



2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

February 17, 2015

Deborah Gray
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204

RE: Bridgeton / 182608020

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on January 30, 2015. The samples were sent out for partial analysis to our Salt Lake City facility. Please find their report (Work Order: 34-1503475) attached. For your reference, these analyses have been assigned our service request number P1500371.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 8:55 am, Feb 17, 2015

For Samantha Henningsen
Project Manager



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Client: Stantec Consulting Services, Inc.
Project: Bridgeton / 182608020

Service Request No: P1500371

CASE NARRATIVE

The samples were received intact under chain of custody on January 30, 2015 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Aldehyde Analysis

The DNPH silica gel tube samples were analyzed for aldehydes according to EPA Method TO-11A using high performance liquid chromatography (HPLC). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

Amine Analysis

The Alumina tube samples were analyzed for amines using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD). This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The upper control criterion was exceeded for Trimethylamine in the Continuing Calibration Verification (CCV) analyzed on February 4, 2015. Since the apparent problem equates to a potential high bias and the field samples analyzed in this sequence did not contain the analyte in question, the data quality has not been affected. No corrective action was required.

Ammonia Analysis

The Anasorb 747 tube samples were prepared in accordance with OSHA ID-188 and analyzed for ammonia in air by Ion Selective Electrode per OSHA ID-164. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

Carboxylic Acids Analysis

The Silica gel tube samples were analyzed for carboxylic acids using combined gas chromatography/mass spectrometry (GC/MS) in accordance with laboratory operating procedures. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The minimum criterion for Cyclohexanecarboxylic Acid was not met in the Continuing Calibration Verification (CCV) analyzed on February 5, 2015 and February 11, 2015. The minimum criterion for Heptanoic Acid, Cyclohexanecarboxylic Acid and Octanoic Acid were not met in the Continuing Calibration Verification (CCV) analyzed on February 6, 2015. In accordance with ALS standard operating procedures, a Method Reporting Limit (MRL) check standard containing the analytes of concern was analyzed each day of analysis. The MRL check



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CASE NARRATIVE

standard verified that instrument sensitivity was adequate to detect the analytes at the MRL on the day of analysis. Because the sensitivity was shown to be adequate to detect the compounds in question and the compounds were not detected in the field samples, the data quality has not been significantly affected. This procedure is a quantitative confirmation of non-detect results at or below the MRL. No further corrective action was necessary.

The upper control criterion was exceeded for Acetic Acid, 2-Methylpropanoic Acid and Benzoic Acid in the Duplicate Laboratory Control Sample analyzed on January 11, 2015. However, the Laboratory Control Sample (LCS) was within control limits. Since the error associated with the elevated recovery equates to a high bias, the sample data has not been significantly affected. The data has been flagged accordingly.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlab.com/search-accredited-labs	L14-2
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	838341
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	CA200007
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-14-5
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA01627201 4-4
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc.
 Project ID: Bridgeton / 182608020

Service Request: P1500371

Date Received: 1/30/2015
 Time Received: 07:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	TO-11A - Carbonyls	Amines - Amines	Carbox Acids - Carboxy Acids	OSHA ID-164 Modified - Ammonia
127U1-ALD	P1500371-001	Air	1/27/2015	14:26	X			
127U1-Amine	P1500371-003	Air	1/27/2015	14:26		X		
127U1-CARBOX	P1500371-005	Air	1/27/2015	16:26			X	
127D1-ALD	P1500371-006	Air	1/27/2015	15:22	X			
127D1-Amine	P1500371-008	Air	1/27/2015	15:22		X		
127D2-ALD	P1500371-010	Air	1/27/2015	15:28	X			
127D2-Amine	P1500371-011	Air	1/27/2015	15:28		X		
127D2-NH3	P1500371-012	Air	1/27/2015	15:28				X
127F-ALD	P1500371-013	Air	1/27/2015	15:15	X			
127F-Amine	P1500371-015	Air	1/27/2015	15:15		X		
127F-CARBOX	P1500371-017	Air	1/27/2015	15:15			X	
127SQ-ALD	P1500371-018	Air	1/27/2015	15:41	X			
127SQ-Amine	P1500371-020	Air	1/27/2015	15:41		X		
128U1-ALD	P1500371-022	Air	1/28/2015	13:45	X			
128U1-Amine	P1500371-023	Air	1/28/2015	13:45		X		
128U1-NH3	P1500371-024	Air	1/28/2015	13:45				X
128U1-CARBOX	P1500371-025	Air	1/28/2015	13:45			X	
128D1-ALD	P1500371-026	Air	1/28/2015	13:35	X			
128D1-Amine	P1500371-027	Air	1/28/2015	13:35		X		
128D1-NH3	P1500371-028	Air	1/28/2015	13:35				X
128D1-CARBOX	P1500371-029	Air	1/28/2015	13:35			X	
128D2-ALD	P1500371-030	Air	1/28/2015	14:32	X			
128D2-Amine	P1500371-031	Air	1/28/2015	14:32		X		
128D2-NH3	P1500371-032	Air	1/28/2015	14:32				X
128D2-CARBOX	P1500371-033	Air	1/28/2015	14:32			X	
128N-ALD	P1500371-034	Air	1/28/2015	13:55	X			
128N-Amine	P1500371-036	Air	1/28/2015	13:55		X		
128N-NH3	P1500371-038	Air	1/28/2015	13:55				X
128N-CARBOX	P1500371-039	Air	1/28/2015	13:55			X	
128NQ-ALD	P1500371-040	Air	1/28/2015	14:02	X			
128NQ-Amine	P1500371-042	Air	1/28/2015	14:02		X		
128NQ-NH3	P1500371-044	Air	1/28/2015	14:02				X
128NQ-CARBOX	P1500371-045	Air	1/28/2015	14:02			X	
127SQ-NH32	P1500371-046	Air	1/28/2015	19:02				X
127SQ-CARBOX2	P1500371-047	Air	1/28/2015	19:02			X	
127F-NH32	P1500371-048	Air	1/28/2015	18:58				X
127U12-NH3	P1500371-049	Air	1/28/2015	20:00				X
127D12-NH3	P1500371-050	Air	1/28/2015	19:55				X
127D22-CARBOX	P1500371-051	Air	1/28/2015	20:06			X	
127D12-CARBOX	P1500371-052	Air	1/28/2015	19:55			X	

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc.
 Project ID: Bridgeton / 182608020

Service Request: P1500371

Date Received: 1/30/2015
 Time Received: 07:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	TO-11A - Carbonyls	Amines - Amines	Carbox Acids - Carboxy Acids	OSHA ID-164 Modified - Ammonia
127TB-ALD	P1500371-053	Air	1/27/2015	00:00	X			
128TB-Amine	P1500371-055	Air	1/28/2015	00:00		X		
127TB-NH3	P1500371-057	Air	1/27/2015	00:00				X
127TB-CARBOX	P1500371-058	Air	1/27/2015	00:00			X	
128N-sALD	P1500371-059	Air	1/28/2015	16:54	X			
128N-sAmine	P1500371-061	Air	1/28/2015	16:42		X		
128N-sNH3	P1500371-063	Air	1/28/2015	17:05				X
128N-sCARBOX	P1500371-064	Air	1/28/2015	17:12			X	
128NQ-sALD	P1500371-065	Air	1/28/2015	14:33	X			
128NQ-sAmine	P1500371-067	Air	1/28/2015	14:29		X		
128NQ-sNH3	P1500371-069	Air	1/28/2015	14:46				X
128NQ-sCARBOX	P1500371-070	Air	1/28/2015	15:00			X	
128SQ-sALD	P1500371-071	Air	1/28/2015	17:40	X			
128SQ-sAmine	P1500371-073	Air	1/28/2015	17:38		X		
128SQ-sNH3	P1500371-075	Air	1/28/2015	17:52				X
128SQ-sCARBOX	P1500371-076	Air	1/28/2015	17:59			X	
128F-sALD	P1500371-077	Air	1/28/2015	13:39	X			
128F-sAmine	P1500371-079	Air	1/28/2015	13:36		X		
128F-sNH3	P1500371-081	Air	1/28/2015	13:46				X
128F-sCARBOX	P1500371-082	Air	1/28/2015	13:52			X	
127-Dup01	P1500371-083	Air	1/27/2015	00:00	X			
127Dup032	P1500371-085	Air	1/28/2015	00:00			X	
128Dup05	P1500371-087	Air	1/28/2015	00:00		X		
128Dup06	P1500371-088	Air	1/28/2015	00:00				X

PS003711

Chain of Custody Record & Analytical Service Request

ALS Environmental
 2655 Park Center Drive, Suite A
 Simi Valley, California 93065
 Phone: (805) 526-7161 Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) Please Circle:		ALS Project No.			
1 Day (100%)	2 Day (75%)	3 Day (50%)	4 Day (35%)	5 Day (25%)	10 Day (Standard)
Company Name & Address (Reporting Information)		ALS Contact:			
Stantec Consulting 1500 Lake Shore Drive Columbus Ohio Project Manager Deb.Gray@Stantec.com Phone 614-643-4362 Email Address for Result Reporting Deb.Gray@Stantec.com		Bridgeton Project Number 1822608020 P.O. # / Billing Information Amy Heigrove/Bridgeton LF			
Client Sample ID		Analysis Method/Analytes			
Laboratory ID #	Tube ID	Client Sample ID	Analysis Method/Analytes		
127U1-ALD	1	127U1-ALD	101 AQL 102		
127U1-CN	2	127U1-CN	OSHA ID 188		
127U1-Amine	3	127U1-Amine	NIOSH 6009		
127U1-Hg	4	127U1-Hg	AQL 101		
127U1-CARBOX	5	127U1-CARBOX	NIOSH 6010		
127D1-ALD	6	127D1-ALD	EP A TO 114		
127D1-CN	7	127D1-CN	X		
127D1-Amine	8	127D1-Amine	X		
127D1-Hg	9	127D1-Hg	X		
127D2-ALD	10	127D2-ALD	X		
127D2-Amine	11	127D2-Amine	X		
127D2-NH3	12	127D2-NH3	X		
Intentionally Blank	XX	Intentionally Blank			
Report Tier Levels - please select		Comments			
Tier I - (Results/Default if not specified)		e.g. Actual Preservative or specific instructions			
Tier II (Results + QC)					
Tier III (Data Validation Package) 10% Surcharge	X				
Tier IV (client specified)					
Relinquished by (Signature)	Date: 1/29/15	Relinquished by (Signature)	Date: 1/29/15		
Relinquished by (Signature)	Date: 1/29/15	Relinquished by (Signature)	Date: 1/29/15		
Relinquished by (Signature)	Date: 1/29/15	Relinquished by (Signature)	Date: 1/29/15		
Project Requirements (MRLs, QAPP)	MCL 14 20				
Cooler / Blank Temperature	°C				

EDD required Yes
 Type: FFD 24
 VLS-13015 0745



Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
 Simi Valley, California 93065
 Phone: (805) 526-7161 Fax: (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) Please Circle: 10 Day (Standard)
 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%)

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampler (Print & Sign)	N/C/JL	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	ALS Project No.				Comments e.g. Actual Preservative or specific instructions		
										Project Name	Project Number	P.O. # / Billing Information	ALS Contact:			
128D1-ALD	26		1/28/2015	Chris Lalonde@stantec.com		1210	9:30	13:35	296,450	EPA TO 110	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	245
128D1-Amine	27		1/28/2015			61.5	9:30	13:35	15,068			X				245
128D1-NH3	28		1/28/2015			404	9:30	13:35	98,980				X			245
128D1-CARBOX	29		1/28/2015			408.5	9:30	13:35	100,063					X		245
128D2-ALD	30		1/28/2015			1205	10:35	14:32	285,585	X						237
128D2-Amine	31		1/28/2015			64	10:35	14:32	15,168			X				237
128D2-NH3	32		1/28/2015			411.5	10:35	14:32	97,526				X			237
128D2-CARBOX	33		1/28/2015			415.5	10:35	14:32	98,474					X		237
128N-ALD	34		1/28/2015			1255	9:53	13:55	303,710	X						242
128N-CN	35		1/28/2015			63	9:53	13:55	15,246		X					242
128N-Amine	36		1/28/2015			82	9:53	13:55	15,004			X				242
128N-Hg	37		1/28/2015			207	9:53	13:55	50,084				X			242
128N-NH3	38		1/28/2015			405.5	9:53	13:55	98,131					X		242
128N-CARBOX	39		1/28/2015			405.5	9:53	13:55	98,131						X	242
Intentionally Blank																

Company Name & Address (Reporting Information)
 Stantec Consulting
 1500 Lake Shore Drive
 Columbus Ohio
 Project Manager
 Deb.Gray@Stantec.com
 Phone
 614-643-4362
 Fax
 Email Address for Result Reporting
 Deb.Gray@Stantec.com
 Chris.lalonde@stantec.com

ALS Project No. _____

ALS Contact: Samantha Henningsen

Method/Analytes

Report Tier Levels - please select
 Tier I - (Results/Default if not specified) _____
 Tier II (Results + QC) _____
 Tier III (Data Validation Package) 10% Surcharge ___ X
 Tier IV (client specified) _____

EDD required Yes / No
 Type: _____

Relinquished by: (Signature) <i>[Signature]</i>	Date: 1/28/15	Time: 1:00	Received by: (Signature) <i>[Signature]</i>	Date: 1/28/15	Time: 1:00
Relinquished by: (Signature) <i>[Signature]</i>	Date: 1/28/15	Time: 1:00	Received by: (Signature) <i>[Signature]</i>	Date: 1/28/15	Time: 1:00
Relinquished by: (Signature) _____	Date: _____	Time: _____	Received by: (Signature) _____	Date: _____	Time: _____

Project Requirements (MRLs, QAPP) _____

Cooler / Blank Temperature _____ °C

P1570571

Chain of Custody Record & Analytical Service Request

Environmental
ALS
 2655 Park Center Drive, Suite A
 Simi Valley, California 93065
 Phone: (805) 526-7161 Fax: (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) Please Circle:		ALS Project No.	
1 Day (100%)	2 Day (75%)	3 Day (50%)	4 Day (35%)
		5 Day (25%)	<u>10 Day (Standard)</u>
Company Name & Address (Reporting Information)		ALS Contact:	
Stantec Consulting 1500 Lake Shore Drive Columbus Ohio Project Manager Deb.Gray@Stantec.com Phone 614-643-4362 Email Address for Result Reporting Deb.Gray@Stantec.com		Samantha Henningsen Analysis Method/Analytes EPA TO 14 NIOSH 6010 NIOSH 6009 OSHA ID 188 AQL 101 AQL 102	
Project Name		Project Requirements (MRLs, QAPP)	
Bridgeton Project Number 182608020 P.O. # / Billing Information Army Hargrove/Bridgeton LF		Project Requirements (MRLs, QAPP) Cooler / Blank Temperature °C	
Sampler (Print & Sign)		Project Requirements (MRLs, QAPP)	
NI/CJL Sampling Pump Flow (mL/min)		Project Requirements (MRLs, QAPP) Cooler / Blank Temperature °C	
Date Collected Tube ID Laboratory ID #		Project Requirements (MRLs, QAPP) Cooler / Blank Temperature °C	
Client Sample ID Sampling Start Time Sampling End Time Sample Volume		Project Requirements (MRLs, QAPP) Cooler / Blank Temperature °C	
128NQG-ALD 128NQG-CN 128NQG-Arithine 128NQG-Hg 128NQG-NH3 128NQG-CARBOX 127SQ-NH32 127SQ-CARBOX2 127F-NH32 127U12-NH3 127D12-NH3 127D22-CARBOX 127D12-CARBOX Intentionally Blank		Project Requirements (MRLs, QAPP) Cooler / Blank Temperature °C	

Report Tier Levels - please select	EDD required	Yes / No	Type:
Tier I - (Results/Default if not specified)			
Tier II (Results + QC)			
Relinquished by: (Signature)	Received by: (Signature)	Time: 1/28/15	Time: 1/28/15
Relinquished by: (Signature)	Received by: (Signature)	Time: 1/28/15	Time: 0745
Relinquished by: (Signature)	Received by: (Signature)	Time: 1/28/15	Time: 0745



Chain of Custody Record & Analytical Service Request

11500519

2655 Park Center Drive, Suite A
 Simi Valley, California 93065
 Phone: (805) 526-7181 Fax: (805) 526-7270

Company Name & Address (Reporting Information)
 Stantec Consulting
 1500 Lake Shore Drive
 Columbus Ohio
 Project Manager
 Deb.Gray@Stantec.com
 Phone 614-643-4362
 Email Address for Result Reporting
 Deb.Gray@Stantec.com

Chris.lalonde@stantec.com

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampler Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	Requested Turnaround Time In Business Days (Surcharges) Please Circle:				ALS Project No.	ALS Contact: Samantha Henningsen Analysis Method/Analytes	Comments e.g. Actual Preservative or specific instructions	
								1 Day (100%)	2 Day (75%)	3 Day (50%)	4 Day (35%)				5 Day (25%)
127TB-ALD	53		1/27/2015	NA	NA	NA	NA	X	EPA TO 114	NIOSH 6010	AQL 101	NIOSH 6009	OSHA ID 188	AQL 102	Trip Blank
127TB-CN	54		1/27/2015	NA	NA	NA	NA			X					Trip Blank
128TB-Amine	55		1/28/2015	NA	NA	NA	NA				X				Trip Blank
127TB-Hg	56		1/27/2015	NA	NA	NA	NA					X			Trip Blank
127TB-NH3	57		1/27/2015	NA	NA	NA	NA						X		Trip Blank
127TB-CARBOX	58		1/27/2015	NA	NA	NA	NA						X		Trip Blank
128N-SALD	59		1/28/2015	1155	16:52	16:54	2,310	X						X	Trip Blank
128N-sHCN	60		1/28/2015	61	16:29	16:35	366			X					2
128N-sAmine	61		1/28/2015	61	16:34	16:42	488				X				6
128N-sHg	62		1/28/2015	188.5	16:55	17:01	1,197					X			8
128N-sNH3	63		1/28/2015	503	17:01	17:05	2,012						X		6
128N-sCARBOX	64		1/28/2015	401.5	17:06	17:12	2,409							X	4
Intentionally Blank															6
Intentionally Blank															

Tier III (Data Validation Package) 10% Surcharge X
 Tier IV (client specified)

Report Tier Levels - please select
 Tier I - (Results/Default if not specified)
 Tier II (Results + QC)

Relinquished by: (Signature) *Am. Ad...* Date: *1/28/15* Time: *17:00*
 Relinquished by: (Signature) *Per ex* Date: *1/28/15* Time: *0745*
 Relinquished by: (Signature) Date: Time:

EDD required Yes / No Type: *Per ex*
 Received by: (Signature) *Per ex* Date: *1/28/15* Time: *0745*

Project Requirements (MRLs, QAPP)
 Cooler / Blank Temperature °C

Chain of Custody Record & Analytical Service Request

Environmental
ALS
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Requested Turnaround Time In Business Days (Surcharges) Please Circle: 10 Day (Standard)
 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%)

Company Name & Address (Reporting Information)	Project Name			ALS Project No.			ALS Contact: Samantha Henningsen	Method/Analytes	EPA TO 170	NIOSH 6010	AQI 101	NIOSH 6009	OSHA ID 188	AQI 102	Comments e.g. Actual Preservative or specific instructions			
	Stantec Consulting 1600 Lake Shore Drive Columbus Ohio	Bridgeton Project Number 182608020		P.O. # / Billing Information												Analysis		
	Project Manager Deb.Gray@Stantec.com			Amy Hargrove/Bridgeton LF														
Phone 614-643-4362	Fax		Sampler (Print & Sign) NI/CJL															
Email Address for Result Reporting Deb.Gray@Stantec.com			Laboratory ID #	Tube ID	Date Collected	Sampling Flow (mL/min)	Sampling Pump	Sampling Start Time	Sampling End Time	Sample Volume								
			65		1/28/2015	1155		14:31	14:33	2,310	X							
			66		1/28/2015	61		14:14	14:20	366	X							
			67		1/28/2015	61		14:21	14:29	488		X						
			68		1/28/2015	199.5		14:35	14:41	1,197			X					
			69		1/28/2015	503		14:42	14:46	2,012			X					
			70		1/28/2015	401.5		14:54	15:00	2,409				X				
			71		1/28/2015	1155		17:38	17:40	2,310	X							
			72		1/28/2015	61		17:22	17:28	366	X							
			73		1/28/2015	61		17:30	17:38	488		X						
			74		1/28/2015	199.5		17:41	17:47	1,197			X					
			75		1/28/2015	503		17:48	17:52	2,012			X					
			76		1/28/2015	401.5		17:53	17:59	2,409				X				
Intentionally Blank																		
Intentionally Blank																		

Report Tier Levels - please select
 Tier I - (Results/Default if not specified)
 Tier II (Results + QC) _____
 Tier III (Data Validation Package) 10% Surcharge ___ X
 Tier IV (client specified)

EDD required Yes / No _____
 Type: _____

Relinquished by: (Signature) <i>[Signature]</i>	Date: 1/29/15	Time: 1700	Received by: (Signature) <i>[Signature]</i>	Date: 1/29/15	Time: 0745
Relinquished by: (Signature) <i>[Signature]</i>	Date: 1/29/15	Time: 1700	Received by: (Signature) <i>[Signature]</i>	Date: 1/30/15	Time: 0745
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Project Requirements (MRLs, QAPP)
 Cooler / Blank Temperature _____ °C

11/02/15

Chain of Custody Record & Analytical Service Request

ALS Environmental
 2855 Park Center Drive, Suite A
 Simi Valley, California 93065
 Phone: (805) 528-7161 Fax: (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) Please Circle: 10 Day (Standard)

1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%)

ALS Project No. _____

Company Name & Address (Reporting Information)
 Stantec Consulting
 1500 Lake Shore Drive
 Columbus Ohio
 Project Manager
 Deb.Gray@Stantec.com
 Phone 614-643-4362
 Email Address for Result Reporting
 Deb.Gray@Stantec.com

Project Name
 Bridgeton
 Project Number
 182608020
 P.O. # / Billing Information
 Army Hargrove/Bridgeton LF

ALS Contact:
 Samantha Henningsen
 Analysis Method/Analytes

Client Sample ID	Laboratory ID #	Tube ID	Date Collected	Sampler (Print & Sign) NI/CJL	Sampling Pump Flow (mL/min)	Sampling Start Time	Sampling End Time	Sample Volume	Method/Analytes				Comments e.g. Actual Preservative or specific instructions
									FPA TO 114	NIOSH 6010	AQL 101	NIOSH 6009	
128F-sALD	77		1/28/2015	1155	13:38	13:39	1,155	X					1
128F-sHCN	78		1/28/2015	61	13:24	13:27	183		X				3
128F-sAmine	79		1/28/2015	61	13:32	13:36	244			X			4
128F-sHg	80		1/28/2015	199.5	13:40	13:43	598				X		3
128F-sNH3	81		1/28/2015	503	13:44	13:46	1,006					X	2
128F-sCARBOX	82		1/28/2015	401.5	13:49	13:52	1,205						3
127-Dup01	83		1/27/2015	1280	NA	NA	346,880	X					271
127Dup02	84		1/27/2015	204	NA	NA	48,960						240
127Dup032	85		1/28/2015	404	NA	NA	94,132		X				233
128F-Dup04	86		1/28/2015	61	NA	NA	183			X			3
128Dup05	87		1/28/2015	61	NA	NA	488			X			8
128Dup06	88		1/28/2015	503	NA	NA	2,012				X		4
Intentionally Blank													
Intentionally Blank													

Report Tier Levels - please select
 Tier I - (Results/Default if not specified) _____
 Tier II (Results + QC) _____
 Tier III (Data Validation Package) 10% Surcharge X
 Tier IV (client specified) _____

EDD required Yes / No Type: _____

Relinquished by: (Signature) <i>[Signature]</i>	Date: <i>1/28/15</i>	Time: <i>1700</i>	Received by: (Signature) <i>Fed Ex</i>	Date: <i>1/30/15</i>	Time: <i>0745</i>
Relinquished by: (Signature) <i>Fed Ex</i>	Date: <i>1/30/15</i>	Time: <i>1700</i>	Received by: (Signature) <i>[Signature]</i>	Date: <i>1/30/15</i>	Time: <i>0745</i>
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Project Requirements (MRLs, QAPP) _____
 Cooler / Blank Temperature _____ °C

**ALS Environmental
Sample Acceptance Check Form**

Client: Stantec Consulting Services, Inc.

Work order: P1500371

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015

Date opened: 1/30/2015

by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- | | Yes | No | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Container(s) supplied by ALS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 Was proper temperature (thermal preservation) of cooler at receipt adhered to? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cooler Temperature: 3° C Blank Temperature: ° C | | | |
| | | Wet Ice | |
| 9 Was a trip blank received? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10 Were custody seals on outside of cooler/Box? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were signature and date included? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were seals intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were custody seals on outside of sample container? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were signature and date included? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were seals intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11 Do containers have appropriate preservation , according to method/SOP or Client specified information? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Is there a client indication that the submitted samples are pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials checked for presence/absence of air bubbles? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12 Tubes: Are the tubes capped and intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do they contain moisture? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 13 Badges: Are the badges properly capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500371-001.01	Silica Gel DNPH Tube					
P1500371-002.01	CN Tube					
P1500371-003.01	Treated Alumina Tube					
P1500371-004.01	Hg tube					
P1500371-005.01	Silica Gel (C. Acids)					
P1500371-006.01	Silica Gel DNPH Tube					

Explain any discrepancies: (include lab sample ID numbers): _____

**ALS Environmental
Sample Acceptance Check Form**

Client: Stantec Consulting Services, Inc.

Work order: P1500371

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015

Date opened: 1/30/2015

by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500371-007.01	CN Tube					
P1500371-008.01	Treated Alumina Tube					
P1500371-009.01	Hg Tube					
P1500371-010.01	Silica Gel DNPH Tube					
P1500371-011.01	Treated Alumina Tube					
P1500371-012.01	Anasorb 747 Tube					
P1500371-013.01	Silica Gel DNPH Tube					
P1500371-014.01	CN Tube					
P1500371-015.01	Treated Alumina Tube					
P1500371-016.01	Hg Tube					
P1500371-017.01	Silica Gel (C. Acids)					
P1500371-018.01	Silica Gel DNPH Tube					
P1500371-019.01	CN Tube					
P1500371-020.01	Treated Alumina Tube					
P1500371-021.01	Hg Tube					
P1500371-022.01	Silica Gel DNPH Tube					
P1500371-023.01	Treated Alumina Tube					
P1500371-024.01	Anasorb 747 Tube					
P1500371-025.01	Silica Gel (C. Acids)					
P1500371-026.01	Silica Gel DNPH Tube					
P1500371-027.01	Treated Alumina Tube					
P1500371-028.01	Anasorb 747 Tube					
P1500371-029.01	Silica Gel (C. Acids)					
P1500371-030.01	Silica Gel DNPH Tube					
P1500371-031.01	Treated Alumina Tube					
P1500371-032.01	Anasorb 747 Tube					
P1500371-033.01	Silica Gel (C. Acids)					
P1500371-034.01	Silica Gel DNPH Tube					
P1500371-035.01	CN Tube					
P1500371-036.01	Treated Alumina Tube					
P1500371-037.01	Hg Tube					
P1500371-038.01	Anasorb 747 Tube					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

**ALS Environmental
Sample Acceptance Check Form**

Client: Stantec Consulting Services, Inc.

Work order: P1500371

Project: Bridgeton / 182608020

Sample(s) received on: 1/30/2015

Date opened: 1/30/2015

by: KKELPE

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1500371-039.01	Silica Gel (C. Acids)					
P1500371-040.01	Silica Gel DNPH Tube					
P1500371-041.01	CN Tube					
P1500371-042.01	Treated Alumina Tube					
P1500371-043.01	Hg Tube					
P1500371-044.01	Anasorb 747 Tube					
P1500371-045.01	Silica Gel (C. Acids)					
P1500371-046.01	Anasorb 747 Tube					
P1500371-047.01	Silica Gel (C. Acids)					
P1500371-048.01	Anasorb 747 Tube					
P1500371-049.01	Anasorb 747 Tube					
P1500371-050.01	Anasorb 747 Tube					
P1500371-051.01	Silica Gel (C. Acids)					
P1500371-052.01	Silica Gel (C. Acids)					
P1500371-053.01	Silica Gel DNPH Tube					
P1500371-054.01	CN Tube					
P1500371-055.01	Treated Alumina Tube					
P1500371-056.01	Hg tube					
P1500371-057.01	Anasorb 747 Tube					
P1500371-058.01	Silica Gel (C. Acids)					
P1500371-059.01	Silica Gel DNPH Tube					
P1500371-060.01	CN Tube					
P1500371-061.01	Treated Alumina Tube					
P1500371-062.01	Hg Tube					
P1500371-063.01	Anasorb 747 Tube					
P1500371-064.01	Silica Gel (C. Acids)					
P1500371-065.01	Silica Gel DNPH Tube					
P1500371-066.01	CN Tube					
P1500371-067.01	Treated Alumina Tube					
P1500371-068.01	Hg Tube					
P1500371-069.01	Anasorb 747 Tube					
P1500371-070.01	Silica Gel (C. Acids)					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127U1-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-001

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 350.945 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	330	0.93	0.28	0.76	0.23	
75-07-0	Acetaldehyde	320	0.92	0.28	0.51	0.16	
123-38-6	Propionaldehyde	< 100	ND	0.28	ND	0.12	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.28	ND	0.099	
123-72-8	Butyraldehyde	< 100	ND	0.28	ND	0.097	
100-52-7	Benzaldehyde	< 100	ND	0.28	ND	0.066	
590-86-3	Isovaleraldehyde	< 100	ND	0.28	ND	0.081	
110-62-3	Valeraldehyde	< 100	ND	0.28	ND	0.081	
529-20-4	o-Tolualdehyde	< 100	ND	0.28	ND	0.058	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.57	ND	0.12	
66-25-1	n-Hexaldehyde	200	0.56	0.28	0.14	0.070	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.28	ND	0.052	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127D1-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-006

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 306 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	540	1.8	0.33	1.4	0.27	
75-07-0	Acetaldehyde	550	1.8	0.33	1.0	0.18	BT
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	140	0.44	0.33	0.11	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127D2-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-010

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 306 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	330	1.1	0.33	0.87	0.27	
75-07-0	Acetaldehyde	560	1.8	0.33	1.0	0.18	BT
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	< 100	ND	0.33	ND	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127F-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-013

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 307.475 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	370	1.2	0.33	0.97	0.26	
75-07-0	Acetaldehyde	710	2.3	0.33	1.3	0.18	BT
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.092	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.092	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.066	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	210	0.68	0.33	0.17	0.079	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.059	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127SQ-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-018

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 306 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	320	1.1	0.33	0.86	0.27	
75-07-0	Acetaldehyde	540	1.8	0.33	0.98	0.18	BT
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.075	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.65	ND	0.13	
66-25-1	n-Hexaldehyde	140	0.45	0.33	0.11	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128U1-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-022

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 301.32 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	350	1.1	0.33	0.93	0.27	
75-07-0	Acetaldehyde	320	1.1	0.33	0.59	0.18	
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.076	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.094	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.094	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.068	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.66	ND	0.14	
66-25-1	n-Hexaldehyde	190	0.62	0.33	0.15	0.081	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128D1-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-026

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: BC

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 296.45 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	490	1.6	0.34	1.3	0.27	
75-07-0	Acetaldehyde	350	1.2	0.34	0.66	0.19	
123-38-6	Propionaldehyde	< 100	ND	0.34	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.34	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.34	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.34	ND	0.078	
590-86-3	Isovaleraldehyde	< 100	ND	0.34	ND	0.096	
110-62-3	Valeraldehyde	< 100	ND	0.34	ND	0.096	
529-20-4	o-Tolualdehyde	< 100	ND	0.34	ND	0.069	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.67	ND	0.14	
66-25-1	n-Hexaldehyde	140	0.48	0.34	0.12	0.082	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.34	ND	0.061	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128D2-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-030

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 285.585 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	530	1.9	0.35	1.5	0.29	
75-07-0	Acetaldehyde	370	1.3	0.35	0.71	0.19	
123-38-6	Propionaldehyde	< 100	ND	0.35	ND	0.15	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.35	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.35	ND	0.12	
100-52-7	Benzaldehyde	< 100	ND	0.35	ND	0.081	
590-86-3	Isovaleraldehyde	< 100	ND	0.35	ND	0.099	
110-62-3	Valeraldehyde	< 100	ND	0.35	ND	0.099	
529-20-4	o-Tolualdehyde	< 100	ND	0.35	ND	0.071	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.70	ND	0.14	
66-25-1	n-Hexaldehyde	190	0.68	0.35	0.17	0.086	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.35	ND	0.064	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128N-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-034

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 303.71 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	410	1.3	0.33	1.1	0.27	
75-07-0	Acetaldehyde	320	1.1	0.33	0.58	0.18	
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.076	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.094	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.094	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.66	ND	0.13	
66-25-1	n-Hexaldehyde	170	0.55	0.33	0.13	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128NQ-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-040

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 304.92 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	460	1.5	0.33	1.2	0.27	
75-07-0	Acetaldehyde	470	1.5	0.33	0.85	0.18	BT
123-38-6	Propionaldehyde	< 100	ND	0.33	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.33	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.33	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.33	ND	0.076	
590-86-3	Isovaleraldehyde	< 100	ND	0.33	ND	0.093	
110-62-3	Valeraldehyde	< 100	ND	0.33	ND	0.093	
529-20-4	o-Tolualdehyde	< 100	ND	0.33	ND	0.067	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.66	ND	0.13	
66-25-1	n-Hexaldehyde	150	0.48	0.33	0.12	0.080	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.33	ND	0.060	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127TB-ALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-053

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: BC

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128N-sALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-059

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 2.31 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	43	ND	35	
75-07-0	Acetaldehyde	150	64	43	35	24	
123-38-6	Propionaldehyde	< 100	ND	43	ND	18	
4170-30-3	Crotonaldehyde, Total	< 100	ND	43	ND	15	
123-72-8	Butyraldehyde	< 100	ND	43	ND	15	
100-52-7	Benzaldehyde	< 100	ND	43	ND	10	
590-86-3	Isovaleraldehyde	< 100	ND	43	ND	12	
110-62-3	Valeraldehyde	< 100	ND	43	ND	12	
529-20-4	o-Tolualdehyde	< 100	ND	43	ND	8.8	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	87	ND	18	
66-25-1	n-Hexaldehyde	< 100	ND	43	ND	11	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	43	ND	7.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128NQ-sALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-065

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 2.31 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	43	ND	35	
75-07-0	Acetaldehyde	100	45	43	25	24	
123-38-6	Propionaldehyde	< 100	ND	43	ND	18	
4170-30-3	Crotonaldehyde, Total	< 100	ND	43	ND	15	
123-72-8	Butyraldehyde	< 100	ND	43	ND	15	
100-52-7	Benzaldehyde	< 100	ND	43	ND	10	
590-86-3	Isovaleraldehyde	< 100	ND	43	ND	12	
110-62-3	Valeraldehyde	< 100	ND	43	ND	12	
529-20-4	o-Tolualdehyde	< 100	ND	43	ND	8.8	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	87	ND	18	
66-25-1	n-Hexaldehyde	< 100	ND	43	ND	11	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	43	ND	7.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128SQ-sALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-071

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/9-10/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 2.31 Liter(s)

Dilution Factor: 1.00
 Dilution Factor: 10.0

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	43	ND	35	
75-07-0	Acetaldehyde	310	130	43	74	24	
123-38-6	Propionaldehyde	140	59	43	25	18	
4170-30-3	Crotonaldehyde, Total	< 100	ND	43	ND	15	
123-72-8	Butyraldehyde	1,100	480	43	160	15	
100-52-7	Benzaldehyde	< 100	ND	43	ND	10	
590-86-3	Isovaleraldehyde	< 100	ND	43	ND	12	
110-62-3	Valeraldehyde	< 100	ND	43	ND	12	
529-20-4	o-Tolualdehyde	< 100	ND	43	ND	8.8	
620-23-5							
104-87-0	m,p-Tolualdehyde	9,700	4,200	87	860	18	
66-25-1	n-Hexaldehyde	< 100	ND	43	ND	11	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	43	ND	7.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128F-sALD
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-077

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/10/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 1.155 Liter(s)

Dilution Factor: 1.00
 Dilution Factor: 10.0

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	ND	87	ND	71	
75-07-0	Acetaldehyde	11,000	9,500	87	5,200	48	BT
123-38-6	Propionaldehyde	7,100	6,100	87	2,600	36	BT
4170-30-3	Crotonaldehyde, Total	< 100	ND	87	ND	30	
123-72-8	Butyraldehyde	26,000	23,000	87	7,700	29	BT
100-52-7	Benzaldehyde	< 100	ND	87	ND	20	
590-86-3	Isovaleraldehyde	30,000	26,000	87	7,300	25	BT
110-62-3	Valeraldehyde	< 100	ND	87	ND	25	
529-20-4	o-Tolualdehyde	< 100	ND	87	ND	18	
620-23-5			6,800				
104-87-0	m,p-Tolualdehyde	7,800		170	1,400	35	BT
66-25-1	n-Hexaldehyde	110	95	87	23	21	BH
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	87	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

BH = Results indicate breakthrough; back section of tube greater than front section.

BT = Results indicated possible breakthrough; back section > 10% front section.

D = The reported result is from a dilution.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127-Dup01
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-083

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/9/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 346.88 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	320	0.92	0.29	0.75	0.23	
75-07-0	Acetaldehyde	400	1.2	0.29	0.65	0.16	BT
123-38-6	Propionaldehyde	< 100	ND	0.29	ND	0.12	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.29	ND	0.10	
123-72-8	Butyraldehyde	< 100	ND	0.29	ND	0.098	
100-52-7	Benzaldehyde	< 100	ND	0.29	ND	0.066	
590-86-3	Isovaleraldehyde	< 100	ND	0.29	ND	0.082	
110-62-3	Valeraldehyde	< 100	ND	0.29	ND	0.082	
529-20-4	o-Tolualdehyde	< 100	ND	0.29	ND	0.059	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.58	ND	0.12	
66-25-1	n-Hexaldehyde	160	0.46	0.29	0.11	0.070	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.29	ND	0.053	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

BT = Results indicated possible breakthrough; back section > 10% front section.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: Method Blank
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150209-MB

Test Code: EPA Method TO-11A
 Instrument ID: Agilent Infinity LC 1220/LC3
 Analyst: Madeleine Dangazyan
 Sample Type: Silica Gel DNPH Tube
 Test Notes: **BC**

Date Collected: NA
 Date Received: NA
 Date Analyzed: 02/09/15
 Desorption Volume: 1.0 ml
 Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

NA = Not applicable.

Response Factor Report GCI

Method Path : J:\LC03\METHODS\
 Method File : TO11A012315E.M
 Title : TO-11A Method for Aldehydes/Ketones by HPLC
 Last Update : Wed Feb 11 10:00:01 2015
 Response Via : Initial Calibration

Calibration Files

50 =012315000004.D 100 =012315000007.D 500 =012315000010.D
 1500 =012315000013.D 5000 =012315000016.D 10 =012315000019.D

Compound	50	100	500	1500	5000	10	Avg	%RSD
1) Formaldehyde	1.841	1.860	1.948	1.979	2.043	2.077	1.958	E4 4.85
2) Acetaldehyde	1.440	1.451	1.520	1.541	1.595	1.625	1.529	E4 4.88
3) Acetone	1.133	1.352	1.214	1.216	1.253	1.275	1.241	E4 5.90
4) Acrolein	1.156	1.294	1.371	1.403	1.453	1.482	1.360	E4 8.80
5) Propionaldehyde	1.058	1.107	1.179	1.199	1.241	1.267	1.175	E4 6.79
6) Crotonaldehyde	0.927	0.990	1.033	1.043	1.075	1.099	1.028	E4 6.02
7) Butyraldehyde	0.940	0.958	1.004	1.017	1.050	1.070	1.007	E4 5.00
8) Benzaldehyde	5.653	5.851	6.802	6.967	7.199	7.344	6.636	E3 10.74
9) Isovaleraldehyde	7.091	7.658	8.808	9.040	9.351	9.517	8.577	E3 11.43
10) Valeraldehyde	6.810	7.290	7.700	7.877	8.167	8.323	7.695	E3 7.35
11) o-Tolualdehyde	7.208	6.147	6.490	6.618	6.925	7.137	6.754	E3 6.07
12) m,p-Tolualdehyde	4.711	4.845	4.973	5.044	5.191	5.248	5.002	E3 4.07
13) Hexaldehyde	5.479	6.153	6.649	7.038	7.396	7.557	6.712	E3 11.78
14) 2,5-Dimethylb...	3.968	3.944	4.540	4.651	4.892	5.004	4.500	E3 10.05

(#) = Out of Range

ALS Environmental
TO11A Aldehyde & Ketone DNP Analysis by HPLC

Instrument : LC 03 Printed : 2/11/2015
 Detector : UV-VIS 360 Date Acquired : 2/10/2015
 Analyst : MD Sample Amount : 3.0uL
 Client & Job# : Stantec Consulting Services, Inc. P1500371

QC

Sample Information	MRL	TO-11A 1500ng/ml S28-01231503	% Diff	acn blank tot dj138	TO-11A 1500ng/ml S28-01231503	% Diff	% Diff	% Diff	% Diff
Dilution	1.0			1.0	1.0	1.0			
Sample Volume (L)	NA			NA	NA	NA			
Final Vol.(mL)	1.0			1.0	1.0	1.0			
Data File		0210150000 02.D		021015000003 .D	0210150000 07.D	0.0	0.0	0.0	0.0
	ng/sample	ng/sample		ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample
Formaldehyde	100.00	1719.3	14.6%	ND	1576.1	5.1%			
Acetaldehyde	100.00	1649.0	9.9%	ND	1561.1	4.1%			
Propionaldehyde	100.00	1575.2	5.0%	ND	1557.3	3.8%			
Crotonaldehyde	100.00	1582.7	5.5%	ND	1555.2	3.7%			
Butyraldehyde	100.00	1584.1	5.6%	ND	1562.2	4.1%			
Benzaldehyde	100.00	1657.9	10.5%	ND	1624.4	8.3%			
Isovaleraldehyde	100.00	1674.8	11.7%	ND	1650.8	10.1%			
Valeraldehyde	100.00	1583.5	5.6%	ND	1561.9	4.1%			
o-Tolualdehyde	100.00	1645.3	9.7%	ND	1602.1	6.8%			
m,p-Tolualdehyde	200.00	3234.6	7.8%	ND	3220.5	7.3%			
Hexaldehyde	100.00	1636.8	9.1%	ND	1620.0	8.0%			
2,5-Dimethylbenzaldehyde	100.00	1667.5	11.2%	ND	1692.5	12.8%			

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.

Client Sample ID: 127U1-Amine

Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371

ALS Sample ID: P1500371-003

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 16.802 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	62	ND	34	
75-04-7	Ethylamine	< 1.1	ND	65	ND	35	
75-50-3	Trimethylamine	< 1.0	ND	59	ND	25	
75-31-0	Isopropylamine	< 1.0	ND	62	ND	26	
75-64-9	tert-Butylamine	< 1.0	ND	62	ND	21	
107-10-8	n-Propylamine	< 1.1	ND	64	ND	27	
109-89-7	Diethylamine	< 1.0	ND	61	ND	21	
13952-84-6	sec-Butylamine	< 1.1	ND	63	ND	21	
78-81-9	Isobutylamine	< 1.1	ND	64	ND	21	
109-73-9	n-Butylamine	< 1.1	ND	66	ND	22	
108-18-9	Diisopropylamine	< 1.0	ND	62	ND	15	
121-44-8	Triethylamine	< 1.0	ND	62	ND	15	
142-84-7	Dipropylamine	< 1.0	ND	62	ND	15	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.

Client Sample ID: 127D1-Amine

Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371

ALS Sample ID: P1500371-008

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 14.52 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	72	ND	39	
75-04-7	Ethylamine	< 1.1	ND	76	ND	41	
75-50-3	Trimethylamine	< 1.0	ND	69	ND	28	
75-31-0	Isopropylamine	< 1.0	ND	72	ND	30	
75-64-9	tert-Butylamine	< 1.0	ND	72	ND	24	
107-10-8	n-Propylamine	< 1.1	ND	75	ND	31	
109-89-7	Diethylamine	< 1.0	ND	71	ND	24	
13952-84-6	sec-Butylamine	< 1.1	ND	72	ND	24	
78-81-9	Isobutylamine	< 1.1	ND	74	ND	25	
109-73-9	n-Butylamine	< 1.1	ND	77	ND	26	
108-18-9	Diisopropylamine	< 1.0	ND	71	ND	17	
121-44-8	Triethylamine	< 1.0	ND	71	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	72	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127D2-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-011

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 14.76 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	70	ND	38	
75-04-7	Ethylamine	< 1.1	ND	74	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	68	ND	28	
75-31-0	Isopropylamine	< 1.0	ND	71	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	71	ND	24	
107-10-8	n-Propylamine	< 1.1	ND	73	ND	30	
109-89-7	Diethylamine	< 1.0	ND	70	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	71	ND	24	
78-81-9	Isobutylamine	< 1.1	ND	73	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	75	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	70	ND	17	
121-44-8	Triethylamine	< 1.0	ND	70	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	71	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127F-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-015

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 15.068 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	69	ND	37	
75-04-7	Ethylamine	< 1.1	ND	73	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	70	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	72	ND	30	
109-89-7	Diethylamine	< 1.0	ND	69	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	70	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	74	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	69	ND	17	
121-44-8	Triethylamine	< 1.0	ND	69	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127SQ-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-020

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/27/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 14.4 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	72	ND	39	
75-04-7	Ethylamine	< 1.1	ND	76	ND	41	
75-50-3	Trimethylamine	< 1.0	ND	69	ND	29	
75-31-0	Isopropylamine	< 1.0	ND	73	ND	30	
75-64-9	tert-Butylamine	< 1.0	ND	72	ND	24	
107-10-8	n-Propylamine	< 1.1	ND	75	ND	31	
109-89-7	Diethylamine	< 1.0	ND	72	ND	24	
13952-84-6	sec-Butylamine	< 1.1	ND	73	ND	24	
78-81-9	Isobutylamine	< 1.1	ND	74	ND	25	
109-73-9	n-Butylamine	< 1.1	ND	77	ND	26	
108-18-9	Diisopropylamine	< 1.0	ND	72	ND	17	
121-44-8	Triethylamine	< 1.0	ND	72	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	73	ND	18	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128U1-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-023

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 15.188 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	68	ND	37	
75-04-7	Ethylamine	< 1.1	ND	72	ND	39	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	69	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	71	ND	29	
109-89-7	Diethylamine	< 1.0	ND	68	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	69	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	73	ND	24	
108-18-9	Diisopropylamine	< 1.0	ND	68	ND	16	
121-44-8	Triethylamine	< 1.0	ND	68	ND	16	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128D1-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-027

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 15.068 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	69	ND	37	
75-04-7	Ethylamine	< 1.1	ND	73	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	70	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	72	ND	30	
109-89-7	Diethylamine	< 1.0	ND	69	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	70	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	74	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	69	ND	17	
121-44-8	Triethylamine	< 1.0	ND	69	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128D2-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-031

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 15.168 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	68	ND	37	
75-04-7	Ethylamine	< 1.1	ND	72	ND	39	
75-50-3	Trimethylamine	< 1.0	ND	66	ND	27	
75-31-0	Isopropylamine	< 1.0	ND	69	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	71	ND	30	
109-89-7	Diethylamine	< 1.0	ND	68	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	69	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	73	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	68	ND	16	
121-44-8	Triethylamine	< 1.0	ND	68	ND	16	
142-84-7	Dipropylamine	< 1.0	ND	69	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

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Client: Stantec Consulting Services, Inc.

Client Sample ID: 128N-Amine

Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371

ALS Sample ID: P1500371-036

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 15.004 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	69	ND	38	
75-04-7	Ethylamine	< 1.1	ND	73	ND	40	
75-50-3	Trimethylamine	< 1.0	ND	67	ND	28	
75-31-0	Isopropylamine	< 1.0	ND	70	ND	29	
75-64-9	tert-Butylamine	< 1.0	ND	69	ND	23	
107-10-8	n-Propylamine	< 1.1	ND	72	ND	30	
109-89-7	Diethylamine	< 1.0	ND	69	ND	23	
13952-84-6	sec-Butylamine	< 1.1	ND	70	ND	23	
78-81-9	Isobutylamine	< 1.1	ND	71	ND	24	
109-73-9	n-Butylamine	< 1.1	ND	74	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	69	ND	17	
121-44-8	Triethylamine	< 1.0	ND	69	ND	17	
142-84-7	Dipropylamine	< 1.0	ND	70	ND	17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128NQ-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-042

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 15.851 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	66	ND	36	
75-04-7	Ethylamine	< 1.1	ND	69	ND	38	
75-50-3	Trimethylamine	< 1.0	ND	63	ND	26	
75-31-0	Isopropylamine	< 1.0	ND	66	ND	27	
75-64-9	tert-Butylamine	< 1.0	ND	66	ND	22	
107-10-8	n-Propylamine	< 1.1	ND	68	ND	28	
109-89-7	Diethylamine	< 1.0	ND	65	ND	22	
13952-84-6	sec-Butylamine	< 1.1	ND	66	ND	22	
78-81-9	Isobutylamine	< 1.1	ND	68	ND	23	
109-73-9	n-Butylamine	< 1.1	ND	70	ND	23	
108-18-9	Diisopropylamine	< 1.0	ND	65	ND	16	
121-44-8	Triethylamine	< 1.0	ND	65	ND	16	
142-84-7	Dipropylamine	< 1.0	ND	66	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128TB-Amine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-055

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	NA	NA	NA	NA	
75-04-7	Ethylamine	< 1.1	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 1.0	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 1.0	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.0	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 1.1	NA	NA	NA	NA	
109-89-7	Diethylamine	< 1.0	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 1.1	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 1.1	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 1.1	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 1.0	NA	NA	NA	NA	
121-44-8	Triethylamine	< 1.0	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 1.0	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

NA = Not applicable.

ALS ENVIRONMENTAL

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128N-sAmine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-061

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128NQ-sAmine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-067

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128SQ-sAmine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-073

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128F-sAmine
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-079

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 0.244 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	4,300	ND	2,300	
75-04-7	Ethylamine	< 1.1	ND	4,500	ND	2,400	
75-50-3	Trimethylamine	< 1.0	ND	4,100	ND	1,700	
75-31-0	Isopropylamine	< 1.0	ND	4,300	ND	1,800	
75-64-9	tert-Butylamine	< 1.0	ND	4,300	ND	1,400	
107-10-8	n-Propylamine	< 1.1	ND	4,400	ND	1,800	
109-89-7	Diethylamine	< 1.0	ND	4,200	ND	1,400	
13952-84-6	sec-Butylamine	< 1.1	ND	4,300	ND	1,400	
78-81-9	Isobutylamine	< 1.1	ND	4,400	ND	1,500	
109-73-9	n-Butylamine	< 1.1	ND	4,600	ND	1,500	
108-18-9	Diisopropylamine	< 1.0	ND	4,200	ND	1,000	
121-44-8	Triethylamine	< 1.0	ND	4,200	ND	1,000	
142-84-7	Dipropylamine	< 1.0	ND	4,300	ND	1,000	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

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DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128Dup05
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-087

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: 0.488 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	ND	2,100	ND	1,200	
75-04-7	Ethylamine	< 1.1	ND	2,300	ND	1,200	
75-50-3	Trimethylamine	< 1.0	ND	2,000	ND	850	
75-31-0	Isopropylamine	< 1.0	ND	2,100	ND	890	
75-64-9	tert-Butylamine	< 1.0	ND	2,100	ND	710	
107-10-8	n-Propylamine	< 1.1	ND	2,200	ND	920	
109-89-7	Diethylamine	< 1.0	ND	2,100	ND	710	
13952-84-6	sec-Butylamine	< 1.1	ND	2,200	ND	720	
78-81-9	Isobutylamine	< 1.1	ND	2,200	ND	730	
109-73-9	n-Butylamine	< 1.1	ND	2,300	ND	760	
108-18-9	Diisopropylamine	< 1.0	ND	2,100	ND	510	
121-44-8	Triethylamine	< 1.0	ND	2,100	ND	510	
142-84-7	Dipropylamine	< 1.0	ND	2,100	ND	520	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: Method Blank
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150204-MB

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes: **BC, DE**

Date Collected: NA
 Date Received: NA
 Date Analyzed: 2/4/15
 Desorption Volume: 2.0 ml
 Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.0	NA	NA	NA	NA	
75-04-7	Ethylamine	< 1.1	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 1.0	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 1.0	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.0	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 1.1	NA	NA	NA	NA	
109-89-7	Diethylamine	< 1.0	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 1.1	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 1.1	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 1.1	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 1.0	NA	NA	NA	NA	
121-44-8	Triethylamine	< 1.0	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 1.0	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

NA = Not applicable.

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ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150204-DLCS

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Zheng Wang
 Sampling Media: Treated Alumina Tube
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 2/04/15
 Volume(s) Analyzed: NA Liter(s)

CAS #	Compound	Spike Amount		Result		% Recovery		ALS		Data Qualifier
		LCS / DLCS µg/ml	LCS µg/ml	DLCS µg/ml	LCS	DLCS	Acceptance Limits	RPD Limit	RPD Limit	
124-40-3	Dimethylamine	10.5	8.43	8.33	80	79	63-117	1	21	
75-04-7	Ethylamine	11.1	7.62	7.33	69	66	55-112	4	28	
75-50-3	Trimethylamine	10.2	9.12	9.57	89	94	61-127	5	32	
75-31-0	Isopropylamine	11.3	9.43	9.14	83	81	48-132	2	17	
75-64-9	tert-Butylamine	11.0	9.34	9.17	85	83	70-122	2	18	
107-10-8	n-Propylamine	11.3	8.08	7.69	72	68	62-112	6	24	
109-89-7	Diethylamine	10.7	9.88	10.2	92	95	75-117	3	18	
13952-84-6	sec-Butylamine	10.8	9.22	9.11	85	84	73-116	1	17	
78-81-9	Isobutylamine	10.6	8.21	7.99	77	75	69-111	3	19	
109-73-9	n-Butylamine	11.3	8.23	8.02	73	71	64-113	3	23	
108-18-9	Diisopropylamine	9.91	9.03	9.62	91	97	74-118	6	20	
121-44-8	Triethylamine	10.0	9.19	9.68	92	97	70-122	5	22	
124-09-4	Hexamethylenediamine	10.3	9.60	10.1	93	98	50-150	5	30	

Response Factor Report GC14

Method Path : J:\GC14\METHODS\
 Method File : AMINE091914E.M
 Title : GC #15/ NPD Method For Volatile Amines
 Last Update : Tue Dec 16 10:15:53 2014
 Response Via : Initial Calibration

Calibration Files

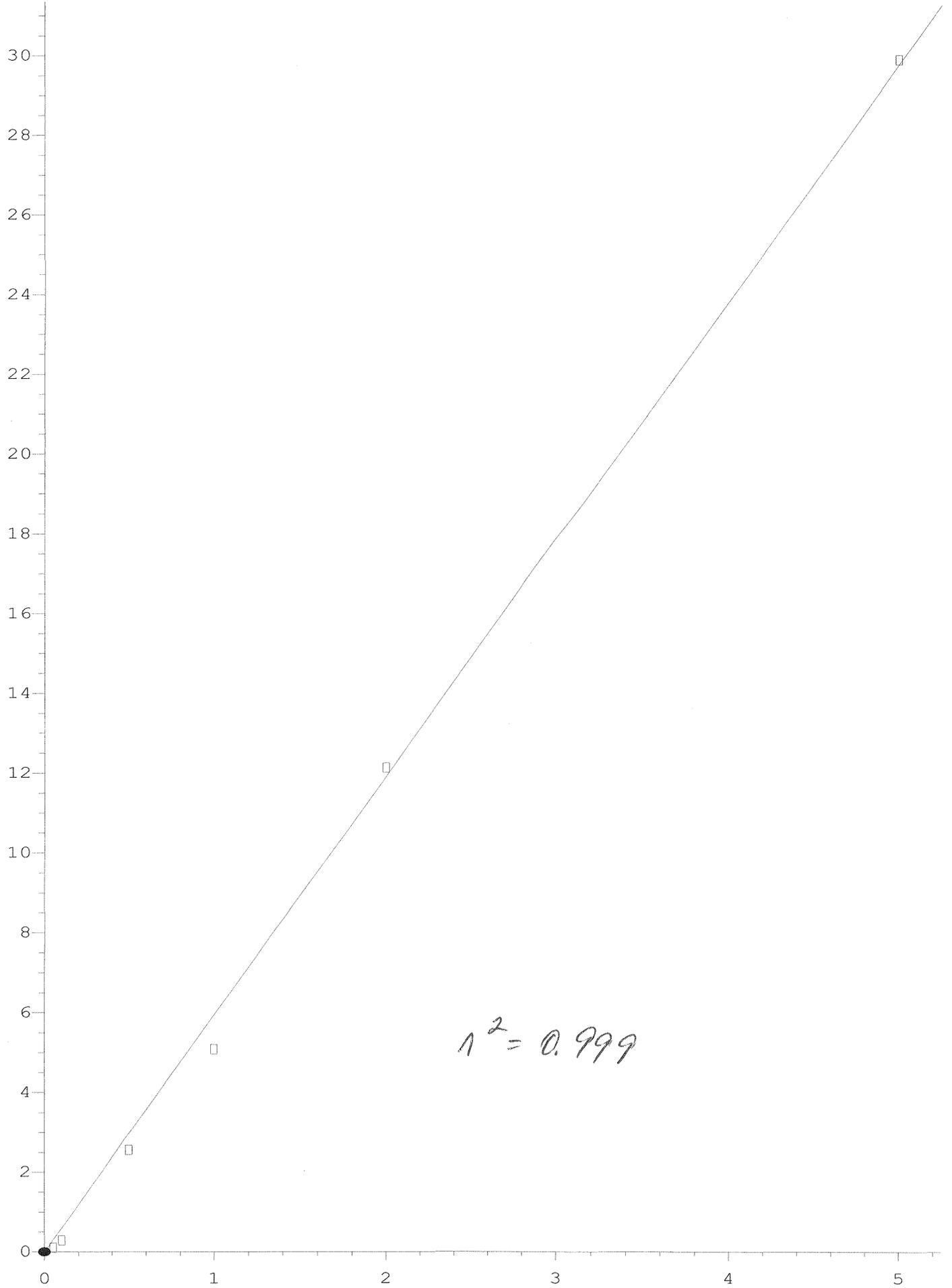
0.5 =09191414.D 1.0 =09191415.D 5.0 =09191416.D
 10 =09191417.D 20 =09191418.D 50 =09191419.D

Compound	0.5	1.0	5.0	10	20	50	Avg	%RSD
1) I 3-Chloropyridine	----- ISTD -----							
2) Dimethylamine	2.186	2.869	5.111	5.085	6.063	5.972	4.548	35.90
3) Ethylamine	1.876	2.524	3.628	3.421	3.935	3.786	3.195	25.53
4) Trimethylamine	3.843	3.627	3.801	3.246	3.676	3.397	3.598	6.48
5) Isopropylamine	1.621	1.815	1.976	1.787	1.980	1.872	1.842	7.30
6) t-Butylamine	0.853	0.842	0.885	0.773	0.841	0.789	0.831	5.04
7) Propylamine	1.764	1.911	2.329	2.202	2.477	2.410	2.182	13.10
8) Diethylamine	1.960	1.898	2.088	1.908	2.086	1.972	1.985	4.23
9) s-Butylamine	1.264	1.299	1.414	1.328	1.445	1.355	1.351	5.09
10) Isobutylamine	1.740	1.644	1.827	1.687	1.868	1.762	1.755	4.79
11) Butylamine	1.124	1.220	1.492	1.455	1.623	1.550	1.411	13.88
12) Diisopropylamine	1.368	1.293	1.266	1.140	1.221	1.130	1.236	7.46
13) Triethylamine	1.484	1.492	1.450	1.328	1.458	1.379	1.432	4.52
14) Pyridine	1.200	1.241	1.332	1.278	1.372	1.288	1.285	4.79
15) Dipropylamine	1.296	1.211	1.339	1.262	1.361	1.269	1.290	4.23

(#) = Out of Range

Dimethylamine

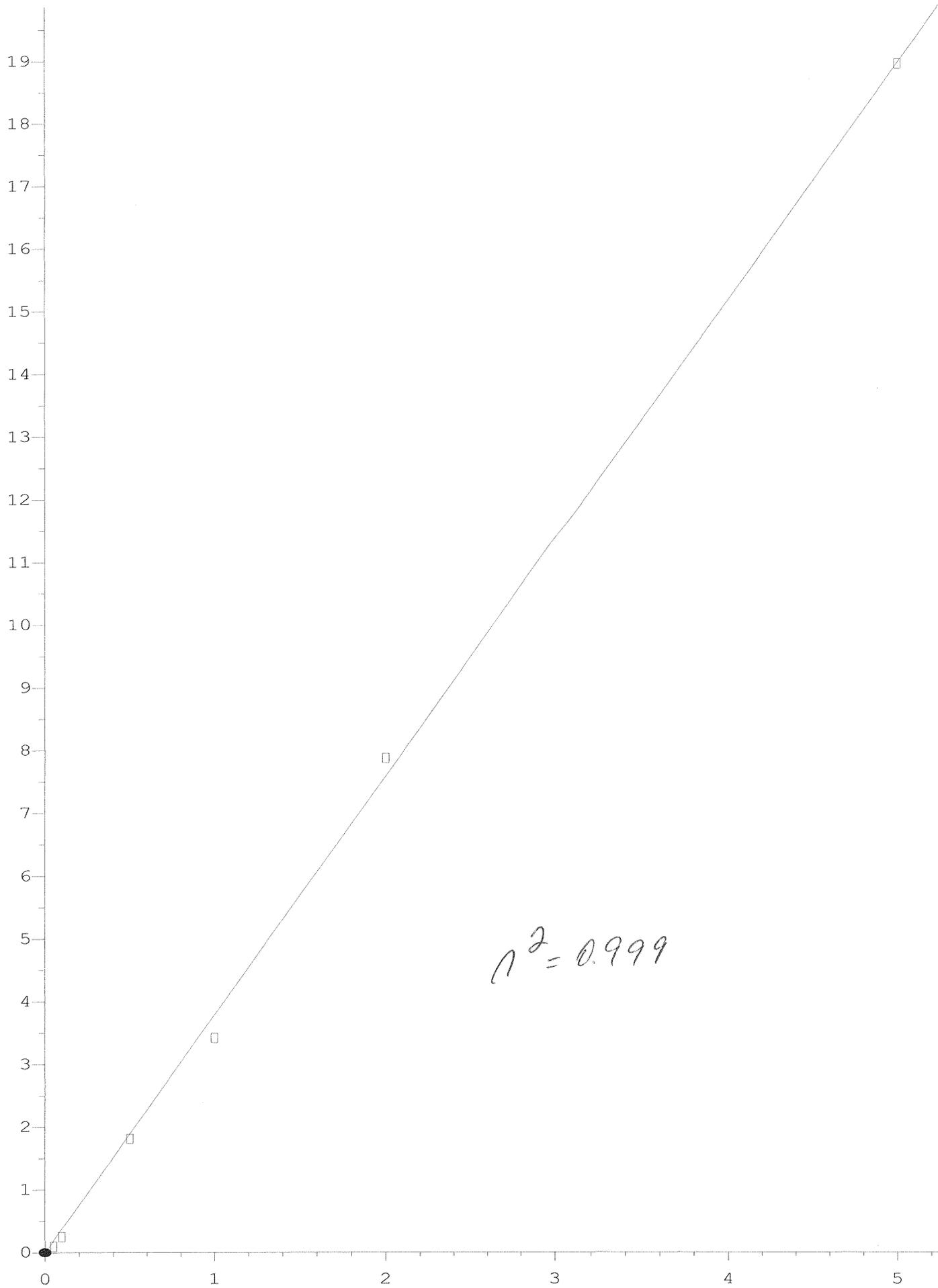
Response Ratio



$R^2 = 0.999$

Ethylamine

Response Ratio



$R^2 = 0.999$

Method : GC #15/ NPD Method For Volatile Amines
 Client & Job # : Stantec Consulting Services, Inc. P1500371
 Analyst : ZW

Printed : 02/09/15
 Instrument : GC14
 Date Acquired : 2/4/2015

QC SAMPLE REPORT SUMMARY

Compounds	ug/ml	% Diff	Control Limits (%)	ug/ml	ug/ml	ug/ml	ug/ml	% Diff	ug/ml	% Diff	ug/ml	% Diff
Sample Information	10ug/ml Amine CCV	10	Control Limits (%)	RB 0.01N NaOH/MeOH	MB	10ug/ml Amine CCV	10	10ug/ml Amine CCV	10	10ug/ml Amine CCV	10	10ug/ml Amine CCV
Desorption Volume (mL)												
Dilution												
3-Chloropyridine IS % Relative to CCV	13819 100.0%		1.0	13721 99.3%	16506 119.4%	14838 107.4%		14406 104.2%		2.0 1.0		2.0 1.0
Dimethylamine	11.074	10.7%	Pass	ND	ND	11.264	12.6%	10.651	6.5%			
Ethylamine	11.776	17.8%	Pass	ND	ND	11.995	20.0%	11.365	13.7%			
Trimethylamine	11.775	17.8%	Pass	ND	ND	12.289	Fail	11.505	15.1%			
Isopropylamine	11.740	17.4%	Pass	ND	1	11.915	19.2%	11.527	15.3%			
t-Butylamine	11.116	11.2%	Pass	ND	ND	11.337	13.4%	10.727	7.3%			
Propylamine	11.476	14.8%	Pass	ND	ND	11.673	16.7%	11.347	13.5%			
Diethylamine	10.994	9.9%	Pass	ND	ND	11.200	12.0%	10.897	9.0%			
s-Butylamine	10.985	9.8%	Pass	ND	ND	11.273	12.7%	10.993	9.9%			
Isobutylamine	10.855	8.6%	Pass	ND	ND	11.247	12.5%	10.879	8.8%			
Butylamine	11.124	11.2%	Pass	ND	ND	11.733	17.3%	11.486	14.9%			
Diisopropylamine	10.258	2.6%	Pass	ND	ND	10.579	5.8%	10.006	0.1%			
Triethylamine	10.427	4.3%	Pass	ND	ND	10.576	5.8%	10.040	0.4%			
Dipropylamine	9.717	2.8%	Pass	ND	ND	10.195	2.0%	9.851	1.5%			
Acquisition Time	10:56	ZW	ZW	11:11	12:29	14:44	17:14					
Analyst	ZW	ZW	ZW	ZW	ZW	ZW	ZW					

MRL CHECK & LCS/ LCS D RESULT SUMMARIES

0	ug / sample	% recovery	Control Limits (%)	ug / sample	ug / sample	ug / sample	ug / sample	% recovery	Average Recovery	RPD	RPD (Control Limits)
0	0.5ug/ml MRL Check Std			SS 10ug/ml	LCS 10ug/ml	LCS D 10ug/ml					
Desorption Volume (mL)											
Dilution											
3-Chloropyridine IS % Relative to CCV	15992 115.7%			16844 121.9%	16978 122.9%	16343 118.3%					
Dimethylamine	0.238	47.6%	P 25-101%	10.528	8.428	8.326	80.1%	Pass	79.6%	1.2%	Pass
Ethylamine	0.338	67.6%	P 29-111%	11.099	7.617	7.325	66.6%	Pass	67.3%	3.9%	Pass
Trimethylamine	0.590	118.0%	P 52-146%	10.220	9.124	9.573	89.3%	Pass	91.5%	4.8%	Pass
Isopropylamine	0.520	104.0%	P 43-142%	11.309	9.429	9.137	83.4%	Pass	82.1%	3.1%	Pass
t-Butylamine	0.551	110.2%	P 47-165%	11.021	9.338	9.169	84.7%	Pass	84.0%	1.8%	Pass
Propylamine	0.445	89.0%	P 39-135%	11.329	8.080	7.686	71.3%	Pass	69.6%	5.0%	Pass
Diethylamine	0.531	106.2%	P 61-136%	10.661	9.875	10.178	92.6%	Pass	94.0%	3.0%	Pass
s-Butylamine	0.482	96.4%	P 57-144%	10.803	9.223	9.106	85.4%	Pass	84.8%	1.3%	Pass
Isobutylamine	0.500	100.0%	P 44-152%	10.620	8.208	7.992	77.3%	Pass	76.3%	2.7%	Pass
Butylamine	0.401	80.2%	P 26-156%	11.335	8.225	8.016	72.6%	Pass	71.6%	2.6%	Pass
Diisopropylamine	0.565	113.0%	P 62-157%	9.909	9.034	9.618	91.2%	Pass	94.1%	6.3%	Pass
Triethylamine	0.527	105.4%	P 71-147%	10.046	9.194	9.679	91.5%	Pass	93.9%	5.1%	Pass
Dipropylamine	0.428	85.6%	P 42-188%	10.341	9.603	10.110	92.9%	Pass	95.3%	5.1%	Pass
Acquisition Time	11:30	ZW	ZW	11:45	12:00	12:14					
Analyst	ZW	ZW	ZW	ZW	ZW	ZW					

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
 Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371

Ammonia

Test Code: OSHA ID-188/ID-164
 Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE
 Analyst: Sue Anderson
 Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
 Test Notes: BC, DE

Date(s) Collected: 1/27 - 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/5 - 2/6/15
 Desorption Volume: 0.10 Liter(s)

Client Sample ID	ALS Sample ID	Sample		Result mg/Tube	Result mg/m ³	MRL mg/m ³	Result ppmV	MRL ppmV	Data Qualifier
		Volume Liter(s)	Dilution Factor						
127D2-NH3	P1500371-012	121.8	1.0	< 0.010	ND	0.085	ND	0.12	
128U1-NH3	P1500371-024	98.415	1.0	< 0.010	ND	0.10	ND	0.15	
128D1-NH3	P1500371-028	98.98	1.0	< 0.010	ND	0.10	ND	0.15	
128D2-NH3	P1500371-032	97.526	1.0	< 0.010	ND	0.11	ND	0.15	
128N-NH3	P1500371-038	98.131	1.0	< 0.010	ND	0.10	ND	0.15	
128NQ-NH3	P1500371-044	96.408	1.0	< 0.010	ND	0.11	ND	0.15	
127SQ-NH32	P1500371-046	94.132	1.0	< 0.010	ND	0.11	ND	0.16	
127F-NH32	P1500371-048	95.698	1.0	< 0.010	ND	0.11	ND	0.15	
127U12-NH3	P1500371-049	95.645	1.0	< 0.010	ND	0.11	ND	0.15	
127D12-NH3	P1500371-050	97.055	1.0	< 0.010	ND	0.11	ND	0.15	
127TB-NH3	P1500371-057	NA	1.0	< 0.010	NA	NA	NA	NA	
128N-sNH3	P1500371-063	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
128NQ-sNH3	P1500371-069	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
128SQ-sNH3	P1500371-075	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
128F-sNH3	P1500371-081	1.006	1.0	< 0.010	ND	10	ND	15	
128Dup06	P1500371-088	2.012	1.0	< 0.010	ND	5.1	ND	7.4	
Method Blank	P150205-MB	NA	1.0	< 0.010	NA	NA	NA	NA	
Method Blank	P150206-MB	NA	1.0	< 0.010	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

NA = Not applicable.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150205-LCS,
 P150205-DLCS

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary

Test Code: OSHA ID-188/ID-164
 Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE
 Analyst: Sue Anderson
 Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
 Test Notes:

Date Sampled: N/A
 Date Received: N/A
 Date Analyzed: 2/05/15
 Volume(s) Analyzed: N/A

Compound	Spike Amount	Result		% Recovery		ALS Acceptance Limits	Relative Percent Difference	RPD Limit	Data Qualifier
	LCS / DLCS mg/L	LCS mg/L	DLCS mg/L	LCS	DLCS				
Ammonia	1.00	0.978	0.978	98	98	88-112	0	4	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150206-LCS,
 P150206-DLCS

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary

Test Code: OSHA ID-188/ID-164
 Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE
 Analyst: Sue Anderson
 Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
 Test Notes:

Date Sampled: N/A
 Date Received: N/A
 Date Analyzed: 2/06/15
 Volume(s) Analyzed: N/A

Compound	Spike Amount	Result		% Recovery		ALS Acceptance Limits	Relative Percent Difference	RPD Limit	Data Qualifier
	LCS / DLCS mg/L	LCS mg/L	DLCS mg/L	LCS	DLCS				
Ammonia	1.00	0.946	0.955	95	96	88-112	1	4	



Ammonia in Air
 OSHA ID-188/ID-164

page 1 of 2

Filling solution changed prior to analysis:

Yes No

Prep. Run# 228656 Run # 431795

Stds.	Conc.	millivolts	Slope:
	mg/L	mV	Range [-54~-60]
Std 1:	0.10	172.5	-57.8
Std 2:	1.00	119.7	
Std 3:	5.00	74.3	
Std 4:	10.00	57.3	
Std 5:	100.00	-0.1	

	Ref#	Exp. Date	Prep
Stock 1000 ppm	524-02041402	8/4/15	—
ICV/CCV 1214 ppm	524-05301402	04/2016	$\frac{10 \cdot 0.005}{50} \rightarrow 0.12115/L$
pH Buffer: ISA	524-09231402A	9/23/15	--
Filling Soln	52411071404	11/7/15	--

DE = 0.971

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected		
				Conc. mg/L	mg	Final Value mg/m ³ ppmV
ICB	90	206.7	0.0170	10.17		
ICV 0.121 mg/L		166.5	0.129	107%		
MB		189.6	0.0454	0.0468	10.01	
LCS 1.00 mg/L		117.1	0.950	0.978	0.0978	110%
DLCS J		117.1	0.950	0.978	0.0978	RPD
P1500371-12.01 B		178.3	0.0773	0.0796	10.011	10.085
-12.01 F		191.2	0.0421	0.0434		
-24.01 B		185.2	0.0562	0.0579		10.11
-24.01 F		193.9	0.0365	0.0376		
-28.01 B		189.6	0.0454	0.0468		10.11
-28.01 F		180.4	0.0703	0.0724		
-32.01 B		190.7	0.0430	0.0443		10.11
CCV 0.121 mg/L		166.8	0.127	105%		
CCB1		206.9	0.0168	10.1		
P1500371-32.01 F		193.5	0.0371	0.0382	10.011	10.11
-38.01 B		194.0	0.0362	0.0374		
-38.01 F		193.3	0.0377	0.0388		
-44.01 B		191.6	0.0411	0.0423		
-44.01 F		193.1	0.0380	0.0391		
-46.01 B		194.7	0.0348	0.0358		
-46.01 F		198.2	0.0287	0.0297		
-48.01 B		197.6	0.0299	0.0308		
-48.01 F		203.3	0.0215	0.0221		

Comments:

B = BACK
 F = FRONT

Analyst: [Signature]

Date/Time: 2/5/15 @ 1000

Reviewer: [Signature]

Date: 2/6/15



Ammonia in Air
OSHA ID-188/ID-164

page 2 of 2

Filling solution changed prior to analysis:

Yes No

Prep. Run# 228656 Run # 431795

Stds.	Conc.	millivolts		Slope:
		mg/L	mV	
Std 1:	0.10	172.5		
Std 2:	1.00	115.7		
Std 3:	5.00	74.3		
Std 4:	10.00	57.3		
Std 5:	100.00	-0.1		

	Ref#	Exp. Date	Prep
Stock 1000 ppm	524-02041402	8/4/15	-
ICV/CCV 1214 ppm	524-05301402	01/20/16	$\frac{10 \cdot 0.05}{50} \Rightarrow 0.121$ mg/L
pH Buffer: ISA	524-09231402	9/23/15	-
Filling Soln	524-01071404	11/7/15	-

DE = 0.971

DE Corrected

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected			
				Conc. mg/L	mg	Final Value mg/m ³	ppmV
ICB P1500371-49.01A	90 mL	204.4	0.0700	0.0206	10.011	10.11	10.16
ICV CCV 2 0.121 mg/L		167.7	0.123	10.2%			
MB CCB2		209.0	0.0147	10.1			
LCS P1500371-49.01E		202.4	0.0227	0.0234	10.011	10.11	10.16
		203.3	0.0215	0.0221			
		205.2	0.0190	0.196%			
CCV 3 0.121 mg/L		167.7	0.123	10.2%			
CCB3		206.7	0.0170	10.1			

8/25/15

small not used

Comments:

B = BACK
F = FRONT

Analyst: [Signature]

Date/Time: 2/5/15 @ 1000

Reviewer: [Signature]

Date: 2/6/15



Ammonia in Air
OSHA ID-188/ID-164

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Filling solution changed
 prior to analysis:

Yes No

Prep. Run# 228840 Run # 431955

Stds.	Conc. mg/L	millivolts mV	Slope: Range [-54--60]
Std 1:	0.10	156.3	-58.6
Std 2:	1.00	110.8	
Std 3:	5.00	70.7	
Std 4:	10.00	53.6	
Std 5:	100.00	4.4	

	Ref#	Exp. Date	Prep
Stock 1000 ppm	524-02041402	2/4/15	
ICV/CCV 1214 ppm	524-05301402	01/20/16	$\frac{10 \cdot 0.05}{\Phi} \Rightarrow 0.121 \text{ mg/L}$
pH Buffer: ISA	524-09231402	9/23/15	--
Filling Soln	524-11071404	11/7/15	--

DE = 0.991

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected			
				Conc. mg/L	mg	Final Value mg/m ³ ppmV	
ICB	50	178.5	0.000	20.1			
ICV 0.121 mg/L		153.8	0.122	101%			
MB		195.2	0.000		20.011		
LCS 1.00 mg/L		112.8	0.919	0.946	0.0946	410.5	95%
D LCS		112.5	0.927	0.955	0.0955	410.5	96%
P1500371-57.01 B		192.6	0.000		20.011		
-57.01 F		184.5	0.000				
-63.01 A		194.0	0.000			25.12	27.36
-63.01 F		183.1	0.000				
-69.01 A		192.0	0.000				
-69.01 F		194.1	0.000				
-75.01 A		192.6	0.000				
CVI 0.121 mg/L		153.8	0.122	101%			
CVI'		179.2	0.000	20.1			
P1500371-75.01 F		194.3	0.000		20.011	25.12	27.36
-81.01 A		183.1	0.000			210.3	214.8
-81.01 F		181.8	0.000				
-88.01 A		192.3	0.000			25.12	27.36
-88.01 F		194.3	0.000				
P1500465-2.01 B		194.8	0.000			234.4	249.4
-2.01 F		189.9	0.000				
-3.01 B		206.8	0.000			241.2	259.2
-3.01 F		187.4	0.000				

Comments: B = BACK
 F = FRONT

Analyst: JK Date/Time: 2/6/15 @ 1000 Reviewer: (D) Date: 2/9/15

ALS Environmental
ISE Method for Ammonia in Air

Printed: 2/5/15
Client: Stantec Consulting Group, Inc.
Analyst: SMA
CAS Job: P1500371
Method: OSHA ID-188/ ID-164

Instrument: pH01
Date Analyzed: 2/5/15
Sample Amt: 0.100 L
Solvent: 0.1 N H2SO4
Matrix: Anasorb 747 (sulfuric treated)

SAMPLE RESULTS

Sample	Ammonia (mg/L)	Desorption Vol (L)	Dilution	Sample Vol (L)	Ammonia (mg/tube)*	Ammonia mg/m3	Ammonia ppm
MW	17.03						
MRL	0.100	0.1	1.0	NA	0.01		
RB	0.0170	NA	NA	NA	ND	ND	ND
MB	0.0454	0.100	1.0	NA	ND	ND	ND
P1500371-012.01	0.0773	0.050	1.0	121.800	ND	ND	ND
P1500371-024.01	0.0562	0.050	1.0	98.415	ND	ND	ND
P1500371-028.01	0.0454	0.050	1.0	98.980	ND	ND	ND
P1500371-032.01	0.0430	0.050	1.0	97.526	ND	ND	ND
P1500371-038.01	0.0363	0.050	1.0	98.131	ND	ND	ND
P1500371-044.01	0.0411	0.050	1.0	96.408	ND	ND	ND
P1500371-046.01	0.0348	0.050	1.0	94.132	ND	ND	ND
P1500371-048.01	0.0299	0.050	1.0	95.698	ND	ND	ND
P1500371-049.01	0.0200	0.050	1.0	95.645	ND	ND	ND
P1500371-050.01	0.0215	0.050	1.0	97.055	ND	ND	ND
P1500371-012.01	0.0421	0.100	1.0	121.800	ND	ND	ND
P1500371-024.01	0.0365	0.100	1.0	98.415	ND	ND	ND
P1500371-028.01	0.0703	0.100	1.0	98.980	ND	ND	ND
P1500371-032.01	0.0371	0.100	1.0	97.526	ND	ND	ND
P1500371-038.01	0.0377	0.100	1.0	98.131	ND	ND	ND
P1500371-044.01	0.0380	0.100	1.0	96.408	ND	ND	ND
P1500371-046.01	0.0289	0.100	1.0	94.132	ND	ND	ND
P1500371-048.01	0.0215	0.100	1.0	95.698	ND	ND	ND
P1500371-049.01	0.0227	0.100	1.0	95.645	ND	ND	ND
P1500371-050.01	0.0190	0.100	1.0	97.055	ND	ND	ND

*Samples are DE corrected
Desorption Efficiency (DE): 0.971

QC RESULTS

0.121 mg/L NH3 ICV S24-05301402 (01/16)	0.121	LCS	1.00
ACTUAL	0.129	SPIKE STD	0.978
% RECOVERY	106.6%	% RECOVERY	97.8%
0.121 mg/L NH3 CCV1 S24-05301402 (01/16)	0.12	LCSD	1.00
ACTUAL	0.13	SPIKE STD	0.978
% RECOVERY	105.0%	% RECOVERY	97.8%
0.121 mg/L NH3 CCV2 S24-05301402 (01/16)	0.12	%RPD:	0.0%
ACTUAL	0.12	0.121 mg/L NH3 CCV3 S24-05301402 (01/16)	0.121
% RECOVERY	101.7%	ACTUAL	0.123
		% RECOVERY	101.7%

ALS Environmental
ISE Method for Ammonia in Air

Printed: 2/16/2015
Client: Stantec Consulting Group, Inc.
Analyst: SMA
CAS Job: P1500371
Method: OSHA ID-188/ID-164

Instrument: pH01
Date Analyzed: 2/6/2015
Sample Amt: 0.100 L
Solvent: 0.1 N H2SO4
Matrix: Anasorb 747 (sulfuric treated)

SAMPLE RESULTS

Sample	Ammonia (mg/L)	Desorption Vol (L)	Dilution	Sample Vol (L)	Ammonia (mg/tube)*	Ammonia mg/m3	Ammonia ppm
MW	17.03						
MRL	0.100	0.1	1.0	NA	0.01		
RB	0.0000	NA	NA	NA	ND	ND	ND
MB	0.000	0.100	1.0	NA	ND	ND	ND
P1500371-057.01	back	0.050	1.0	NA	ND	ND	ND
P1500371-063.01	back	0.050	1.0	2.012	ND	ND	ND
P1500371-069.01	back	0.050	1.0	2.012	ND	ND	ND
P1500371-075.01	back	0.050	1.0	2.012	ND	ND	ND
P1500371-081.01	back	0.050	1.0	1.006	ND	ND	ND
P1500371-088.01	back	0.050	1.0	2.012	ND	ND	ND
P1500371-057.01	front	0.100	1.0	NA	ND	ND	ND
P1500371-063.01	front	0.100	1.0	2.012	ND	ND	ND
P1500371-069.01	front	0.100	1.0	2.012	ND	ND	ND
P1500371-075.01	front	0.100	1.0	2.012	ND	ND	ND
P1500371-081.01	front	0.100	1.0	1.006	ND	ND	ND
P1500371-088.01	front	0.100	1.0	2.012	ND	ND	ND

*Samples are DE corrected
Desorption Efficiency (DE): 0.971

QC RESULTS

0.121 mg/L NH3 ICV S24-05301402 (01/16)	0.121	LCS	1.00
ACTUAL	0.122	SPIKE STD	0.946
% RECOVERY	100.8%	% RECOVERY	94.6%
0.121 mg/L NH3 CCV1 S24-05301402 (01/16)	0.121	LCS	1.00
ACTUAL	0.122	SPIKE STD	0.955
% RECOVERY	100.8%	% RECOVERY	95.5%
0.121 mg/L NH3 CCV2 S24-05301402 (01/16)	0.121	%RPD:	0.9%
ACTUAL	0.121	0.121 mg/L NH3 CCV3 S24-05301402 (01/16)	0.121
% RECOVERY	100.0%	ACTUAL	0.121
		% RECOVERY	100.0%

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127U1-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-005

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 101.279 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.2	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.6	ND	0.87	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.70	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.5	ND	0.70	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.60	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.59	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.5	ND	0.60	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.52	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.53	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.47	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.7	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.47	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.42	
65-85-0	Benzoic Acid	< 0.31	ND	3.0	ND	0.61	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127F-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-017

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 99.96 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.3	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.88	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.71	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.60	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.61	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.53	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.47	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.61	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128U1-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-025

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.172 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128D1-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-029

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
 Date Received: 1/30/15
 Date Analyzed: 2/6/15
 Desorption Volume: 1.0 ml
 Volume Sampled: 100.083 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.3	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.88	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.5	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.71	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.60	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.5	ND	0.61	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.53	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.53	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.47	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.61	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128D2-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-033

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.474 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.4	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.89	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.72	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.61	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.49	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.62	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128N-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-039

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.131 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128NQ-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-045

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 99.583 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	20	ND	8.3	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.88	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.71	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.61	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.60	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.61	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.53	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.5	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.5	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.5	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.62	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.5	ND	0.39	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127SQ-CARBOX2
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-047

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.181 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	0.41	4.2	2.6	1.2	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127D22-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-051

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 97.699 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.5	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.72	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.6	ND	0.62	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.6	ND	0.62	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.63	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.55	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.55	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.55	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.6	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.6	ND	0.49	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.63	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127D12-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-052

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 98.935 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	21	ND	8.4	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	2.7	ND	0.89	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.6	ND	0.71	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.72	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.5	ND	0.61	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.5	ND	0.61	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.62	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.5	ND	0.54	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.6	ND	0.54	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.6	ND	0.54	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.6	ND	0.54	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.5	ND	0.48	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2.8	ND	0.48	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.5	ND	0.48	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.6	ND	0.43	
65-85-0	Benzoic Acid	< 0.31	ND	3.1	ND	0.62	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 127TB-CARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-058

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/27/15
Date Received: 1/30/15
Date Analyzed: 2/5/15
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.27	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.25	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.28	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	NA	NA	NA	NA	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.31	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

NA = Not applicable.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128N-sCARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-064

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 2.409 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	850	ND	340	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	110	ND	36	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	110	ND	29	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	110	ND	30	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	100	ND	25	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	100	ND	25	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	110	ND	25	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	100	ND	22	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	110	ND	22	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	110	ND	22	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	110	ND	22	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	100	ND	20	V
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	120	ND	20	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	100	ND	20	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	100	ND	18	V
65-85-0	Benzoic Acid	< 0.31	ND	130	ND	25	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	110	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

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Client: Stantec Consulting Services, Inc.
Client Sample ID: 128NQ-sCARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-070

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 2.409 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	850	ND	340	
79-09-4	Propionic Acid (Propanoic)	< 0.27	ND	110	ND	36	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	110	ND	29	
107-92-6	Butanoic Acid (Butyric)	0.40	170	110	46	30	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	100	ND	25	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	100	ND	25	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	110	ND	25	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	100	ND	22	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	110	ND	22	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	110	ND	22	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	110	ND	22	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	100	ND	20	V
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	120	ND	20	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	100	ND	20	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	100	ND	18	V
65-85-0	Benzoic Acid	< 0.31	ND	130	ND	25	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	110	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128SQ-sCARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-076

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 2.409 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	30	13,000	850	5,100	340	
79-09-4	Propionic Acid (Propanoic)	27	11,000	110	3,800	36	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	22	9,300	110	2,600	29	
107-92-6	Butanoic Acid (Butyric)	59	24,000	110	6,800	30	
116-53-0	2-Methylbutanoic Acid	5.4	2,200	100	530	25	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	7.7	3,200	100	770	25	
109-52-4	Pentanoic Acid (Valeric)	5.2	2,200	110	520	25	
97-61-0	2-Methylpentanoic Acid	0.38	160	100	33	22	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	110	ND	22	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	110	ND	22	
142-62-1	Hexanoic Acid (Caproic)	1.6	650	110	140	22	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	100	ND	20	V
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	120	ND	20	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	100	ND	20	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	100	ND	18	V
65-85-0	Benzoic Acid	< 0.31	ND	130	ND	25	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	110	ND	16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 128F-sCARBOX
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-082

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/6/15
Desorption Volume: 1.0 ml
Volume Sampled: 1.205 Liter(s)

Dilution Factor: 10.0

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	260	210,000	17,000	87,000	6,900	
79-09-4	Propionic Acid (Propanoic)	220	180,000	2,200	61,000	730	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	130	110,000	2,100	30,000	590	
107-92-6	Butanoic Acid (Butyric)	970	800,000	2,100	220,000	590	
116-53-0	2-Methylbutanoic Acid	60	49,000	2,100	12,000	500	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	96	80,000	2,100	19,000	500	
109-52-4	Pentanoic Acid (Valeric)	240	200,000	2,100	49,000	510	
97-61-0	2-Methylpentanoic Acid	4.8	4,000	2,100	840	440	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2,100	ND	440	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2,100	ND	440	
142-62-1	Hexanoic Acid (Caproic)	150	130,000	2,100	27,000	440	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2,100	ND	390	V
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	2,300	ND	390	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2,100	ND	400	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2,100	ND	360	V
65-85-0	Benzoic Acid	< 0.31	ND	2,500	ND	510	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2,100	ND	320	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: 127Dup032
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P1500371-085

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: 1/28/15
Date Received: 1/30/15
Date Analyzed: 2/11/15
Desorption Volume: 1.0 ml
Volume Sampled: 94.132 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	ND	22	ND	8.8	L
79-09-4	Propionic Acid (Propanoic)	0.29	3.1	2.8	1.0	0.93	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	ND	2.7	ND	0.75	L
107-92-6	Butanoic Acid (Butyric)	0.38	4.0	2.7	1.1	0.76	
116-53-0	2-Methylbutanoic Acid	< 0.25	ND	2.7	ND	0.64	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	ND	2.7	ND	0.64	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.7	ND	0.65	
97-61-0	2-Methylpentanoic Acid	< 0.25	ND	2.7	ND	0.56	
105-43-1	3-Methylpentanoic Acid	< 0.25	ND	2.7	ND	0.57	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	ND	2.7	ND	0.57	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	ND	2.7	ND	0.57	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	ND	2.7	ND	0.50	
149-57-5	2-Ethylhexanoic Acid	< 0.28	ND	3.0	ND	0.50	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	ND	2.7	ND	0.51	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	ND	2.7	ND	0.46	
65-85-0	Benzoic Acid	< 0.31	ND	3.3	ND	0.65	L
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	ND	2.7	ND	0.42	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

L = Laboratory control sample recovery outside the specified limits.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: Method Blank
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150205-MB

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: NA
Date Received: NA
Date Analyzed: 2/5/15
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.27	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.25	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.28	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	NA	NA	NA	NA	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.31	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

NA = Not applicable.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: Method Blank
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150211-MB

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS14
Analyst: Zheng Wang
Sampling Media: Silica Gel Tube
Test Notes: BC, DE

Date Collected: NA
Date Received: NA
Date Analyzed: 2/11/15
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.0	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.27	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.25	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.25	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.25	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.25	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.25	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.25	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.25	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.28	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.25	NA	NA	NA	NA	V
124-07-2	Octanoic Acid (Caprylic)	< 0.25	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.31	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.25	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

NA = Not applicable.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

V = The continuing calibration verification standard was outside biased low the specified limits for this compound.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150205-DLCS

Test Code: GC/MS
 Instrument ID: Agilent 5973/Agilent 6890/MS14
 Analyst: Zheng Wang
 Sampling Media: Silica Gel Tube
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 2/05/15
 Volume(s) Analyzed: NA Liter(s)

CAS #	Compound	Spike Amount		Result		% Recovery		ALS		Data Qualifier
		LCS / DLCS µg/ml	LCS µg/ml	DLCS µg/ml	LCS	DLCS	Acceptance Limits	RPD	RPD Limit	
64-19-7	Acetic Acid	23.6	27.5	26.5	117	112	56-135	4	31	
79-09-4	Propionic Acid (Propanoic)	9.29	9.96	9.59	107	103	73-119	4	15	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	9.69	10.1	9.89	104	102	81-114	2	13	
107-92-6	Butanoic Acid (Butyric)	9.98	10.1	10.1	101	101	85-110	0	10	
116-53-0	2-Methylbutanoic Acid	10.3	10.3	10.3	100	100	89-109	0	8	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	10.2	10.2	10.1	100	99	89-109	1	8	
109-52-4	Pentanoic Acid (Valeric)	9.75	9.70	9.69	99	99	91-107	0	7	
97-61-0	2-Methylpentanoic Acid	10.2	10.0	10.0	98	98	93-106	0	4	
105-43-1	3-Methylpentanoic Acid	10.4	10.2	10.2	98	98	93-106	0	4	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	10.2	10	9.96	98	98	92-107	0	5	
142-62-1	Hexanoic Acid (Caproic)	9.84	9.77	9.75	99	99	93-105	0	4	
111-14-8	Heptanoic Acid (Enanthoic)	7.08	6.80	6.82	96	96	92-107	0	7	
149-57-5	2-Ethylhexanoic Acid	7.74	7.36	7.45	95	96	81-107	1	10	
98-89-5	Cyclohexanecarboxylic Acid	6.45	6.29	6.25	98	97	91-108	1	6	
124-07-2	Octanoic Acid (Caprylic)	7.10	6.88	6.82	97	96	92-107	1	6	
65-85-0	Benzoic Acid	7.00	6.48	6.44	93	92	68-106	1	15	
112-05-0	Nonanoic Acid (Pelargonic)	8.27	7.92	7.91	96	96	90-107	0	8	

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

Client: Stantec Consulting Services, Inc.
Client Sample ID: Duplicate Lab Control Sample
Client Project ID: Bridgeton / 182608020

ALS Project ID: P1500371
 ALS Sample ID: P150211-DLCS

Test Code: GC/MS
 Instrument ID: Agilent 5973/Agilent 6890/MS14
 Analyst: Zheng Wang
 Sampling Media: Silica Gel Tube
 Test Notes:

Date Collected: NA
 Date Received: NA
 Date Analyzed: 2/11/15
 Volume(s) Analyzed: NA Liter(s)

CAS #	Compound	Spike Amount		Result		% Recovery		ALS		Data Qualifier
		LCS / DLCS µg/ml	LCS µg/ml	DLCS µg/ml	LCS	DLCS	Acceptance Limits	RPD	RPD Limit	
64-19-7	Acetic Acid	25.7	22.3	13.6	87	53	56-135	49	31	L, R
79-09-4	Propionic Acid (Propanoic)	9.44	8.76	7.03	93	74	73-119	23	15	R
79-31-2	2-Methylpropanoic Acid (Isobutyric)	9.59	9.03	7.68	94	80	81-114	16	13	L, R
107-92-6	Butanoic Acid (Butyric)	9.79	9.39	8.84	96	90	85-110	6	10	
116-53-0	2-Methylbutanoic Acid	10.1	9.85	9.38	98	93	89-109	5	8	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	9.81	9.76	9.29	99	95	89-109	4	8	
109-52-4	Pentanoic Acid (Valeric)	9.49	9.53	9.50	100	100	91-107	0	7	
97-61-0	2-Methylpentanoic Acid	9.84	10	9.80	102	100	93-106	2	4	
105-43-1	3-Methylpentanoic Acid	10.1	10.3	10.3	102	102	93-106	0	4	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	9.87	10.1	10.1	102	102	92-107	0	5	
142-62-1	Hexanoic Acid (Caproic)	9.60	9.88	9.87	103	103	93-105	0	4	
111-14-8	Heptanoic Acid (Enanthoic)	6.80	6.75	7.00	99	103	92-107	4	7	
149-57-5	2-Ethylhexanoic Acid	7.43	7.31	7.54	98	101	81-107	3	10	
98-89-5	Cyclohexanecarboxylic Acid	6.22	6.21	6.38	100	103	91-108	3	6	
124-07-2	Octanoic Acid (Caprylic)	6.79	6.74	6.98	99	103	92-107	4	6	
65-85-0	Benzoic Acid	6.90	6.87	7.36	100	107	68-106	7	15	L
112-05-0	Nonanoic Acid (Pelargonic)	8.17	8.09	8.06	99	99	90-107	0	8	

L = Laboratory control sample recovery outside the specified limits.

R = Duplicate precision not met

Method Path : J:\MS14\METHODS\
 Method File : CA042314E.M
 Title : Short Chain Carboxylic Acids in Air
 Last Update : Thu Apr 24 11:01:56 2014
 Response Via : Initial Calibration

Calibration Files

0.25=04231404.D 1 =04231405.D 5 =04231406.D 10 =04231407.D
 25 =04231408.D 50 =04231409.D

Compound	0.25	1	5	10	25	50	Avg	%RSD
1) I IS1 Bromofluoroben...	-----ISTD-----							
2) T Acetic acid		0.090	0.088	0.079	0.067	0.045	0.074	25.15
3) T Propanoic acid	0.876	0.757	0.792	0.717	0.633	0.713	0.748	10.99
4) T 2-Methylpropan...	0.534	0.538	0.550	0.501	0.453	0.491	0.511	7.15
5) T Butanoic acid	0.932	0.907	0.918	0.832	0.775	0.818	0.864	7.38
6) 2-Methylbutano...	1.309	1.246	1.260	1.164	1.087	1.141	1.201	6.98
7) T 3-Methylbutano...	1.845	1.666	1.725	1.602	1.496	1.532	1.644	7.87
8) T Pentanoic acid	1.720	1.651	1.709	1.579	1.486	1.503	1.608	6.31
9) T 2-Methylpentan...	2.165	2.083	2.128	1.977	1.884	1.915	2.026	5.76
10) T 3-Methylpentan...	2.613	2.527	2.529	2.343	2.206	2.193	2.402	7.49
11) T 4-Methylpentan...	1.333	1.320	1.304	1.203	1.156	1.159	1.246	6.61
12) T Hexanoic acid	2.396	2.211	2.258	2.107	1.986	1.982	2.157	7.54
13) I IS2 1,4-Dibromoben...	-----ISTD-----							
14) T Heptanoic acid	4.795	4.695	4.879	4.579	4.300	4.159	4.568	6.22
15) T 2-Ethylhexanoi...	3.566	3.391	3.442	3.230	3.060	3.025	3.285	6.61
16) T Cyclohexanecar...	2.403	2.288	2.310	2.139	2.021	1.921	2.180	8.52
17) T Octanoic acid	5.656	5.271	5.331	4.996	4.676	4.520	5.075	8.43
18) T Benzoic acid	4.006	3.764	3.749	3.602	3.474	3.530	3.687	5.27
19) I IS3 Biphenyl	-----ISTD-----							
20) T Nonanoic acid	1.173	1.148	1.191	1.144	1.101	1.011	1.128	5.76
21) T Decanoic Acid	0.975	1.002	1.111	1.036	0.999	0.966	1.015	5.22

(#) = Out of Range

Evaluate Continuing Calibration Report

Data Path : J:\MS14\DATA\ACIDS\2015_02\05\
 Data File : 02051509.D
 Acq On : 5 Feb 2015 9:36 am
 Operator : ZW
 Sample : 25/50ug/ml Carboxylic Acid
 Misc : S28-12171407
 ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 11 10:30:13 2015
 Quant Method : J:\MS14\METHODS\CA042314E.M
 Quant Title : Short Chain Carboxylic Acids in Air
 QLast Update : Thu Apr 24 11:01:56 2014
 Response via : Initial Calibration
 DataAcq Meth:FAME

zw
2/12/15

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 I	IS1 Bromofluorobenzene (BFB	1.000	1.000	0.0	212#	-0.02
2 T	Acetic acid	0.074	0.095	-28.4	301#	-0.03
3 T	Propanoic acid	0.748	0.762	-1.9	255#	-0.02
4 T	2-Methylpropanoic acid	0.511	0.530	-3.7	248#	-0.02
5 T	Butanoic acid	0.864	0.918	-6.3	251#	-0.02
6	2-Methylbutanoic acid	1.201	1.292	-7.6	252#	-0.02
7 T	3-Methylbutanoic acid	1.644	1.757	-6.9	249#	-0.02
8 T	Pentanoic acid	1.608	1.647	-2.4	235#	-0.02
9 T	2-Methylpentanoic acid	2.026	2.144	-5.8	241#	-0.02
10 T	3-Methylpentanoic acid	2.402	2.550	-6.2	245#	-0.02
11 T	4-Methylpentanoic acid	1.246	1.324	-6.3	243#	-0.02
12 T	Hexanoic acid	2.157	2.225	-3.2	238#	-0.03
13 I	IS2 1,4-Dibromobenzene	1.000	1.000	0.0	298#	-0.02
14 T	Heptanoic acid	4.568	3.317	27.4	230#	-0.02
15 T	2-Ethylhexanoic acid	3.285	2.614	20.4	255#	-0.02
16 T	Cyclohexanecarboxylic acid	2.180	1.462	32.9#	216#	-0.02
17 T	Octanoic acid	5.075	3.676	27.6	234#	-0.02
18 T	Benzoic acid	3.687	2.649	28.2	227#	-0.02
19 I	IS3 Biphenyl	1.000	1.000	0.0	273#	-0.02
20 T	Nonanoic acid	1.128	0.973	13.7	241#	-0.02
21 T	Decanoic Acid	1.015	0.893	12.0	244#	-0.02

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS14\DATA\ACIDS\2015_02\06\
 Data File : 02061503.D
 Acq On : 6 Feb 2015 9:07 am
 Operator : ZW
 Sample : 25/50ug/ml Carboxylic Acid
 Misc : S28-12171407
 ALS Vial : 2 Sample Multiplier: 1

Quant Time: Feb 11 13:42:31 2015
 Quant Method : J:\MS14\METHODS\CA042314E.M
 Quant Title : Short Chain Carboxylic Acids in Air
 QLast Update : Thu Apr 24 11:01:56 2014
 Response via : Initial Calibration
 DataAcq Meth:FAME

ZW
 2/12/15

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 I IS1 Bromofluorobenzene (BFB	1.000	1.000	0.0	218#	-0.02
2 T Acetic acid	0.074	0.074	0.0	243#	-0.04
3 T Propanoic acid	0.748	0.627	16.2	216#	-0.02
4 T 2-Methylpropanoic acid	0.511	0.480	6.1	231#	-0.02
5 T Butanoic acid	0.864	0.814	5.8	229#	-0.02
6 2-Methylbutanoic acid	1.201	1.236	-2.9	248#	-0.02
7 T 3-Methylbutanoic acid	1.644	1.660	-1.0	242#	-0.03
8 T Pentanoic acid	1.608	1.572	2.2	231#	-0.02
9 T 2-Methylpentanoic acid	2.026	2.103	-3.8	243#	-0.03
10 T 3-Methylpentanoic acid	2.402	2.525	-5.1	249#	-0.02
11 T 4-Methylpentanoic acid	1.246	1.307	-4.9	246#	-0.03
12 T Hexanoic acid	2.157	2.186	-1.3	240#	-0.03
13 I IS2 1,4-Dibromobenzene	1.000	1.000	0.0	320#	-0.02
14 T Heptanoic acid	4.568	3.181	30.4#	237#	-0.03
15 T 2-Ethylhexanoic acid	3.285	2.518	23.3	263#	-0.02
16 T Cyclohexanecarboxylic acid	2.180	1.415	35.1#	224#	-0.02
17 T Octanoic acid	5.075	3.526	30.5#	241#	-0.02
18 T Benzoic acid	3.687	2.583	29.9	238#	-0.02
19 I IS3 Biphenyl	1.000	1.000	0.0	299#	-0.02
20 T Nonanoic acid	1.128	0.916	18.8	248#	-0.02
21 T Decanoic Acid	1.015	0.856	15.7	256#	-0.02

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS14\DATA\ACIDS\2015_02\11\
 Data File : 02111504.D
 Acq On : 11 Feb 2015 11:22 am
 Operator : ZW
 Sample : 25/50ug/ml Carboxylic Acid
 Misc : S28-12171407
 ALS Vial : 1 Sample Multiplier: 1

Quant Time: Feb 13 09:42:58 2015
 Quant Method : J:\MS14\METHODS\CA042314E.M
 Quant Title : Short Chain Carboxylic Acids in Air
 QLast Update : Thu Apr 24 11:01:56 2014
 Response via : Initial Calibration
 DataAcq Meth:FAME

2h
2/13/15

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 30% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 I	IS1 Bromofluorobenzene (BFB	1.000	1.000	0.0	241#	-0.02
2 T	Acetic acid	0.074	0.093	-25.7	336#	-0.04
3 T	Propanoic acid	0.748	0.750	-0.3	286#	-0.02
4 T	2-Methylpropanoic acid	0.511	0.519	-1.6	276#	-0.02
5 T	Butanoic acid	0.864	0.892	-3.2	277#	-0.02
6	2-Methylbutanoic acid	1.201	1.251	-4.2	277#	-0.03
7 T	3-Methylbutanoic acid	1.644	1.702	-3.5	274#	-0.03
8 T	Pentanoic acid	1.608	1.584	1.5	257#	-0.02
9 T	2-Methylpentanoic acid	2.026	2.059	-1.6	263#	-0.03
10 T	3-Methylpentanoic acid	2.402	2.467	-2.7	269#	-0.02
11 T	4-Methylpentanoic acid	1.246	1.281	-2.8	267#	-0.02
12 T	Hexanoic acid	2.157	2.170	-0.6	263#	-0.03
13 I	IS2 1,4-Dibromobenzene	1.000	1.000	0.0	338#	-0.02
14 T	Heptanoic acid	4.568	3.276	28.3	258#	-0.03
15 T	2-Ethylhexanoic acid	3.285	2.513	23.5	278#	-0.03
16 T	Cyclohexanecarboxylic acid	2.180	1.425	34.6#	239#	-0.02
17 T	Octanoic acid	5.075	3.584	29.4	259#	-0.02
18 T	Benzoic acid	3.687	2.683	27.2	261#	-0.02
19 I	IS3 Biphenyl	1.000	1.000	0.0	318#	-0.02
20 T	Nonanoic acid	1.128	0.923	18.2	267#	-0.02
21 T	Decanoic Acid	1.015	0.861	15.2	274#	-0.02

(#) = Out of Range

SPCC's out = 0 CCC's out = 0



ANALYTICAL REPORT

Report Date: February 12, 2015

Deb Gray
Stantec Consulting
1500 Lake Shore Drive
Suite 100
Columbus, OH 43204

Phone: (614) 643-4362

E-mail: Deb.Gray@Stantec.com

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Analytical Results

Sample ID: 127UI-CN		Collected: 01/27/2015		
Lab ID: 1503475001	Sampling Location: P1500371		Received: 02/03/2015	
Method: NIOSH 6010 Mod.		Media: SKC 226-28, Soda Lime-200/600		Analyzed: 02/05/2015
Sampling Parameter: Air Volume 16.531 L				
Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.013	<0.011	0.21

Sample ID: 127U1-HG		Collected: 01/27/2015		
Lab ID: 1503475002	Sampling Location: P1500371		Received: 02/03/2015	
Method: NIOSH 6009 Mod.		Media: SKC 226-17-1A, Hopcalite Tube		Analyzed: 02/10/2015
Sampling Parameter: Air Volume 55.013 L				
Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00022	<0.000027	0.012

Sample ID: 127D1-CN		Collected: 01/27/2015		
Lab ID: 1503475003	Sampling Location: P1500371		Received: 02/03/2015	
Method: NIOSH 6010 Mod.		Media: SKC 226-28, Soda Lime-200/600		Analyzed: 02/05/2015
Sampling Parameter: Air Volume 14.76 L				
Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.013	0.21

Sample ID: 127D1-Hg		Collected: 01/27/2015		
Lab ID: 1503475004	Sampling Location: P1500371		Received: 02/03/2015	
Method: NIOSH 6009 Mod.		Media: SKC 226-17-1A, Hopcalite Tube		Analyzed: 02/10/2015
Sampling Parameter: Air Volume 48.48 L				
Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00025	<0.000030	0.012

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ANALYTICAL REPORT

Workorder: **34-1503475**
 Client Project ID: P1500371 020315
 Purchase Order: P1500371
 Project Manager: Paul Pope

Analytical Results

Sample ID: 127F-CN	Collected: 01/27/2015
Lab ID: 1503475005	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 14.333 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.015	<0.013	0.21

Sample ID: 127F-Hg	Collected: 01/27/2015
Lab ID: 1503475006	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube	Analyzed: 02/10/2015
Sampling Parameter: Air Volume 49.368 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000030	0.012

Sample ID: 127SQ-CN	Collected: 01/27/2015
Lab ID: 1503475007	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 14.04 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.015	<0.014	0.21

Sample ID: 127SQ-Hg	Collected: 01/27/2015
Lab ID: 1503475008	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube	Analyzed: 02/10/2015
Sampling Parameter: Air Volume 49.08 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.00024	<0.000030	0.012

Sample ID: 128N-CN	Collected: 01/28/2015
Lab ID: 1503475009	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 15.246 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.014	<0.012	0.21



ANALYTICAL REPORT

Workorder: **34-1503475**
 Client Project ID: P1500371 020315
 Purchase Order: P1500371
 Project Manager: Paul Pope

Analytical Results

Sample ID: 128N-Hg	Collected: 01/28/2015
Lab ID: 1503475010	Received: 02/03/2015
Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube
	Analyzed: 02/10/2015
	Sampling Parameter: Air Volume 50.094 L
Analyte	ug/sample
	mg/m³
	ppm
	RL (ug/sample)
Mercury	<0.012
	<0.00024
	<0.000029
	0.012

Sample ID: 128NQ-CN	Collected: 01/28/2015
Lab ID: 1503475011	Received: 02/03/2015
Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600
	Analyzed: 02/05/2015
	Sampling Parameter: Air Volume 15.488 L
Analyte	ug/sample
	mg/m³
	ppm
	RL (ug/sample)
Hydrogen Cyanide	<0.21
	<0.014
	<0.012
	0.21

Sample ID: 128NQ-Hg	Collected: 01/28/2015
Lab ID: 1503475012	Received: 02/03/2015
Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube
	Analyzed: 02/10/2015
	Sampling Parameter: Air Volume 50.215 L
Analyte	ug/sample
	mg/m³
	ppm
	RL (ug/sample)
Mercury	<0.012
	<0.00024
	<0.000029
	0.012

Sample ID: 127TB-CN	Collected: 01/27/2015
Lab ID: 1503475013	Received: 02/03/2015
Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600
	Analyzed: 02/05/2015
Analyte	ug/sample
	mg/m³
	ppm
	RL (ug/sample)
Hydrogen Cyanide	<0.21
	NA
	NA
	0.21

Sample ID: 127TB-Hg	Collected: 01/27/2015
Lab ID: 1503475015	Received: 02/03/2015
Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube
	Analyzed: 02/10/2015
	Sampling Parameter: Air Volume Not Provided
Analyte	ug/sample
	mg/m³
	ppm
	RL (ug/sample)
Mercury	<0.012
	NA
	NA
	0.012



ANALYTICAL REPORT

Workorder: **34-1503475**
 Client Project ID: P1500371 020315
 Purchase Order: P1500371
 Project Manager: Paul Pope

Analytical Results

Sample ID: 128N-sHCN	Collected: 01/28/2015
Lab ID: 1503475016	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 366 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.00057	<0.00052	0.21

Sample ID: 128N-sHg	Collected: 01/28/2015
Lab ID: 1503475017	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube	Analyzed: 02/10/2015
Sampling Parameter: Air Volume 1.197 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: 128NQ-sHCN	Collected: 01/28/2015
Lab ID: 1503475018	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 366 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.00057	<0.00052	0.21

Sample ID: 128NQ-sHg	Collected: 01/28/2015
Lab ID: 1503475019	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube	Analyzed: 02/10/2015
Sampling Parameter: Air Volume 1.197 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: 128SQ-sHCN	Collected: 01/28/2015
Lab ID: 1503475020	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 366 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.00057	<0.00052	0.21



ANALYTICAL REPORT

Workorder: **34-1503475**
 Client Project ID: P1500371 020315
 Purchase Order: P1500371
 Project Manager: Paul Pope

Analytical Results

Sample ID: 128SQ-sHg	Collected: 01/28/2015
Lab ID: 1503475021	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube	Analyzed: 02/10/2015
Sampling Parameter: Air Volume 1.197 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.010	<0.0012	0.012

Sample ID: 128F-sHCN	Collected: 01/28/2015
Lab ID: 1503475022	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 183 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.0011	<0.0010	0.21

Sample ID: 128F-sHg	Collected: 01/28/2015
Lab ID: 1503475023	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube	Analyzed: 02/10/2015
Sampling Parameter: Air Volume 598 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	0.29	0.00048	0.000059	0.012

Sample ID: 128F-Dup04	Collected: 01/27/2015
Lab ID: 1503475024	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6010 Mod.	Media: SKC 226-28, Soda Lime-200/600	Analyzed: 02/05/2015
Sampling Parameter: Air Volume 48.96 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Hydrogen Cyanide	<0.21	<0.0043	<0.0039	0.21

Sample ID: 127 Dup02	Collected: 01/28/2015
Lab ID: 1503475025	Received: 02/03/2015
Sampling Location: P1500371	

Method: NIOSH 6009 Mod.	Media: SKC 226-17-1A, Hopcalite Tube	Analyzed: 02/10/2015
Sampling Parameter: Air Volume 183 L		

Analyte	ug/sample	mg/m ³	ppm	RL (ug/sample)
Mercury	<0.012	<0.000066	<0.000080	0.012



ANALYTICAL REPORT

Workorder: **34-1503475**
 Client Project ID: P1500371 020315
 Purchase Order: P1500371
 Project Manager: Paul Pope

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 6009 Mod.	/S/ Christopher R. Hansen 02/10/2015 16:02	/S/ Kristie F. Bitner 02/10/2015 16:02
NIOSH 6010 Mod.	/S/ Brittney Austin 02/06/2015 09:02	/S/ Whitney Lewis 02/09/2015 09:02

Laboratory Contact Information

ALS Environmental
 960 W Levoy Drive
 Salt Lake City, Utah 84123

Phone: (801) 266-7700
 Email: als@alst.com
 Web: www.alst.com

General Lab Comments

The results provided in this report relate only to the items tested.
 Samples were received in acceptable condition unless otherwise noted.
 Samples have not been blank corrected unless otherwise noted.
 This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	AClass (DoD ELAP)	ADE-1420	http://www.aiclasscorp.com
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/labimp/
	Nevada	UT00009	http://ndep.nv.gov/bsdwl/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Florida (TNI)	E871067	http://www.dep.state.fl.us/labs/bars/sas/qa/
Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html	
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Lead Testing:			
CPSC	AClass (ISO 17025, CPSC)	ADE-1420	http://www.aiclasscorp.com
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	AClass (ISO 17025)	ADE-1420	http://www.aiclasscorp.com



ANALYTICAL REPORT

Workorder: **34-1503475**
Client Project ID: P1500371 020315
Purchase Order: P1500371
Project Manager: Paul Pope

Definitions

LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

** No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

() This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.



Quality Control Sample Batch Report

Analysis Information

Workorder: 1503475

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: NIOSH 6009 Mod.
Batch: IHG/2818 (HBN: 143412)
Analyzed By: Christopher R. Hansen

Blank

LRB: 432885 Analyzed: 02/10/2015 15:36 Units: ug/sample			
Analyte	Result	MDL	RL
Mercury	ND	NA	0.0120

LMB: 432886 Analyzed: 02/10/2015 15:37 Units: ug/sample			
Analyte	Result	MDL	RL
Mercury	ND	NA	0.0120

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 432888 Analyzed: 02/10/2015 15:38 Dilution: 1 Units: ug/sample					LCSD: 432889 Analyzed: 02/10/2015 15:39 Dilution: 1 Units: ug/sample				
Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits	
Mercury	0.550	0.500	110	80.3 128.9	0.548	110	0.292	0.0 15.0	

QC Data Approved and Reviewed by

<u>Christopher R. Hansen</u>	<u>Kristie F. Bitner</u>	<u>2/10/2015</u>
Analyst	Peer Review	Date

Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
 ND - Not Detected (U - Qualifier also flags analyte as not detected)
 NA - Not Applicable
 QC results are not adjusted for moisture correction, where applicable



Quality Control Sample Batch Report

Analysis Information

Workorder: 1503475

Limits: Historical/Performance
Basis: ALS Laboratory Group

Preparation: NA
Batch: NA
Prepared By: NA

Analysis: NIOSH 6010 Mod.
Batch: IWC/2224 (HBN: 143203)
Analyzed By: Brittney Austin

Blank

LMB: 432304
Analyzed: 02/05/2015 13:42
Units: ug/sample

Analyte	Result	MDL	RL
Cyanide	ND	NA	0.200

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 432305
Analyzed: 02/05/2015 15:07
Dilution: 1
Units: ug/sample

LCSD: 432306
Analyzed: 02/05/2015 13:45
Dilution: 1
Units: ug/sample

Analyte	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Cyanide	1.88	2.00	94.0	42.9 120.4	1.90	94.9	0.911	0.0 20.0

QC Data Approved and Reviewed by

Brittney Austin _____ Analyst	Whitney Lewis _____ Peer Review	2/9/2015 _____ Date
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Symbols and Definitions

- * - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)
 ND - Not Detected (U - Qualifier also flags analyte as not detected)
 NA - Not Applicable
 QC results are not adjusted for moisture correction, where applicable

ALS Environmental Chain of Custody
 2655 Park Center Drive, Suite A • Simi Valley, CA 93065 • 805-526-7161 • FAX 805-526-7270

ALS Contact: Samantha Henningsen

Project Number: P1500371
 Project Manager: Samantha Henningsen



1503475

Lab Code	Sample ID	# of Cont.	Matrix	Sample			Lab ID
				Date	Time		
P1500371-002	127U1-CN *	1	Air	1/27/15	1426	Salt Lake City ALS	X
P1500371-004	127U1-Hg		Air	1/27/15	1426	Salt Lake City ALS	X
P1500371-007	127D1-CN		Air	1/27/15	1522	Salt Lake City ALS	X
P1500371-009	127D1-Hg		Air	1/27/15	1522	Salt Lake City ALS	X
P1500371-014	127F-CN		Air	1/27/15	1515	Salt Lake City ALS	X
P1500371-016	127F-Hg		Air	1/27/15	1515	Salt Lake City ALS	X
P1500371-019	127SQ-CN		Air	1/27/15	1541	Salt Lake City ALS	X
P1500371-021	127SQ-Hg		Air	1/27/15	1541	Salt Lake City ALS	X
P1500371-035	128N-CN		Air	1/28/15	1355	Salt Lake City ALS	X
P1500371-037	128N-Hg		Air	1/28/15	1355	Salt Lake City ALS	X
P1500371-041	128NQ-CN		Air	1/28/15	1402	Salt Lake City ALS	X
P1500371-043	128NQ-Hg		Air	1/28/15	1402	Salt Lake City ALS	X

Misc Out 2 None N10CH 6010
 Misc Out 3 None N10CH 6009

Special Instructions/Comments <i>Please address report to client listed on COC - Deb Gray Invoice ALS Simi Valley - PM STEENINGSEN</i>	Turnaround Requirements <input type="checkbox"/> RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 <input checked="" type="checkbox"/> STANDARD Requested FAX Date: _____ Requested Report Date: <u>02/10/15</u>	Report Requirements <input type="checkbox"/> I. Results Only <input checked="" type="checkbox"/> II. Results + QC Summaries <input type="checkbox"/> III. Results + QC and Calibration Summaries <input type="checkbox"/> IV. Data Validation Report with Raw Data PQL/MDL/J <u>N</u> EDD <u>N</u>	Invoice Information PO# P1500371 Bill to _____
	Relinquished By: <i>[Signature]</i> 2/2/15 1600 Received By: _____ Airbill Number: <i>02-03-15 918</i>		H - Test is On Hold P - Test is Authorized for Prep Only

ALS Environmental Chain of Custody

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ALS Contact: Samantha Henningsen

Project Number: P1500371
Project Manager: Samantha Henningsen

Lab Code	Sample ID	# of Cont.	Matrix	Sample		Lab ID	Misc Out 2 None	Misc Out 3 None
				Date	Time			
P1500371-054	127TB-CN	1	Air	1/27/15	0000	Salt Lake City ALS		X
P1500371-056	127TB-Hg		Air	1/27/15	0000	Salt Lake City ALS	X	
P1500371-060	128N-sHCN		Air	1/28/15	1635	Salt Lake City ALS		X
P1500371-062	128N-sHg		Air	1/28/15	1701	Salt Lake City ALS	X	
P1500371-066	128NQ-sHCN		Air	1/28/15	1420	Salt Lake City ALS		X
P1500371-068	128NQ-sHg		Air	1/28/15	1441	Salt Lake City ALS	X	
P1500371-072	128SQ-sHCN		Air	1/28/15	1728	Salt Lake City ALS		X
P1500371-074	128SQ-sHg		Air	1/28/15	1747	Salt Lake City ALS	X	
P1500371-078	128F-sHCN		Air	1/28/15	1327	Salt Lake City ALS		X
P1500371-080	128F-sHg		Air	1/28/15	1343	Salt Lake City ALS	X	
P1500371-084	127Dup02		Air	1/27/15	0000	Salt Lake City ALS	X	
P1500371-086	128F-Dup04		Air	1/28/15	0000	Salt Lake City ALS		X

Special Instructions/Comments H - Test is On Hold P - Test is Authorized for Prep Only	Turnaround Requirements ___ RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 ___ STANDARD Requested FAX Date: _____ Requested Report Date: 02/10/15	Report Requirements ___ I. Results Only ___ II. Results + QC Summaries ___ III. Results + QC and Calibration Summaries ___ IV. Data Validation Report with Raw Data PQL/MDL/J N EDD N	Invoice Information PO# P1500371 Bill to
	Relinquished By: <u><i>Samantha Henningsen</i></u> Received By: <u><i>[Signature]</i></u> Airbill Number: <u>020375 9118</u> P - Test is Authorized for Prep Only		

ALS Environmental Chain of Custody

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ALS Contact: Samantha Henningsen

Reference Numbers: P1500371

Samantha Henningsen

P1500371-004,9,16,21,37,43,56,62,68,74, Subbed to ALS SLC 80,84

Misc Out 3 - None

P1500371-002,7,14,19,35,41,54,60,66,72, Subbed to ALS SLC 78,86

Special Instructions/Comments H - Test is On Hold P - Test is Authorized for Prep Only	Turnaround Requirements <input type="checkbox"/> RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 <input type="checkbox"/> STANDARD Requested FAX Date: _____ Requested Report Date: <u>02/10/15</u>	Report Requirements <input type="checkbox"/> I. Results Only <input type="checkbox"/> II. Results + QC Summaries <input type="checkbox"/> III. Results + QC and Calibration Summaries <input type="checkbox"/> IV. Data Validation Report with Raw Data PQL/MDL/ <u> N </u> EDD <u> N </u>	Invoice Information PO# P1500371 Bill to
	Relinquished By: <u><i>Samantha Henningsen</i></u> Received By: <u><i>Jennifer Gessell</i></u> Airbill Number: <u>000375 9118</u>		