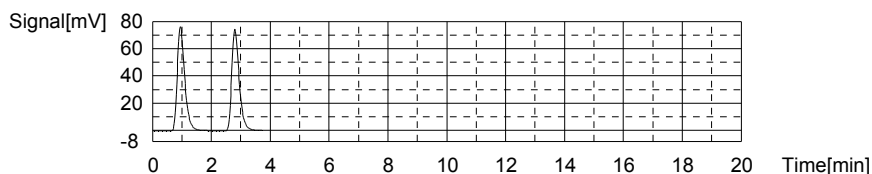
Mean Area 302.8
Mean Conc. 7.647mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	133.3	3.811mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 7:25:35 PM
2	130.4	3.724mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 7:30:09 PM

Mean Area 131.9
Mean Conc. 3.767mg/L



Sample

Sample Name: WG595480-05 DUP
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

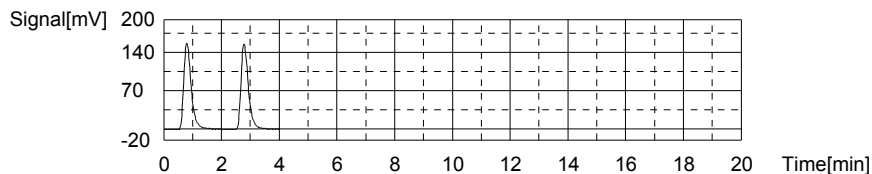
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.726mg/L TC:7.038mg/L IC:3.311mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	280.1	7.065mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 7:37:34 PM
2	278.0	7.011mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 7:41:51 PM

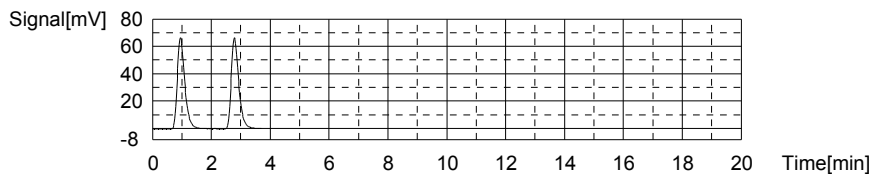
Mean Area 279.1
Mean Conc. 7.038mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	116.6	3.311mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 7:46:36 PM
2	116.6	3.311mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 7:51:13 PM

Mean Area 116.6
Mean Conc. 3.311mg/L



Sample

Sample Name: WG595480-06 MS
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

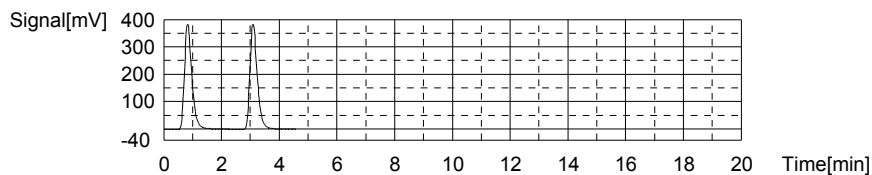
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.34mg/L TC:17.38mg/L IC:3.045mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	681.5	17.37mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 7:58:56 PM
2	682.3	17.39mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 8:03:40 PM

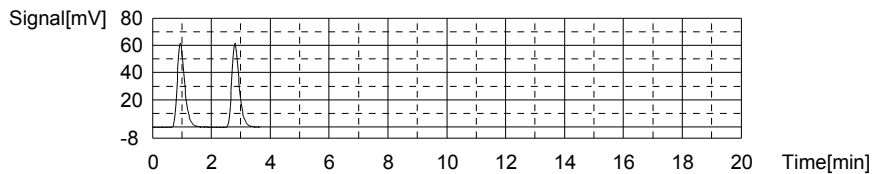
Mean Area 681.9
Mean Conc. 17.38mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	108.0	3.054mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 8:08:24 PM
2	107.4	3.036mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 8:12:54 PM

Mean Area 107.7
Mean Conc. 3.045mg/L



Sample

Sample Name: WG595482-01 BLK
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

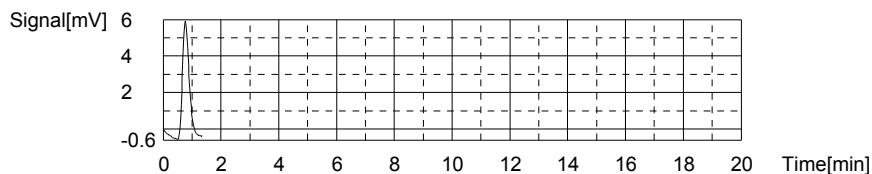
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.01288mg/L TC:0.1335mg/L IC:0.1206mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.15	0.1335mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 8:17:53 PM

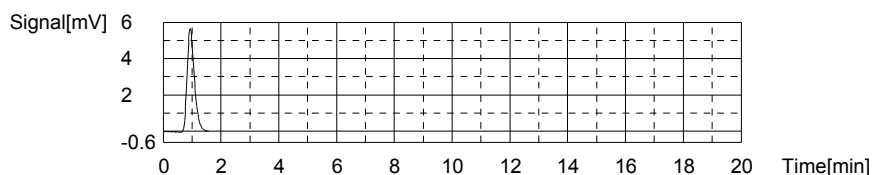
Mean Area 10.15
Mean Conc. 0.1335mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.957	0.1206mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/19/2016 8:21:54 PM

Mean Area 9.957
Mean Conc. 0.1206mg/L



Sample

Sample Name: WG595482-02 LCS
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result:

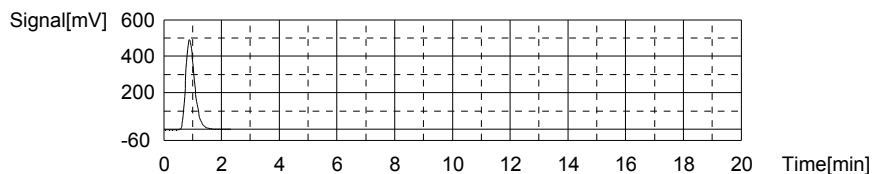
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.00mg/L TC:27.09mg/L IC:0.08435mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1060	27.09mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 31	12/19/2016 8:29:40 PM

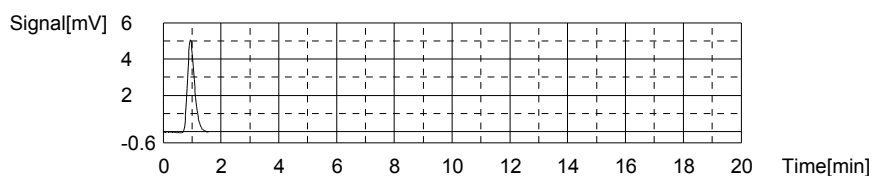
Mean Area 1060
Mean Conc. 27.09mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.746	0.08435mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/19/2016 8:34:06 PM

Mean Area 8.746
Mean Conc. 0.08435mg/L



Sample

Sample Name: WG595482-03 LCSDUP
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result:

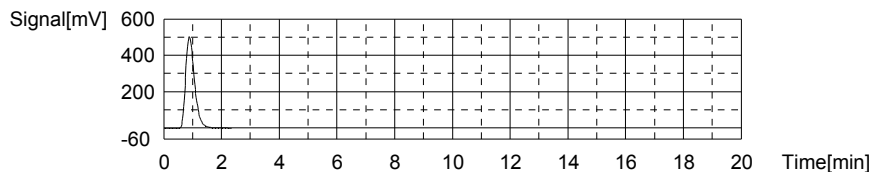
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.41mg/L TC:27.50mg/L IC:0.08764mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1076	27.50mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 8:41:56 PM

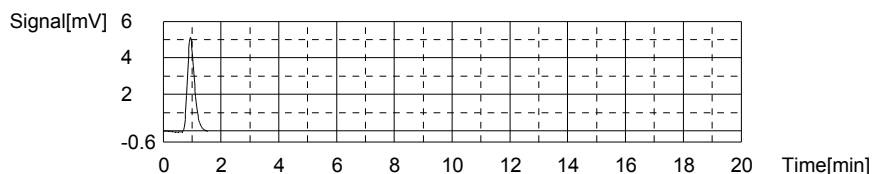
Mean Area 1076
Mean Conc. 27.50mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.856	0.08764mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 8:46:19 PM

Mean Area 8.856
Mean Conc. 0.08764mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

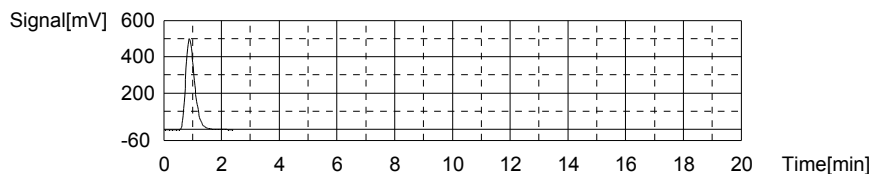
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.47mg/L TC:27.53mg/L IC:0.05317mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1077	27.53mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 8:54:23 PM

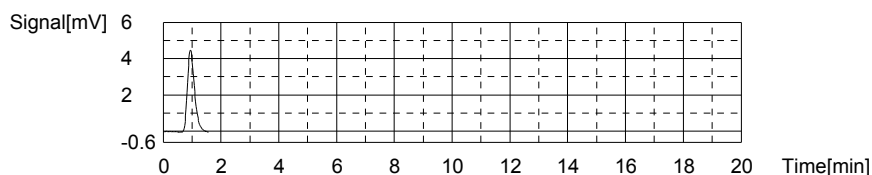
Mean Area 1077
Mean Conc. 27.53mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.704	0.05317mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/19/2016 8:58:49 PM

Mean Area 7.704
Mean Conc. 0.05317mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

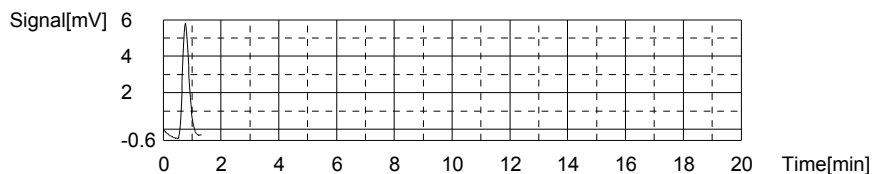
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.01779mg/L TC:0.1237mg/L IC:0.1059mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.769	0.1237mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/19/2016 9:03:46 PM

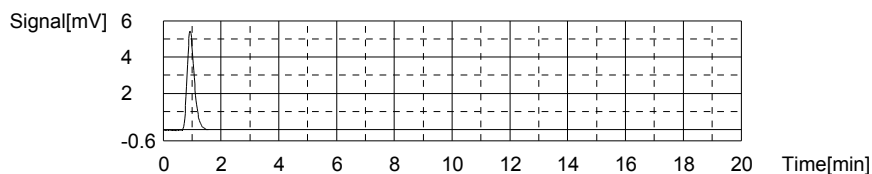
Mean Area 9.769
Mean Conc. 0.1237mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.466	0.1059mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/19/2016 9:07:44 PM

Mean Area 9.466
Mean Conc. 0.1059mg/L



Sample

Sample Name: L16120858-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

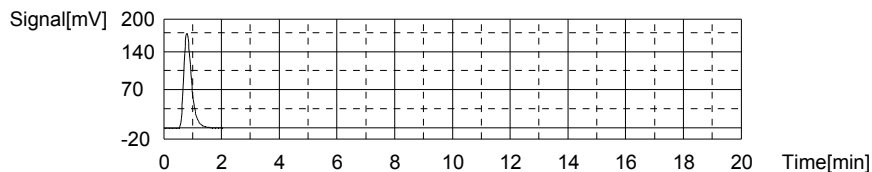
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.626mg/L TC:8.299mg/L IC:3.673mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	328.2	8.299mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 9:15:15 PM

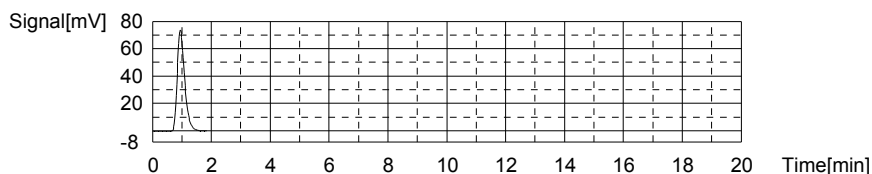
Mean Area 328.2
Mean Conc. 8.299mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	128.7	3.673mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 9:20:01 PM

Mean Area 128.7
Mean Conc. 3.673mg/L



Sample

Sample Name: L16120858-02
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

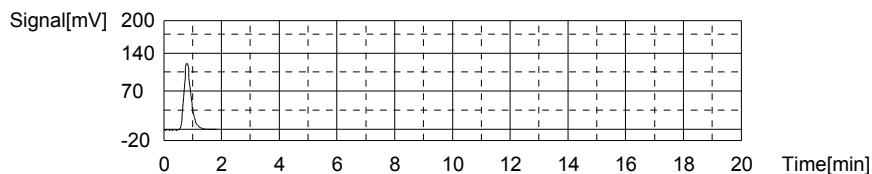
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.187mg/L TC:5.239mg/L IC:2.052mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	209.0	5.239mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 9:27:19 PM

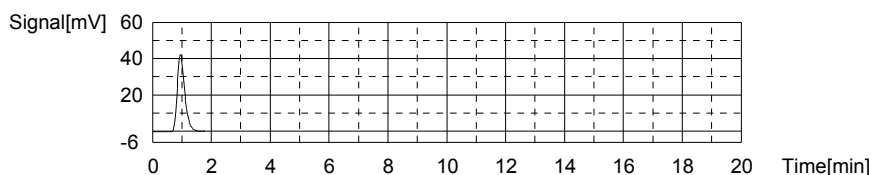
Mean Area 209.0
Mean Conc. 5.239mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	74.51	2.052mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 9:32:01 PM

Mean Area 74.51
Mean Conc. 2.052mg/L



Sample

Sample Name: L16120856-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

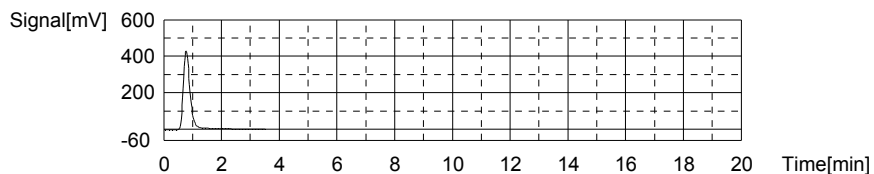
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.280mg/L TC:18.49mg/L IC:14.21mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	725.1	18.49mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 9:40:59 PM

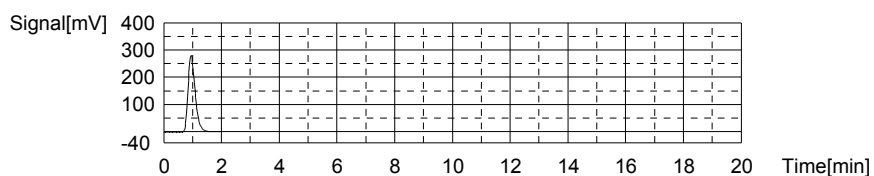
Mean Area 725.1
Mean Conc. 18.49mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	480.9	14.21mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 9:45:54 PM

Mean Area 480.9
Mean Conc. 14.21mg/L



Sample

Sample Name: L16120856-02
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

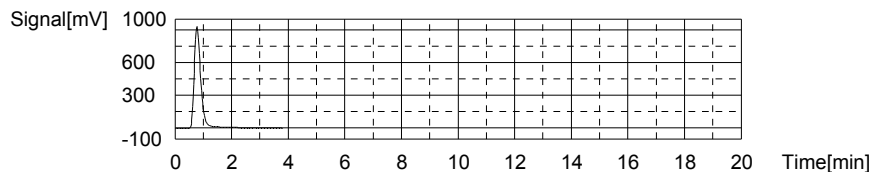
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.176mg/L TC:39.41mg/L IC:31.24mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1540	39.41mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 9:55:09 PM

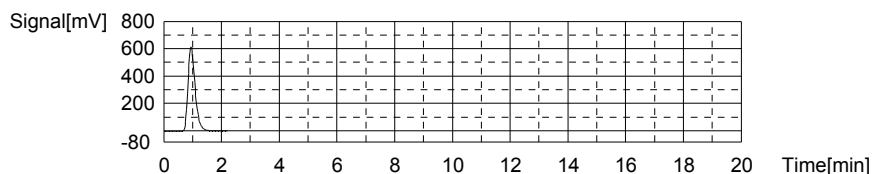
Mean Area 1540
Mean Conc. 39.41mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1050	31.24mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 10:00:25 PM

Mean Area 1050
Mean Conc. 31.24mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met
Completed

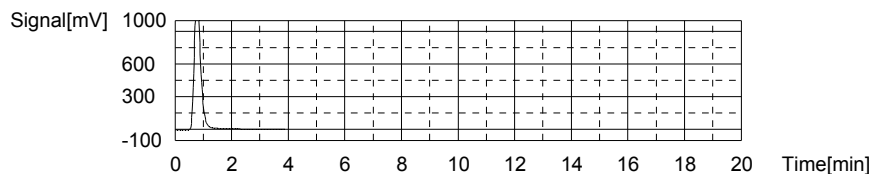
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.104mg/L TC:50.61mg/L IC:43.50mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1976	50.61mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 10:09:46 PM

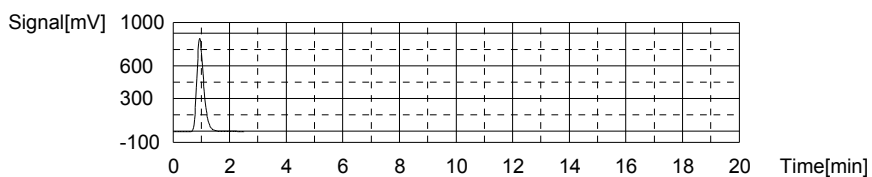
Mean Area 1976
Mean Conc. 50.61mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1460	43.50mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 10:15:20 PM

Mean Area 1460
Mean Conc. 43.50mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met
Completed

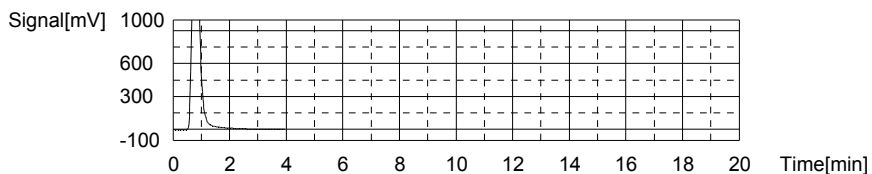
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-3.036mg/L TC:77.39mg/L IC:80.42mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3019	77.39mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_31	12/19/2016 10:24:43 PM

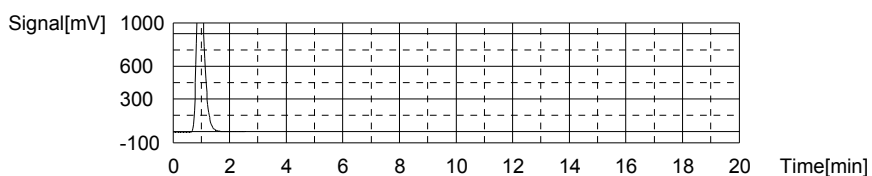
Mean Area 3019
Mean Conc. 77.39mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2694	80.42mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/19/2016 10:30:31 PM

Mean Area 2694
Mean Conc. 80.42mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

L16120856-05
TOC-10-31-2015.met
Completed

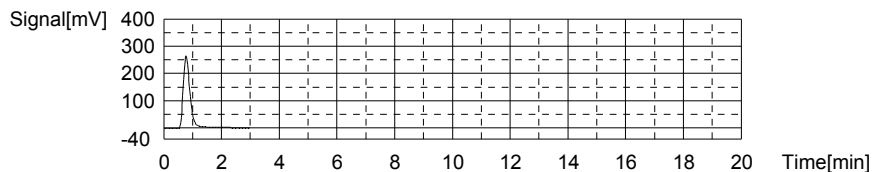
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.352mg/L TC:11.16mg/L IC:8.813mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	439.8	11.16mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 10:38:58 PM

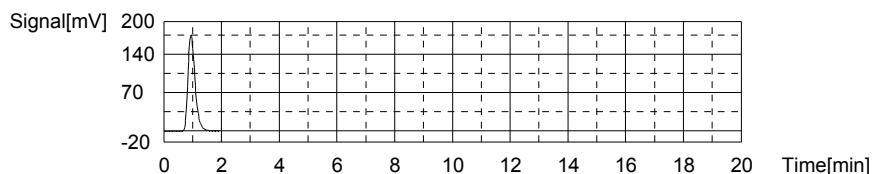
Mean Area 439.8
Mean Conc. 11.16mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	300.5	8.813mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 10:43:57 PM

Mean Area 300.5
Mean Conc. 8.813mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met
Completed

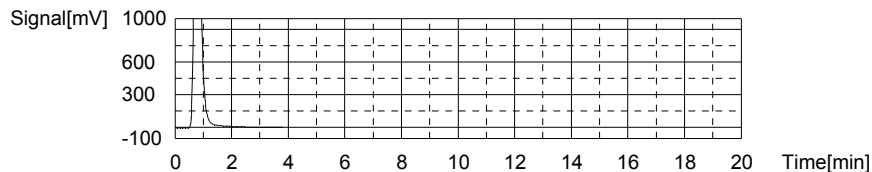
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-5.016mg/L TC:76.69mg/L IC:81.71mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2992	76.69mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 10:53:12 PM

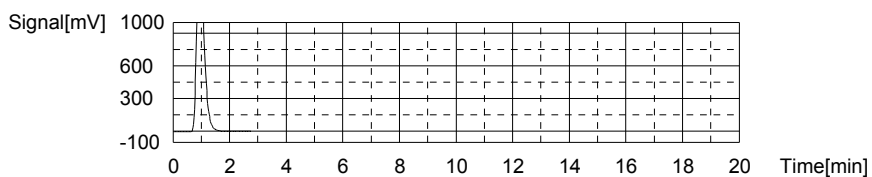
Mean Area 2992
Mean Conc. 76.69mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2737	81.71mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/19/2016 10:59:08 PM

Mean Area 2737
Mean Conc. 81.71mg/L



Sample

Sample Name: L16120856-07
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

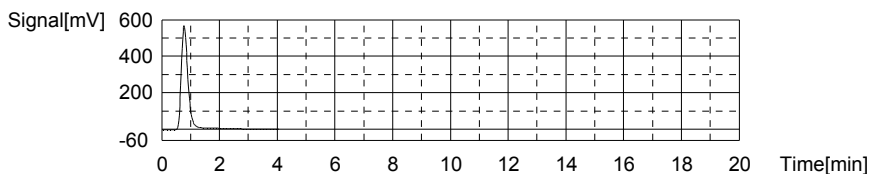
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.255mg/L TC:24.53mg/L IC:19.28mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	960.5	24.53mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/19/2016 11:08:39 PM

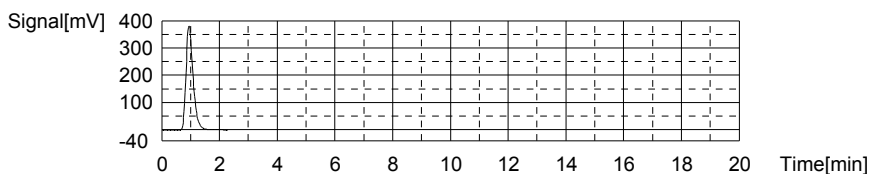
Mean Area 960.5
Mean Conc. 24.53mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	650.3	19.28mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/19/2016 11:14:01 PM

Mean Area 650.3
Mean Conc. 19.28mg/L



Sample

Sample Name: L16120856-08
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

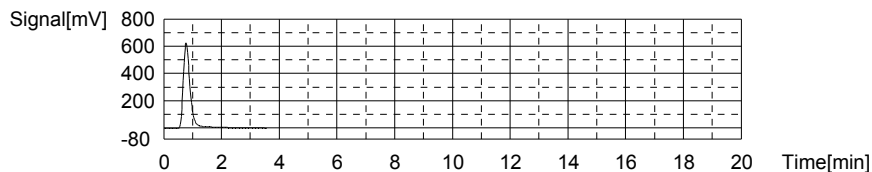
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.110mg/L TC:26.81mg/L IC:20.70mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1049	26.81mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 11:23:02 PM

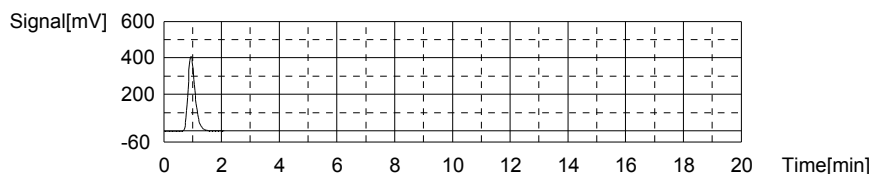
Mean Area 1049
Mean Conc. 26.81mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	697.7	20.70mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/19/2016 11:28:04 PM

Mean Area 697.7
Mean Conc. 20.70mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

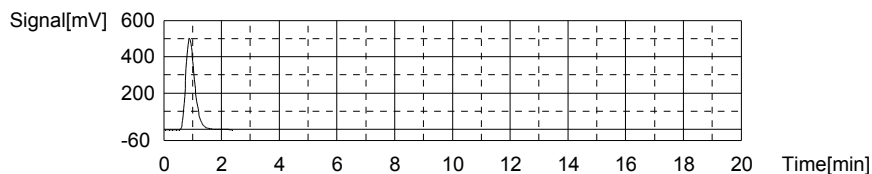
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.57mg/L TC:27.73mg/L IC:0.1620mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1085	27.73mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 11:36:03 PM

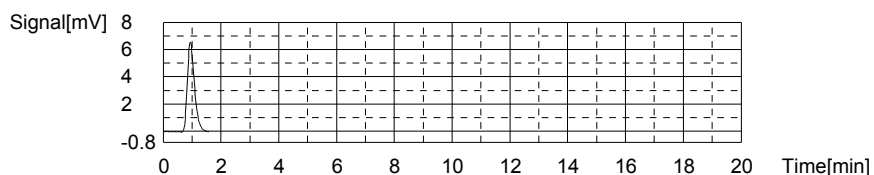
Mean Area 1085
Mean Conc. 27.73mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.34	0.1620mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/19/2016 11:40:32 PM

Mean Area 11.34
Mean Conc. 0.1620mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

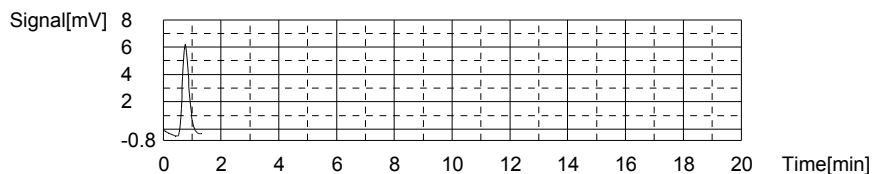
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.01357mg/L TC:0.1432mg/L IC:0.1296mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.53	0.1432mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/19/2016 11:45:31 PM

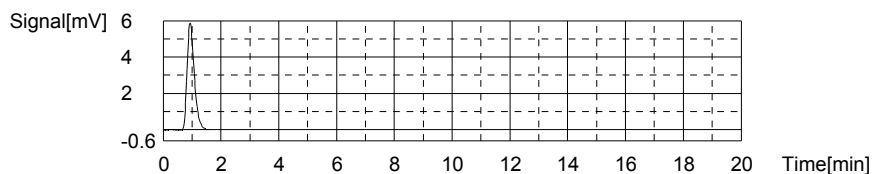
Mean Area 10.53
Mean Conc. 0.1432mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.26	0.1296mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/19/2016 11:49:30 PM

Mean Area 10.26
Mean Conc. 0.1296mg/L



Sample

Sample Name: L16120521-11
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

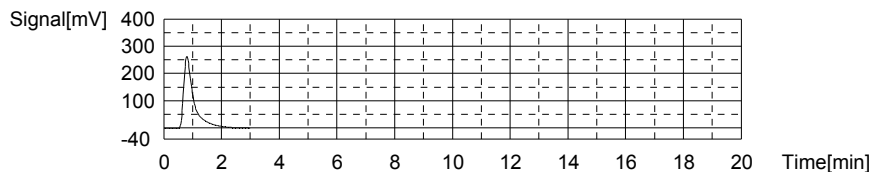
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:10.01mg/L TC:16.31mg/L IC:6.300mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	640.2	16.31mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/19/2016 11:58:05 PM

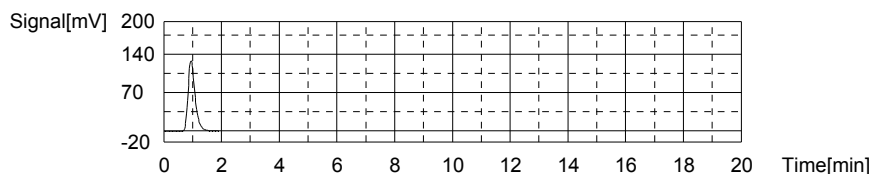
Mean Area 640.2
Mean Conc. 16.31mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	216.5	6.300mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 12:02:56 AM

Mean Area 216.5
Mean Conc. 6.300mg/L



Sample

Sample Name: L16120568-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

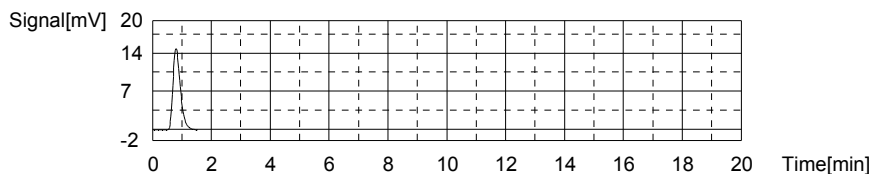
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4199mg/L TC:0.5466mg/L IC:0.1267mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	26.24	0.5466mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 12:09:56 AM

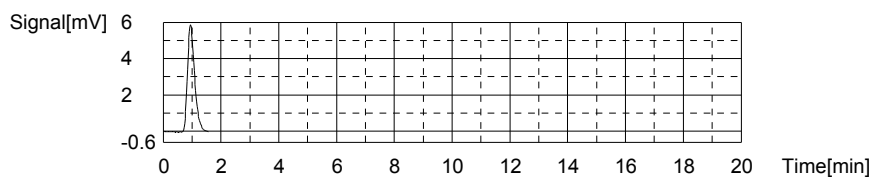
Mean Area 26.24
Mean Conc. 0.5466mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.16	0.1267mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	12/20/2016 12:14:22 AM

Mean Area 10.16
Mean Conc. 0.1267mg/L



Sample

Sample Name: L16120617-02
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

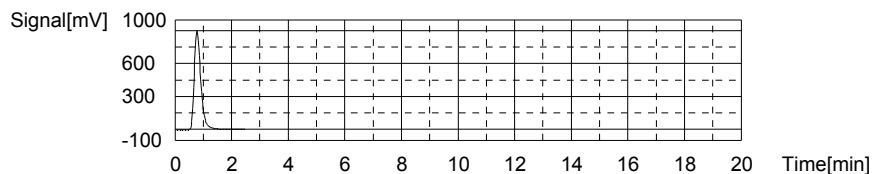
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.961mg/L TC:37.38mg/L IC:29.42mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1461	37.38mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 12:22:18 AM

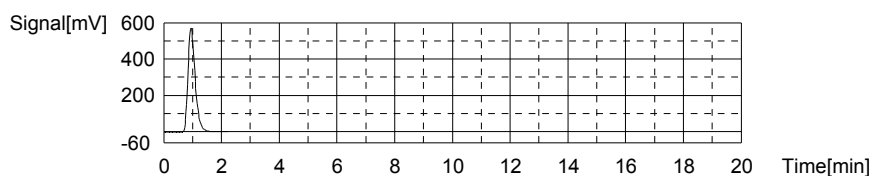
Mean Area 1461
Mean Conc. 37.38mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	989.4	29.42mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	12/20/2016 12:27:32 AM

Mean Area 989.4
Mean Conc. 29.42mg/L



Sample

Sample Name: L16120617-03
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

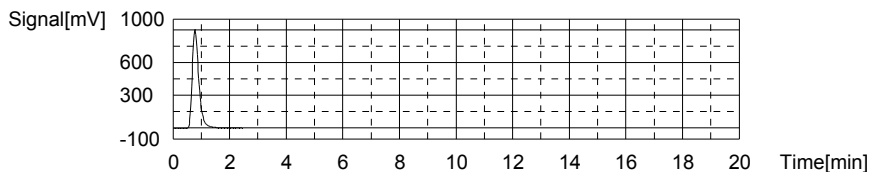
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.840mg/L TC:37.64mg/L IC:29.80mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1471	37.64mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 12:35:25 AM

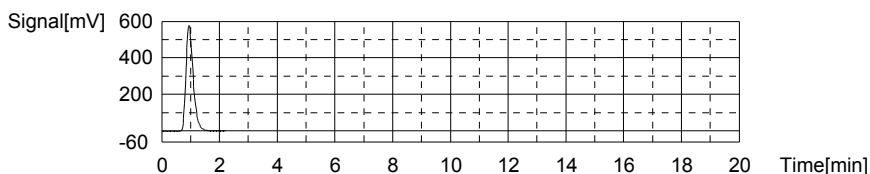
Mean Area 1471
Mean Conc. 37.64mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1002	29.80mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 12:40:42 AM

Mean Area 1002
Mean Conc. 29.80mg/L



Sample

Sample Name: L16120617-04
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

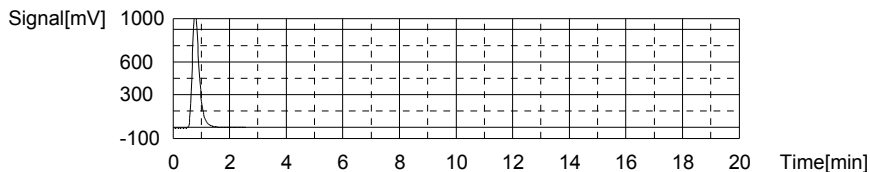
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.07mg/L TC:46.47mg/L IC:32.40mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1815	46.47mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 12:48:43 AM

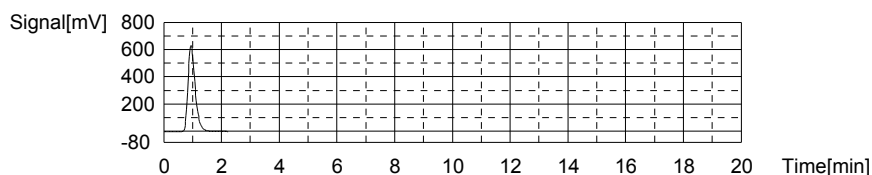
Mean Area 1815
Mean Conc. 46.47mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1089	32.40mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 12:53:57 AM

Mean Area 1089
Mean Conc. 32.40mg/L



Sample

Sample Name: WG595482-05 DUP
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result:

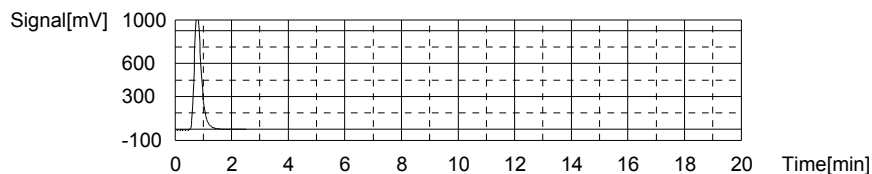
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.20mg/L TC:47.47mg/L IC:33.27mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1854	47.47mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 1:01:54 AM

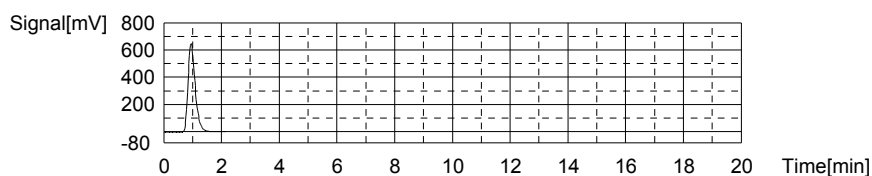
Mean Area 1854
Mean Conc. 47.47mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1118	33.27mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 1:07:08 AM

Mean Area 1118
Mean Conc. 33.27mg/L



Sample

Sample Name: L16120617-05 MS
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result:

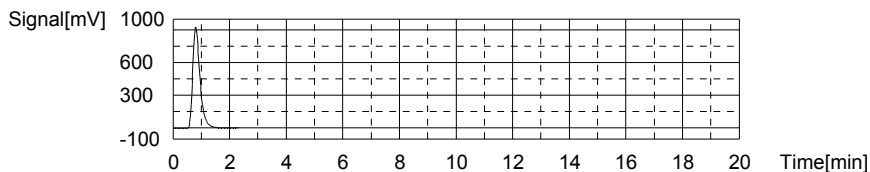
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:21.87mg/L TC:42.72mg/L IC:20.86mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1669	42.72mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 1:14:55 AM

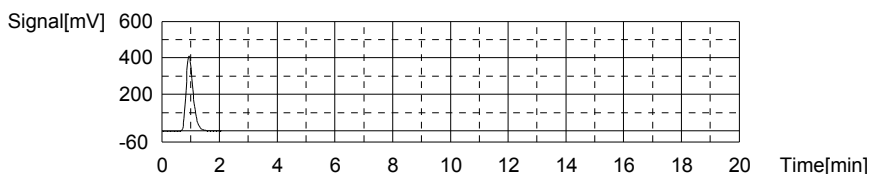
Mean Area 1669
Mean Conc. 42.72mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	703.0	20.86mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 1:20:01 AM

Mean Area 703.0
Mean Conc. 20.86mg/L



Sample

Sample Name: L16120617-06 MSD
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

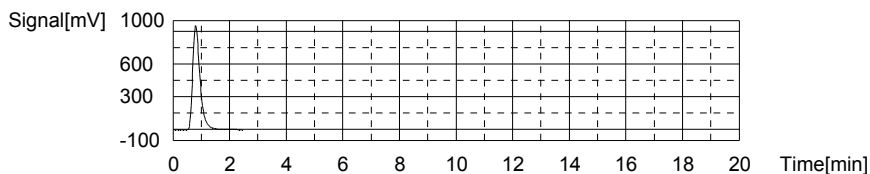
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:22.34mg/L TC:44.09mg/L IC:21.74mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1722	44.09mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 1:28:03 AM

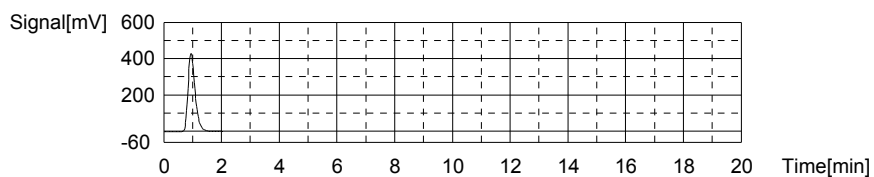
Mean Area 1722
Mean Conc. 44.09mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	732.7	21.74mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 1:33:03 AM

Mean Area 732.7
Mean Conc. 21.74mg/L



Sample

Sample Name: L16120617-08
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

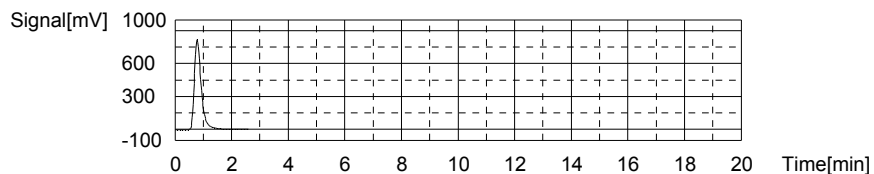
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.545mg/L TC:35.64mg/L IC:26.09mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1393	35.64mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 1:41:06 AM

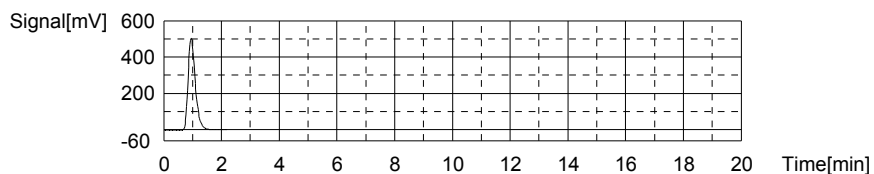
Mean Area 1393
Mean Conc. 35.64mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	878.1	26.09mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 1:46:21 AM

Mean Area 878.1
Mean Conc. 26.09mg/L



Sample

Sample Name: L16120617-09 (2)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

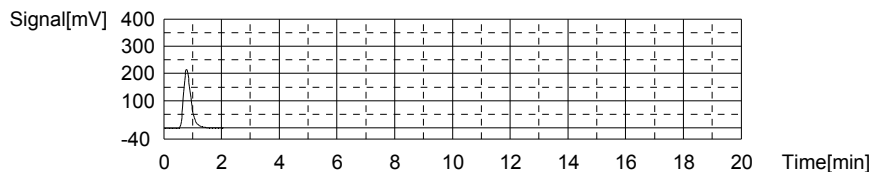
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.867mg/L TC:9.724mg/L IC:5.857mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	383.7	9.724mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 1:53:54 AM

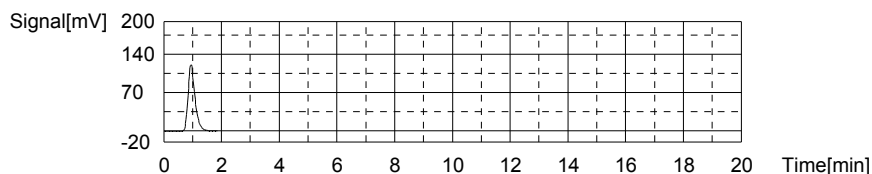
Mean Area 383.7
Mean Conc. 9.724mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	201.7	5.857mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 1:58:41 AM

Mean Area 201.7
Mean Conc. 5.857mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

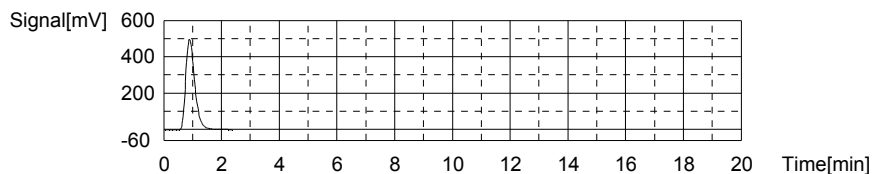
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.39mg/L TC:27.50mg/L IC:0.1124mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1076	27.50mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 2:06:36 AM

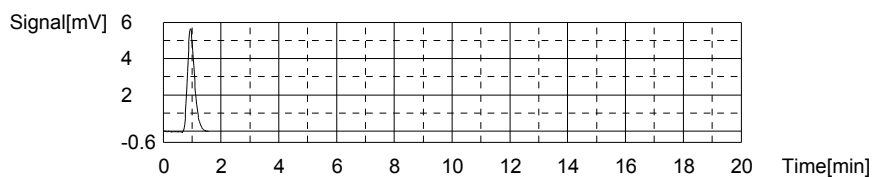
Mean Area 1076
Mean Conc. 27.50mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.685	0.1124mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	12/20/2016 2:11:01 AM

Mean Area 9.685
Mean Conc. 0.1124mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

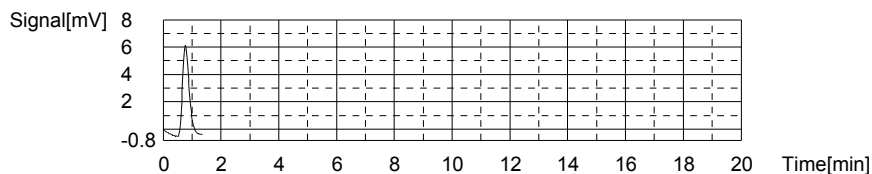
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.01703mg/L TC:0.1422mg/L IC:0.1252mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.49	0.1422mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 2:16:00 AM

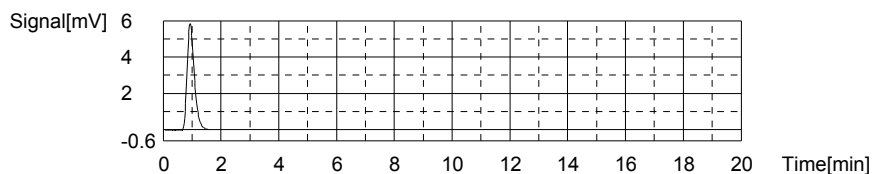
Mean Area 10.49
Mean Conc. 0.1422mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.11	0.1252mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	12/20/2016 2:19:58 AM

Mean Area 10.11
Mean Conc. 0.1252mg/L



Sample

Sample Name: L16120691-03
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

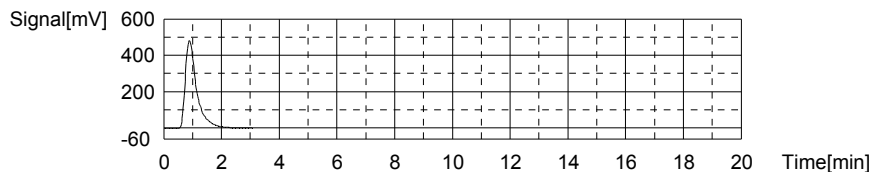
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:29.28mg/L TC:33.61mg/L IC:4.328mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1314	33.61mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 2:28:43 AM

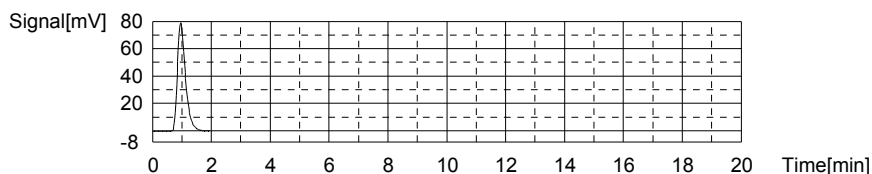
Mean Area 1314
Mean Conc. 33.61mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	150.6	4.328mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 2:33:36 AM

Mean Area 150.6
Mean Conc. 4.328mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met
Completed

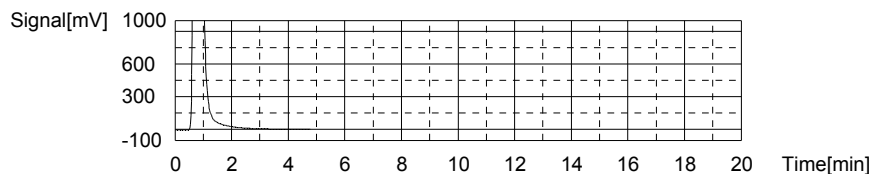
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-11.68mg/L TC:107.8mg/L IC:119.5mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4203	107.8mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 2:43:50 AM

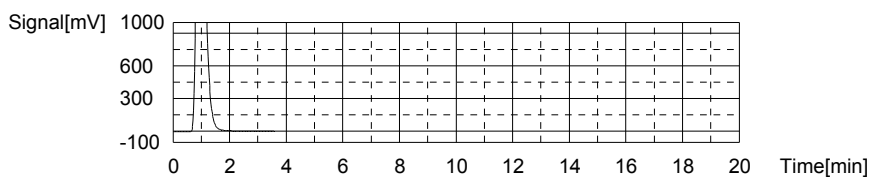
Mean Area 4203
Mean Conc. 107.8mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3999	119.5mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 2:51:02 AM

Mean Area 3999
Mean Conc. 119.5mg/L



Sample

Sample Name: L16121003-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

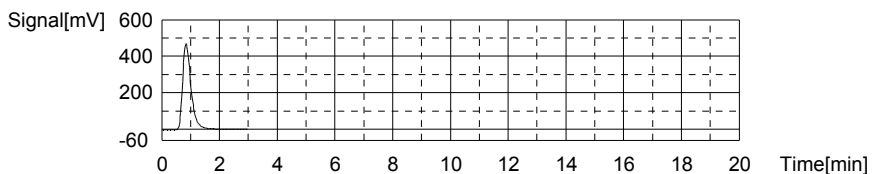
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:20.93mg/L TC:24.46mg/L IC:3.527mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	957.6	24.46mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 2:59:29 AM

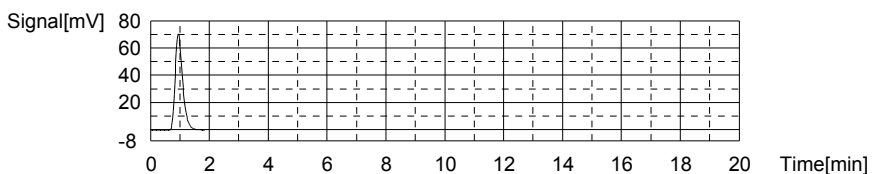
Mean Area 957.6
Mean Conc. 24.46mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	123.8	3.527mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 3:04:32 AM

Mean Area 123.8
Mean Conc. 3.527mg/L



Sample

Sample Name: WG595485-01 BLK
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

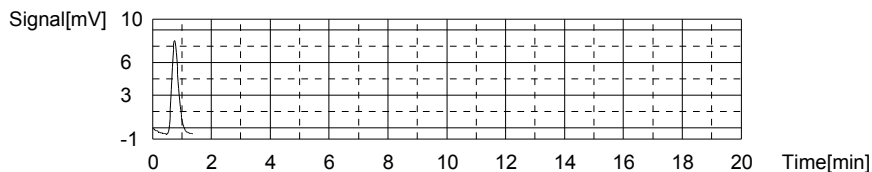
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.03899mg/L TC:0.2187mg/L IC:0.2577mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.47	0.2187mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 3:09:31 AM

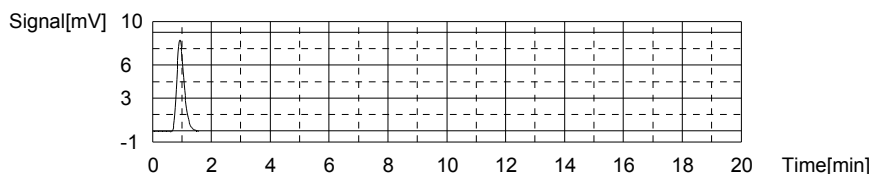
Mean Area 13.47
Mean Conc. 0.2187mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	14.54	0.2577mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 3:13:31 AM

Mean Area 14.54
Mean Conc. 0.2577mg/L



Sample

Sample Name: WG595485-02 LCS
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

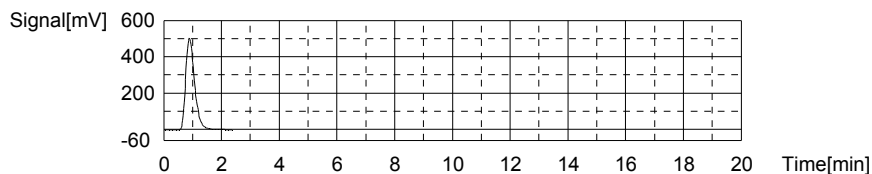
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.33mg/L TC:27.47mg/L IC:0.1407mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1075	27.47mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 3:21:23 AM

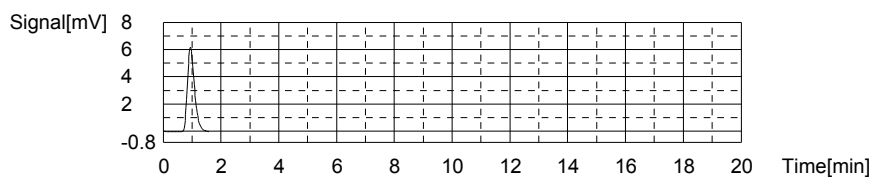
Mean Area 1075
Mean Conc. 27.47mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.63	0.1407mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	12/20/2016 3:25:48 AM

Mean Area 10.63
Mean Conc. 0.1407mg/L



Sample

Sample Name: WG595485-03 LCSDUP
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

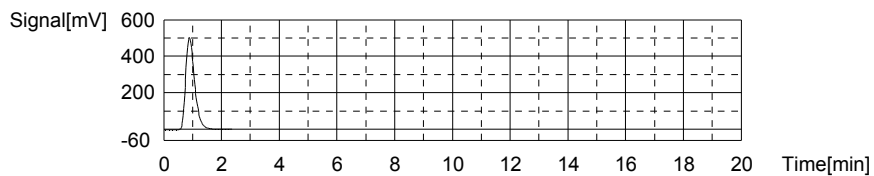
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.57mg/L TC:27.68mg/L IC:0.1121mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1083	27.68mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 3:33:46 AM

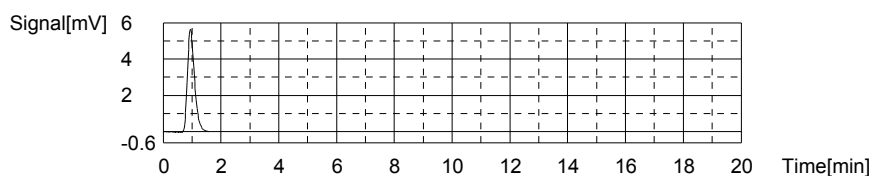
Mean Area 1083
Mean Conc. 27.68mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.675	0.1121mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	12/20/2016 3:38:14 AM

Mean Area 9.675
Mean Conc. 0.1121mg/L



Sample

Sample Name: L16120974-02
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

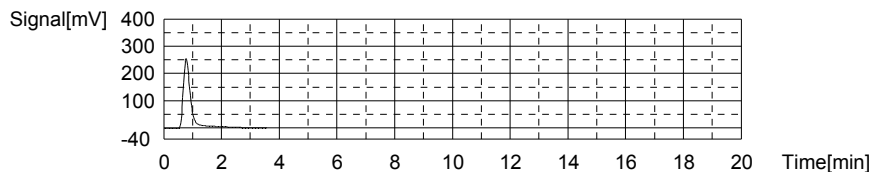
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.361mg/L TC:11.97mg/L IC:8.610mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	471.2	11.97mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 3:47:23 AM

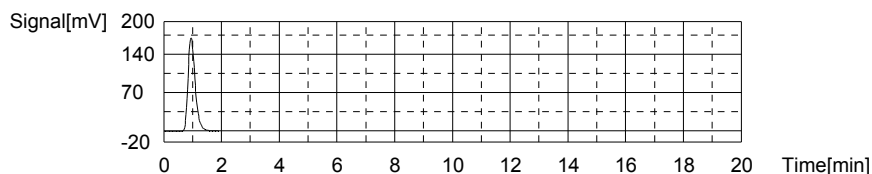
Mean Area 471.2
Mean Conc. 11.97mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	293.7	8.610mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 3:52:11 AM

Mean Area 293.7
Mean Conc. 8.610mg/L



Sample

Sample Name: L16120974-03
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

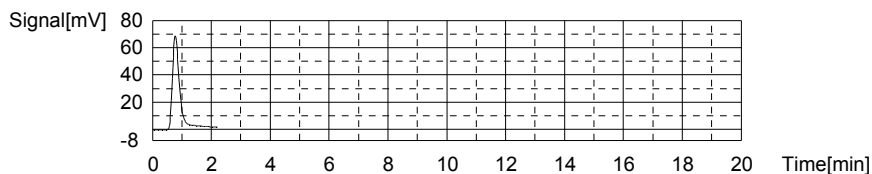
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.6252mg/L TC:2.900mg/L IC:2.275mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	117.9	2.900mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 3:59:52 AM

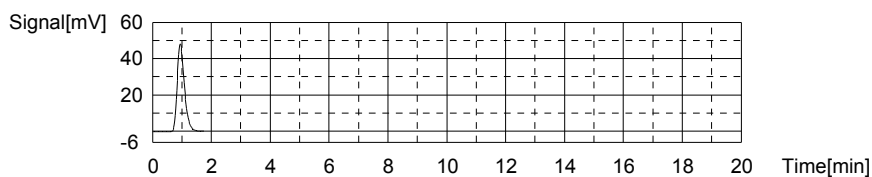
Mean Area 117.9
Mean Conc. 2.900mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	81.96	2.275mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 4:04:30 AM

Mean Area 81.96
Mean Conc. 2.275mg/L



Sample

Sample Name: L16120974-06
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

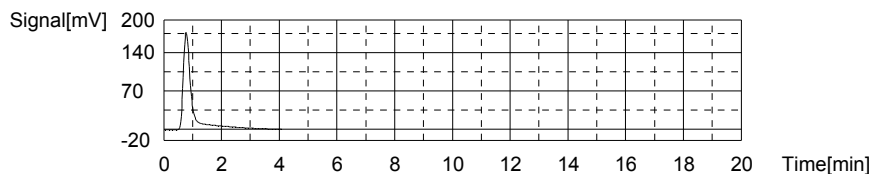
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.330mg/L TC:9.283mg/L IC:5.953mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	366.5	9.283mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 31	12/20/2016 4:14:04 AM

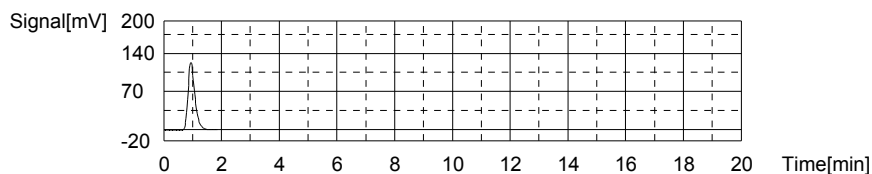
Mean Area 366.5
Mean Conc. 9.283mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	204.9	5.953mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 4:18:52 AM

Mean Area 204.9
Mean Conc. 5.953mg/L



Sample

Sample Name: L16120974-07
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

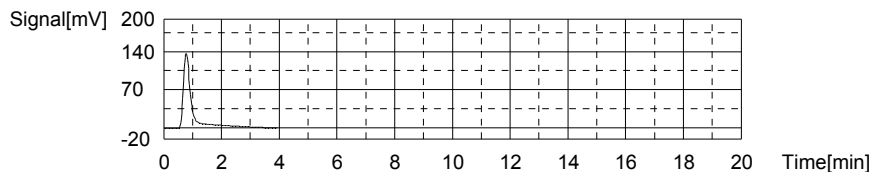
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.916mg/L TC:7.116mg/L IC:4.200mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	282.1	7.116mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 4:28:16 AM

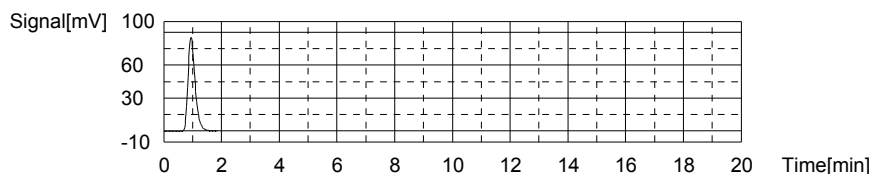
Mean Area 282.1
Mean Conc. 7.116mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	146.3	4.200mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 4:32:59 AM

Mean Area 146.3
Mean Conc. 4.200mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

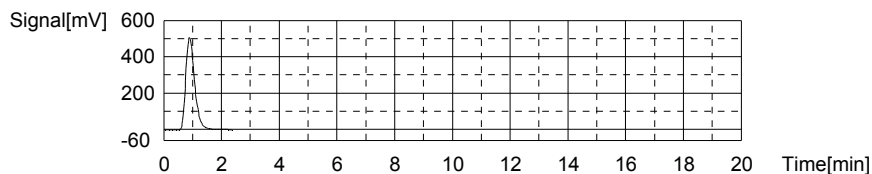
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.48mg/L TC:27.58mg/L IC:0.09536mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1079	27.58mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 4:41:05 AM

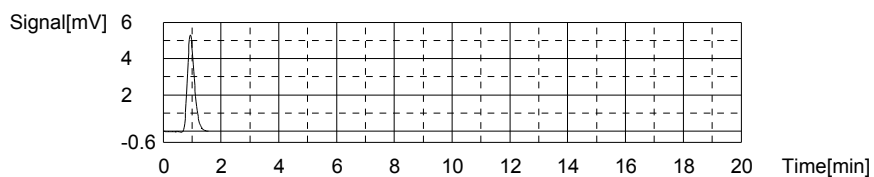
Mean Area 1079
Mean Conc. 27.58mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.114	0.09536mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 4:45:29 AM

Mean Area 9.114
Mean Conc. 0.09536mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

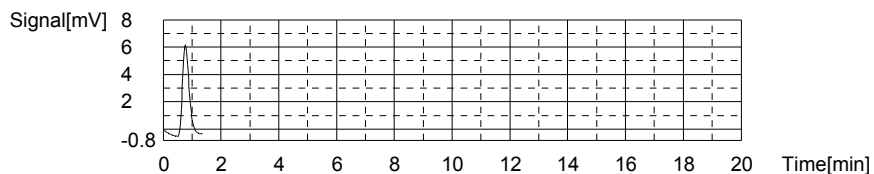
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.01237mg/L TC:0.1432mg/L IC:0.1308mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.53	0.1432mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 4:50:28 AM

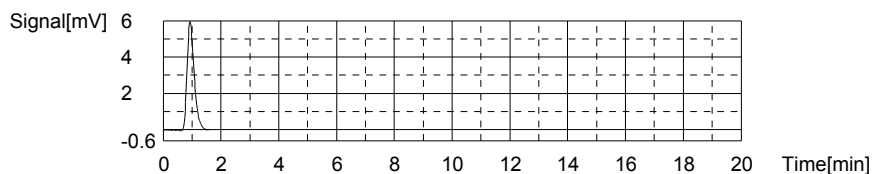
Mean Area 10.53
Mean Conc. 0.1432mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.30	0.1308mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 4:54:26 AM

Mean Area 10.30
Mean Conc. 0.1308mg/L



Sample

Sample Name: L16120974-08
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

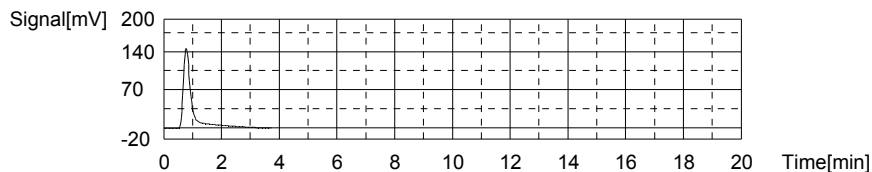
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.152mg/L TC:7.642mg/L IC:4.490mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	302.6	7.642mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 5:03:42 AM

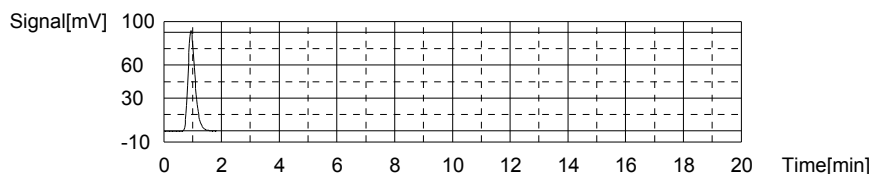
Mean Area 302.6
Mean Conc. 7.642mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	156.0	4.490mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 5:08:25 AM

Mean Area 156.0
Mean Conc. 4.490mg/L



Sample

Sample Name: L16120974-09
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

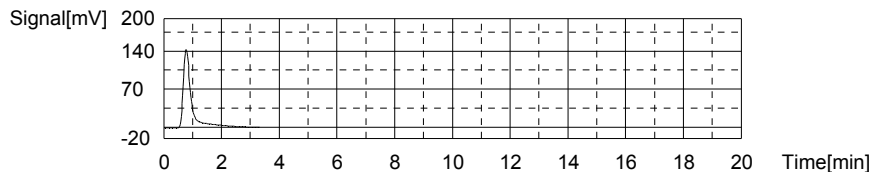
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.770mg/L TC:7.129mg/L IC:4.358mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	282.6	7.129mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 5:17:14 AM

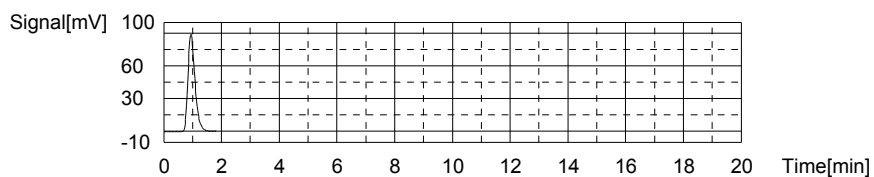
Mean Area 282.6
Mean Conc. 7.129mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	151.6	4.358mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 5:21:56 AM

Mean Area 151.6
Mean Conc. 4.358mg/L



Sample

Sample Name: L16121006-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

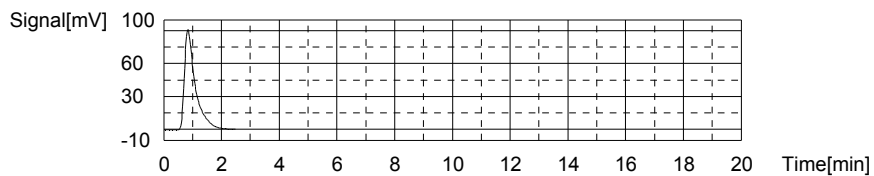
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.381mg/L TC:5.958mg/L IC:0.5766mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	237.0	5.958mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 5:29:53 AM

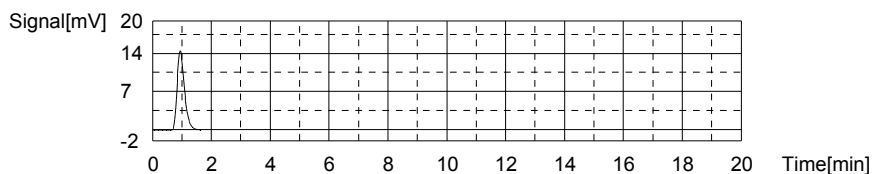
Mean Area 237.0
Mean Conc. 5.958mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	25.20	0.5766mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 5:34:23 AM

Mean Area 25.20
Mean Conc. 0.5766mg/L



Sample

Sample Name: L16121006-02
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

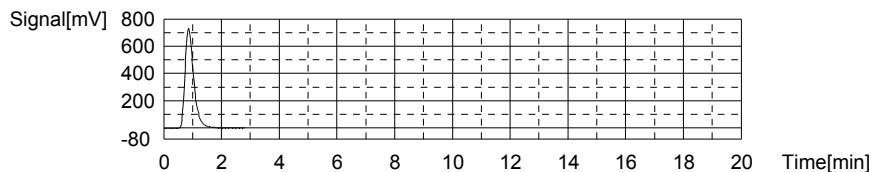
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:34.97mg/L TC:39.18mg/L IC:4.209mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1531	39.18mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 5:42:41 AM

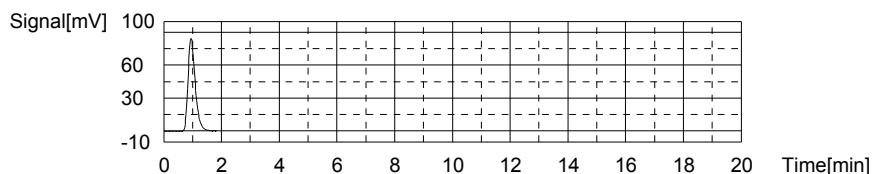
Mean Area 1531
Mean Conc. 39.18mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	146.6	4.209mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 5:47:25 AM

Mean Area 146.6
Mean Conc. 4.209mg/L



Sample

Sample Name: L16121006-03
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

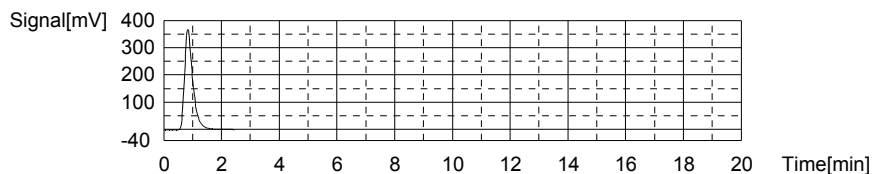
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.39mg/L TC:18.63mg/L IC:3.242mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	730.5	18.63mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 5:55:21 AM

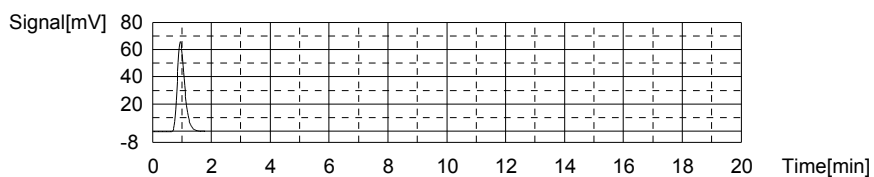
Mean Area 730.5
Mean Conc. 18.63mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	114.3	3.242mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 6:00:02 AM

Mean Area 114.3
Mean Conc. 3.242mg/L



Sample

Sample Name: L16121006-04
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

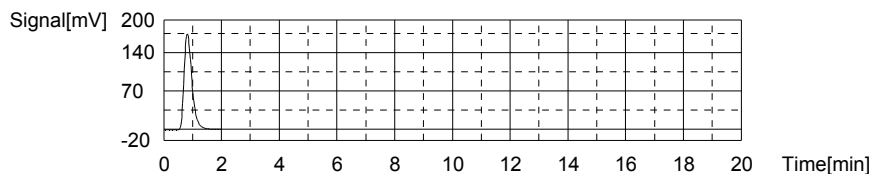
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.965mg/L TC:8.364mg/L IC:2.399mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	330.7	8.364mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 6:07:33 AM

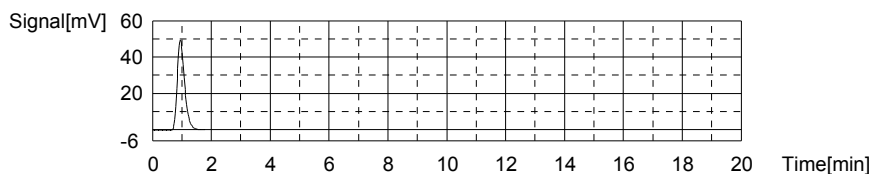
Mean Area 330.7
Mean Conc. 8.364mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	86.11	2.399mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 6:12:13 AM

Mean Area 86.11
Mean Conc. 2.399mg/L



Sample

Sample Name: L16120755-03 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

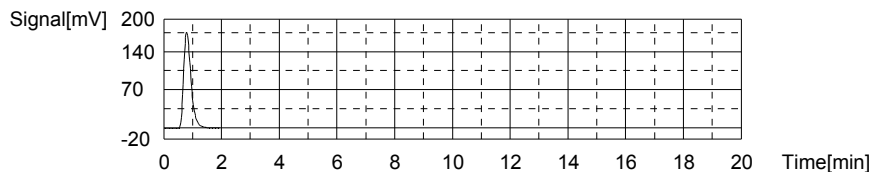
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.697mg/L TC:7.878mg/L IC:4.182mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	311.8	7.878mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 6:19:42 AM

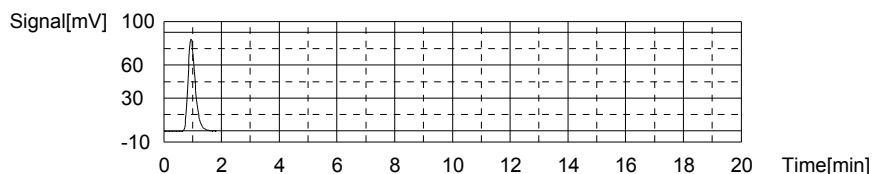
Mean Area 311.8
Mean Conc. 7.878mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	145.7	4.182mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 6:24:26 AM

Mean Area 145.7
Mean Conc. 4.182mg/L



Sample

Sample Name: L16120755-09 (2)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

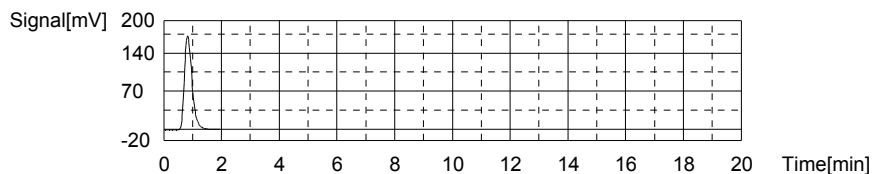
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.878mg/L TC:7.997mg/L IC:1.118mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	316.4	7.997mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 6:31:52 AM

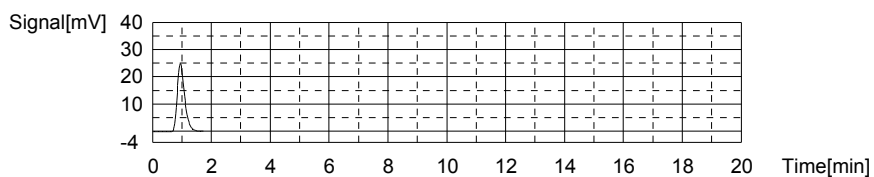
Mean Area 316.4
Mean Conc. 7.997mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	43.30	1.118mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 6:36:37 AM

Mean Area 43.30
Mean Conc. 1.118mg/L



Sample

Sample Name: L16120755-17
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

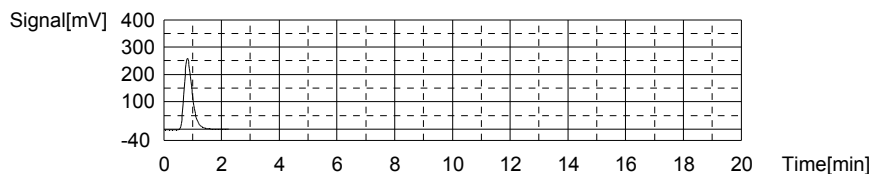
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.218mg/L TC:12.97mg/L IC:3.757mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	510.3	12.97mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 6:44:19 AM

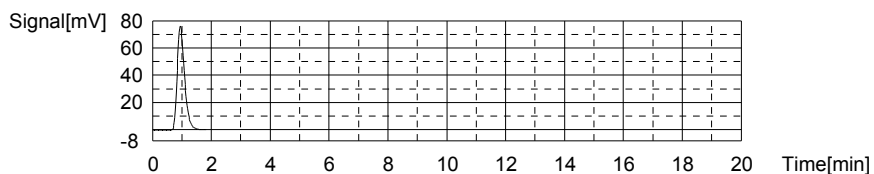
Mean Area 510.3
Mean Conc. 12.97mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	131.5	3.757mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 6:49:00 AM

Mean Area 131.5
Mean Conc. 3.757mg/L



Sample

Sample Name: L16120755-18 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

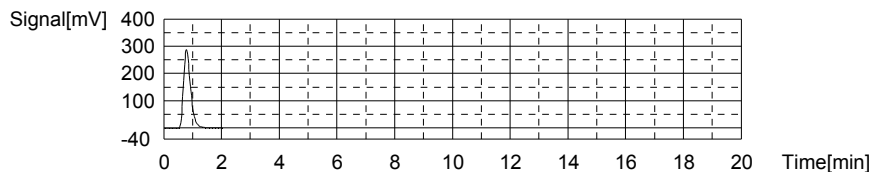
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.908mg/L TC:12.44mg/L IC:5.528mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	489.3	12.44mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 6:56:39 AM

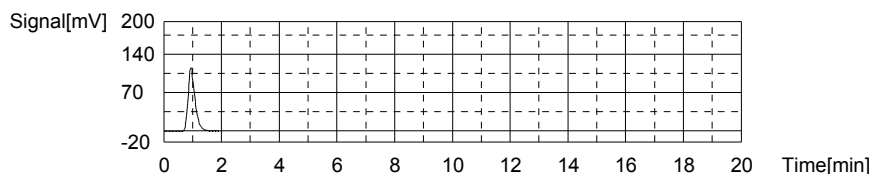
Mean Area 489.3
Mean Conc. 12.44mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	190.7	5.528mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 7:01:27 AM

Mean Area 190.7
Mean Conc. 5.528mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

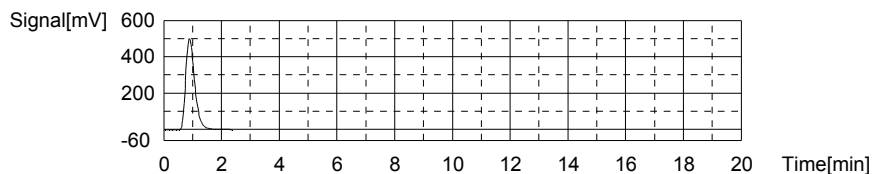
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.60mg/L TC:27.70mg/L IC:0.1047mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1084	27.70mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 7:09:24 AM

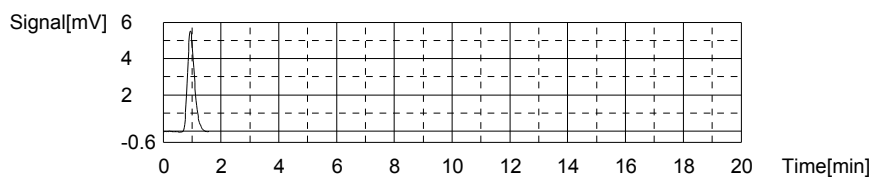
Mean Area 1084
Mean Conc. 27.70mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.427	0.1047mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 7:13:50 AM

Mean Area 9.427
Mean Conc. 0.1047mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

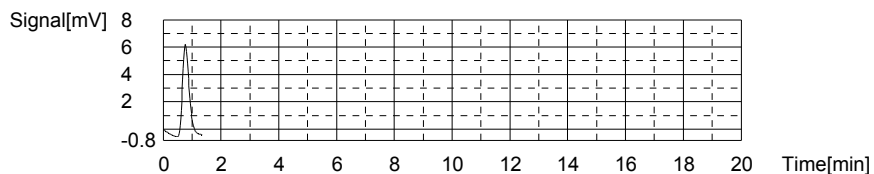
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02283mg/L TC:0.1435mg/L IC:0.1206mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.54	0.1435mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 7:18:49 AM

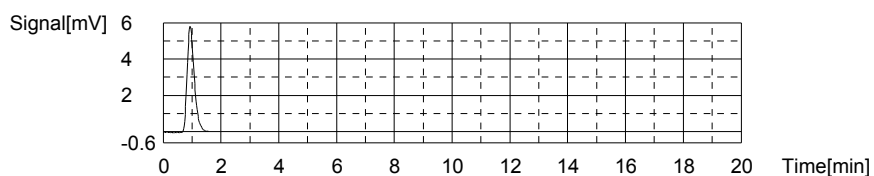
Mean Area 10.54
Mean Conc. 0.1435mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.959	0.1206mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 7:22:47 AM

Mean Area 9.959
Mean Conc. 0.1206mg/L



Sample

Sample Name: L16120782-05 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

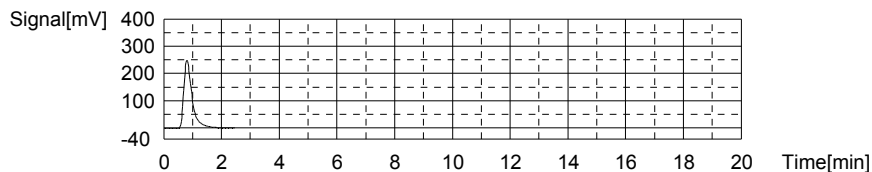
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.336mg/L TC:12.63mg/L IC:5.295mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	496.9	12.63mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 7:30:43 AM

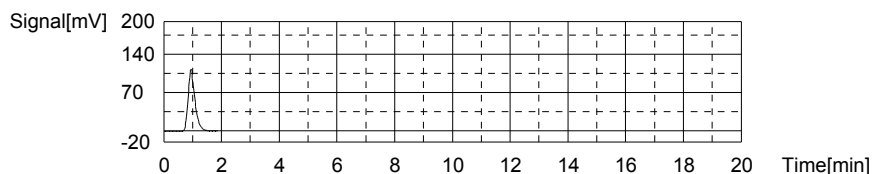
Mean Area 496.9
Mean Conc. 12.63mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	182.9	5.295mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 7:35:29 AM

Mean Area 182.9
Mean Conc. 5.295mg/L



Sample

Sample Name: L16120782-07
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

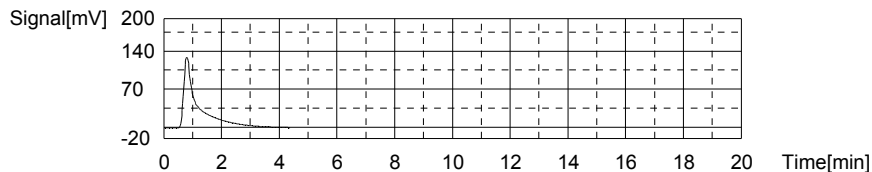
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.237mg/L TC:11.08mg/L IC:2.838mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	436.3	11.08mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 7:45:22 AM

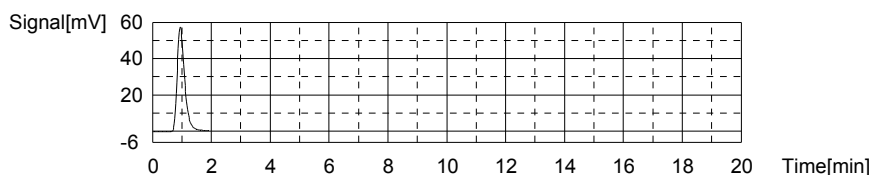
Mean Area 436.3
Mean Conc. 11.08mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	100.8	2.838mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 7:50:10 AM

Mean Area 100.8
Mean Conc. 2.838mg/L



Sample

Sample Name: L16120857-02 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

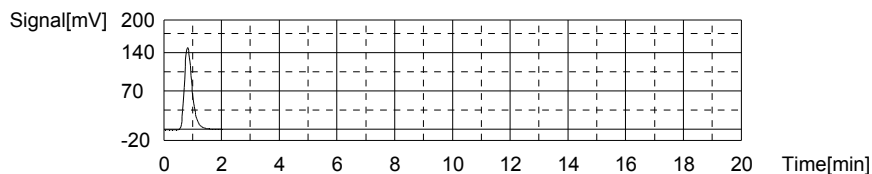
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.844mg/L TC:7.118mg/L IC:1.275mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	282.2	7.118mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 7:57:50 AM

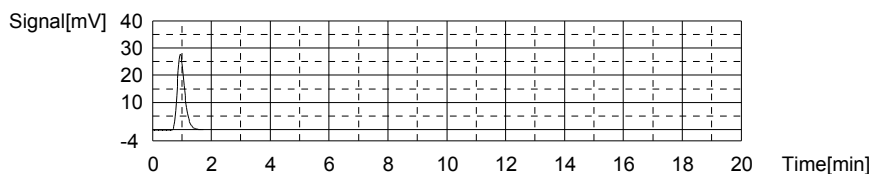
Mean Area 282.2
Mean Conc. 7.118mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	48.53	1.275mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 8:02:25 AM

Mean Area 48.53
Mean Conc. 1.275mg/L



Sample

Sample Name: WG595485-05 (3) DUP
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

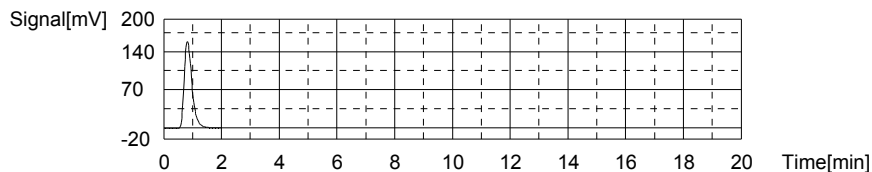
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.735mg/L TC:7.540mg/L IC:1.804mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	298.6	7.540mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 8:09:56 AM

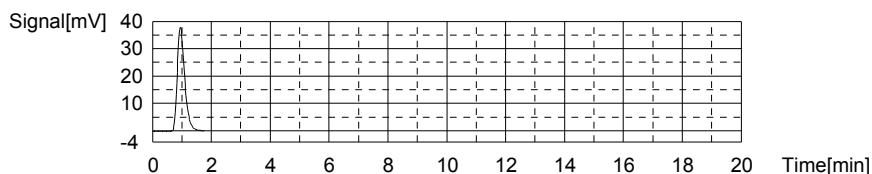
Mean Area 298.6
Mean Conc. 7.540mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	66.23	1.804mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 8:14:34 AM

Mean Area 66.23
Mean Conc. 1.804mg/L



Sample

Sample Name: L16120857-03 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

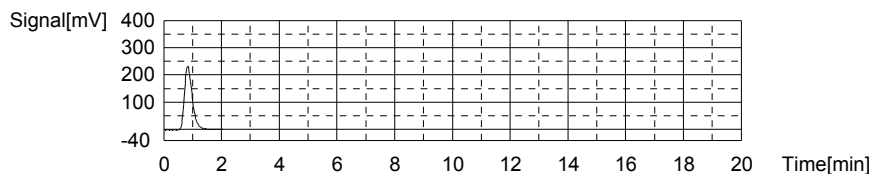
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.402mg/L TC:11.13mg/L IC:1.727mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	438.4	11.13mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 8:22:15 AM

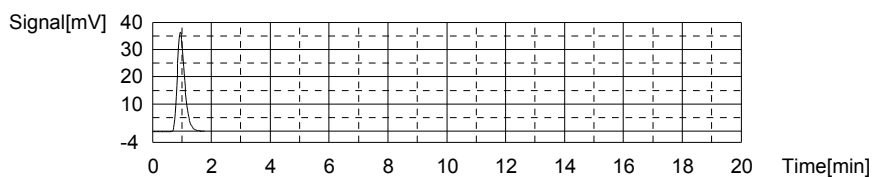
Mean Area 438.4
Mean Conc. 11.13mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	63.66	1.727mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 8:26:52 AM

Mean Area 63.66
Mean Conc. 1.727mg/L



Sample

Sample Name: L16120857-04 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

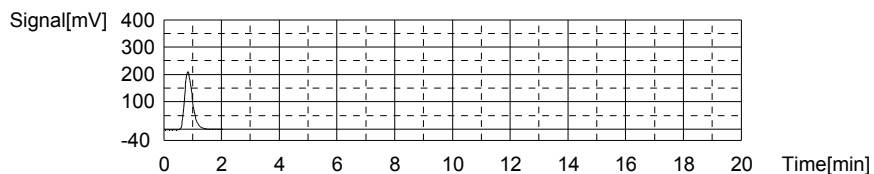
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:9.140mg/L TC:10.17mg/L IC:1.026mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	400.9	10.17mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 8:34:37 AM

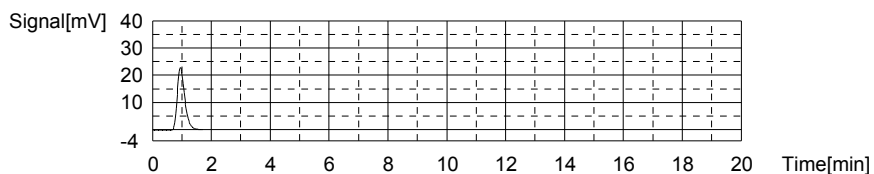
Mean Area 400.9
Mean Conc. 10.17mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	40.21	1.026mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 8:39:12 AM

Mean Area 40.21
Mean Conc. 1.026mg/L



Sample

Sample Name: L16120857-07
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

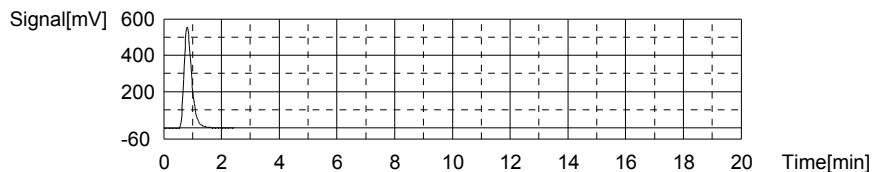
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:15.56mg/L TC:26.40mg/L IC:10.84mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1033	26.40mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 8:47:18 AM

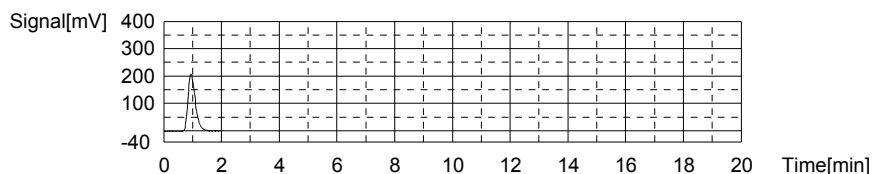
Mean Area 1033
Mean Conc. 26.40mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	368.1	10.84mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 8:52:14 AM

Mean Area 368.1
Mean Conc. 10.84mg/L



Sample

Sample Name: L16120857-12
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

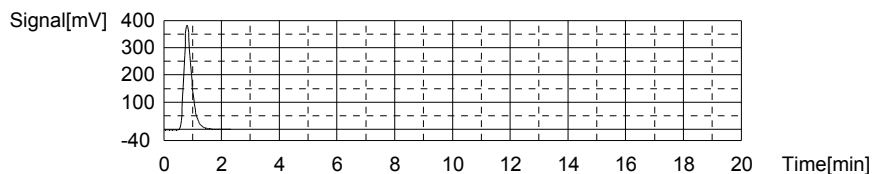
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:10.79mg/L TC:18.37mg/L IC:7.587mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	720.6	18.37mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 9:00:13 AM

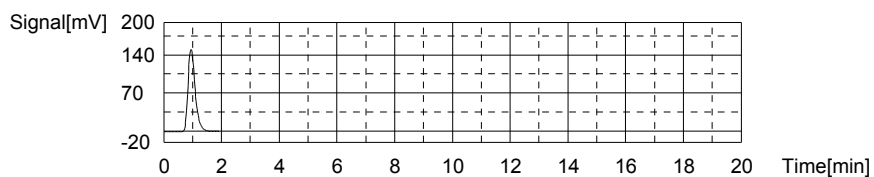
Mean Area 720.6
Mean Conc. 18.37mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	259.5	7.587mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 9:05:05 AM

Mean Area 259.5
Mean Conc. 7.587mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

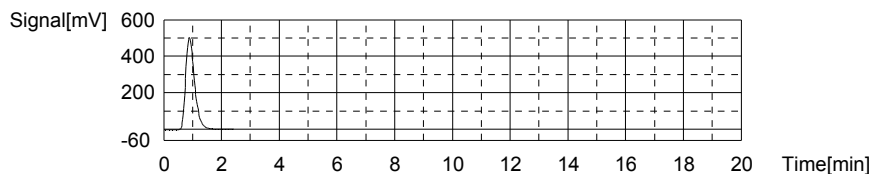
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.47mg/L TC:27.60mg/L IC:0.1293mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1080	27.60mg/L	500uL		1	TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 9:35:23 AM

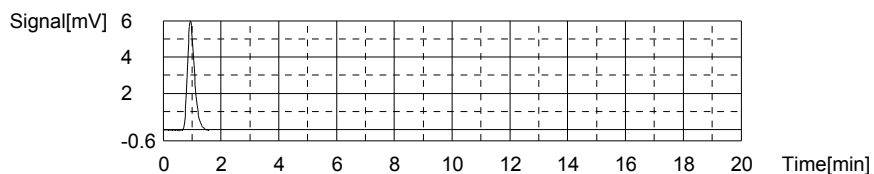
Mean Area 1080
Mean Conc. 27.60mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.25	0.1293mg/L	500uL		1	TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 9:39:49 AM

Mean Area 10.25
Mean Conc. 0.1293mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

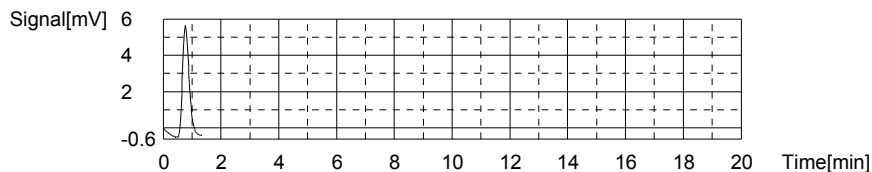
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.01088mg/L TC:0.1204mg/L IC:0.1095mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.642	0.1204mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 9:44:47 AM

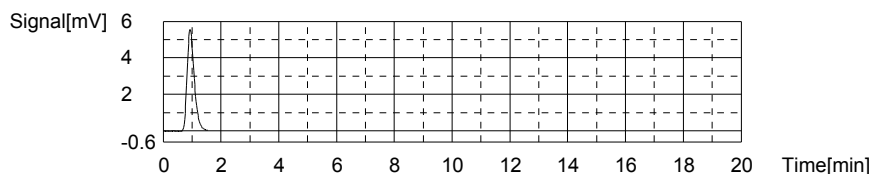
Mean Area 9.642
Mean Conc. 0.1204mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.588	0.1095mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 9:48:46 AM

Mean Area 9.588
Mean Conc. 0.1095mg/L



Sample

Sample Name: L16120949-01 (50)
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

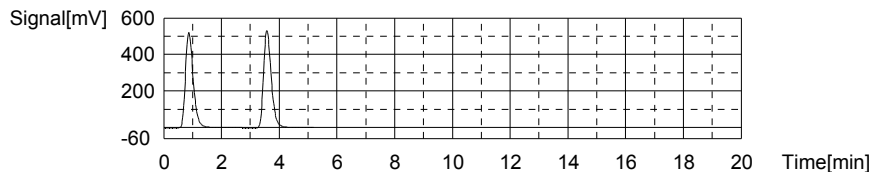
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:24.78mg/L TC:25.12mg/L IC:0.3394mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	974.6	24.90mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 9:56:55 AM
2	991.9	25.34mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 10:01:44 AM

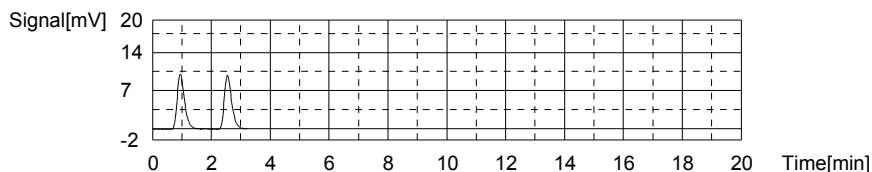
Mean Area 983.3
Mean Conc. 25.12mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	17.31	0.3406mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 10:06:11 AM
2	17.23	0.3382mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 10:10:28 AM

Mean Area 17.27
Mean Conc. 0.3394mg/L



Sample

Sample Name: L16121004-03 (3)
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

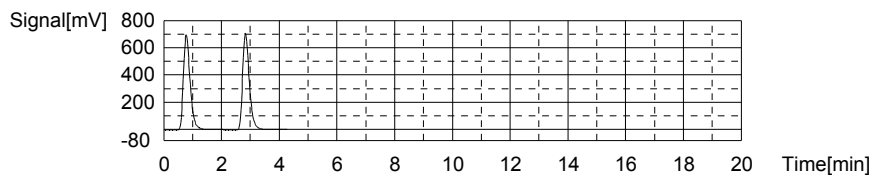
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.047mg/L TC:28.92mg/L IC:22.88mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1119	28.60mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 10:17:58 AM
2	1144	29.25mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 10:22:27 AM

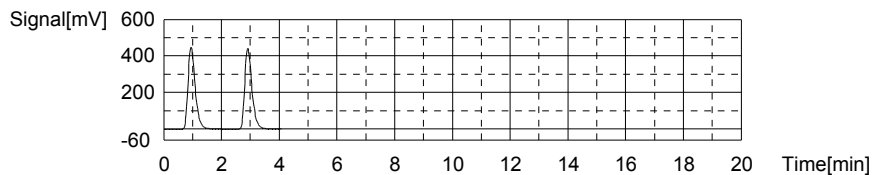
Mean Area 1132
Mean Conc. 28.92mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	773.7	22.97mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 10:27:25 AM
2	767.5	22.79mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 10:32:19 AM

Mean Area 770.6
Mean Conc. 22.88mg/L



Sample

Sample Name: L16121073-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

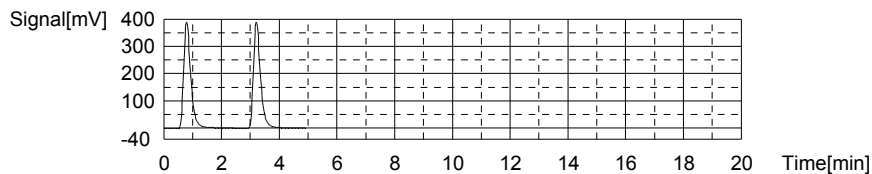
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.815mg/L TC:16.94mg/L IC:10.12mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	665.2	16.95mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 10:40:10 AM
2	664.0	16.92mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 10:45:54 AM

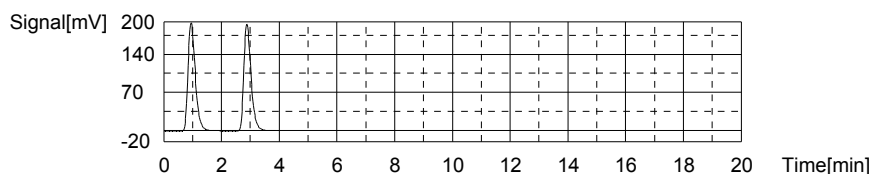
Mean Area 664.6
Mean Conc. 16.94mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	346.4	10.19mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 10:50:51 AM
2	342.1	10.06mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 10:55:30 AM

Mean Area 344.3
Mean Conc. 10.12mg/L



Sample

Sample Name: L16120856-03 (2)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

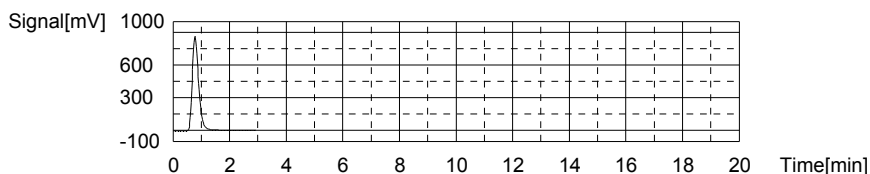
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.728mg/L TC:35.25mg/L IC:29.53mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1378	35.25mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 11:03:52 AM

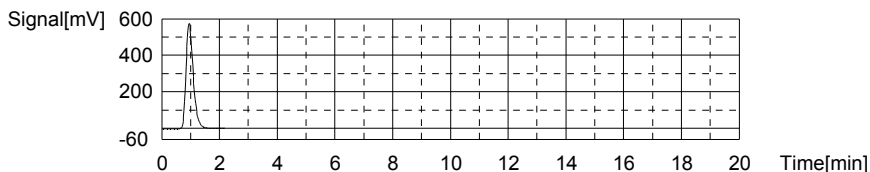
Mean Area 1378
Mean Conc. 35.25mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	992.8	29.53mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 11:09:04 AM

Mean Area 992.8
Mean Conc. 29.53mg/L



Sample

Sample Name: L16120856-04 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

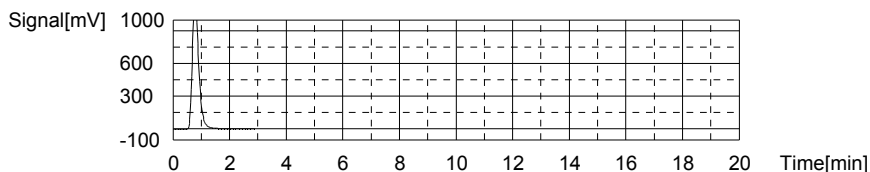
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.682mg/L TC:48.27mg/L IC:41.59mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1885	48.27mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 11:17:23 AM

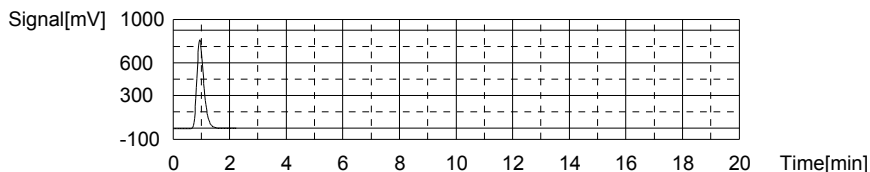
Mean Area 1885
Mean Conc. 48.27mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1396	41.59mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 0	12/20/2016 11:22:41 AM

Mean Area 1396
Mean Conc. 41.59mg/L



Sample

Sample Name: L16120856-06 (3)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

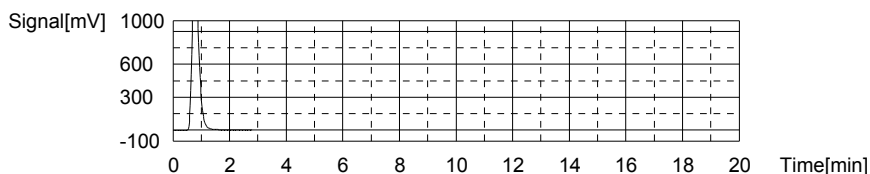
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.935mg/L TC:59.80mg/L IC:57.86mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2334	59.80mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 11:30:55 AM

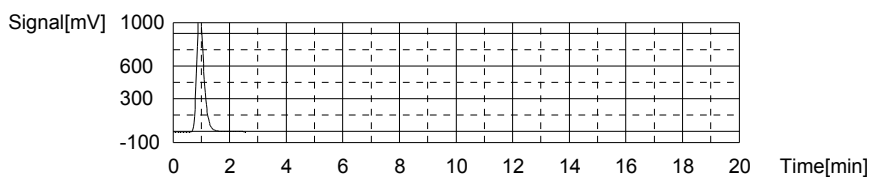
Mean Area 2334
Mean Conc. 59.80mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1940	57.86mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 11:36:37 AM

Mean Area 1940
Mean Conc. 57.86mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

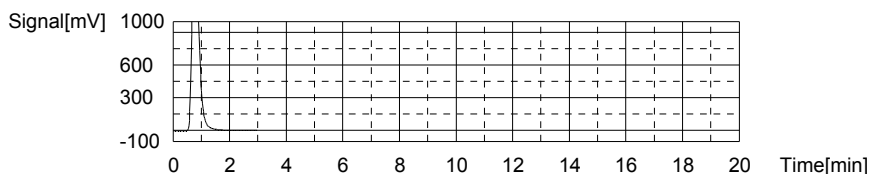
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-1.517mg/L TC:68.19mg/L IC:69.71mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2661	68.19mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 11:45:01 AM

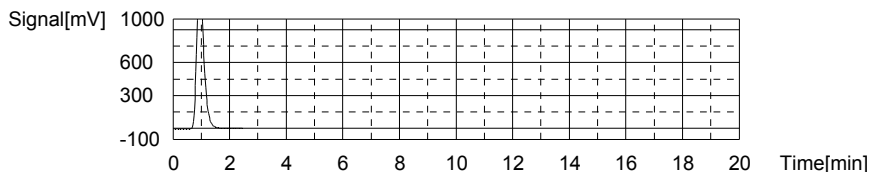
Mean Area 2661
Mean Conc. 68.19mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2336	69.71mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 11:50:39 AM

Mean Area 2336
Mean Conc. 69.71mg/L



Sample

Sample Name:
Sample ID:

Origin:
Status
Chk. Result

TOC-10-31-2015.met
Completed

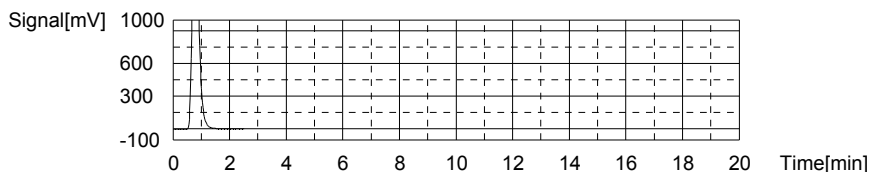
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-3.300mg/L TC:67.58mg/L IC:70.88mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2637	67.58mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 11:58:36 AM

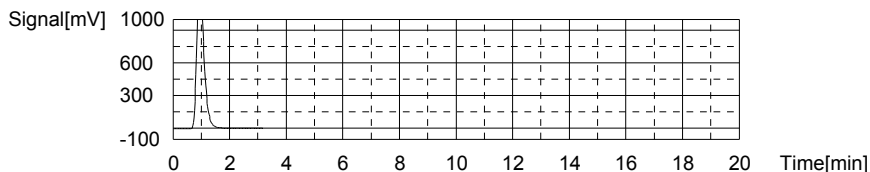
Mean Area 2637
Mean Conc. 67.58mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2375	70.88mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 12:04:54 PM

Mean Area 2375
Mean Conc. 70.88mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met

Completed

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:13.19mg/L TC:53.05mg/L IC:39.85mg/L

1. Det

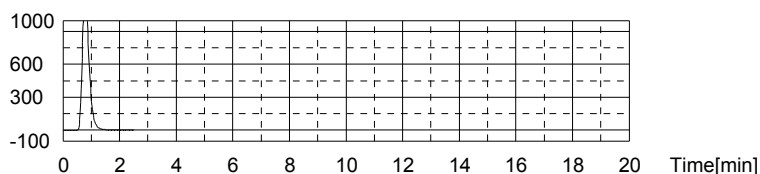
Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2071	53.05mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 12:12:51 PM

Mean Area 2071

Mean Conc. 53.05mg/L

Signal[mV]



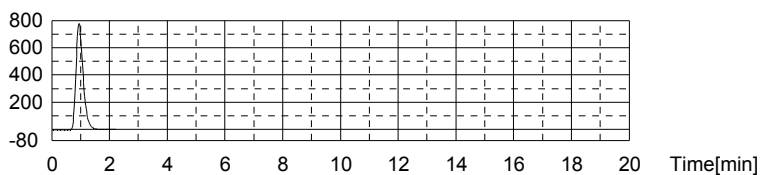
Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1338	39.85mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 12:18:06 PM

Mean Area 1338

Mean Conc. 39.85mg/L

Signal[mV]



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met

Completed

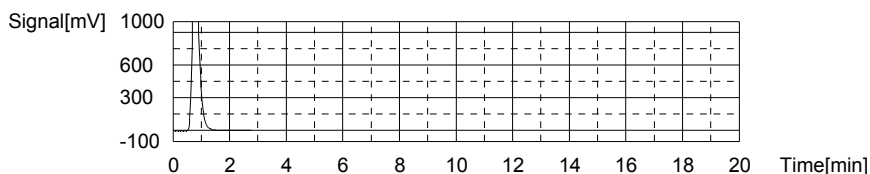
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:13.07mg/L TC:61.57mg/L IC:48.50mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2403	61.57mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 12:26:17 PM

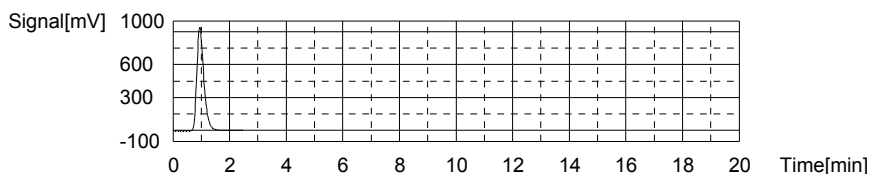
Mean Area 2403
Mean Conc. 61.57mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1627	48.50mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 12:31:46 PM

Mean Area 1627
Mean Conc. 48.50mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

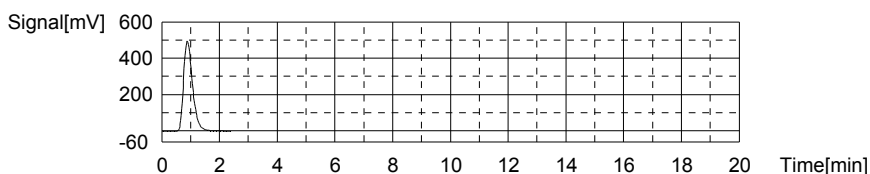
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.06mg/L TC:27.37mg/L IC:0.3151mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1071	27.37mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 12:39:36 PM

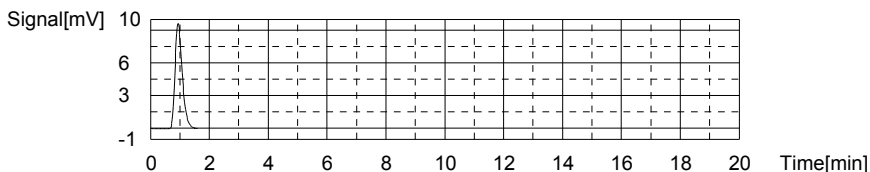
Mean Area 1071
Mean Conc. 27.37mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	16.46	0.3151mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 12:44:07 PM

Mean Area 16.46
Mean Conc. 0.3151mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

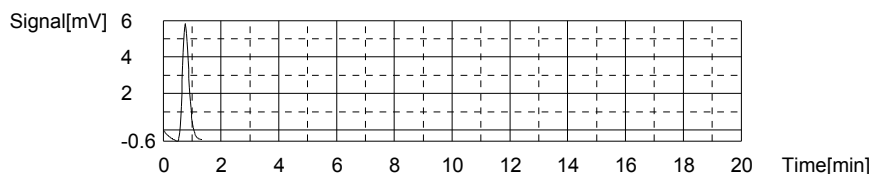
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.00290mg/L TC:0.1324mg/L IC:0.1353mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.11	0.1324mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 12:49:05 PM

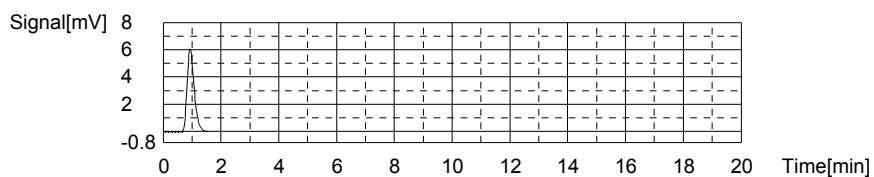
Mean Area 10.11
Mean Conc. 0.1324mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.45	0.1353mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 12:53:03 PM

Mean Area 10.45
Mean Conc. 0.1353mg/L



Sample

Sample Name:
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

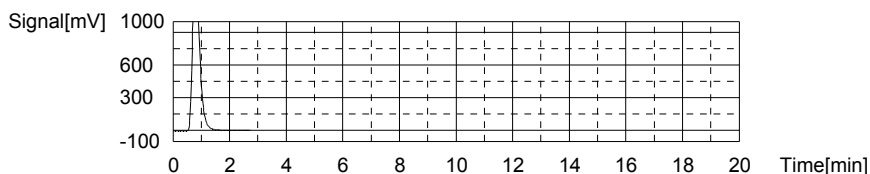
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:16.28mg/L TC:63.88mg/L IC:47.60mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2493	63.88mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 1:01:12 PM

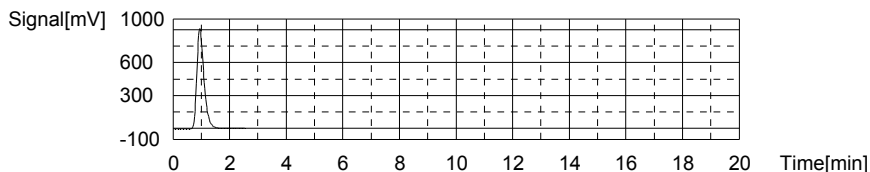
Mean Area 2493
Mean Conc. 63.88mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1597	47.60mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 1:06:45 PM

Mean Area 1597
Mean Conc. 47.60mg/L



Sample

Sample Name:
Sample ID:

Origin:
Status
Chk. Result

TOC-10-31-2015.met
Completed

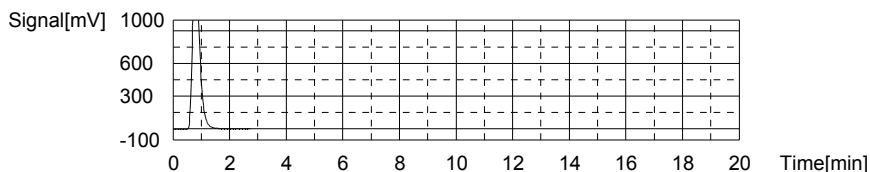
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:16.10mg/L TC:64.81mg/L IC:48.71mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2529	64.81mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/20/2016 1:14:55 PM

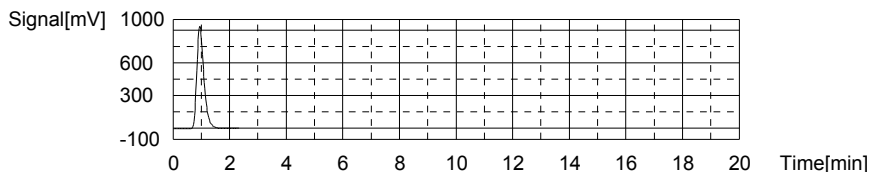
Mean Area 2529
Mean Conc. 64.81mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1634	48.71mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 1:20:19 PM

Mean Area 1634
Mean Conc. 48.71mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met

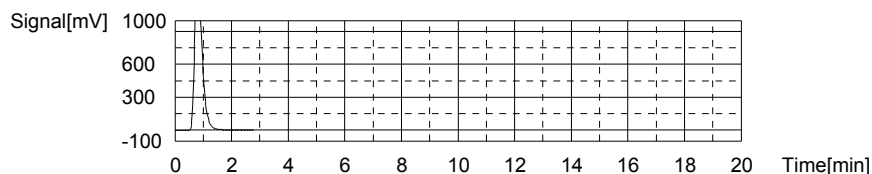
Completed

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.16mg/L TC:64.83mg/L IC:37.67mg/L

1. Det

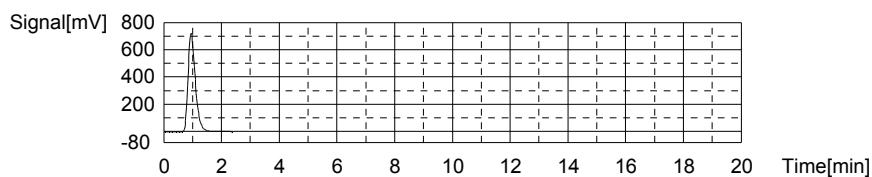
Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2530	64.83mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 1:28:31 PM

Mean Area 2530
Mean Conc. 64.83mg/L

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1265	37.67mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/20/2016 1:33:58 PM

Mean Area 1265
Mean Conc. 37.67mg/L

Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met

Completed

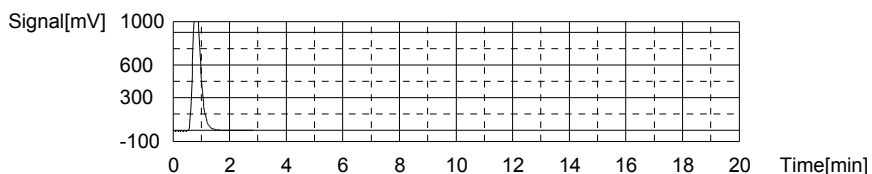
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:29.67mg/L TC:59.95mg/L IC:30.28mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2340	59.95mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/20/2016 1:42:14 PM

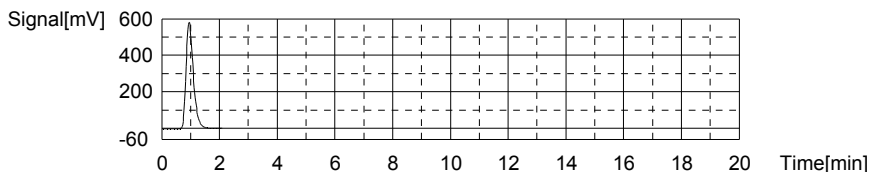
Mean Area 2340
Mean Conc. 59.95mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1018	30.28mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 1:47:19 PM

Mean Area 1018
Mean Conc. 30.28mg/L



Sample

Sample Name: L16121129-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

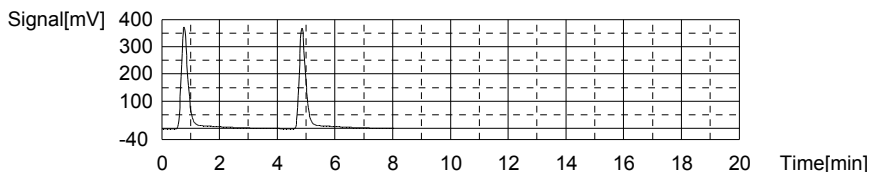
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.900mg/L TC:16.69mg/L IC:11.79mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	660.2	16.82mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 1:56:51 PM
2	650.1	16.56mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/20/2016 2:03:12 PM

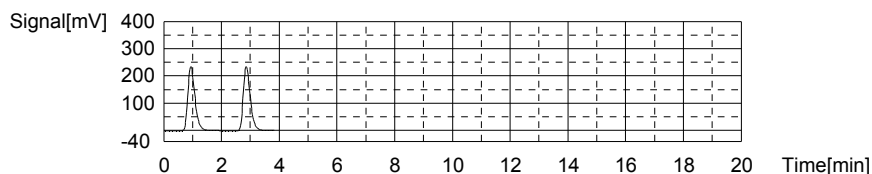
Mean Area 655.2
Mean Conc. 16.69mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	401.9	11.85mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 2:08:04 PM
2	398.4	11.74mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/20/2016 2:12:39 PM

Mean Area 400.2
Mean Conc. 11.79mg/L



Sample

Sample Name: L16120959-01 (10)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

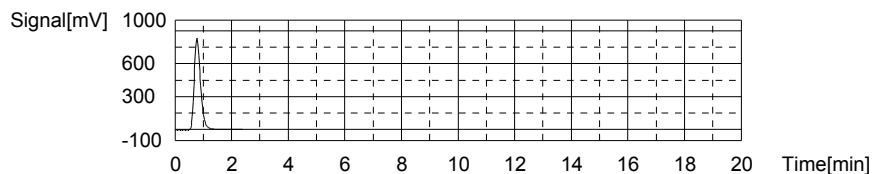
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.974mg/L TC:33.23mg/L IC:28.25mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1299	33.23mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 2:20:30 PM

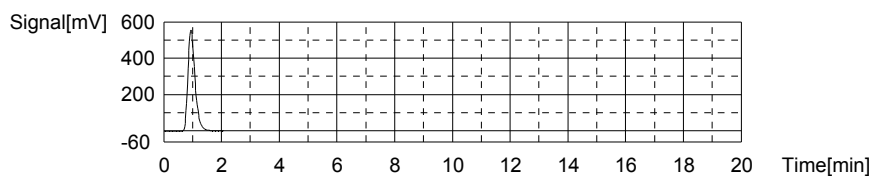
Mean Area 1299
Mean Conc. 33.23mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	950.2	28.25mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 2:25:34 PM

Mean Area 950.2
Mean Conc. 28.25mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

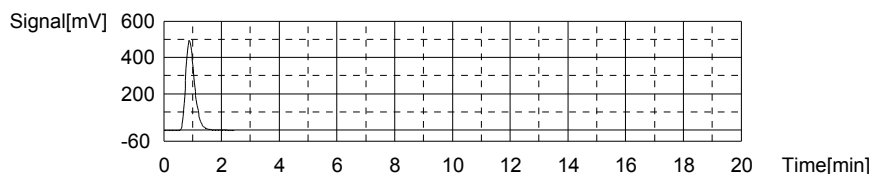
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.04mg/L TC:27.19mg/L IC:0.1527mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1064	27.19mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 2:46:52 PM

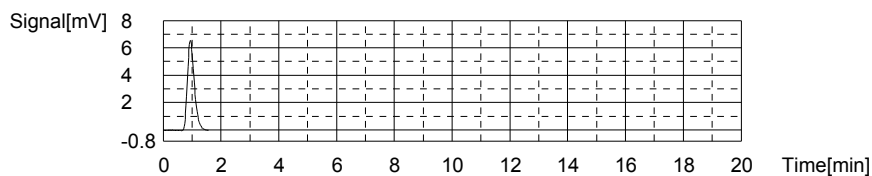
Mean Area 1064
Mean Conc. 27.19mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.03	0.1527mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 2:51:18 PM

Mean Area 11.03
Mean Conc. 0.1527mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

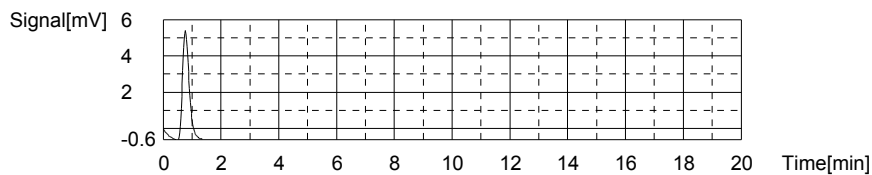
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.00014mg/L TC:0.1178mg/L IC:0.1179mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.539	0.1178mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/20/2016 2:56:18 PM

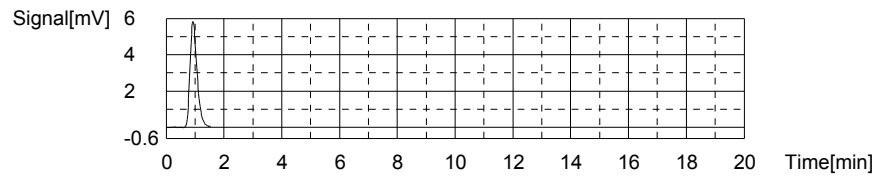
Mean Area 9.539
Mean Conc. 0.1178mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.868	0.1179mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/20/2016 3:00:16 PM

Mean Area 9.868
Mean Conc. 0.1179mg/L



595004

Total Organic Carbon

MAKE DAILY

CCV (TOC): Std 79381
(5/200)(1000) = 25mg/LLCS (TOC): Std 77870
(5/200)(1000) = 25mg/LCCV (TIC): Std 78236
(5/200)(1000) = 25mg/LMS (TOC): Std 77870
0.4 (1000) / 10 = 10Calibration Curve Date: 10/31/15Reagent: Rbt 38591
Rbt 38673☒ SM5310-C : Matrix 2 WG 595003☒ EPA 415.1/9060A(mod): Matrix 1 WG 595004SOP: K 4151 Rev. 19

WG

Instrument: Shimadza TOC-VWP/ASI

☒ drain reservoir filled
☒ ASI water bottle full
☒ dilution water bottle full☒ DAILY CHECK
☒ 3rd bottle full
☒ sufficient gas
☒ sufficient persulfate☒ sufficient acid
☒ waste container

Position	Sample ID	Dilution
1	TIC	
2	TIC/TIC	
3	CCV	
4	Blk	
5	LCS	
6	LCS/DUP	
7	12-732-C2	
8	04	
9	12-734-C1	
10	02	
11	12-735-C1	
12	03	
13	03	
14	CCV	
15	CCB	
16	12-735-04	
17	09	
18	06	
19	07	
20	12-750-C1	
21	02	
22	12-800-C1	
23	12-590-35	
24	36	
25	37	

Position	Sample ID	Dilution
26	CCV	
27	CCB	
28	12-590-38	
29	39	
30	40	
31	DUP 12-590-41	40 dup
32	MS 12-590-41	40 replicate
33	Blk	
34	LCS	
35	LCS/DUP	
36	12-590-41	
37	42	
38	CCV	
39	CCB	
40	12-715-C1	
41	02	Y2
42	12-352-C1	Y5
43	07	
44	15	
45	12-692-C1	Y25
46	12-762-C1	
47	02	
48	12-790-C1	
49	12-425-C1	
50	CCV	

Position	Sample ID	Dilution
51	CCB	
52	12-425-05	
53	09	
54	19	
55	12-521-C1	
56	03	
57	05	
58	07	1/100
59	09	1/25
60	DUP 12-590-41	
61	MS 12-590-41	
62	CCV	
63	CCB	
64	CCV	
65	CCB	
66	12-352-C1	Y5
67	CCV	
68	CCB	
69		
70		
71		
72		
73		
74		
75		

Analyst: Daniel HorvathDate/Time: 12/15/16 0832

* Preserved with phosphoric acid

DCN#122744



	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	TIC	TOC:3.899mg/L TC:29.01mg/L IC:25.12mg/L	Complete	12/15/2016 8:32:59 AM	1
2	TOC	TOC/TIC	TOC:28.65mg/L TC:37.31mg/L IC:8.658mg/L	Complete	12/15/2016 8:45:41 AM	2
3	TOC	CCV	TOC:26.41mg/L TC:26.45mg/L IC:0.03974mg/L	Complete	12/15/2016 8:57:50 AM	3
4	TOC	WG595003-01 BLK	!!Error!! TOC:0.00103mg/L TC:0.1184mg/L IC:0.117	Complete	12/15/2016 9:14:23 AM	0
5	TOC	WG595003-02 LCS	TOC:24.74mg/L TC:24.78mg/L IC:0.03631mg/L	Complete	12/15/2016 9:35:07 AM	5
6	TOC	WG595003-03 LCSDUP	TOC:26.67mg/L TC:26.69mg/L IC:0.01660mg/L	Complete	12/15/2016 10:04:16 AM	6
7	TOC	L16120732-02	TOC:1.810mg/L TC:2.044mg/L IC:0.2350mg/L	Complete	12/15/2016 10:24:00 AM	7
8	TOC	L16120732-04	TOC:0.9352mg/L TC:1.124mg/L IC:0.1884mg/L	Complete	12/15/2016 10:43:35 AM	8
9	TOC	L16120734-01	TOC:5.081mg/L TC:0.4834mg/L IC:14.41mg/L	Complete	12/15/2016 11:04:55 AM	9
10	TOC	L16120734-02	TOC:7.607mg/L TC:22.59mg/L IC:14.98mg/L	Complete	12/15/2016 11:26:31 AM	10
11	TOC	L16120735-01	TOC:0.8827mg/L TC:1.421mg/L IC:0.5385mg/L	Complete	12/15/2016 11:46:12 AM	11
12	TOC	L16120735-02	TOC:0.5955mg/L TC:0.6367mg/L IC:0.04119mg/L	Complete	12/15/2016 12:05:29 PM	12
13	TOC	L16120735-03	TOC:0.4522mg/L TC:0.4834mg/L IC:0.03121mg/L	Complete	12/15/2016 12:24:46 PM	13
14	TOC	CCV	TOC:26.46mg/L TC:26.50mg/L IC:0.03570mg/L	Complete	12/15/2016 12:36:58 PM	14
15	TOC	CCB	TOC:0.03220mg/L TC:0.08391mg/L IC:0.05171mg/L	Complete	12/15/2016 12:45:47 PM	0
16	TOC	L16120735-04	TOC:0.4271mg/L TC:0.4656mg/L IC:0.03845mg/L	Complete	12/15/2016 1:05:03 PM	16
17	TOC	L16120735-05	TOC:0.4515mg/L TC:0.4817mg/L IC:0.03020mg/L	Complete	12/15/2016 1:24:13 PM	17
18	TOC	L16120735-06	TOC:0.4970mg/L TC:0.5364mg/L IC:0.03944mg/L	Complete	12/15/2016 1:43:32 PM	18
19	TOC	L16120735-07	TOC:0.4800mg/L TC:0.5254mg/L IC:0.04535mg/L	Complete	12/15/2016 2:02:52 PM	19
20	TOC	L16120750-01	TOC:8.718mg/L TC:40.93mg/L IC:32.21mg/L	Complete	12/15/2016 2:26:31 PM	20
21	TOC	L16120750-02	TOC:4.063mg/L TC:8.298mg/L IC:4.233mg/L	Complete	12/15/2016 2:47:30 PM	21
22	TOC	L16120800-01	TOC:0.4465mg/L TC:0.4979mg/L IC:0.05147mg/L	Complete	12/15/2016 3:06:49 PM	22
23	TOC	L16120590-35	TOC:2.700mg/L TC:9.049mg/L IC:6.349mg/L	Complete	12/15/2016 3:27:49 PM	23
24	TOC	L16120590-36	TOC:2.715mg/L TC:8.369mg/L IC:5.654mg/L	Complete	12/15/2016 3:48:44 PM	24
25	TOC	L16120590-37	TOC:2.862mg/L TC:7.226mg/L IC:4.364mg/L	Complete	12/15/2016 4:09:37 PM	25
26	TOC	CCV	TOC:26.92mg/L TC:27.01mg/L IC:0.08863mg/L	Complete	12/15/2016 4:22:13 PM	26
27	TOC	CCB	TOC:0.02460mg/L TC:0.08098mg/L IC:0.05637mg/L	Complete	12/15/2016 4:31:05 PM	0
28	TOC	L16120590-38	TOC:2.617mg/L TC:5.782mg/L IC:3.165mg/L	Complete	12/15/2016 4:51:31 PM	28
29	TOC	L16120590-39	TOC:2.788mg/L TC:6.977mg/L IC:4.189mg/L	Complete	12/15/2016 5:12:12 PM	29
30	TOC	L16120590-40	TOC:2.903mg/L TC:6.727mg/L IC:3.824mg/L	Complete	12/15/2016 5:32:49 PM	30
31	TOC	WG595003-05 DUP	TOC:2.864mg/L TC:6.963mg/L IC:4.100mg/L	Complete	12/15/2016 5:53:32 PM	31
32	TOC	WG595003-06 MS	TOC:14.73mg/L TC:16.18mg/L IC:1.453mg/L	Complete	12/15/2016 6:14:05 PM	32
33	TOC	WG595004-01 BLK	TOC:0.02137mg/L TC:0.08229mg/L IC:0.06092mg/L	Complete	12/15/2016 6:22:59 PM	0
34	TOC	WG595004-02 LCS	TOC:27.29mg/L TC:27.37mg/L IC:0.08163mg/L	Complete	12/15/2016 6:35:09 PM	34
35	TOC	WG595004-03 LCSDUP	TOC:26.86mg/L TC:26.93mg/L IC:0.07759mg/L	Complete	12/15/2016 6:47:18 PM	35
36	TOC	L16120590-41	TOC:2.746mg/L TC:6.697mg/L IC:3.951mg/L	Complete	12/15/2016 6:59:23 PM	36
37	TOC	L16120590-42	TOC:2.565mg/L TC:5.876mg/L IC:3.311mg/L	Complete	12/15/2016 7:11:21 PM	37
38	TOC	CCV	TOC:27.13mg/L TC:27.22mg/L IC:0.08964mg/L	Complete	12/15/2016 7:23:31 PM	38
39	TOC	CCB	TOC:0.02425mg/L TC:0.09071mg/L IC:0.06646mg/L	Complete	12/15/2016 7:32:23 PM	0
40	TOC	L16120715-01	TOC:4.822mg/L TC:17.63mg/L IC:12.81mg/L	Complete	12/15/2016 7:46:16 PM	40
41	TOC	L16120715-02 (2)	TOC:5.132mg/L TC:15.88mg/L IC:10.75mg/L	Complete	12/15/2016 7:59:33 PM	41
42	TOC		TOC:3.544mg/L TC:6.415mg/L IC:2.871mg/L	Complete	12/15/2016 8:11:31 PM	42
43	TOC	L16120352-07	TOC:6.016mg/L TC:8.464mg/L IC:2.448mg/L	Complete	12/15/2016 8:23:46 PM	43
44	TOC	L16120352-15	TOC:8.205mg/L TC:10.54mg/L IC:2.331mg/L	Complete	12/15/2016 8:37:16 PM	44
45	TOC	L16120692-01 (25)	TOC:10.72mg/L TC:10.92mg/L IC:0.1997mg/L	Complete	12/15/2016 8:52:03 PM	45
46	TOC	L16120762-01	TOC:2.287mg/L TC:6.939mg/L IC:4.652mg/L	Complete	12/15/2016 9:04:05 PM	46
47	TOC	L16120762-02	TOC:2.118mg/L TC:4.836mg/L IC:2.718mg/L	Complete	12/15/2016 9:16:03 PM	47
48	TOC	L16120790-01	TOC:3.583mg/L TC:16.41mg/L IC:12.82mg/L	Complete	12/15/2016 9:28:29 PM	48
49	TOC	L16120425-01	TOC:2.927mg/L TC:5.108mg/L IC:2.181mg/L	Complete	12/15/2016 9:40:21 PM	49
50	TOC	CCV	TOC:27.13mg/L TC:27.22mg/L IC:0.08602mg/L	Complete	12/15/2016 9:52:36 PM	50
51	TOC	CCB	TOC:0.02210mg/L TC:0.09846mg/L IC:0.07636mg/L	Complete	12/15/2016 10:01:31 PM	0
52	TOC	L16120425-05	TOC:3.420mg/L TC:7.670mg/L IC:4.251mg/L	Complete	12/15/2016 10:15:13 PM	52
53	TOC	L16120425-09	TOC:7.406mg/L TC:18.53mg/L IC:11.12mg/L	Complete	12/15/2016 10:28:07 PM	53
54	TOC	L16120425-19	TOC:7.591mg/L TC:13.52mg/L IC:5.926mg/L	Complete	12/15/2016 10:43:07 PM	54
55	TOC	L16120521-01	TOC:2.967mg/L TC:8.256mg/L IC:5.289mg/L	Complete	12/15/2016 10:55:49 PM	55
56	TOC	L16120521-03	TOC:2.023mg/L TC:3.945mg/L IC:1.922mg/L	Complete	12/15/2016 11:09:48 PM	56
57	TOC	L16120521-05	TOC:1.529mg/L TC:1.651mg/L IC:0.1222mg/L	Complete	12/15/2016 11:22:42 PM	57
58	TOC	L16120521-07 (100)	TOC:7.291mg/L TC:28.30mg/L IC:21.00mg/L	Complete	12/15/2016 11:35:26 PM	58
59	TOC	L16120521-09 (25)	TOC:10.21mg/L TC:11.56mg/L IC:1.348mg/L	Complete	12/15/2016 11:47:51 PM	59
60	TOC	WG595004-05 DUP	TOC:2.161mg/L TC:3.439mg/L IC:1.278mg/L	Complete	12/15/2016 11:59:44 PM	60
61	TOC	WG595004-06 MS	TOC:12.25mg/L TC:12.85mg/L IC:0.6062mg/L	Complete	12/16/2016 12:11:42 AM	61
62	TOC	CCV	TOC:27.70mg/L TC:27.78mg/L IC:0.08249mg/L	Complete	12/16/2016 12:23:58 AM	62
63	TOC	CCB	TOC:0.02470mg/L TC:0.1076mg/L IC:0.08285mg/L	Complete	12/16/2016 12:32:51 AM	0
64	TOC	CCV	TOC:26.47mg/L TC:26.58mg/L IC:0.1015mg/L	Complete	12/16/2016 8:39:07 AM	64
65	TOC	CCB	TOC:0.02130mg/L TC:0.1051mg/L IC:0.08384mg/L	Complete	12/16/2016 8:48:03 AM	0
66	TOC	L16120352-01 (5)	TOC:26.31mg/L TC:26.42mg/L IC:0.1125mg/L	Complete	12/16/2016 9:00:22 AM	66
67	TOC	CCV	TOC:26.65mg/L TC:26.70mg/L IC:0.05530mg/L	Complete	12/16/2016 9:15:52 AM	67

12/16/2016 9:26:21 AM

1/2

	Analysis	Sample Name	Result	Status	Date / Time	Vial
68	TOC	CCB	TOC:0.01528mg/L TC:0.09959mg/L IC:0.08432mg/L	Complete	12/16/2016 9:24:48 AM	0

12/16/2016 9:26:22 AM

2/2

Instr. Information

System TOCVW ASI
Detector Wet Chemical

Sample

Sample Name: TIC
Sample ID:
Origin: TOC-10-31-2015.met
Status Completed
Chk. Result

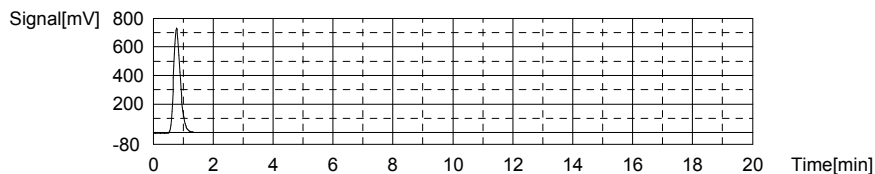
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.899mg/L TC:29.01mg/L IC:25.12mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1135	29.01mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 8:27:29 AM

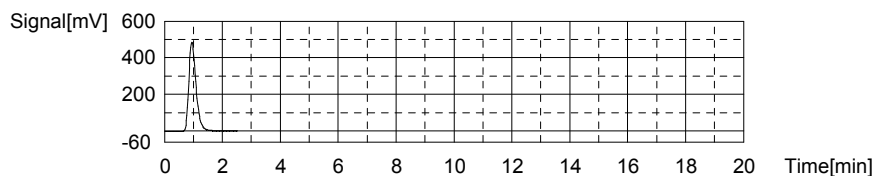
Mean Area 1135
Mean Conc. 29.01mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	845.4	25.12mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 8:32:59 AM

Mean Area 845.4
Mean Conc. 25.12mg/L



Sample

Sample Name: TOC/TIC
Sample ID:
Origin: TOC-10-31-2015.met
Status Completed
Chk. Result

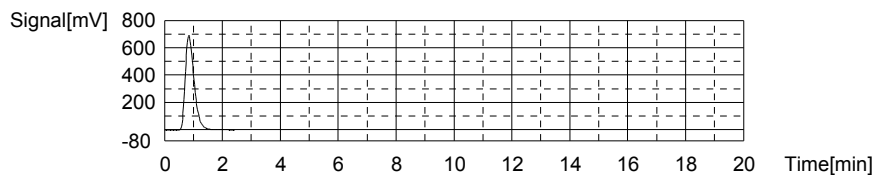
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:28.65mg/L TC:37.31mg/L IC:8.658mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1458	37.31mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 8:40:51 AM

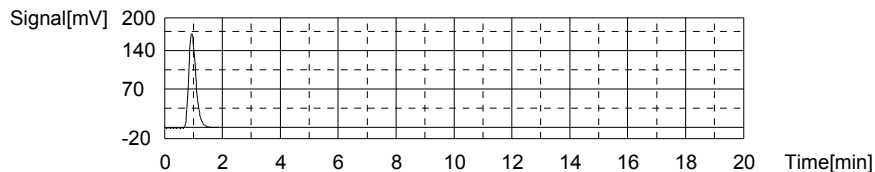
Mean Area 1458
Mean Conc. 37.31mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	295.3	8.658mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 0	12/15/2016 8:45:41 AM

Mean Area 295.3
Mean Conc. 8.658mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

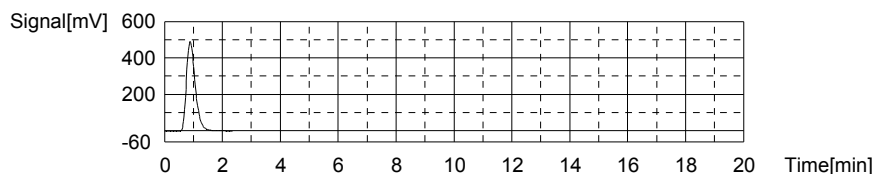
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.41mg/L TC:26.45mg/L IC:0.03974mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1035	26.45mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 8:53:27 AM

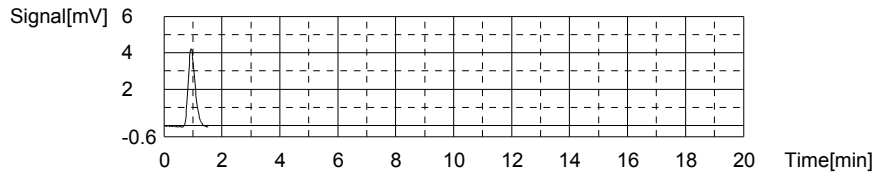
Mean Area 1035
Mean Conc. 26.45mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.255	0.03974mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 0	12/15/2016 8:57:50 AM

Mean Area 7.255
Mean Conc. 0.03974mg/L



Sample

Sample Name: WG595003-01 BLK
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

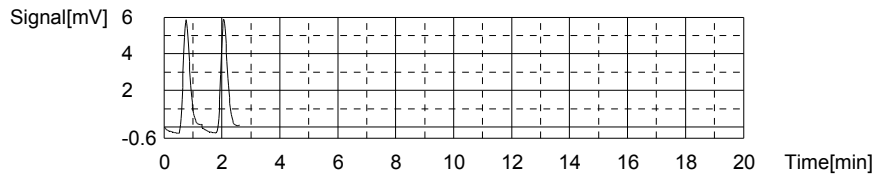
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-0.00103mg/L TC:0.1164mg/L IC:0.1175mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.518	0.1172mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:02:46 AM
2	9.457	0.1157mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:06:17 AM

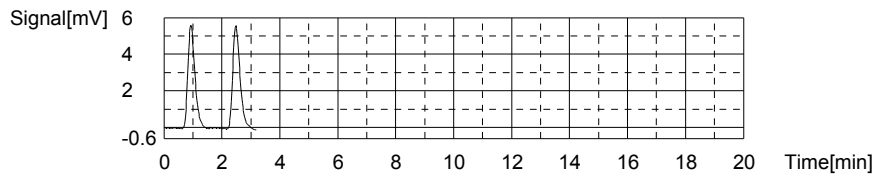
Mean Area 9.488
Mean Conc. 0.1164mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.697	0.1128mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:10:18 AM
2	10.01	0.1222mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:14:23 AM

Mean Area 9.854
Mean Conc. 0.1175mg/L



Sample

Sample Name: WG595003-02 LCS
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

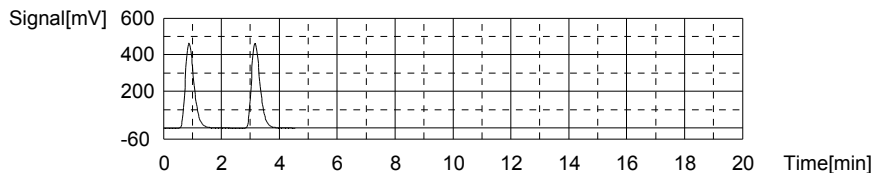
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:24.74mg/L TC:24.78mg/L IC:0.03631mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	971.8	24.82mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:22:06 AM
2	968.0	24.73mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:26:37 AM

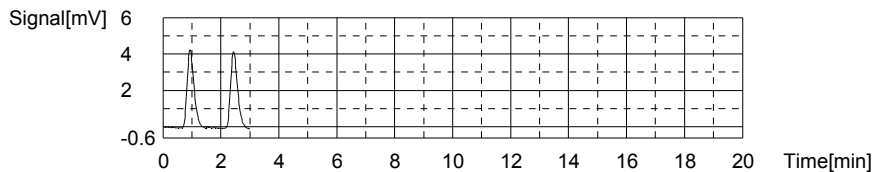
Mean Area 969.9
Mean Conc. 24.78mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.218	0.03863mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:30:59 AM
2	7.063	0.03399mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:35:07 AM

Mean Area 7.141
Mean Conc. 0.03631mg/L



Sample

Sample Name: WG595003-03 LCS DUP
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result:

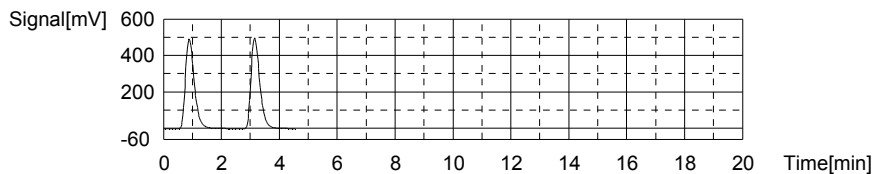
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.67mg/L TC:26.69mg/L IC:0.01660mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1042	26.63mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:51:16 AM
2	1047	26.75mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:55:50 AM

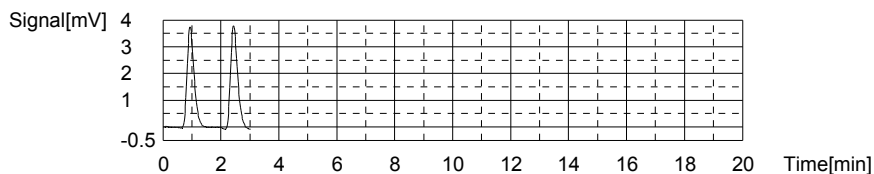
Mean Area 1045
Mean Conc. 26.69mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.364	0.01308mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 10:00:08 AM
2	6.599	0.02011mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 10:04:16 AM

Mean Area 6.482
Mean Conc. 0.01660mg/L



Sample

Sample Name: L16120732-02
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

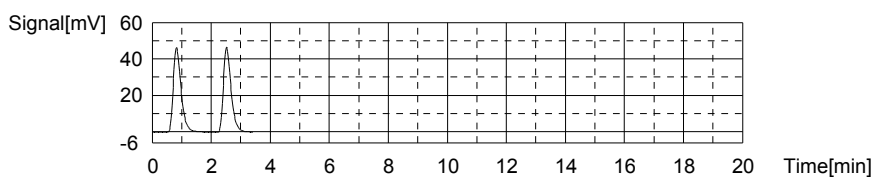
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.810mg/L TC:2.044mg/L IC:0.2350mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	84.37	2.039mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 10:11:25 AM
2	84.79	2.050mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 10:15:23 AM

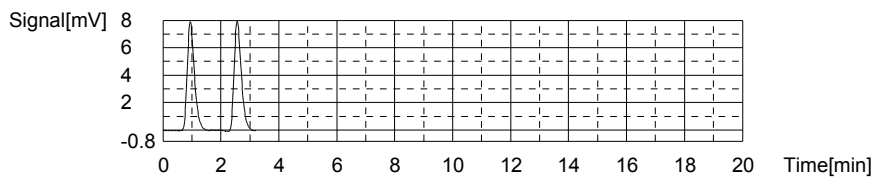
Mean Area 84.58
Mean Conc. 2.044mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.74	0.2338mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 10:19:50 AM
2	13.82	0.2362mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 10:24:00 AM

Mean Area 13.78
Mean Conc. 0.2350mg/L



Sample

Sample Name: L16120732-04
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

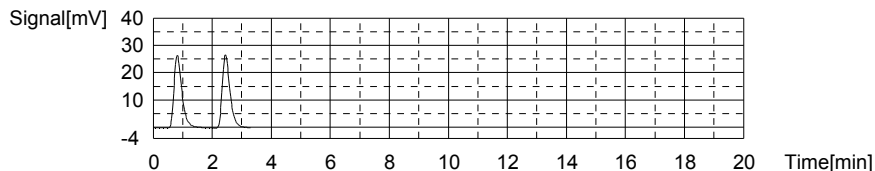
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.9352mg/L TC:1.124mg/L IC:0.1884mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	48.48	1.118mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 10:31:05 AM
2	48.95	1.130mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 10:35:00 AM

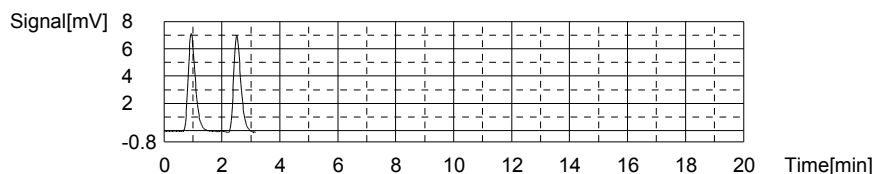
Mean Area 48.72
Mean Conc. 1.124mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	12.32	0.1913mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 0	12/15/2016 10:39:23 AM
2	12.13	0.1856mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 0	12/15/2016 10:43:35 AM

Mean Area 12.23
Mean Conc. 0.1884mg/L



Sample

Sample Name: L16120734-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

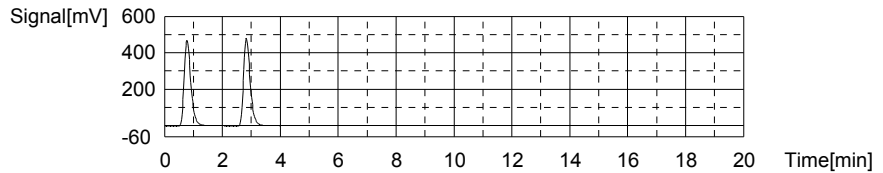
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.081mg/L TC:19.49mg/L IC:14.41mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	756.3	19.29mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 10:51:03 AM
2	771.8	19.69mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 10:55:14 AM

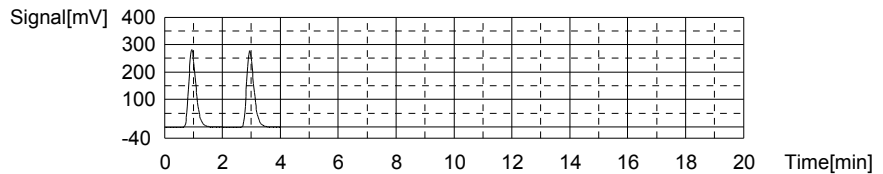
Mean Area 764.1
Mean Conc. 19.49mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	488.9	14.45mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 11:00:09 AM
2	486.2	14.37mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 11:04:55 AM

Mean Area 487.6
Mean Conc. 14.41mg/L



Sample

Sample Name: L16120734-02
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

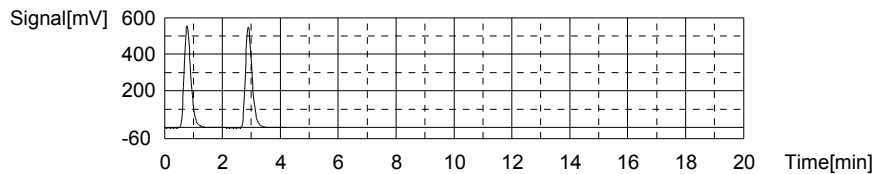
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.607mg/L TC:22.59mg/L IC:14.98mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	888.8	22.69mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 11:12:28 AM
2	880.6	22.48mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 11:16:48 AM

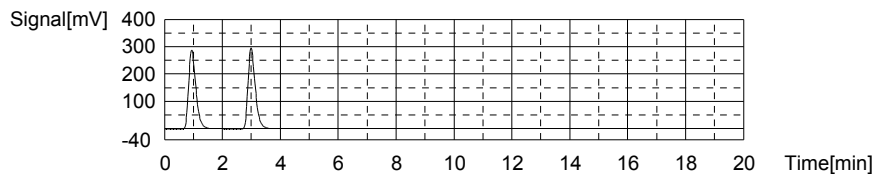
Mean Area 884.7
Mean Conc. 22.59mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	501.3	14.82mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 11:21:50 AM
2	512.0	15.14mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 11:26:31 AM

Mean Area 506.6
Mean Conc. 14.98mg/L



Sample

Sample Name: L16120735-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

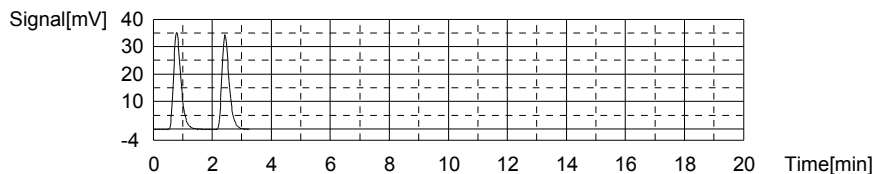
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.8827mg/L TC:1.421mg/L IC:0.5385mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	61.05	1.440mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 11:33:35 AM
2	59.56	1.402mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 11:37:28 AM

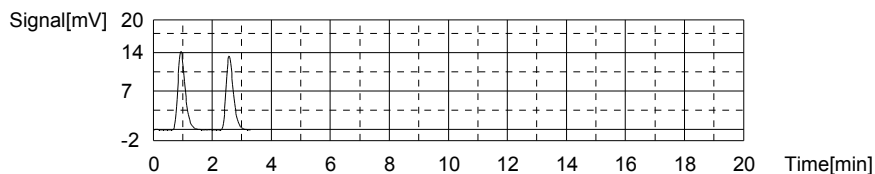
Mean Area 60.31
Mean Conc. 1.421mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.62	0.5593mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 11:41:56 AM
2	23.23	0.5177mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 11:46:12 AM

Mean Area 23.93
Mean Conc. 0.5385mg/L



Sample

Sample Name: L16120735-02
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

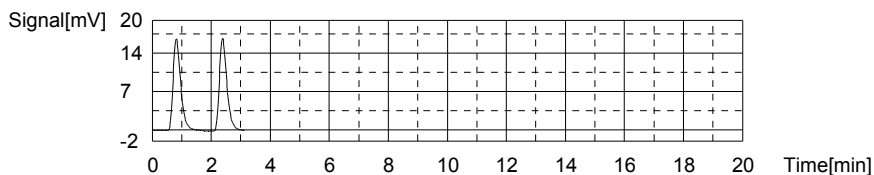
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.5955mg/L TC:0.6367mg/L IC:0.04119mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	29.59	0.6326mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 11:53:11 AM
2	29.91	0.6408mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 11:57:00 AM

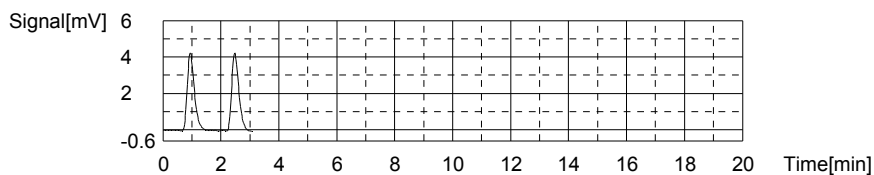
Mean Area 29.75
Mean Conc. 0.6367mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.282	0.04055mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 12:01:20 PM
2	7.325	0.04183mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 12:05:29 PM

Mean Area 7.303
Mean Conc. 0.04119mg/L



Sample

Sample Name: L16120735-03
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result:

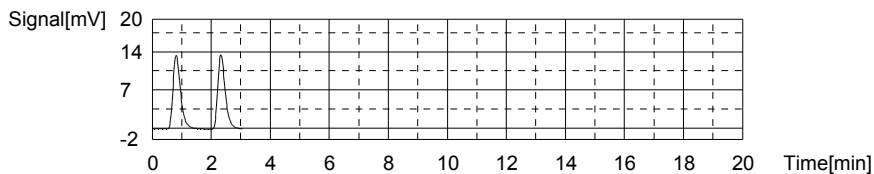
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4522mg/L TC:0.4834mg/L IC:0.03121mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	23.65	0.4801mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 12:12:26 PM
2	23.91	0.4868mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 12:16:15 PM

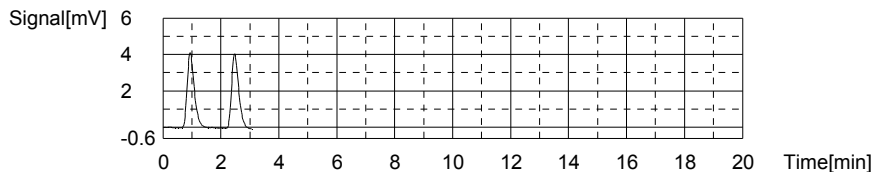
Mean Area 23.78
Mean Conc. 0.4834mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.018	0.03265mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/15/2016 12:20:36 PM
2	6.922	0.02978mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/15/2016 12:24:46 PM

Mean Area 6.970
Mean Conc. 0.03121mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

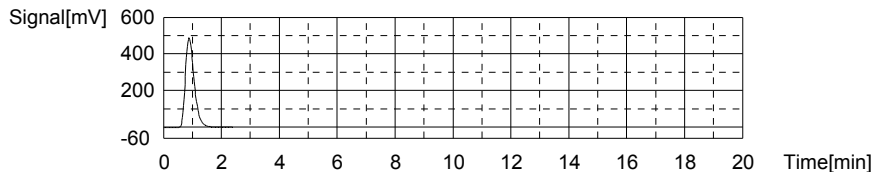
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.46mg/L TC:26.50mg/L IC:0.03570mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1037	26.50mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 12:32:36 PM

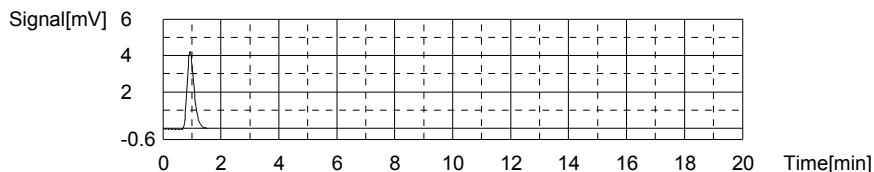
Mean Area 1037
Mean Conc. 26.50mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.120	0.03570mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55	012/15/2016 12:36:58 PM

Mean Area 7.120
Mean Conc. 0.03570mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

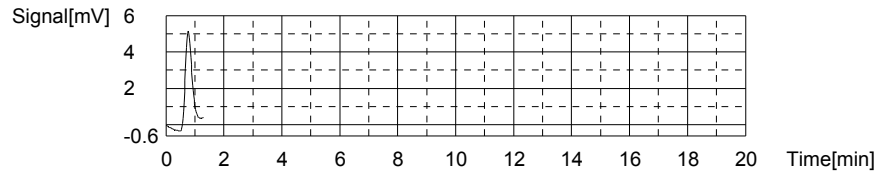
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.03220mg/L TC:0.08391mg/L IC:0.05171mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.220	0.08391mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 12:41:54 PM

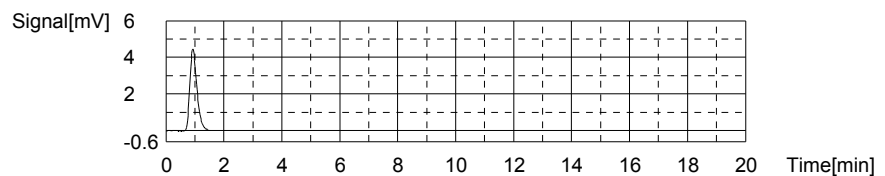
Mean Area 8.220
Mean Conc. 0.08391mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.655	0.05171mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 12:45:47 PM

Mean Area 7.655
Mean Conc. 0.05171mg/L



Sample

Sample Name: L16120735-04
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result:

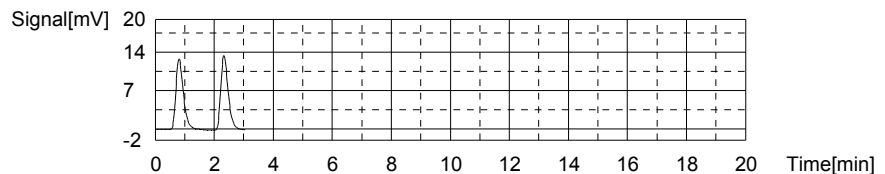
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4271mg/L TC:0.4656mg/L IC:0.03845mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	22.48	0.4500mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 12:52:47 PM
2	23.69	0.4811mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 12:56:35 PM

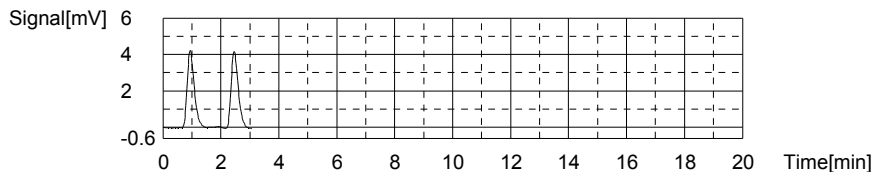
Mean Area 23.09
Mean Conc. 0.4656mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.194	0.03791mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 1:00:56 PM
2	7.230	0.03899mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 1:05:03 PM

Mean Area 7.212
Mean Conc. 0.03845mg/L



Sample

Sample Name: L16120735-05
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

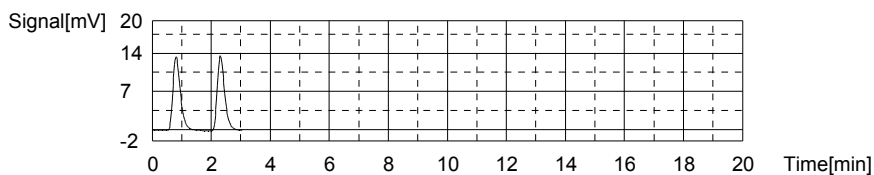
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4515mg/L TC:0.4817mg/L IC:0.03020mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	23.56	0.4778mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 1:11:59 PM
2	23.87	0.4857mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 1:15:48 PM

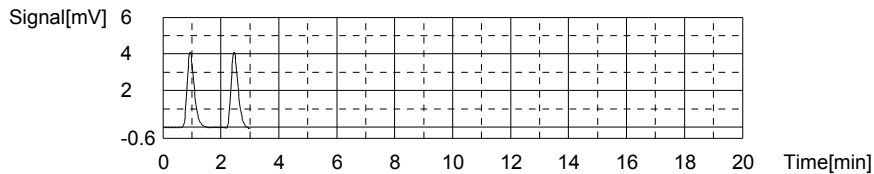
Mean Area 23.72
Mean Conc. 0.4817mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.973	0.03130mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 1:20:09 PM
2	6.899	0.02909mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 1:24:13 PM

Mean Area 6.936
Mean Conc. 0.03020mg/L



Sample

Sample Name: L16120735-06
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

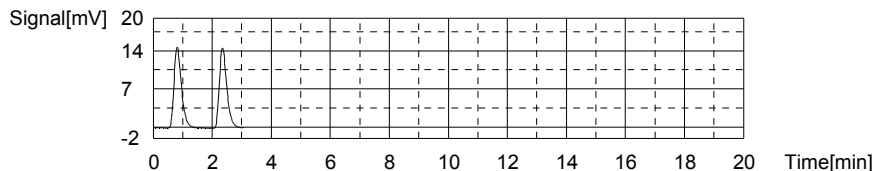
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4970mg/L TC:0.5364mg/L IC:0.03944mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	25.86	0.5368mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/15/2016 1:31:11 PM
2	25.83	0.5360mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/15/2016 1:34:58 PM

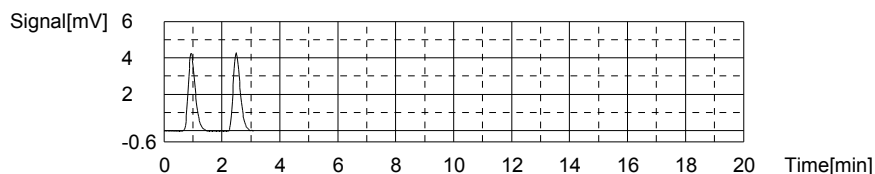
Mean Area 25.85
Mean Conc. 0.5364mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.247	0.03950mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 01	12/15/2016 1:39:22 PM
2	7.243	0.03938mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 01	12/15/2016 1:43:32 PM

Mean Area 7.245
Mean Conc. 0.03944mg/L



Sample

Sample Name: L16120753-07
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

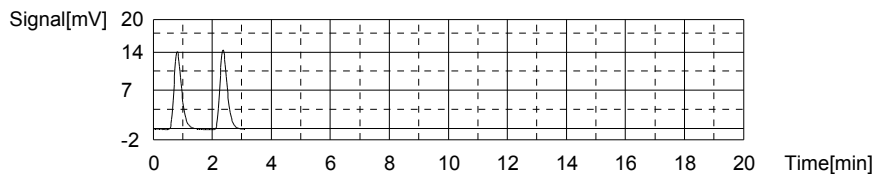
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4800mg/L TC:0.5254mg/L IC:0.04535mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	25.21	0.5201mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/15/2016 1:50:32 PM
2	25.62	0.5307mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/15/2016 1:54:20 PM

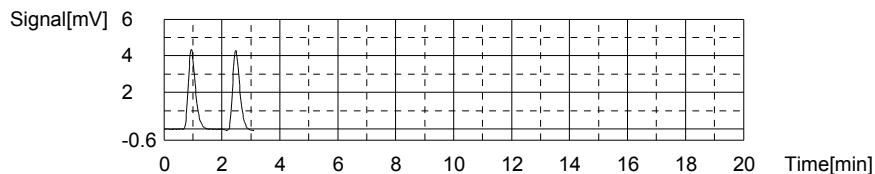
Mean Area 25.41
Mean Conc. 0.5254mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.432	0.04503mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 1:58:42 PM
2	7.453	0.04566mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 2:02:52 PM

Mean Area 7.443
Mean Conc. 0.04535mg/L



Sample

Sample Name: L16120750-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

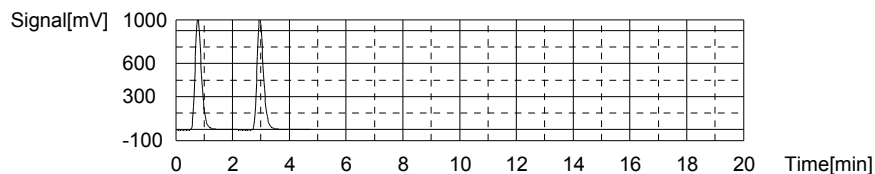
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.718mg/L TC:40.93mg/L IC:32.21mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1593	40.77mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 2:10:29 PM
2	1605	41.08mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 2:16:13 PM

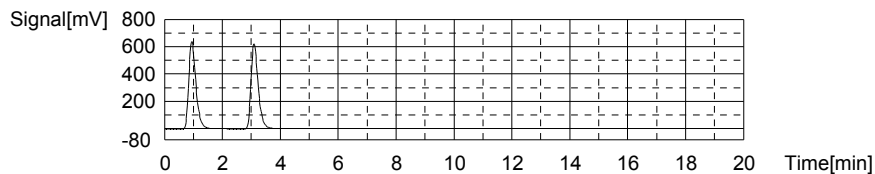
Mean Area 1599
Mean Conc. 40.93mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1093	32.52mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 2:21:25 PM
2	1072	31.90mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 2:26:31 PM

Mean Area 1083
Mean Conc. 32.21mg/L



Sample

Sample Name: L16120750-02
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

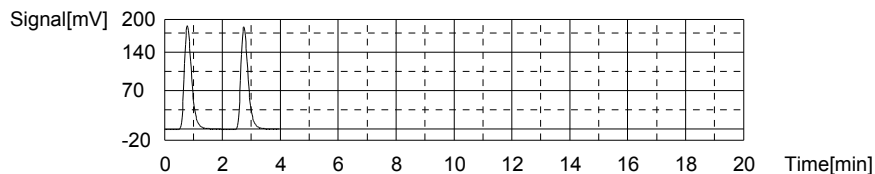
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.063mg/L TC:8.296mg/L IC:4.233mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	328.9	8.317mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 2:33:55 PM
2	327.2	8.274mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 2:38:11 PM

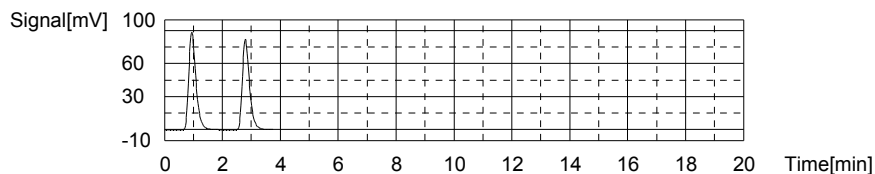
Mean Area 328.1
Mean Conc. 8.296mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	152.8	4.394mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 2:42:59 PM
2	142.0	4.071mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 2:47:30 PM

Mean Area 147.4
Mean Conc. 4.233mg/L



Sample

Sample Name: L16120800-01
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

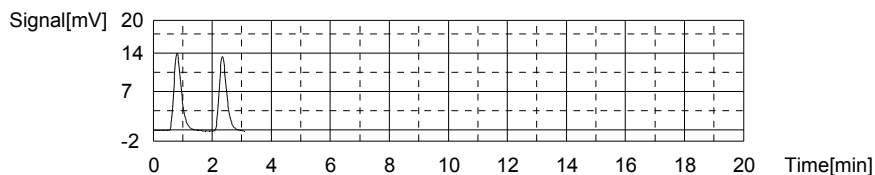
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.4465mg/L TC:0.4979mg/L IC:0.05147mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	24.82	0.5101mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 2:54:30 PM
2	23.87	0.4857mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 2:58:18 PM

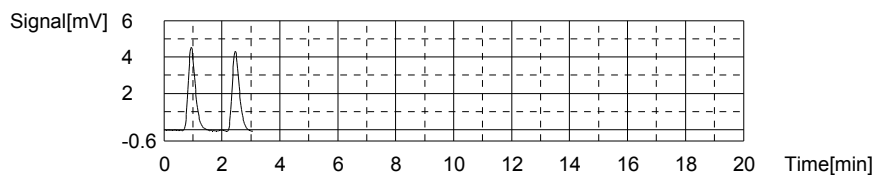
Mean Area 24.34
Mean Conc. 0.4979mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.776	0.05533mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 3:02:39 PM
2	7.518	0.04761mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 3:06:49 PM

Mean Area 7.647
Mean Conc. 0.05147mg/L



Sample

Sample Name: L16120590-35
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result:

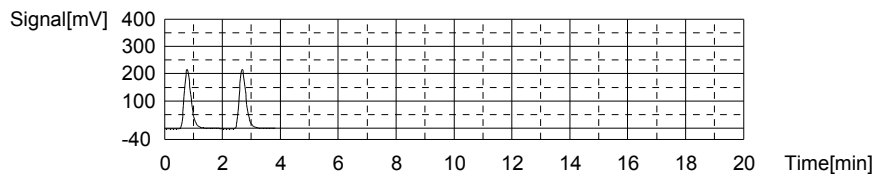
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.700mg/L TC:9.049mg/L IC:6.349mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	356.3	9.021mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 3:14:09 PM
2	358.5	9.077mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 3:18:21 PM

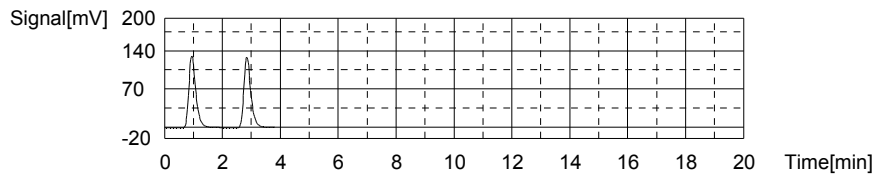
Mean Area 357.4
Mean Conc. 9.049mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	219.5	6.390mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 3:23:10 PM
2	216.8	6.309mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 3:27:49 PM

Mean Area 218.2
Mean Conc. 6.349mg/L



Sample

Sample Name: L16120590-36
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

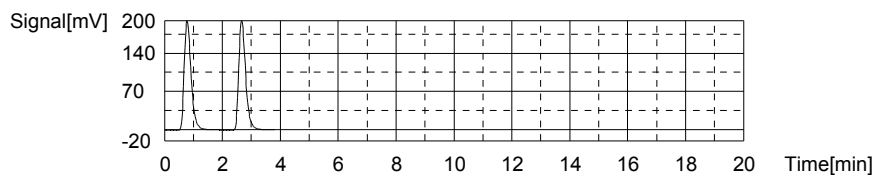
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.715mg/L TC:8.369mg/L IC:5.654mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	329.7	8.338mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 3:35:10 PM
2	332.1	8.400mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 3:39:23 PM

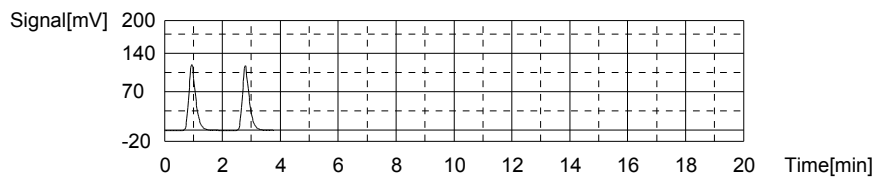
Mean Area 330.9
Mean Conc. 8.369mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	196.4	5.699mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 3:44:09 PM
2	193.4	5.609mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55	012/15/2016 3:48:44 PM

Mean Area 194.9
Mean Conc. 5.654mg/L



Sample

Sample Name: L16120590-37
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result:

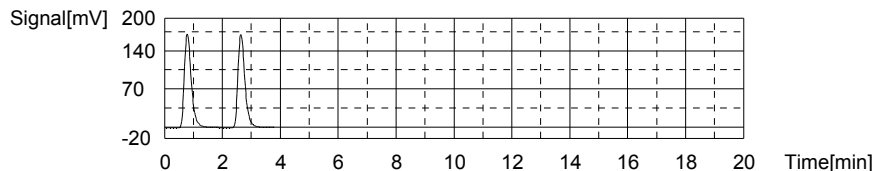
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.862mg/L TC:7.226mg/L IC:4.364mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	285.7	7.208mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/15/2016 3:56:02 PM
2	287.1	7.244mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/15/2016 4:00:19 PM

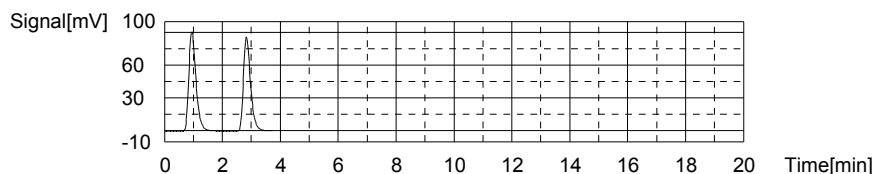
Mean Area 286.4
Mean Conc. 7.226mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	156.0	4.490mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 01	12/15/2016 4:05:03 PM
2	147.6	4.239mg/L	500uL	1		TICCURVE-10-30-2015.2015 10 31 11 55 01	12/15/2016 4:09:37 PM

Mean Area 151.8
Mean Conc. 4.364mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result:

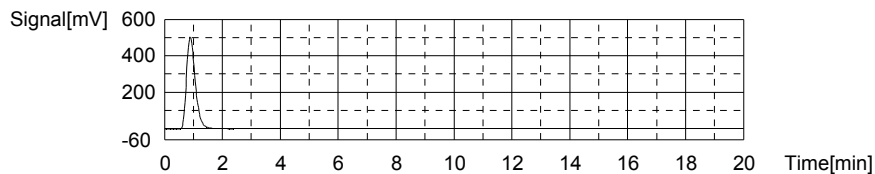
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.92mg/L TC:27.01mg/L IC:0.08863mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1057	27.01mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 31	12/15/2016 4:17:25 PM

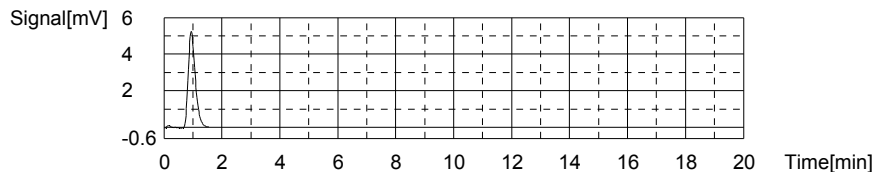
Mean Area 1057
Mean Conc. 27.01mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.889	0.08863mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 4:22:13 PM

Mean Area 8.889
Mean Conc. 0.08863mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

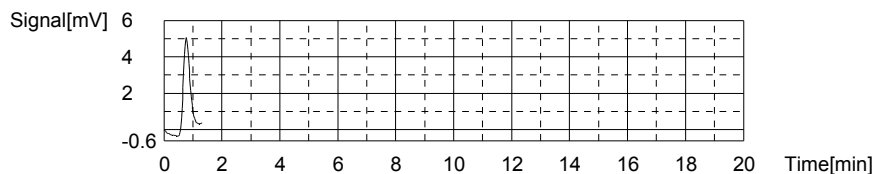
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02460mg/L TC:0.08098mg/L IC:0.05637mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.106	0.08098mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 4:27:10 PM

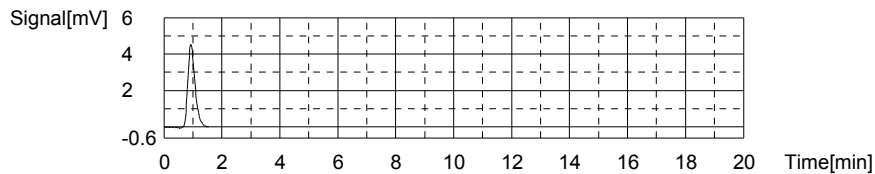
Mean Area 8.106
Mean Conc. 0.08098mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.811	0.05637mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 4:31:05 PM

Mean Area 7.811
Mean Conc. 0.05637mg/L



Sample

Sample Name: L16120590-38
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result:

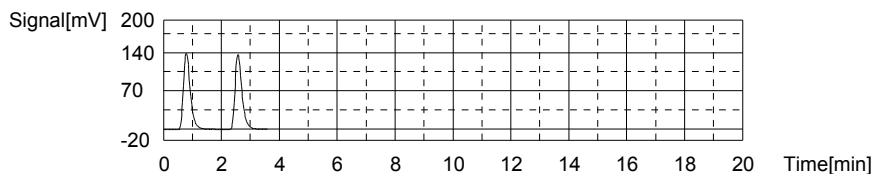
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.617mg/L TC:5.782mg/L IC:3.165mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	231.4	5.814mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 4:38:19 PM
2	228.9	5.750mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 4:42:24 PM

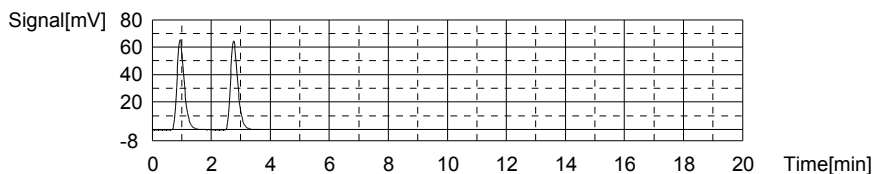
Mean Area 230.2
Mean Conc. 5.782mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	112.3	3.183mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 0	12/15/2016 4:47:03 PM
2	111.1	3.147mg/L	500uL	1		TICURVE-10-30-2015.2015 10 31 11 55 0	12/15/2016 4:51:31 PM

Mean Area 111.7
Mean Conc. 3.165mg/L



Sample

Sample Name: L16120590-39
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result:

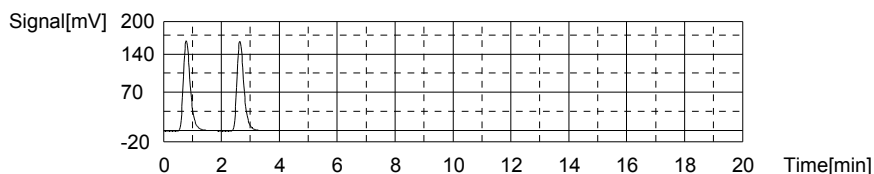
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.788mg/L TC:6.977mg/L IC:4.189mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	277.6	7.000mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 4:58:50 PM
2	275.8	6.954mg/L	500uL	1		TCCURVE-10-30-2015.2015 10 30 16 06 3	12/15/2016 5:02:54 PM

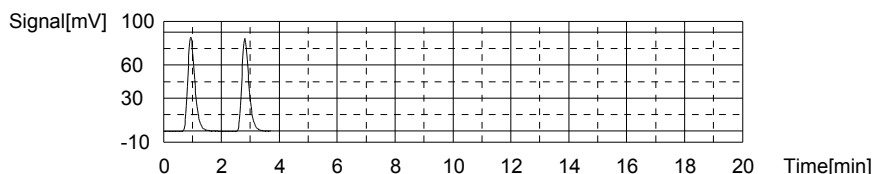
Mean Area 276.7
Mean Conc. 6.977mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	146.7	4.212mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 5:07:40 PM
2	145.2	4.167mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 5:12:12 PM

Mean Area 146.0
Mean Conc. 4.189mg/L



Sample

Sample Name: L16120590-40
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

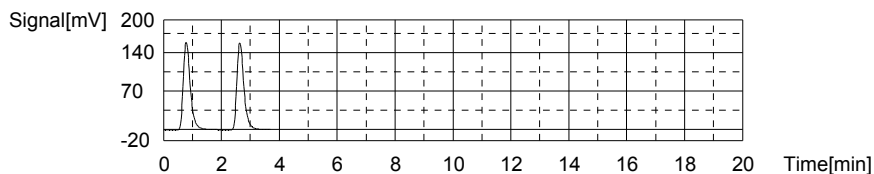
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.903mg/L TC:6.727mg/L IC:3.824mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	267.0	6.728mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 5:19:31 PM
2	266.9	6.726mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 5:23:38 PM

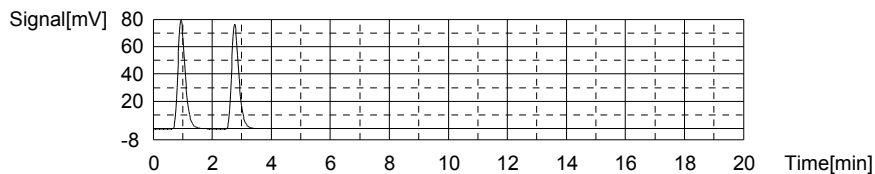
Mean Area 267.0
Mean Conc. 6.727mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	136.5	3.907mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 5:28:21 PM
2	131.0	3.742mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 5:32:49 PM

Mean Area 133.8
Mean Conc. 3.824mg/L



Sample

Sample Name: WG595003-05 DUP
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

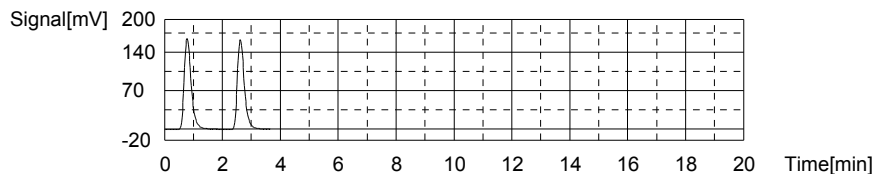
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.864mg/L TC:6.963mg/L IC:4.100mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	277.7	7.003mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 5:40:07 PM
2	274.6	6.923mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 5:44:13 PM

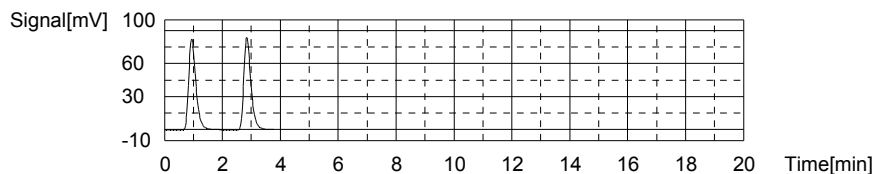
Mean Area 276.1
Mean Conc. 6.963mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	141.9	4.068mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 5:48:58 PM
2	144.0	4.131mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 5:53:32 PM

Mean Area 142.9
Mean Conc. 4.100mg/L



Sample

Sample Name: WG595003-06 MS
Sample ID: <Untitled>
Origin: TOC-10-31-2015A.met
Status: Completed
Chk. Result

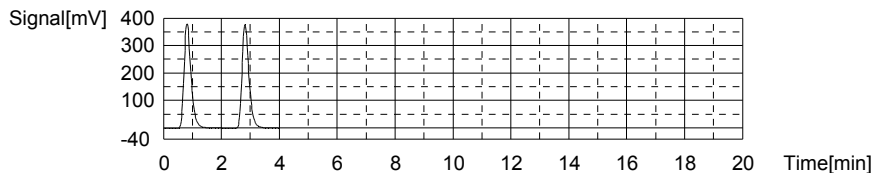
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.73mg/L TC:16.18mg/L IC:1.453mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	635.5	16.19mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 6:00:59 PM
2	635.0	16.18mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 6:05:14 PM

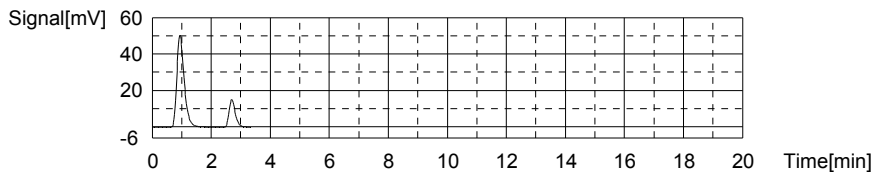
Mean Area 635.3
Mean Conc. 16.18mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	86.72	2.417mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 6:09:56 PM
2	22.25	0.4884mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_01	12/15/2016 6:14:05 PM

Mean Area 54.48
Mean Conc. 1.453mg/L



Sample

Sample Name: WG595004-01 BLK
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

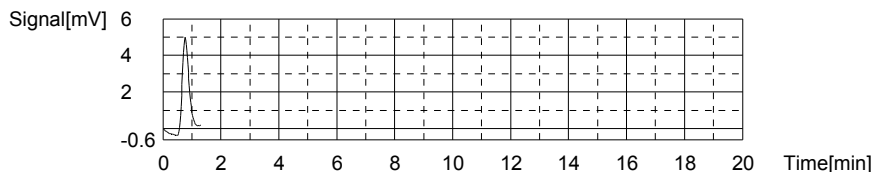
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02137mg/L TC:0.08229mg/L IC:0.06092mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.157	0.08229mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 6:19:02 PM

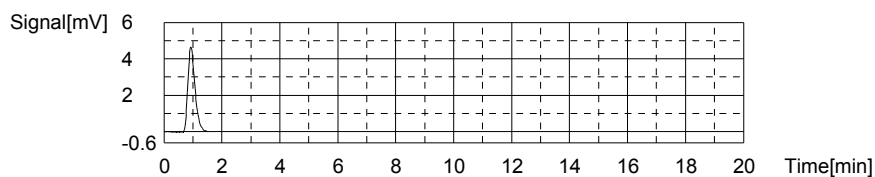
Mean Area 8.157
Mean Conc. 0.08229mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.963	0.06092mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 6:22:59 PM

Mean Area 7.963
Mean Conc. 0.06092mg/L



Sample

Sample Name: WG595004-02 LCS
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

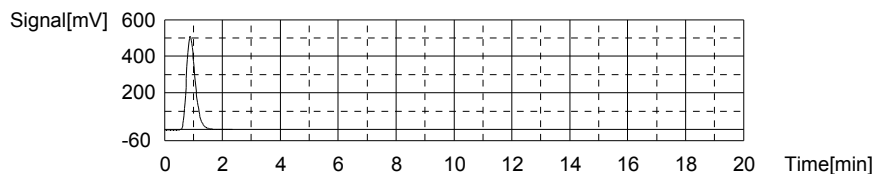
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.29mg/L TC:27.37mg/L IC:0.08163mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1071	27.37mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 6:30:47 PM

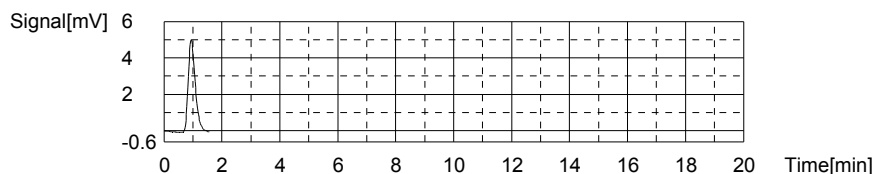
Mean Area 1071
Mean Conc. 27.37mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.655	0.08163mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 6:35:09 PM

Mean Area 8.655
Mean Conc. 0.08163mg/L



Sample

Sample Name: WG595004-03 LCS DUP
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

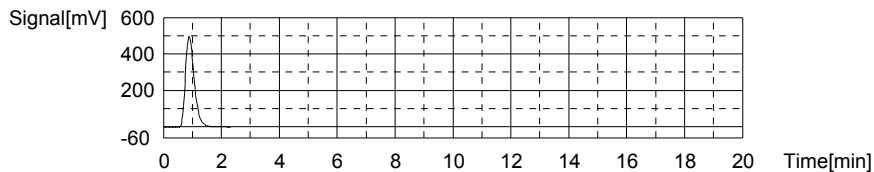
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.86mg/L TC:26.93mg/L IC:0.07759mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1054	26.93mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 6:42:56 PM

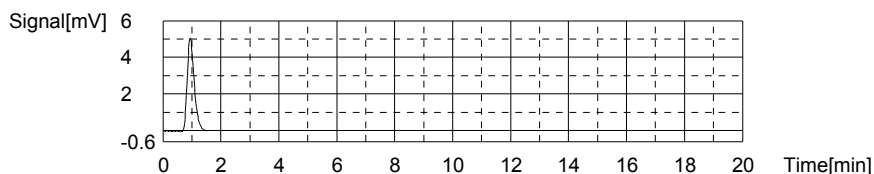
Mean Area 1054
Mean Conc. 26.93mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.520	0.07759mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 6:47:18 PM

Mean Area 8.520
Mean Conc. 0.07759mg/L



Sample

Sample Name: L16120590-41
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

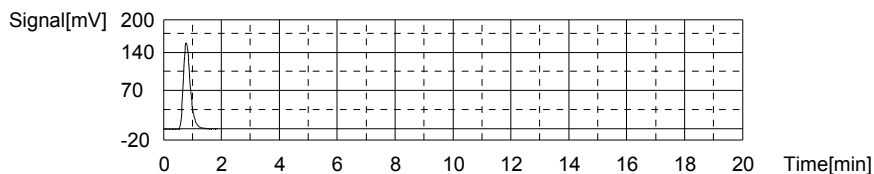
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.746mg/L TC:6.697mg/L IC:3.951mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	265.8	6.697mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 6:54:39 PM

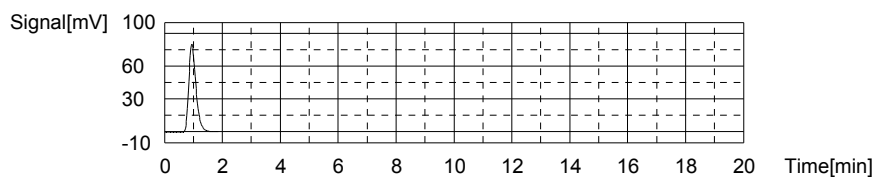
Mean Area 265.8
Mean Conc. 6.697mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	138.0	3.951mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 6:59:23 PM

Mean Area 138.0
Mean Conc. 3.951mg/L



Sample

Sample Name: L16120590-42
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

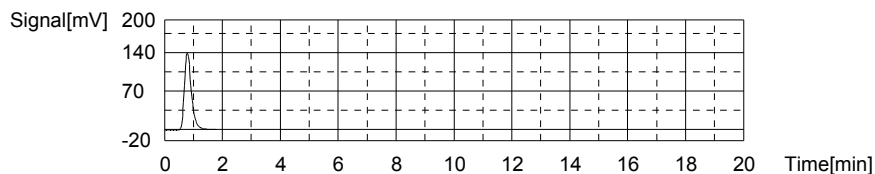
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.565mg/L TC:5.876mg/L IC:3.311mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	233.8	5.876mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_31	12/15/2016 7:06:38 PM

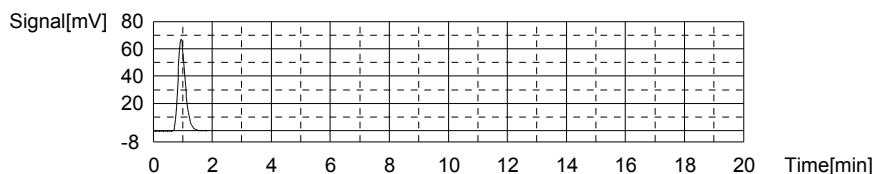
Mean Area 233.8
Mean Conc. 5.876mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	116.6	3.311mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 7:11:21 PM

Mean Area 116.6
Mean Conc. 3.311mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

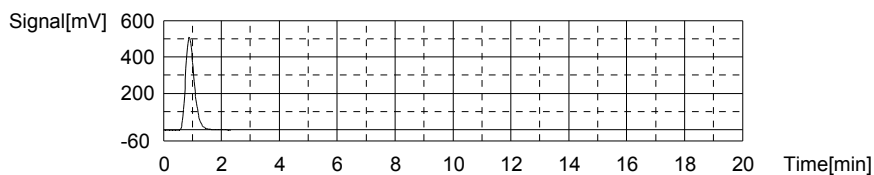
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.13mg/L TC:27.22mg/L IC:0.08964mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1065	27.22mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 7:19:07 PM

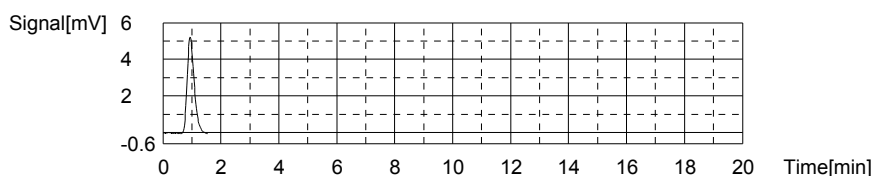
Mean Area 1065
Mean Conc. 27.22mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.923	0.08964mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 7:23:31 PM

Mean Area 8.923
Mean Conc. 0.08964mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

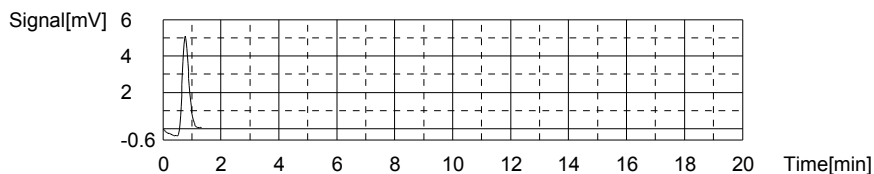
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02425mg/L TC:0.09071mg/L IC:0.06646mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.485	0.09071mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 7:28:29 PM

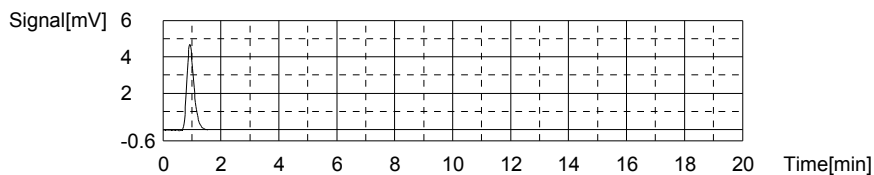
Mean Area 8.485
Mean Conc. 0.09071mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.148	0.06646mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 7:32:23 PM

Mean Area 8.148
Mean Conc. 0.06646mg/L



Sample

Sample Name: L16120715-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

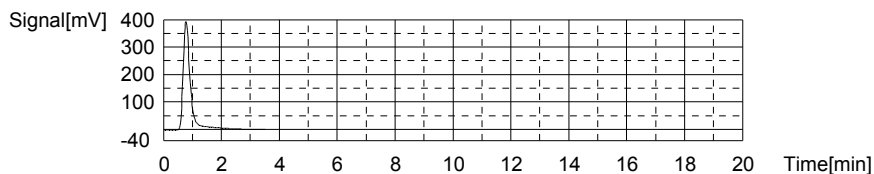
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.822mg/L TC:17.63mg/L IC:12.81mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	691.7	17.63mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 7:41:21 PM

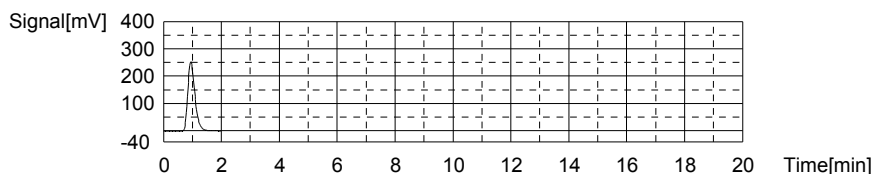
Mean Area 691.7
Mean Conc. 17.63mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	434.1	12.81mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 7:46:16 PM

Mean Area 434.1
Mean Conc. 12.81mg/L



Sample

Sample Name: L16120715-02 (2)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

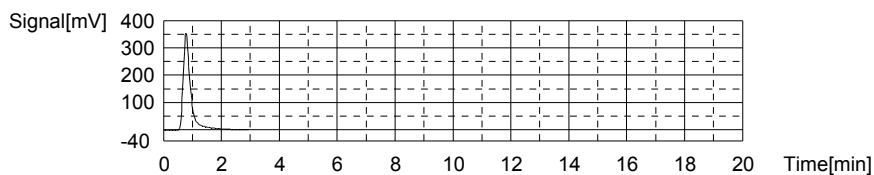
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.132mg/L TC:15.88mg/L IC:10.75mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	623.6	15.88mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 7:54:40 PM

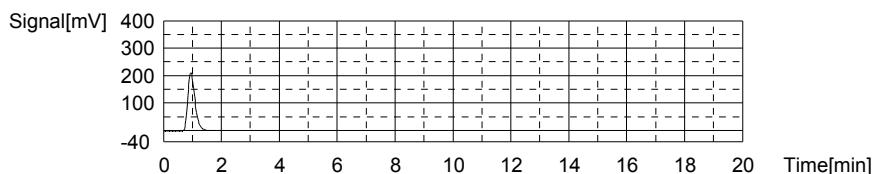
Mean Area 623.6
Mean Conc. 15.88mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	365.3	10.75mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 7:59:33 PM

Mean Area 365.3
Mean Conc. 10.75mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

TOC-10-31-2015.met
Completed

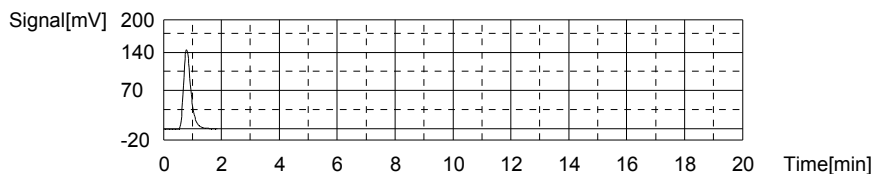
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.544mg/L TC:6.415mg/L IC:2.871mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	254.8	6.415mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 8:06:52 PM

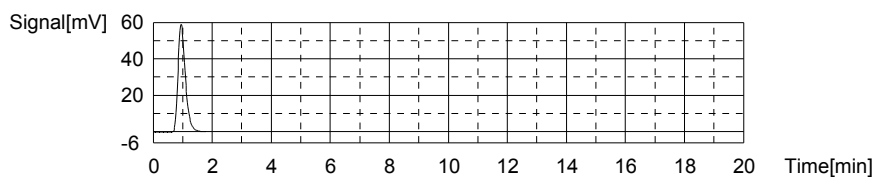
Mean Area 254.8
Mean Conc. 6.415mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	101.9	2.871mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 8:11:31 PM

Mean Area 101.9
Mean Conc. 2.871mg/L



Sample

Sample Name: L16120352-07
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

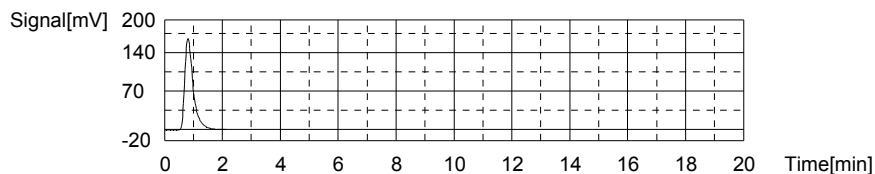
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.016mg/L TC:8.464mg/L IC:2.448mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	334.6	8.464mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 8:19:06 PM

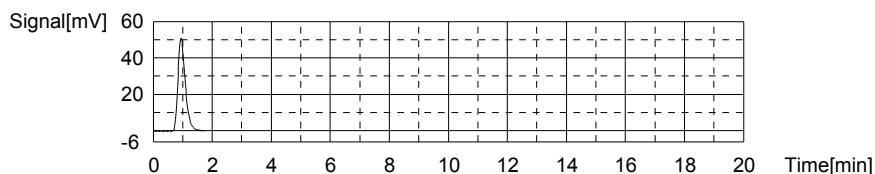
Mean Area 334.6
Mean Conc. 8.464mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	87.74	2.448mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 8:23:46 PM

Mean Area 87.74
Mean Conc. 2.448mg/L



Sample

Sample Name: L16120352-15
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

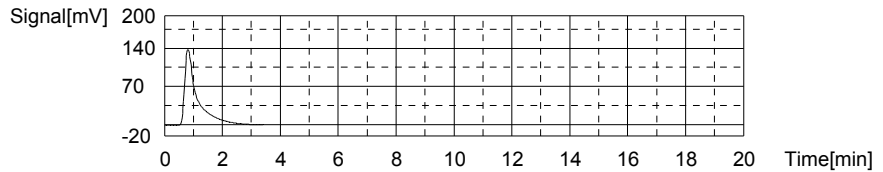
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:8.205mg/L TC:10.54mg/L IC:2.331mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	415.3	10.54mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 8:32:37 PM

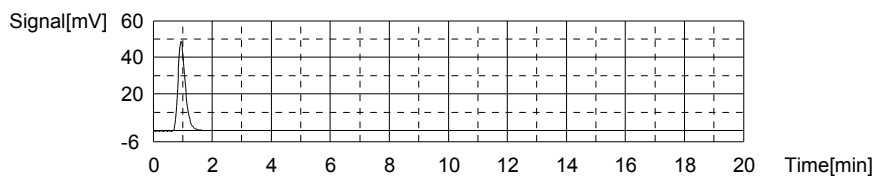
Mean Area 415.3
Mean Conc. 10.54mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	83.84	2.331mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 8:37:16 PM

Mean Area 83.84
Mean Conc. 2.331mg/L



Sample

Sample Name: L16120692-01 (25)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

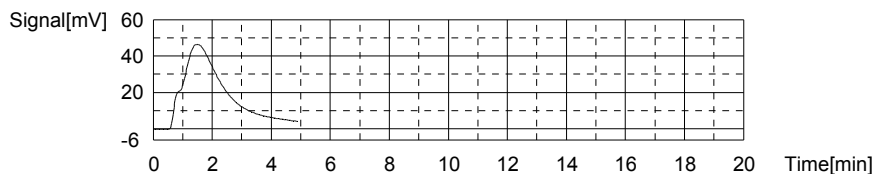
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:10.72mg/L TC:10.92mg/L IC:0.1997mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	430.3	10.92mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 8:47:37 PM

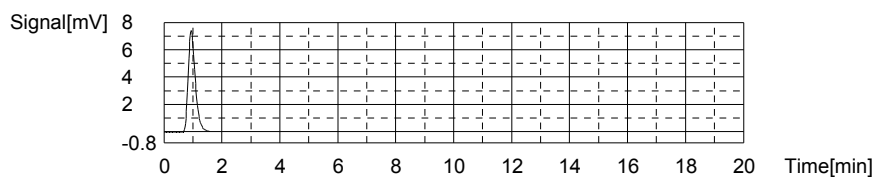
Mean Area 430.3
Mean Conc. 10.92mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	12.60	0.1997mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 8:52:03 PM

Mean Area 12.60
Mean Conc. 0.1997mg/L



Sample

Sample Name: L16120762-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

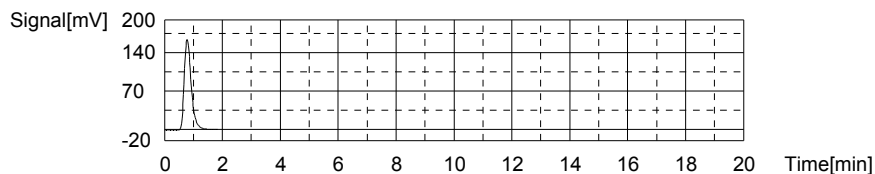
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.287mg/L TC:6.939mg/L IC:4.652mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	275.2	6.939mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 8:59:21 PM

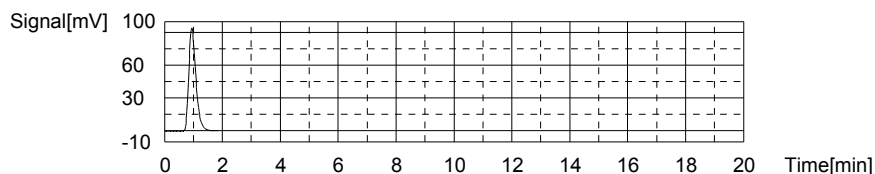
Mean Area 275.2
Mean Conc. 6.939mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	161.4	4.652mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:04:05 PM

Mean Area 161.4
Mean Conc. 4.652mg/L



Sample

Sample Name: L16120762-02
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

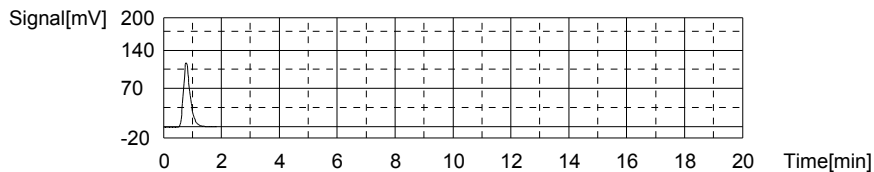
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.118mg/L TC:4.836mg/L IC:2.718mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	193.3	4.836mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:11:23 PM

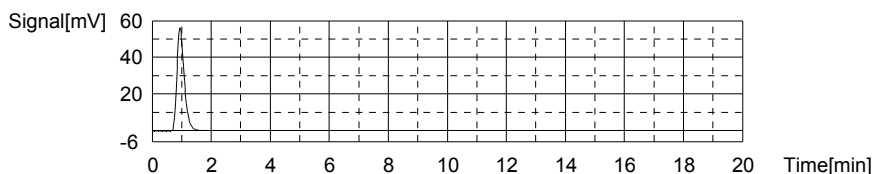
Mean Area 193.3
Mean Conc. 4.836mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	96.76	2.718mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:16:03 PM

Mean Area 96.76
Mean Conc. 2.718mg/L



Sample

Sample Name: L16120790-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

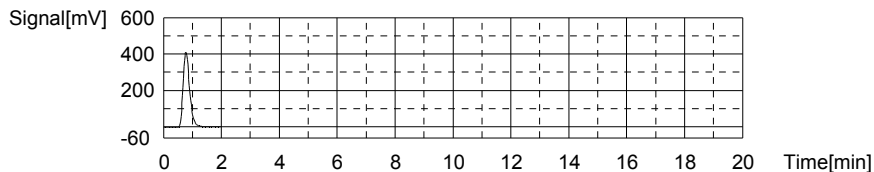
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.583mg/L TC:16.41mg/L IC:12.82mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	643.9	16.41mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:23:30 PM

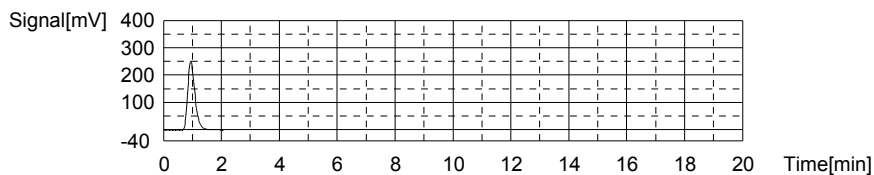
Mean Area 643.9
Mean Conc. 16.41mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	434.5	12.82mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:28:29 PM

Mean Area 434.5
Mean Conc. 12.82mg/L



Sample

Sample Name: L16120425-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

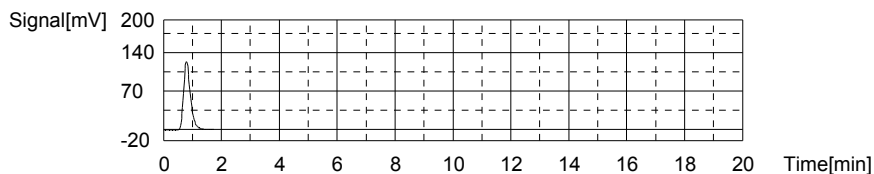
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.927mg/L TC:5.108mg/L IC:2.181mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	203.9	5.108mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:35:42 PM

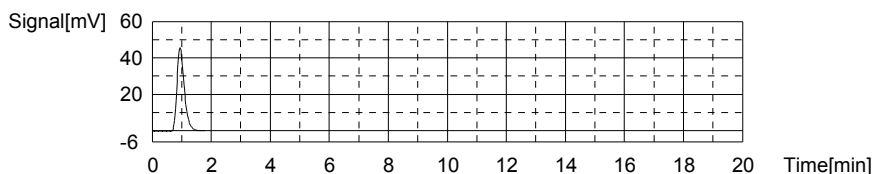
Mean Area 203.9
Mean Conc. 5.108mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	78.82	2.181mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:40:21 PM

Mean Area 78.82
Mean Conc. 2.181mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

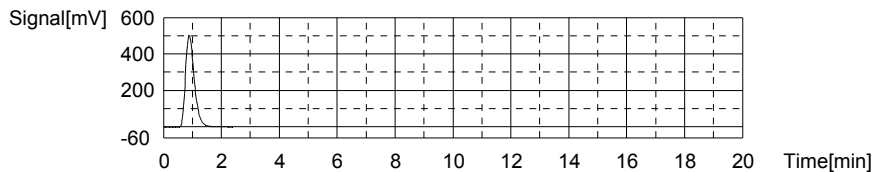
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.13mg/L TC:27.22mg/L IC:0.08602mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1065	27.22mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:48:12 PM

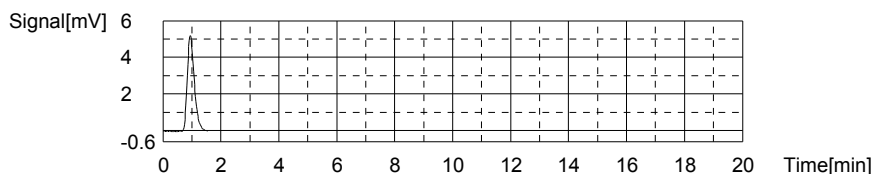
Mean Area 1065
Mean Conc. 27.22mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.802	0.08602mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 9:52:36 PM

Mean Area 8.802
Mean Conc. 0.08602mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

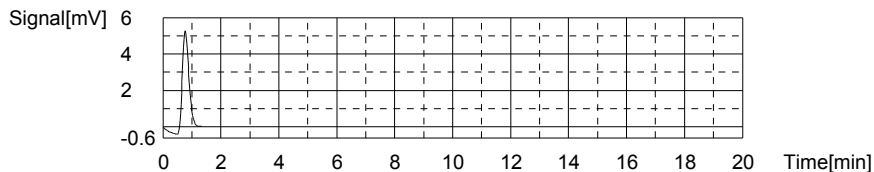
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02210mg/L TC:0.09846mg/L IC:0.07636mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.787	0.09846mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 9:57:34 PM

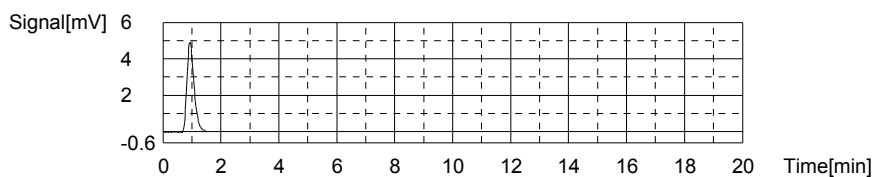
Mean Area 8.787
Mean Conc. 0.09846mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.479	0.07636mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 10:01:31 PM

Mean Area 8.479
Mean Conc. 0.07636mg/L



Sample

Sample Name: L16120425-05
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

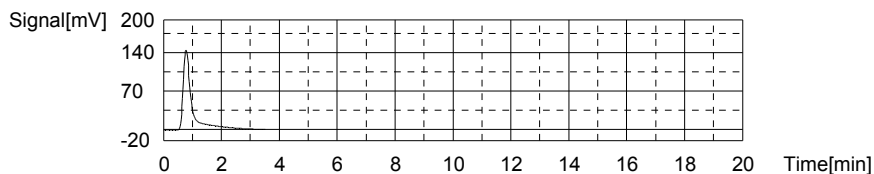
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.420mg/L TC:7.670mg/L IC:4.251mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	303.7	7.670mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 10:10:31 PM

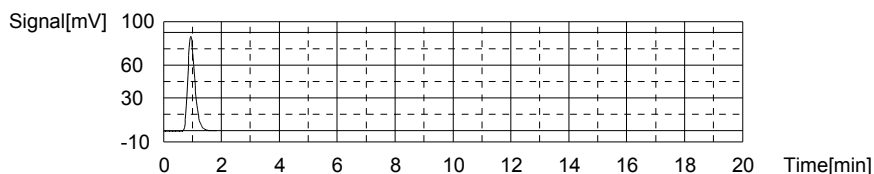
Mean Area 303.7
Mean Conc. 7.670mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	148.0	4.251mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 10:15:13 PM

Mean Area 148.0
Mean Conc. 4.251mg/L



Sample

Sample Name: L16120425-09
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

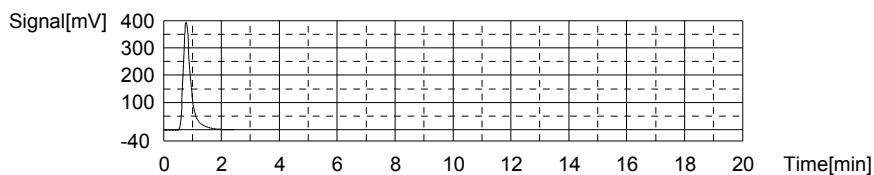
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.406mg/L TC:18.53mg/L IC:11.12mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	726.5	18.53mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 10:23:07 PM

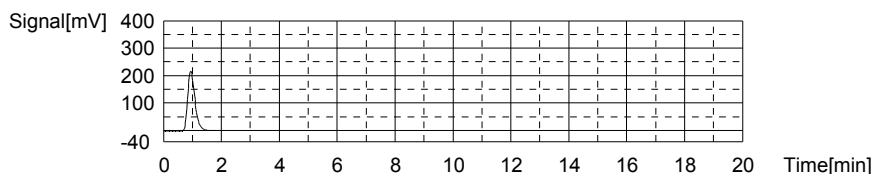
Mean Area 726.5
Mean Conc. 18.53mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	377.6	11.12mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 10:28:07 PM

Mean Area 377.6
Mean Conc. 11.12mg/L



Sample

Sample Name: L16120425-19
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

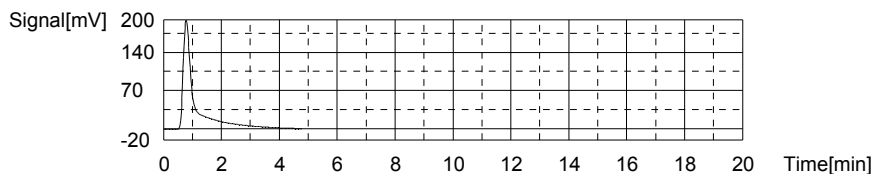
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.591mg/L TC:13.52mg/L IC:5.926mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	531.4	13.52mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 10:38:22 PM

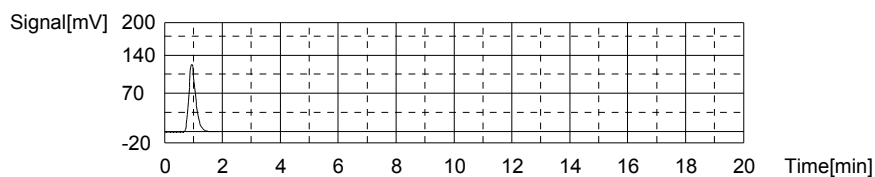
Mean Area 531.4
Mean Conc. 13.52mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	204.0	5.926mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 10:43:07 PM

Mean Area 204.0
Mean Conc. 5.926mg/L



Sample

Sample Name: L16120521-01
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

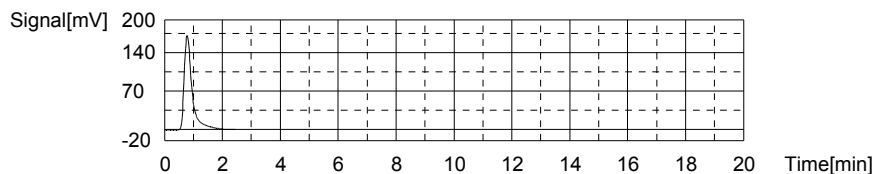
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.967mg/L TC:8.256mg/L IC:5.289mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	326.5	8.256mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 10:51:02 PM

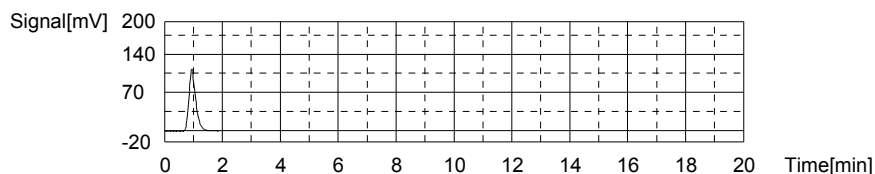
Mean Area 326.5
Mean Conc. 8.256mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	182.7	5.289mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 10:55:49 PM

Mean Area 182.7
Mean Conc. 5.289mg/L



Sample

Sample Name: L16120521-03
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

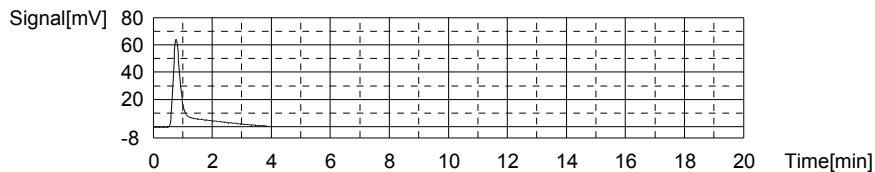
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.023mg/L TC:3.945mg/L IC:1.922mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	158.6	3.945mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 11:05:10 PM

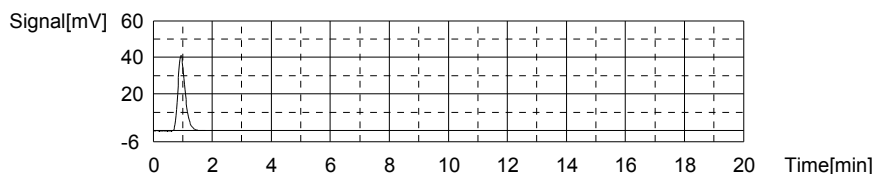
Mean Area 158.6
Mean Conc. 3.945mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	70.16	1.922mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 11:09:48 PM

Mean Area 70.16
Mean Conc. 1.922mg/L



Sample

Sample Name: L16120521-05
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

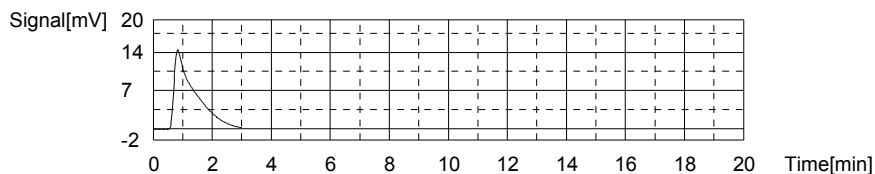
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.529mg/L TC:1.651mg/L IC:0.1222mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	69.25	1.651mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 11:18:16 PM

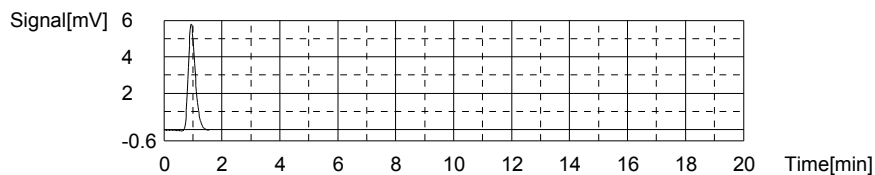
Mean Area 69.25
Mean Conc. 1.651mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.01	0.1222mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 11:22:42 PM

Mean Area 10.01
Mean Conc. 0.1222mg/L



Sample

Sample Name: L16120521-07 (100)
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result

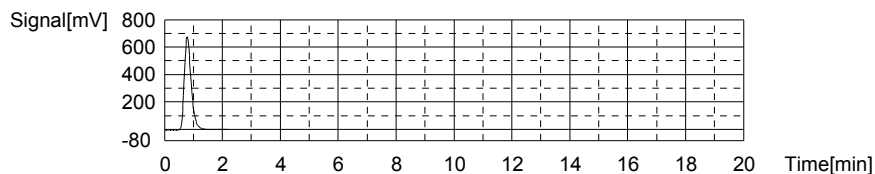
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:7.291mg/L TC:28.30mg/L IC:21.00mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1107	28.30mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 11:30:22 PM

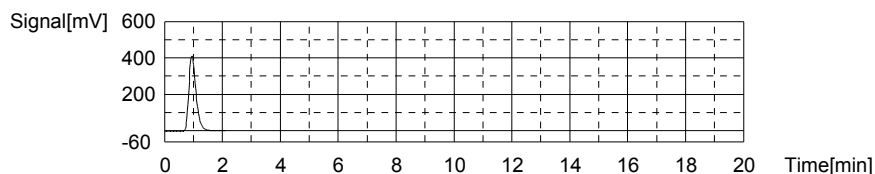
Mean Area 1107
Mean Conc. 28.30mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	708.0	21.00mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 11:35:26 PM

Mean Area 708.0
Mean Conc. 21.00mg/L



Sample

Sample Name: L16120521-09 (25)
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result

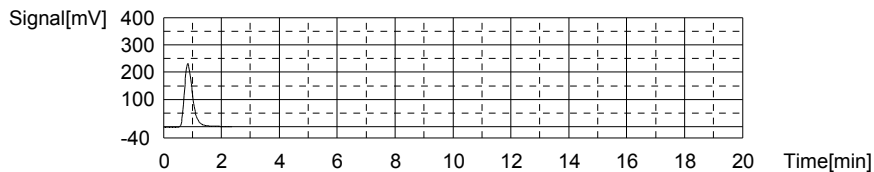
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:10.21mg/L TC:11.56mg/L IC:1.348mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	455.0	11.56mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 11:43:16 PM

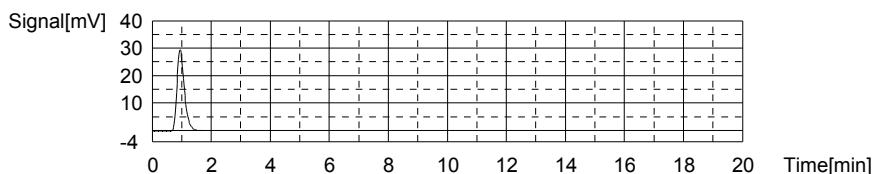
Mean Area 455.0
Mean Conc. 11.56mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	50.99	1.348mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 11:47:51 PM

Mean Area 50.99
Mean Conc. 1.348mg/L



Sample

Sample Name: WG595004-05 DUP
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

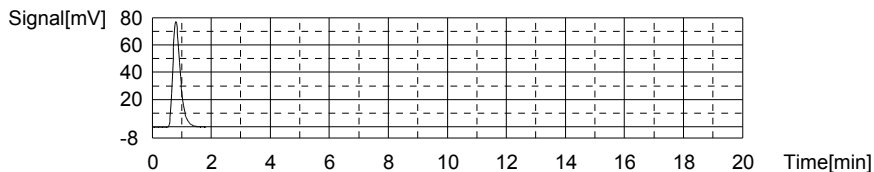
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.161mg/L TC:3.439mg/L IC:1.278mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	138.9	3.439mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/15/2016 11:55:09 PM

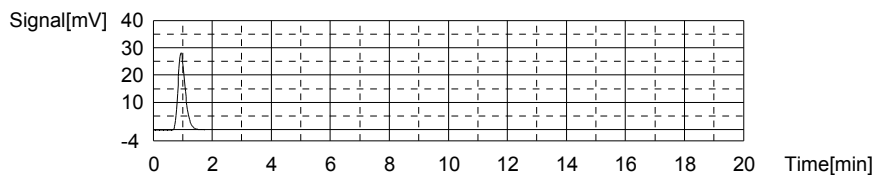
Mean Area 138.9
Mean Conc. 3.439mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	48.64	1.278mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/15/2016 11:59:44 PM

Mean Area 48.64
Mean Conc. 1.278mg/L



Sample

Sample Name: WG595004-06 MS
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

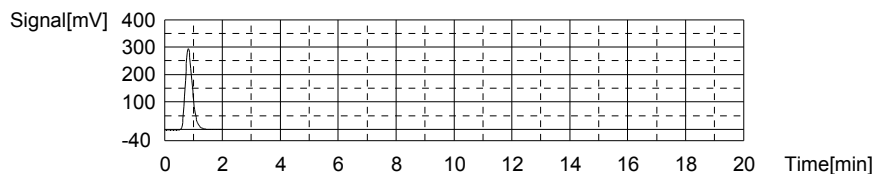
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:12.25mg/L TC:12.85mg/L IC:0.6062mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	505.6	12.85mg/L	500uL		1	TCCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 12:07:12 AM

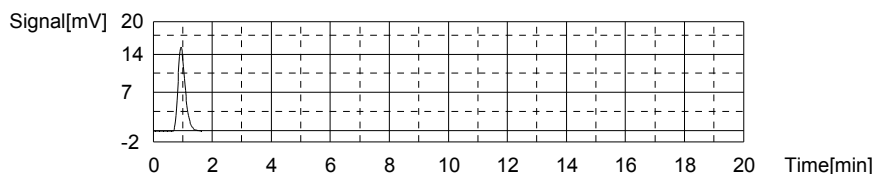
Mean Area 505.6
Mean Conc. 12.85mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	26.19	0.6062mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 12:11:42 AM

Mean Area 26.19
Mean Conc. 0.6062mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

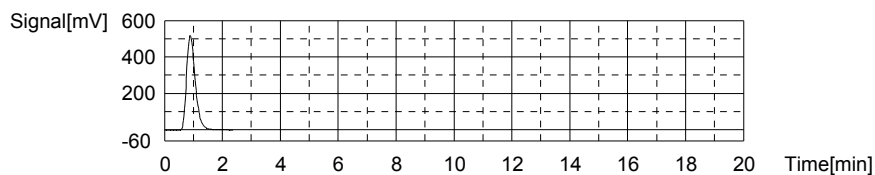
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:27.70mg/L TC:27.78mg/L IC:0.08249mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1087	27.78mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 12:19:33 AM

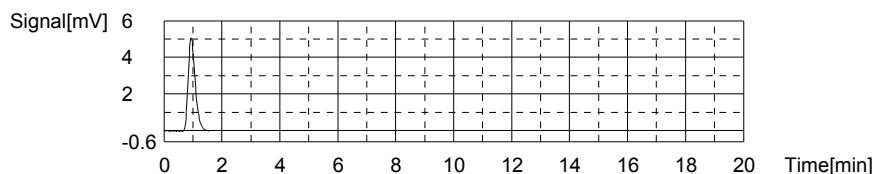
Mean Area 1087
Mean Conc. 27.78mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.684	0.08249mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 12:23:58 AM

Mean Area 8.684
Mean Conc. 0.08249mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

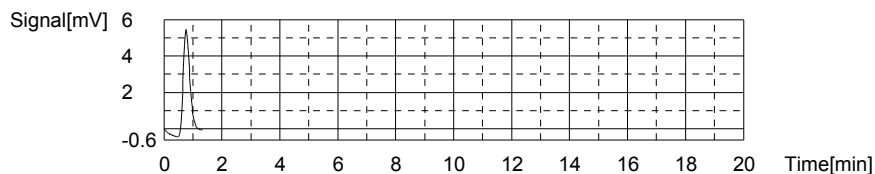
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02470mg/L TC:0.1076mg/L IC:0.08285mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.141	0.1076mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 12:28:55 AM

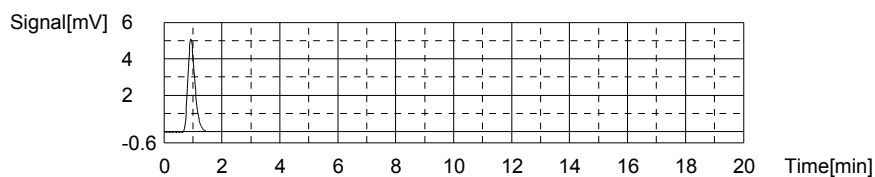
Mean Area 9.141
Mean Conc. 0.1076mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.696	0.08285mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 12:32:51 AM

Mean Area 8.696
Mean Conc. 0.08285mg/L



Sample

Sample Name: CCV
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

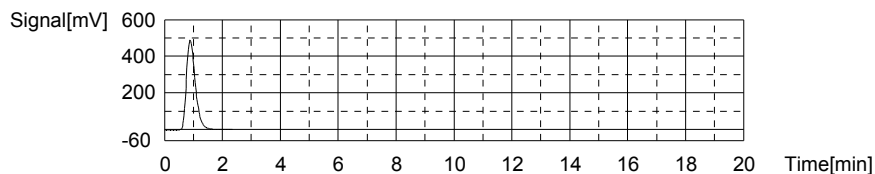
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.47mg/L TC:26.58mg/L IC:0.1015mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1040	26.58mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 8:34:40 AM

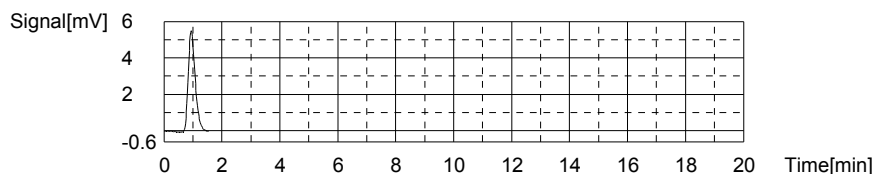
Mean Area 1040
Mean Conc. 26.58mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.319	0.1015mg/L	500uL		1	TICCURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 8:39:07 AM

Mean Area 9.319
Mean Conc. 0.1015mg/L



Sample

Sample Name: CCB
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

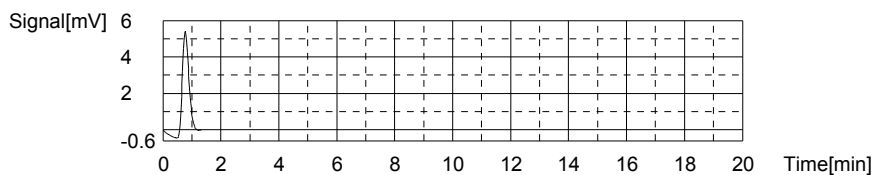
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.02130mg/L TC:0.1051mg/L IC:0.08384mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.047	0.1051mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 8:44:05 AM

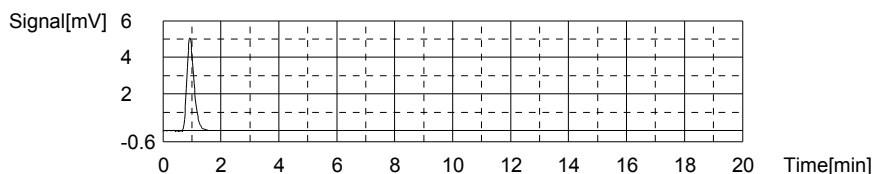
Mean Area 9.047
Mean Conc. 0.1051mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.729	0.08384mg/L	500uL	1		TICURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 8:48:03 AM

Mean Area 8.729
Mean Conc. 0.08384mg/L



Sample

Sample Name: L16120352-01 (5)
Sample ID:
Origin: TOC-10-31-2015.met
Status: Completed
Chk. Result

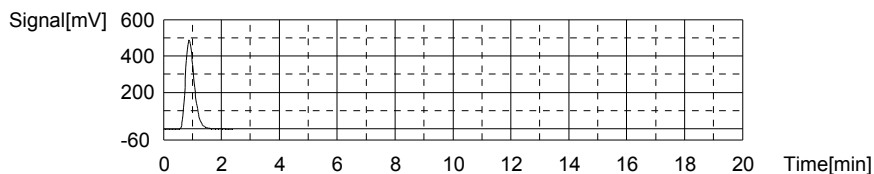
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.31mg/L TC:26.42mg/L IC:0.1125mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1034	26.42mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 8:55:58 AM

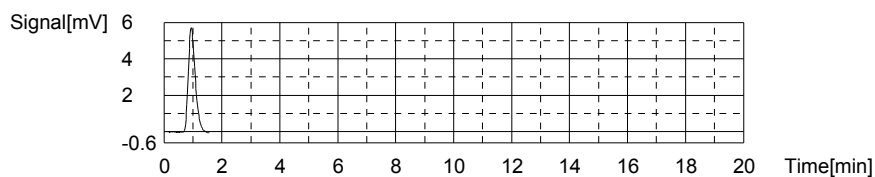
Mean Area 1034
Mean Conc. 26.42mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.686	0.1125mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 9:00:22 AM

Mean Area 9.686
Mean Conc. 0.1125mg/L



Sample

Sample Name: CCV
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result:

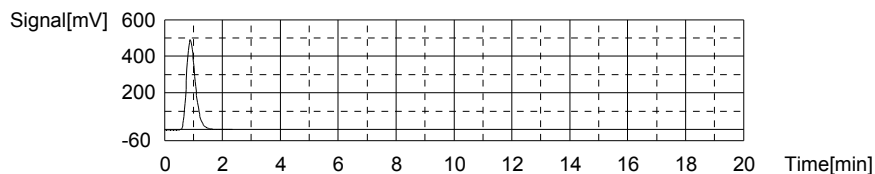
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.65mg/L TC:26.70mg/L IC:0.05530mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1045	26.70mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 9:11:29 AM

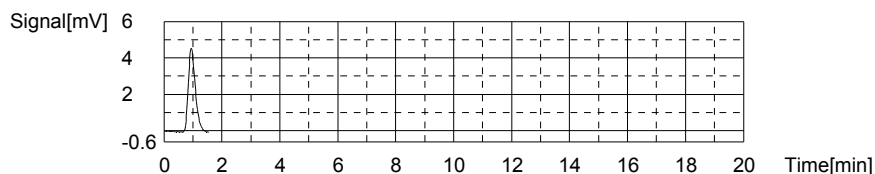
Mean Area 1045
Mean Conc. 26.70mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.775	0.05530mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 9:15:52 AM

Mean Area 7.775
Mean Conc. 0.05530mg/L



Sample

Sample Name: CCB
Sample ID: TOC-10-31-2015.met
Origin: Completed
Status: Completed
Chk. Result:

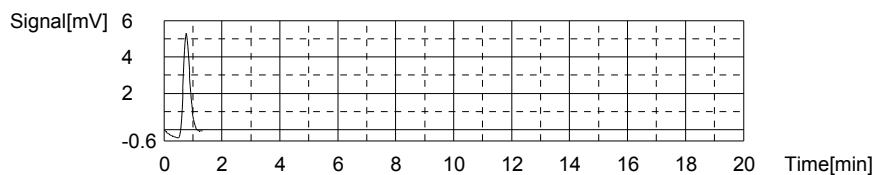
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:0.01528mg/L TC:0.09959mg/L IC:0.08432mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.831	0.09959mg/L	500uL	1		TCCURVE-10-30-2015.2015_10_30_16_06_3	12/16/2016 9:20:51 AM

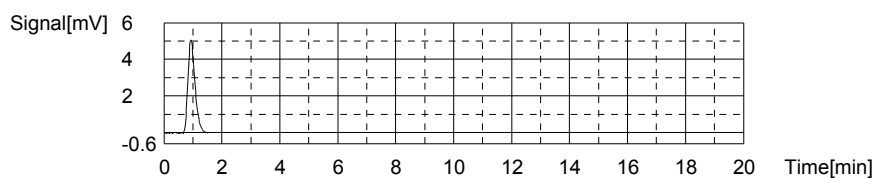
Mean Area 8.831
Mean Conc. 0.09959mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.745	0.08432mg/L	500uL	1		TICCURVE-10-30-2015.2015_10_31_11_55_0	12/16/2016 9:24:48 AM

Mean Area 8.745
Mean Conc. 0.08432mg/L



3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
January 3, 2017

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND	AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
AED - ALLEN E. DAVIS	ALS - ADRIANE L. STEED
AMA - ALEXANDRA M. ALFRED	AWE - ANDREW W. ESSIG
AZH - AFTER HOURS	BJO - BRIAN J. OGDEN
BKT - BRENDAN TORRENCE	BLG - BRENDA L. GREENWALT
BNB - Brandi N. Bentley	BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CAS - Craig A. Smith	CEB - CHAD E. BARNES
CJQ - Cameron J. Quick	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS	CRW - CHRISTINA R. WILSON
CSH - CHRIS S. HILL	CV - Carl Volkman
DAK - DEAN A. KETELSEN	DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DSM - DAVID S. MOSSOR	DTG - DOMINIC T. GEHRET
ECL - ERIC C. LAWSON	EMW - ERIC M. WILKEN
ENY - EMILY N. YOAK	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HDD - HANAH D. DAWKINS
JDH - JUSTIN D. HESSON	JDS - JARED D. SMITH
JKP - JACQUELINE K. PARSONS	JLD - JESSICA L. DELONG
JLL - JOHN L. LENT	JMW - JEANA M. WHITE
JTP - JOSHUA T. PEMBERTON	JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES	JYH - JI Y. HU
KAK - KATHY A. KIRBY	KAT - KATHY A. TUCKER
KDD - Katelyn D. Daley	KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES	KHR - KIM H. RHODES
KKB - KERRI K. BUCK	KRA - KATHY R. ALBERTSON
KRB - KAELY R. BECKER	KRP - KATHY R. PARSONS
LJH - Lacey J. Hendershot	LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS	LSB - LESLIE S. BUCINA
LSJ - LAURA S. JONES	MAP - MARLA A. PORTER
MBK - MORGAN B. KNOWLTON	MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN	MES - MARY E. SCHILLING
MMB - MAREN M. BEERY	MRT - MICHELLE R. TAYLOR
MSW - MATT S. WILSON	NPH - Natalie P. Hart
PDM - PIERCE D. MORRIS	PIT - MICROBAC WARRENDAL
QX - QIN XU	RAH - ROY A. HALSTEAD
REK - BOB E. KYER	RLB - BOB BUCHANAN
RNP - RICK N. PETTY	SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN	SDC - SHALYN D. CONLEY
SLM - STEPHANIE L. MOSSBURG	SLP - SHERI L. PFALZGRAF
TB - TODD BOYLE	TGF - TIM G. FELTON
TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WJB - WILL J. BEASLEY
WTD - WADE T. DELONG	XXX - UNAVAILABLE OR SUBCONTRACT

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Result is greater than the associated numerical value.
>,H1	Result is greater than the associated numerical value. Sample analysis performed past holding time.
A	See the report narrative
B	Analyte detected in the method blank
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to interference.
E	Semiquantitative result (out of calibration range)
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for requ
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration.
J	The analyte was positively identified, but the quantitation was below the RL.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ.
J,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	Analyte detected in both the method blank and sample above the MDL.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Tentatively identified compound(TIC)
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Not detected at or above adjusted sample detection limit.



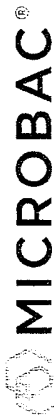
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below



COC No. A 52276

158 Starlite Drive

Marietta, OH 45750



Phone: 740-373-4071

Toll Free: 800-373-4071

CHAIN-OF-CUSTODY RECORD

Company Name: CH2M		Contact Phone #: 973-216-3538	
Project Contact: Dave Newman		Location: Water 100 NY	
Turn Around Requirements: Standard		Project ID: E 31159	
Sampler (print): Taylor Salsburg		Signature: <i>Taylor Salsburg</i>	
Sample I.D. No.	Comp	Grab	Matrix*
MW36-120816	X	X	GW
MW37-120816	X	X	↓
MW35-120816	X	X	1415
MW21-120816	X	X	1450
MW31-120816	X	X	1145
MW24-120816	X	X	1025
~~MB-120816~~	~~X~~	~~X~~	~~DE~~

NUMBER OF CONTAINERS	Hold	VOC+TVCS 8260C	Metals GCIC → Al, As, Ca, Cr, Fe, F, Mg, Mn, Na, Ni, Pb, Se, Si, Zn	Metals GCIC → Al, As, Ca, Fe, F, Mg, Mn, Na, Ni, Pb, Se, Si, Zn	Disolved Metals, GCIC → Al, As, Fe, Mn, Cr	Disolved Metals, GCIC → Al, As, Fe, Mn, Cr	Silica 300.7	Anions 300.0 Cl-SO ₄ ⁻	Nitrate 353.2 / Alkalinity 30.2	Total P/TCC / Ammonia / TKN	Ortho Phosphate SM4500-P-E	TDS SM 3540	Total Sulfide SM 4500	SVOC 8270C	PAH 8270D SIM	TOTAL # (LAB USE)	Program	ADDITIONAL REQUIREMENTS
0000			X	X	X	X	X	X	X	X	X	X	X	X	X		☐ CWA ☐ RCRA ☐ DOD ☐ AFCEE ☐ Other	

Microbac OVD



Received: 12/09/2016 11:05

By: BRENDA GREGORY

221000094507

Received by:
(Signature)

Brenda Gregory

Relinquish
(Signature)Received by:
(Signature)Date
12/18/16Time
1700Relinquished by:
(Signature)Date
12/18/16Time
1700

Received for Laboratory by:

Date

Time

Relinquished by:
(Signature)

Date

Time

Remarks:

Ortho Phosphate

48 hours

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

Page _____ of _____



Cooler ID

12/9/16

pH Lot # Hc693/24

pH

Exceptions

121916

PRESERVATIVE EXCEPTIONS

~~NONE~~

AS NOTED

Document Control # 1957
Last 10-07-2016

Issued to: Document Master File

By 12/9/16

Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

Samplenum **Container ID** **Products**
L16120521-01 839378 300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	SEM	22-DEC-2016 08:46	CAS	BRG	

Samplenum **Container ID** **Products**
L16120521-01 839379 N03

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	14-DEC-2016 10:45	BRG	DCM	

Samplenum **Container ID** **Products**
L16120521-01 839380 P04

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	13-DEC-2016 08:24	BRG	DLP	

Samplenum **Container ID** **Products**
L16120521-01 839381 TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 15:00	AWE	BRG	

Samplenum **Container ID** **Products**
L16120521-01 839382 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	WET	09-DEC-2016 13:21	BRG		
2	STORE	WET	A2	26-DEC-2016 13:23	AZH	DCM	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-01	839383	AL AS-MS CA FE K MG MN NA SI SILICA-ICP

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-01	839384	S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:10	EPT	BRG	
3	STORE	WET	A2	12-DEC-2016 17:21	BRG	TB	

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-02	839385	AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-03	839386	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	SEM	22-DEC-2016 08:46	CAS	BRG	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

Samplenum **Container ID** **Products**
L16120521-03 839387 N03

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	14-DEC-2016 10:46	BRG	DCM	

Samplenum **Container ID** **Products**
L16120521-03 839388 P04

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	13-DEC-2016 08:24	BRG	DLP	

Samplenum **Container ID** **Products**
L16120521-03 839389 TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 15:00	AWE	BRG	

Samplenum **Container ID** **Products**
L16120521-03 839390 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	WET	09-DEC-2016 13:21	BRG		
2	STORE	WET	A2	26-DEC-2016 13:23	AZH	DCM	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-03	839391	AL AS-MS CA FE K MG MN NA SI SILICA-ICP

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-03	839392	S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:10	EPT	BRG	
3	STORE	WET	A2	12-DEC-2016 17:21	BRG	TB	

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-04	839393	AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-05	839394	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	SEM	22-DEC-2016 08:46	CAS	BRG	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

Samplenum **Container ID** **Products**
L16120521-05 839395 N03

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	14-DEC-2016 10:46	BRG	DCM	

Samplenum **Container ID** **Products**
L16120521-05 839396 P04

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	13-DEC-2016 08:24	BRG	DLP	

Samplenum **Container ID** **Products**
L16120521-05 839397 TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 15:00	AWE	BRG	

Samplenum **Container ID** **Products**
L16120521-05 839398 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	WET	09-DEC-2016 13:21	BRG		
2	STORE	WET	A2	26-DEC-2016 13:24	AZH	DCM	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-05	839399	AL AS-MS CA FE K MG MN NA SI SILICA-ICP

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-05	839400	S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:10	EPT	BRG	
3	STORE	WET	A2	12-DEC-2016 17:21	BRG	TB	

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-06	839401	AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-07	839402	300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	SEM	22-DEC-2016 08:46	CAS	BRG	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

Samplenum **Container ID** **Products**
L16120521-07 839403 N03

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	14-DEC-2016 10:46	BRG	DCM	

Samplenum **Container ID** **Products**
L16120521-07 839404 P04

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	13-DEC-2016 08:24	BRG	DLP	

Samplenum **Container ID** **Products**
L16120521-07 839405 TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:34	AWE	BRG	
3	STORE	WET	A2	23-DEC-2016 15:39	CLS	ADG	

Samplenum **Container ID** **Products**
L16120521-07 839406 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:04	TMM	BRG	
3	STORE	WET	A2	26-DEC-2016 13:23	AZH	DCM	

Samplenum **Container ID** **Products**
L16120521-07 839407 AL AS-MS CA FE K MG MN NA SI SILICA-ICP

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

Samplenum **Container ID** **Products**
L16120521-07 839408 S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:10	EPT	BRG	
3	STORE	WET	A2	12-DEC-2016 17:21	BRG	TB	

Samplenum **Container ID** **Products**
L16120521-08 839409 AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		

Samplenum **Container ID** **Products**
L16120521-09 839410 300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	SEM	22-DEC-2016 08:46	CAS	BRG	

Samplenum **Container ID** **Products**
L16120521-09 839411 N03

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	14-DEC-2016 10:45	BRG	DCM	

Samplenum **Container ID** **Products**
L16120521-09 839412 P04

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	13-DEC-2016 08:25	BRG	DLP	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

Samplenum **Container ID** **Products**
L16120521-09 839413 TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:34	AWE	BRG	

Samplenum **Container ID** **Products**
L16120521-09 839414 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:04	TMM	BRG	
3	STORE	WET	A2	26-DEC-2016 13:23	AZH	DCM	

Samplenum **Container ID** **Products**
L16120521-09 839415 AL AS-MS CA FE K MG MN NA SI SILICA-ICP

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		

Samplenum **Container ID** **Products**
L16120521-09 839416 S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:10	EPT	BRG	
3	STORE	WET	A2	12-DEC-2016 17:21	BRG	TB	

Samplenum **Container ID** **Products**
L16120521-10 839417 AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

Samplenum **Container ID** **Products**
L16120521-11 839418 300

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	SEM	22-DEC-2016 08:46	CAS	BRG	

Samplenum **Container ID** **Products**
L16120521-11 839419 N03

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	14-DEC-2016 10:45	BRG	DCM	

Samplenum **Container ID** **Products**
L16120521-11 839420 P04

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	09-DEC-2016 13:54	DLP	BRG	
3	STORE	WET	A2	13-DEC-2016 08:25	BRG	DLP	

Samplenum **Container ID** **Products**
L16120521-11 839421 TDS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:34	AWE	BRG	

Samplenum **Container ID** **Products**
L16120521-11 839422 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:04	TMM	BRG	
3	STORE	WET	A2	20-DEC-2016 08:05	CLS	DIH	

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



Internal Chain of Custody Report

Login: L16120521

Account: 2736

Project: 2736.061

Samples: 12

Due Date: 23-DEC-2016

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-11	839423	AL AS-MS CA FE K MG MN NA SI SILICA-ICP

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-11	839424	S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	ANALYZ	W1	WET	12-DEC-2016 08:10	EPT	BRG	
3	STORE	WET	A2	12-DEC-2016 17:21	BRG	TB	

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L16120521-12	839425	AL-D AS-MSD FE-D MN-D

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	09-DEC-2016 13:21	BRG		
2	PREP	W1	DIG	09-DEC-2016 13:35	ERP	BRG	
3	ANALYZ*	DIG	METALS	13-DEC-2016 13:14	JYH	ERP	
4	STORE	DIG	A2	14-DEC-2016 13:18	BRG	ERP	

**Sample extract/digestate/leachate*

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



NELAP Addendum - January 4, 2016

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO₃)
Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS

Nitrogen, Ammonia by Method 350.1
Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
Phenolics, Total by Method 420.1
ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

SOLID AND HAZARDOUS CHEMICALS

OVD MSS01/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP

SOLID AND HAZARDOUS CHEMICALS

OVD MSV01/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)