

ANALYTICAL REPORT

Job Number: 280-96051-2

Job Description: Camp Ravenna, OH

For:

Cardno TEC, Inc
1658 Cole Boulevard
Suite 190
Golden, CO 80401

Attention: Ms. Heather Miner



Approved for release.
Patrick J McEntee
Manager of Project Management
5/10/2017 7:11 PM

Patrick J McEntee, Manager of Project Management
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05/10/2017

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

TestAmerica Laboratories, Inc.

TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002
Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com

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Definitions/Glossary

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: Cardno TEC, Inc

Project: Camp Ravenna, OH

Report Number: 280-96051-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 4/19/2017 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.7° C, 1.2° C and 2.8° C.

Receipt Exceptions

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. The chain of custody did not list a sample time for sample FWGmw-004-041717-GW (280-96051-3). The sample time was logged as 13:12, per the information listed on the sample container label.

The Non-DOD method SM20 4500_CN_I are reported under job 280-96051-2 with standard data qualifiers applied. All DOD methods/analytes are reported under job 280-96051-1.

FREE CYANIDE

Sample EBGmw-125-041717-GW (280-96051-6) was analyzed for Free Cyanide in accordance with SM20 4500_CN_I. The samples were prepared on 04/28/2017 and analyzed on 04/29/2017.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Client Sample ID: EBGmw-125-041717-GW

Lab Sample ID: 280-96051-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cyanide, Free	29		10	2.0	ug/L	1		SM 4500 CN I	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Client Sample ID: EBGmw-125-041717-GW

Lab Sample ID: 280-96051-6

Date Collected: 04/17/17 14:05

Matrix: Water

Date Received: 04/19/17 09:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	29		10	2.0	ug/L		04/28/17 11:15	04/29/17 12:35	1

Default Detection Limits

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

General Chemistry

Prep: SM 4500 CN I

Analyte	RL	MDL	Units	Method
Cyanide, Free	10	2.0	ug/L	SM 4500 CN I

QC Sample Results

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Method: SM 4500 CN I - Cyanide, Weak Acid Dissociable

Lab Sample ID: MB 280-371422/5-A
Matrix: Water
Analysis Batch: 371518

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 371422

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	ND		10	2.0	ug/L		04/28/17 11:15	04/29/17 12:33	1

Lab Sample ID: HLCS 280-371422/1-A
Matrix: Water
Analysis Batch: 371518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371422

Analyte	Spike Added	HLCS Result	HLCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Free	400	385		ug/L		96	75 - 120

Lab Sample ID: LCS 280-371422/3-A
Matrix: Water
Analysis Batch: 371518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371422

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Free	100	98.0		ug/L		98	75 - 120

Lab Sample ID: LCSD 280-371422/4-A
Matrix: Water
Analysis Batch: 371518

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 371422

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Free	100	93.0		ug/L		93	75 - 120	5	20

Lab Sample ID: LLCS 280-371422/2-A
Matrix: Water
Analysis Batch: 371518

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 371422

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	Limits
Cyanide, Free	100	99.9		ug/L		100	75 - 120

Lab Sample ID: 280-96051-6 MS
Matrix: Water
Analysis Batch: 371518

Client Sample ID: EBGmw-125-041717-GW
Prep Type: Total/NA
Prep Batch: 371422

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Cyanide, Free	29		100	132		ug/L		103	75 - 120

Lab Sample ID: 280-96051-6 MSD
Matrix: Water
Analysis Batch: 371518

Client Sample ID: EBGmw-125-041717-GW
Prep Type: Total/NA
Prep Batch: 371422

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Cyanide, Free	29		100	123		ug/L		94	75 - 120	7	20

QC Association Summary

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

General Chemistry

Prep Batch: 371422

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-96051-6	EBGmw-125-041717-GW	Total/NA	Water	SM 4500 CN I	
MB 280-371422/5-A	Method Blank	Total/NA	Water	SM 4500 CN I	
HLCS 280-371422/1-A	Lab Control Sample	Total/NA	Water	SM 4500 CN I	
LCS 280-371422/3-A	Lab Control Sample	Total/NA	Water	SM 4500 CN I	
LCSD 280-371422/4-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN I	
LLCS 280-371422/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN I	
280-96051-6 MS	EBGmw-125-041717-GW	Total/NA	Water	SM 4500 CN I	
280-96051-6 MSD	EBGmw-125-041717-GW	Total/NA	Water	SM 4500 CN I	

Analysis Batch: 371518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-96051-6	EBGmw-125-041717-GW	Total/NA	Water	SM 4500 CN I	371422
MB 280-371422/5-A	Method Blank	Total/NA	Water	SM 4500 CN I	371422
HLCS 280-371422/1-A	Lab Control Sample	Total/NA	Water	SM 4500 CN I	371422
LCS 280-371422/3-A	Lab Control Sample	Total/NA	Water	SM 4500 CN I	371422
LCSD 280-371422/4-A	Lab Control Sample Dup	Total/NA	Water	SM 4500 CN I	371422
LLCS 280-371422/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN I	371422
280-96051-6 MS	EBGmw-125-041717-GW	Total/NA	Water	SM 4500 CN I	371422
280-96051-6 MSD	EBGmw-125-041717-GW	Total/NA	Water	SM 4500 CN I	371422

Lab Chronicle

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Client Sample ID: EBGmw-125-041717-GW

Lab Sample ID: 280-96051-6

Date Collected: 04/17/17 14:05

Matrix: Water

Date Received: 04/19/17 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SM 4500 CN I			50 mL	50 mL	371422	04/28/17 11:15	JML	TAL DEN
Total/NA	Analysis	SM 4500 CN I		1	50 mL	50 mL	371518	04/29/17 12:35	JML	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
SM 4500 CN I	SM 4500 CN I	Water	Cyanide, Free

Method Summary

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Method	Method Description	Protocol	Laboratory
SM 4500 CN I	Cyanide, Weak Acid Dissociable	SM	TAL DEN

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Cardno TEC, Inc
Project/Site: Camp Ravenna, OH

TestAmerica Job ID: 280-96051-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-96051-6	EBGmw-125-041717-GW	Water	04/17/17 14:05	04/19/17 09:00

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver

Job No.: 280-96051-2

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
CN 10ppm_00251	04/29/17	04/22/17	2% NaOH, Lot 1% NaOH_00256	100 mg/L	CN CAL Std_00053	1 mL	Cyanide, Amenable	10 mg/L
							Cyanide, Free	10 mg/L
							Cyanide, Non-amenable	10 mg/L
							Cyanide, Total	10 mg/L
							Cyanide, Weak Acid Dissociable	10 mg/L
.CN CAL Std_00053	07/31/17		Ricca, Lot 4701B68		(Purchased Reagent)		Cyanide, Amenable	1000 mg/L
							Cyanide, Free	1000 mg/L
							Cyanide, Non-amenable	1000 mg/L
							Cyanide, Total	1000 mg/L
							Cyanide, Weak Acid Dissociable	1000 mg/L
CN CAL 1 ppm_01244	04/29/17	04/29/17	1% NaOH, Lot N/A	100 mL	CN 10ppm 00251	10 mL	Cyanide, Free	1 mg/L
.CN 10ppm_00251	04/29/17	04/22/17	2% NaOH, Lot 1% NaOH_00256	100 mg/L	CN CAL Std_00053	1 mL	Cyanide, Free	10 mg/L
..CN CAL Std 00053	07/31/17		Ricca, Lot 4701B68		(Purchased Reagent)		Cyanide, Free	1000 mg/L
CN ICV Daily_01009	04/29/17	04/29/17	1% HNO3, Lot N/A	100 mL	CN ICV Int_00433	1 mL	Cyanide, Free	0.1 mg/L
.CN ICV Int_00433	04/29/17	04/22/17	1% NaOH, Lot 1% NaOH_00256	100 mL	CN ICV Std_00041	1 mL	Cyanide, Free	10 mg/L
..CN ICV Std 00041	04/16/18		CPI, Lot 1104086		(Purchased Reagent)		Cyanide, Free	1000 mg/L
CN ICV Int_00433	04/29/17	04/22/17	1% NaOH, Lot 1% NaOH_00256	100 mL	CN ICV Std_00041	1 mL	Cyanide, Amenable	10 mg/L
							Cyanide, Free	10 mg/L
							Cyanide, Non-amenable	0 mg/L
							Cyanide, Total	10 mg/L
							Cyanide, Weak Acid Dissociable	10 mg/L
.CN ICV Std_00041	04/16/18		CPI, Lot 1104086		(Purchased Reagent)		Cyanide, Amenable	1000 mg/L
							Cyanide, Free	1000 mg/L
							Cyanide, Non-amenable	0 mg/L
							Cyanide, Total	1000 mg/L
							Cyanide, Weak Acid Dissociable	1000 mg/L

Reagent

CN CAL Std_00053

Certificate of Analysis

Cyanide Standard, 1000 ppm CN⁻
Lot Number: 4701B68

Product Number: 2543

Manufacture Date: JAN 10, 2017

Expiration Date: JUL 2017

This standard is prepared using accurate volumetric techniques from material that has been assayed against Silver Nitrate solution certified traceable to NIST Standard Reference Material 999. The certified value reported is the prepared value based upon the method of preparation of the material. The uncertainty in the prepared value is the combined uncertainty based on the stability of the assayed Potassium Cyanide, and the uncertainty in the mass and volume measurements.

Use 0.16% (w/v) (0.04 N) Sodium Hydroxide or 0.225 % (w/v) (0.04 N) Potassium Hydroxide to make dilutions of this standard. Restandardize weekly if extreme accuracy is required.

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Potassium Cyanide	151-50-8	ACS
Sodium Hydroxide	1310-73-2	Reagent

Test	Specification	Result
Appearance	Colorless liquid	Passed
Cyanide (CN ⁻)	995-1005 ppm	1000 ppm

Specification	Reference
Stock Standard Cyanide Solution	APHA (4500-CN- F)
Stock Cyanide Solution	APHA (4500-CN- E)
Stock Cyanide Solution	APHA (4500-CN- K)
Stock Cyanide Solution	APHA (4500-CN- H)
Cyanide Reference Solution (1000 mg/L)	EPA (SW-846) (7.3.3.2)
Cyanide Calibration Stock Solution (1,000 mg/L CN ⁻)	EPA (SW-846) (9213)
Stock Cyanide Solution	EPA (335.3)
Stock Cyanide Solution	EPA (335.2)
Cyanide Solution Stock	ASTM (D 4282)
Simple Cyanide Solution, Stock (1.0 g/L CN ⁻)	ASTM (D 4374)

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
2543-4	120 mL amber poly	6 months
2543-16	500 mL amber poly	6 months

Recommended Storage: 2°C - 8°C (36°F - 46°F)

Reagent

CN ICV Std_00041



USA

5580 Skylane Boulevard P: 707.525.5788
Santa Rosa, CA 95403 P: 800.878.7654
F: 707.545.7901

Europe

P.O. Box 2704 P: +31 20 638 05 97
1000 CS Amsterdam F: +31 20 420 28 36
The Netherlands

Certificate of Analysis

Rev 0

Comment:

Catalog No:

Z-G34-4400-IC9M

Lot No:

1104086

Expiration Date:

2-Sep-2018

Matrix:

0.179% NaOH

Description:

ISO Guide 34 - Cyanide, 100 mL
1,000 mg/L in H₂O

Additional Information:

Date Received: _____

Container: 4 oz (125 mL) Narrow
Mouth, HDPE

Certified Values:

The certified value is based on gravimetric and volumetric preparation of this CRM. This CRM has been confirmed by inductively coupled plasma optical emission spectrometry (ICP-OES) using an internally developed method against an independent source which is directly traceable to the NIST SRM's listed below.

The uncertainty value is calculated for a 95% confidence interval with a *k* value of 2.

Element	Symbol	CAS No	SRM No	NIST Lot No	Source Lot No	Purity %	Concentration mg/L	Uncertainty ± mg/L
Cyanide	CN	151-50-8	N/A	N/A	363.25.1P	98.1	1000	4.5



USA

5580 Skylane Boulevard P: 707.525.5788
Santa Rosa, CA 95403 P: 800.878.7654
F: 707.545.7901

Europe

P.O. Box 2704 P: +31 20 638 05 97
1000 CS Amsterdam F: +31 20 420 28 36
The Netherlands

Certificate of Analysis

Rev 0

Comment:

Catalog No: Z-G34-4400-IC9M	Lot No: 1104086	Expiration Date: 2-Sep-2018	Matrix: 0.179% NaOH	Description: ISO Guide 34 - Cyanide, 100 mL 1,000 mg/L in H ₂ O
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Calculation of Uncertainty

The following equations are used to calculate the value of the expanded uncertainty:

$U = k u_c$ U=Expanded Uncertainty, k= the coverage factor at the 95% confidence level, k=2, u_c = the combined uncertainty
 $u_c = \sqrt{\sum u_i^2}$ where u_i are the individual uncertainty components for raw material, transportation, homogeneity, and shelf life.

Expiration Information:

The Stability of this product is based upon rigorous short term and long term testing of the solution for the certified value. These tests include the effect of temperature and packaging on the product. This standard is guaranteed until the expiration date listed above.

Accreditation:

This standard was manufactured by an ISO 17025 Chemical Testing Lab (Certificate number 3031.01) and ISO Guide 34 Reference Material Producer (RMP) Certificate number 3031.02 accredited by The American Association of Laboratory Accreditation (A2LA). Manufacturer's Quality System audited and registered by NSF-ISR to ISO 9001:2008 (Certificate number IZ391-IS4).

Manufactured By:

Carrie Bibbins
Chemist

Manufacture Date: 3/1/2017

Certified By:

Cristy Lane
Chemist

Certified Date: 3/1/2017

Released By:

Mark Filla
Chemist

Original Issue Date: 3/1/2017

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-96051-2

SDG No.: _____

Project: Camp Ravenna, OH

Client Sample ID
EBGmw-125-041717-GW

Lab Sample ID
280-96051-6

Comments:

1B-IN
 INORGANIC ANALYSIS DATA SHEET
 GENERAL CHEMISTRY

Client Sample ID: EBGmw-125-041717-GW

Lab Sample ID: 280-96051-6

Lab Name: TestAmerica Denver

Job No.: 280-96051-2

SDG ID.: _____

Matrix: Water

Date Sampled: 04/17/2017 14:05

Reporting Basis: WET

Date Received: 04/19/2017 09:00

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Cyanide, Free	29	10	2.0	ug/L			1	SM 4500 CN I

2-IN
 CALIBRATION QUALITY CONTROL
 GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2
 SDG No.: _____
 Analyst: JML Batch Start Date: 04/29/2017
 Reporting Units: mg/L Analytical Batch No.: 371518

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
14	ICV	12:23	Cyanide, Free	0.0979	0.100	98	90-110		CN ICV Daily_01009
15	ICB	12:24	Cyanide, Free	ND					
29	CCV	12:45	Cyanide, Free	0.200	0.200	100	90-110		CN CAL 1 ppm_01244
30	CCB	12:47	Cyanide, Free	ND					

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2

SDG No.: _____

Method	Lab Sample ID	Analyte	Result	Qual	Units	RL	Dil
Batch ID: 371518 Date: 04/29/2017 12:33 Prep Batch: 371422 Date: 04/28/2017 11:15							
SM 4500 CN MB 280-371422/5-A		Cyanide, Free	ND		ug/L	10	1
I							

5-IN
 MATRIX SPIKE SAMPLE RECOVERY
 GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2

SDG No.: _____

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 371518		Date: 04/29/2017 12:36	Prep Batch: 371422		Date: 04/28/2017 11:15						
SM 4500	280-96051-6	Cyanide, Free	29		ug/L						
CN I											
SM 4500	280-96051-6	Cyanide, Free	132		ug/L	100	103	75-120			
CN I	MS										

Calculations are performed before rounding to avoid round-off errors in calculated results.

5-IN
 MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
 GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2
 SDG No.: _____
 Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 371518		Date: 04/29/2017 12:38		Prep Batch: 371422		Date: 04/28/2017 11:15					
SM 4500	280-96051-6	Cyanide, Free	123		ug/L	100	94	75-120	7	20	
CN I	MSD										

Calculations are performed before rounding to avoid round-off errors in calculated results.

7A-IN
 LAB CONTROL SAMPLE
 GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2

SDG No.: _____

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 371518 Date: 04/29/2017 12:30			Prep Batch: 371422 Date: 04/28/2017 11:15			LCS Source: CN ICV Int_00433					
SM 4500	LCS	Cyanide, Free	98.0		ug/L	100	98	75-120	5	20	
CN I	280-371422/3-										
	A										

Calculations are performed before rounding to avoid round-off errors in calculated results.

7A-IN
 LAB CONTROL SAMPLE DUPLICATE
 GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2
 SDG No.: _____
 Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 371518 Date: 04/29/2017 12:32			Prep Batch: 371422 Date: 04/28/2017 11:15			LCSD Source: CN ICV Int_00433					
SM 4500	LCSD	Cyanide, Free	93.0		ug/L	100	93	75-120	5	20	
CN I	280-371422/4-										
	A										

Calculations are performed before rounding to avoid round-off errors in calculated results.

7A-IN
 LOW LEVEL CONTROL SAMPLE
 GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2
 SDG No.: _____
 Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 371518 Date: 04/29/2017 12:29			Prep Batch: 371422 Date: 04/28/2017 11:15			LCS Source: CN 10ppm_00251					
SM 4500	LLCS	Cyanide, Free	99.9		ug/L	100	100	75-120			
CN I	280-371422/2-										
	A										

Calculations are performed before rounding to avoid round-off errors in calculated results.

7A-IN
HIGH LEVEL CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2
SDG No.: _____
Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 371518 Date: 04/29/2017 12:27			Prep Batch: 371422 Date: 04/28/2017 11:15			LCS Source: CN 10ppm_00251					
SM 4500	HLCS	Cyanide, Free	385		ug/L	400	96	75-120			
CN I	280-371422/1-										
	A										

Calculations are performed before rounding to avoid round-off errors in calculated results.

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver

Job Number: 280-96051-2

SDG Number: _____

Matrix: Water

Instrument ID: WC_Alph 1

Method: SM 4500 CN I

MDL Date: 10/11/2010 11:56

Prep Method: SM 4500 CN I

Analyte	Wavelength/ Mass	RL (mg/L)	MDL (mg/L)
Cyanide, Free		0.01	0.002

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-96051-2
SDG Number: _____
Matrix: Water Instrument ID: WC_Alph 1
Method: SM 4500 CN I XMDL Date: 10/11/2010 11:56

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Cyanide, Free		0.01	0.002

12-IN
PREPARATION LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver

Job No.: 280-96051-2

SDG No.: _____

Prep Method: SM 4500 CN I

Lab Sample ID	Preparation Date	Prep Batch	Initial Weight	Initial Volume (mL)	Final Volume (mL)
HLCS 280-371422/1-A	04/28/2017 11:15	371422		50	50
LLCS 280-371422/2-A	04/28/2017 11:15	371422		50	50
LCS 280-371422/3-A	04/28/2017 11:15	371422		50	50
LCSD 280-371422/4-A	04/28/2017 11:15	371422		50	50
MB 280-371422/5-A	04/28/2017 11:15	371422		50	50
280-96051-6	04/28/2017 11:15	371422		50	50
280-96051-6 MS	04/28/2017 11:15	371422		50	50
280-96051-6 MSD	04/28/2017 11:15	371422		50	50

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96051-2

SDG No.: _____

Instrument ID: WC_Alp 1 Analysis Method: SM 4500 CN I

Start Date: 04/29/2017 12:03 End Date: 04/29/2017 13:58

Lab Sample Id	D/F	Type	Time	Analytes																											
				C	N	F	r	e																							
ZZZZZZ			13:00																												
ZZZZZZ			13:02																												
ZZZZZZ			13:03																												
ZZZZZZ			13:05																												
ZZZZZZ			13:06																												
CCV 280-371518/44			13:08																												
CCB 280-371518/45			13:09																												
ZZZZZZ			13:11																												
ZZZZZZ			13:12																												
ZZZZZZ			13:14																												
ZZZZZZ			13:15																												
ZZZZZZ			13:17																												
ZZZZZZ			13:18																												
ZZZZZZ			13:20																												
ZZZZZZ			13:21																												
ZZZZZZ			13:23																												
ZZZZZZ			13:24																												
ZZZZZZ			13:26																												
ZZZZZZ			13:27																												
ZZZZZZ			13:29																												
CCV 280-371518/59			13:30																												
CCB 280-371518/60			13:32																												
ZZZZZZ			13:33																												
ZZZZZZ			13:35																												
ZZZZZZ			13:36																												
ZZZZZZ			13:38																												
ZZZZZZ			13:39																												
ZZZZZZ			13:41																												
ZZZZZZ			13:42																												
ZZZZZZ			13:44																												
ZZZZZZ			13:45																												
ZZZZZZ			13:47																												
ZZZZZZ			13:48																												
ZZZZZZ			13:50																												
CCV 280-371518/73			13:51																												
CCB 280-371518/74			13:53																												
ZZZZZZ			13:58																												

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-96051-2

SDG No.: _____

Batch Number: 371422 Batch Start Date: 04/28/17 11:15 Batch Analyst: Lehman, Jeffrey M

Batch Method: SM 4500 CN I Batch End Date: _____

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	DistillpHCheck	SulfideCheck	ChlorineCheck	CN 10ppm 00251
HLCS 280-371422/1		SM 4500 CN I, SM 4500 CN I		50 mL	50 mL	>12	N	N	2 mL
LLCS 280-371422/2		SM 4500 CN I, SM 4500 CN I		50 mL	50 mL	>12	N	N	0.5 mL
LCS 280-371422/3		SM 4500 CN I, SM 4500 CN I		50 mL	50 mL	>12	N	N	
LCSD 280-371422/4		SM 4500 CN I, SM 4500 CN I		50 mL	50 mL	>12	N	N	
MB 280-371422/5		SM 4500 CN I, SM 4500 CN I		50 mL	50 mL	>12	N	N	
280-96051-B-6	EBGmw-125-041717 -GW	SM 4500 CN I, SM 4500 CN I	T	50 mL	50 mL	>12	N	N	
280-96051-B-6 MS	EBGmw-125-041717 -GW	SM 4500 CN I, SM 4500 CN I	T	50 mL	50 mL	>12	N	N	
280-96051-B-6 MSD	EBGmw-125-041717 -GW	SM 4500 CN I, SM 4500 CN I	T	50 mL	50 mL	>12	N	N	

Lab Sample ID	Client Sample ID	Method Chain	Basis	CN ICV Int 00433					
HLCS 280-371422/1		SM 4500 CN I, SM 4500 CN I							
LLCS 280-371422/2		SM 4500 CN I, SM 4500 CN I							
LCS 280-371422/3		SM 4500 CN I, SM 4500 CN I		0.5 mL					
LCSD 280-371422/4		SM 4500 CN I, SM 4500 CN I		0.5 mL					
MB 280-371422/5		SM 4500 CN I, SM 4500 CN I							

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-96051-2

SDG No.: _____

Batch Number: 371422 Batch Start Date: 04/28/17 11:15 Batch Analyst: Lehman, Jeffrey M

Batch Method: SM 4500 CN I Batch End Date: _____

Lab Sample ID	Client Sample ID	Method Chain	Basis	CN ICV Int 00433					
280-96051-B-6	EBGmw-125-041717 -GW	SM 4500 CN I, SM 4500 CN I	T						
280-96051-B-6 MS	EBGmw-125-041717 -GW	SM 4500 CN I, SM 4500 CN I	T	0.5 mL					
280-96051-B-6 MSD	EBGmw-125-041717 -GW	SM 4500 CN I, SM 4500 CN I	T	0.5 mL					

Batch Notes	
Acetate Buffer ID	WAD Acetate_00010
Methyl Red Indicator ID	METHYL RED_00012
Sodium Hydroxide ID	2% NaOH_00276
Pipette ID	WC T1000
WAD Releasing Agent ID	10% Acetic_00017
Zinc Acetate Buffer ID	ZINC BUFFER_00013

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-96051-2

SDG No.: _____

Batch Number: 371518 Batch Start Date: 04/29/17 12:03 Batch Analyst: Lehman, Jeffrey M

Batch Method: SM 4500 CN I Batch End Date: _____

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	CN CAL 1 ppm 01244	CN ICV Daily 01009		
ICV 280-371518/14		SM 4500 CN I		50 mL	50 mL		50 mL		
ICB 280-371518/15		SM 4500 CN I		50 mL	50 mL				
HLCS 280-371422/1-A		SM 4500 CN I		50 mL	50 mL				
LLCS 280-371422/2-A		SM 4500 CN I		50 mL	50 mL				
LCS 280-371422/3-A		SM 4500 CN I		50 mL	50 mL				
LCSD 280-371422/4-A		SM 4500 CN I		50 mL	50 mL				
MB 280-371422/5-A		SM 4500 CN I		50 mL	50 mL				
280-96051-B-6-A	EBGmw-125-041717 -GW	SM 4500 CN I	T	50 mL	50 mL				
280-96051-B-6-B	EBGmw-125-041717 -GW	SM 4500 CN I	T	50 mL	50 mL				
MS 280-96051-B-6-C	EBGmw-125-041717 -GW	SM 4500 CN I	T	50 mL	50 mL				
MSD									
CCV 280-371518/29		SM 4500 CN I		50 mL	50 mL	10 mL			
CCB 280-371518/30		SM 4500 CN I		50 mL	50 mL				

Batch Notes	
Buffer Reagent ID Number	CN Buffer_00094
Chloramine-T ID	CN Chloro-T_00776
Pipette ID	WC 5000ELJ WC T1000
Pyridine-Barbituric Acid ID	CN Pyr/Barb_00162

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Run Results Report

Facility Name
 Facility Location
 Department
 Operator Name JML
 Operator ID JML
 Platform FS III/IV/3100
 Software Rev Code 222
 Data system ID 57

Result path C:\FLOW_4\C042917.RST
 Sample table path C:\FLOW_4\c042917.tbl
 Method path C:\FLOW_4\cyanide.mth
 Date acquired 29-Apr-17
 Time acquired 14:03

----- Cyanide, Total -----						
Date	Time	Cup	Name	Response	Calc [ppb]	Flags
29-Apr-17	12:03	107	Sync	340026	405.093	
29-Apr-17	12:05	0	Carryover	293	-0.861	LO
29-Apr-17	12:06	0	Carryover	41	-1.162	LO
29-Apr-17	12:08	0	Baseline	0	-1.211	BL
29-Apr-17	12:09	101	CAL 0.00 ppb	111	-1.078	LO
29-Apr-17	12:11	102	CAL 10.0 ppb	8760	9.257	
29-Apr-17	12:12	103	CAL 20.0 ppb	17144	19.275	
29-Apr-17	12:14	104	CAL 50.0 ppb	43345	50.583	
29-Apr-17	12:15	105	CAL 100 ppb	85816	101.332	
29-Apr-17	12:17	106	Cal 200 ppb	170031	201.962	
29-Apr-17	12:18	107	Cal 400 ppb	334649	398.668	
29-Apr-17	12:20	0	BLK	-11	-1.224	LO
29-Apr-17	12:21	0	Baseline	0	-1.211	BL
29-Apr-17	12:23	108	ICV 100 ppb	82924	97.877	
29-Apr-17	12:24	0	ICB	-7	-1.219	LO
29-Apr-17	12:26	0	Baseline	0	-1.211	BL
29-Apr-17	12:27	113	hlcs 280-371422/1-a	162208	385.230	
29-Apr-17	12:29	114	llcs 280-371422/2-a	84646	99.934	
29-Apr-17	12:30	115	lcs 280-371422/3-a	83032	98.006	
29-Apr-17	12:32	116	lcsd 280-371422/4-a	78824	92.978	
29-Apr-17	12:33	117	mb 280-371422/5-a	2088	1.285	
29-Apr-17	12:35	118	280-96051-b-6-a	25271	28.986	
29-Apr-17	12:36	119	280-96051-b-6-b ms	111080	131.520	
29-Apr-17	12:38	120	280-96051-b-6-c msd	103787	122.806	
29-Apr-17	12:39	121	280-96239-k-12-a	3922	3.476	
29-Apr-17	12:41	122	280-96228-a-1-a	2839	2.181	
29-Apr-17	12:42	0	BLK	34	-1.170	LO
29-Apr-17	12:44	0	baseline	0	-1.211	BL
29-Apr-17	12:45	109	CCV 200PPB	168385	199.996	
29-Apr-17	12:47	0	CCB	58	-1.142	LO
29-Apr-17	12:48	0	Baseline	0	-1.211	BL
29-Apr-17	12:50	123	280-96228-a-2-a	2382	1.636	
29-Apr-17	12:51	124	280-96308-e-2-e	1999	1.178	
29-Apr-17	12:53	125	hlcs 280-371486/1-a	161716	384.053	
29-Apr-17	12:54	126	llcs 280-371486/2-a	84690	99.987	
29-Apr-17	12:56	127	lcs 280-371486/3-a	76144	89.775	
29-Apr-17	12:57	128	lcsd 280-371486/4-a	82501	97.371	
29-Apr-17	12:59	129	mb 280-371486/5-a	2173	1.385	
29-Apr-17	13:00	130	280-95999-d-3-b	2577	1.868	
29-Apr-17	13:02	131	280-95999-d-4-b	2601	1.897	
29-Apr-17	13:03	132	280-95999-d-5-b	2381	1.634	
29-Apr-17	13:05	0	BLK	74	-1.122	LO
29-Apr-17	13:06	0	baseline	0	-1.211	BL
29-Apr-17	13:08	109	CCV 200PPB	167668	199.139	
29-Apr-17	13:09	0	CCB	-123	-1.357	LO
29-Apr-17	13:11	0	Baseline	0	-1.211	BL

Result path C:\FLOW_4\C042917.RST
 Sample table path C:\FLOW_4\c042917.tbl
 Method path C:\FLOW_4\cyanide.mth
 Date acquired 29-Apr-17
 Time acquired 14:03

|----- Cyanide, Total -----|

Date	Time	Cup	Name	Response	Calc [ppb]	Flags
29-Apr-17	13:12	133	280-95999-d-6-b	2223	1.445	
29-Apr-17	13:14	134	280-95999-d-7-b	2238	1.463	
29-Apr-17	13:15	135	280-95999-e-8-b	1904	1.065	
29-Apr-17	13:17	136	280-95999-f-8-c ms	79728	94.058	
29-Apr-17	13:18	137	280-95999-f-8-d msd	80566	95.060	
29-Apr-17	13:20	138	280-95999-d-9-b	3245	2.667	
29-Apr-17	13:21	139	280-95999-d-10-b	2528	1.811	
29-Apr-17	13:23	140	280-96011-j-1-b	56657	66.490	
29-Apr-17	13:24	141	280-96011-k-2-b	17406	19.588	
29-Apr-17	13:26	142	280-96011-j-3-b	3757	3.279	
29-Apr-17	13:27	0	BLK	55	-1.145	LO
29-Apr-17	13:29	0	baseline	0	-1.211	BL
29-Apr-17	13:30	109	CCV 200PPB	167336	198.742	
29-Apr-17	13:32	0	CCB	92	-1.101	LO
29-Apr-17	13:33	0	Baseline	0	-1.211	BL
29-Apr-17	13:35	143	280-96011-j-3-c ms	81419	96.079	
29-Apr-17	13:36	144	280-96011-j-3-d msd	81741	96.463	
29-Apr-17	13:38	145	280-96051-a-6-d	16699	18.744	
29-Apr-17	13:39	146	280-96051-a-7-b	1651	0.762	
29-Apr-17	13:41	147	280-96051-b-9-b	2705	2.022	
29-Apr-17	13:42	148	280-96052-a-1-b	1448	0.520	
29-Apr-17	13:44	149	280-96113-i-1-b	1941	1.108	
29-Apr-17	13:45	150	280-96059-b-1-b	2522	1.803	
29-Apr-17	13:47	127	lcs 280-371486/3-a	76321	89.986	
29-Apr-17	13:48	0	BLK	-13	-1.226	LO
29-Apr-17	13:50	0	baseline	0	-1.211	BL
29-Apr-17	13:51	109	CCV 200PPB	165807	196.915	
29-Apr-17	13:53	0	CCB	22	-1.185	LO
29-Apr-17	13:58	0	Baseline	0	-1.211	BL

Peak	Cup	Name	R	Type	Dil	Wt	Height	Calc. (ppb)	Flags	
1	107	Sync	1	SYNC		1	340026	405.092773		
2	0	Carryover	1	CO		1	293	-0.860913	LO	
3	0	Carryover	2	CO		1	41	-1.162300	LO	
B	0	Baseline	1	RB		1	0	-1.210775	BL	
5	101	CAL 0.00 ppb	1	C		1	111	-1.077611	LO	
6	102	CAL 10.0 ppb	1	C		1	8760	9.256921		
7	103	CAL 20.0 ppb	1	C		1	17144	19.275316		
8	104	CAL 50.0 ppb	1	C		1	43345	50.583042		
9	105	CAL 100 ppb	1	C		1	85816	101.332436		
10	106	Cal 200 ppb	1	C		1	170031	201.962128		
11	107	Cal 400 ppb	1	C		1	334649	398.667725		
12	0	BLK	1	BLNK		1	-11	-1.223564	LO	
B	0	Baseline	1	RB		1	0	-1.210775	BL	
14	108	ICV 100 ppb	1	CCV		1	82924	97.877090		
15	0	ICB	1	U		1	-7	-1.219314	LO	
B	0	Baseline	1	RB		1	0	-1.210775	BL	
17	113	hlcs 280-371422/1-a	1	U		2	1	162208	385.230347	
18	114	llcs 280-371422/2-a	1	U		1	1	84646	99.933830	
19	115	lcs 280-371422/3-a	1	U		1	1	83032	98.005867	
20	116	lcsd 280-371422/4-a	1	U		1	1	78824	92.977554	
21	117	mb 280-371422/5-a	1	U		1	1	2088	1.284754	
22	118	280-96051-b-6-a	1	U		1	1	25271	28.986385	
23	119	280-96051-b-6-b	ms	1	U	1	1	111080	131.520462	
24	120	280-96051-b-6-c	msd	1	U	1	1	103787	122.805962	
25	121	280-96239-k-12-a	1	U		1	1	3922	3.476105	
26	122	280-96228-a-1-a	1	U		1	1	2839	2.181170	
27	0	BLK	1	BLNK		1	1	34	-1.170374	LO
B	0	baseline	1	RB		1	1	0	-1.210775	BL
29	109	CCV 200PPB	1	CCV		1	1	168385	199.995514	
30	0	CCB	1	U		1	1	58	-1.141584	LO
B	0	Baseline	1	RB		1	1	0	-1.210775	BL
32	123	280-96228-a-2-a	1	U		1	1	2382	1.635927	
33	124	280-96308-e-2-e	1	U		1	1	1999	1.178382	
34	125	hlcs 280-371486/1-a	1	U		2	1	161716	384.052551	
35	126	llcs 280-371486/2-a	1	U		1	1	84690	99.987183	
36	127	lcs 280-371486/3-a	1	U		1	1	76144	89.775131	
37	128	lcsd 280-371486/4-a	1	U		1	1	82501	97.370781	
38	129	mb 280-371486/5-a	1	U		1	1	2173	1.385424	
39	130	280-95999-d-3-b	1	U		1	1	2577	1.868176	
40	131	280-95999-d-4-b	1	U		1	1	2601	1.896706	
41	132	280-95999-d-5-b	1	U		1	1	2381	1.633973	
42	0	BLK	1	BLNK		1	1	74	-1.122358	LO
B	0	baseline	1	RB		1	1	0	-1.210775	BL
44	109	CCV 200PPB	1	CCV		1	1	167668	199.139450	
45	0	CCB	1	U		1	1	-123	-1.357218	LO
B	0	Baseline	1	RB		1	1	0	-1.210775	BL
47	133	280-95999-d-6-b	1	U		1	1	2223	1.445302	
48	134	280-95999-d-7-b	1	U		1	1	2238	1.463468	
49	135	280-95999-e-8-b	1	U		1	1	1904	1.064680	
50	136	280-95999-f-8-c	ms	1	U	1	1	79728	94.058296	
51	137	280-95999-f-8-d	msd	1	U	1	1	80566	95.059692	
52	138	280-95999-d-9-b	1	U		1	1	3245	2.666803	
53	139	280-95999-d-10-b	1	U		1	1	2528	1.810546	
54	140	280-96011-j-1-b	1	U		1	1	56657	66.490303	
55	141	280-96011-k-2-b	1	U		1	1	17406	19.588490	
56	142	280-96011-j-3-b	1	U		1	1	3757	3.278673	
57	0	BLK	1	BLNK		1	1	55	-1.145046	LO
B	0	baseline	1	RB		1	1	0	-1.210775	BL
59	109	CCV 200PPB	1	CCV		1	1	167336	198.741959	
60	0	CCB	1	U		1	1	92	-1.101415	LO
B	0	Baseline	1	RB		1	1	0	-1.210775	BL
62	143	280-96011-j-3-c	ms	1	U	1	1	81419	96.078743	
63	144	280-96011-j-3-d	msd	1	U	1	1	81741	96.463371	
64	145	280-96051-a-6-d	1	U		1	1	16699	18.743553	
65	146	280-96051-a-7-b	1	U		1	1	1651	0.762469	
66	147	280-96051-b-9-b	1	U		1	1	2705	2.021790	
67	148	280-96052-a-1-b	1	U		1	1	1448	0.519562	
68	149	280-96113-i-1-b	1	U		1	1	1941	1.108499	
69	150	280-96059-b-1-b	1	U		1	1	2522	1.803276	
70	127	lcs 280-371486/3-a	1	U		1	1	76321	89.986153	

Peak	Cup	Name	R	Type	Dil	Wt	Height	Calc. (ppb)	Flags
71	0	BLK	1	BLNK		1	-13	-1.225936	LO
B	0	baseline	1	RB		1	0	-1.210775	BL
73	109	CCV 200PPB	1	CCV		1	165807	196.914810	
74	0	CCB	1	U		1	22	-1.184867	LO
B	0	Baseline	1	RB		1	0	-1.210775	BL

File name: C:\FLOW_4\C042917.RST

Date: 29-Apr-17

Operator: JML

* Name	Conc	Height
* CAL 0.00 ppb	0.000000	111.441956
* CAL 10.0 ppb	10.000000	8760.166016
* CAL 20.0 ppb	20.000000	17144.324219
* CAL 50.0 ppb	50.000000	43345.015625
* CAL 100 ppb	100.000000	85815.984375
* Cal 200 ppb	200.000000	170030.578125
* Cal 400 ppb	400.000000	334648.812500

Calib Coef:

y=bx+a

a: (intercept) 1.0133e+03

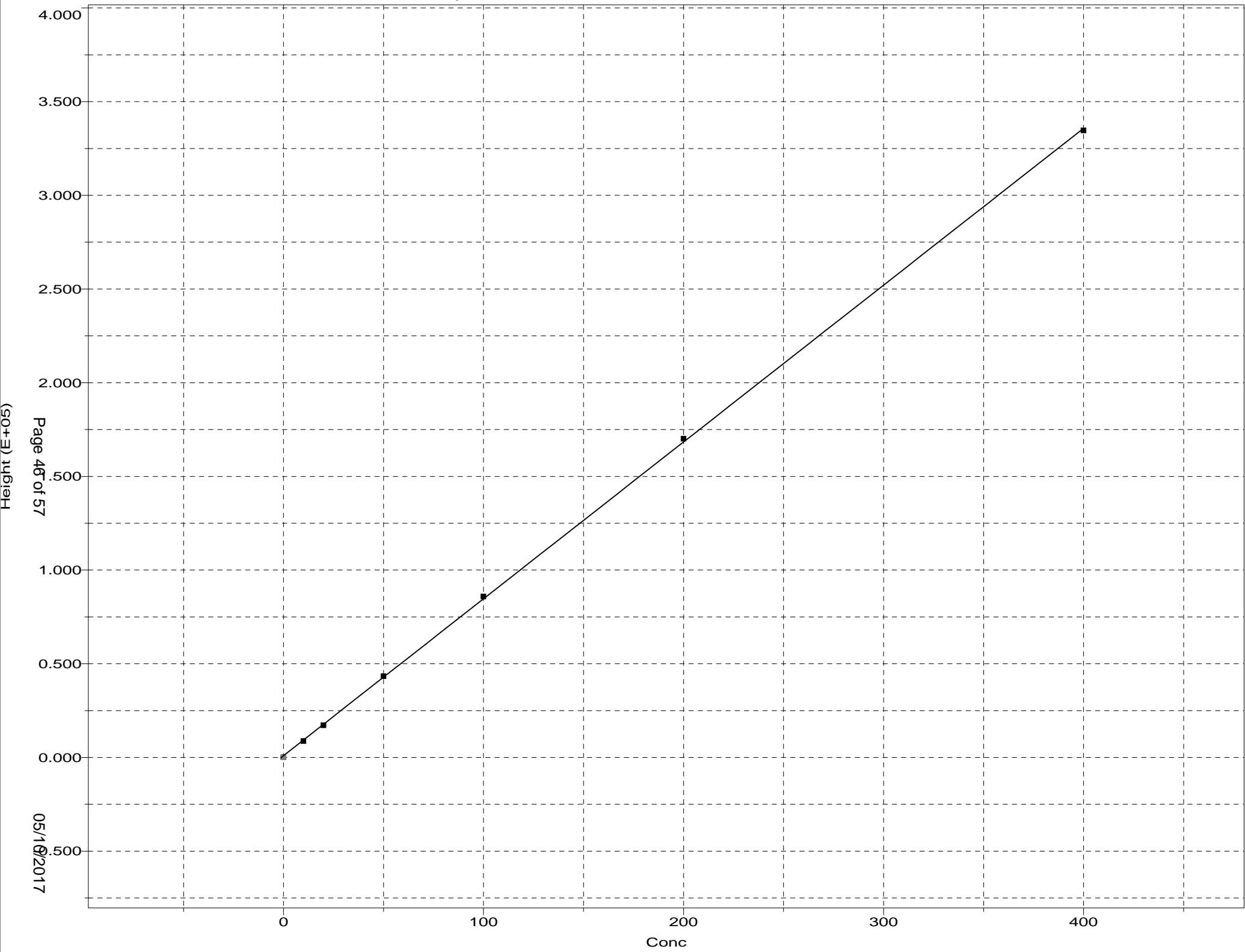
b: 8.3688e+02

Corr Coef: 0.999960

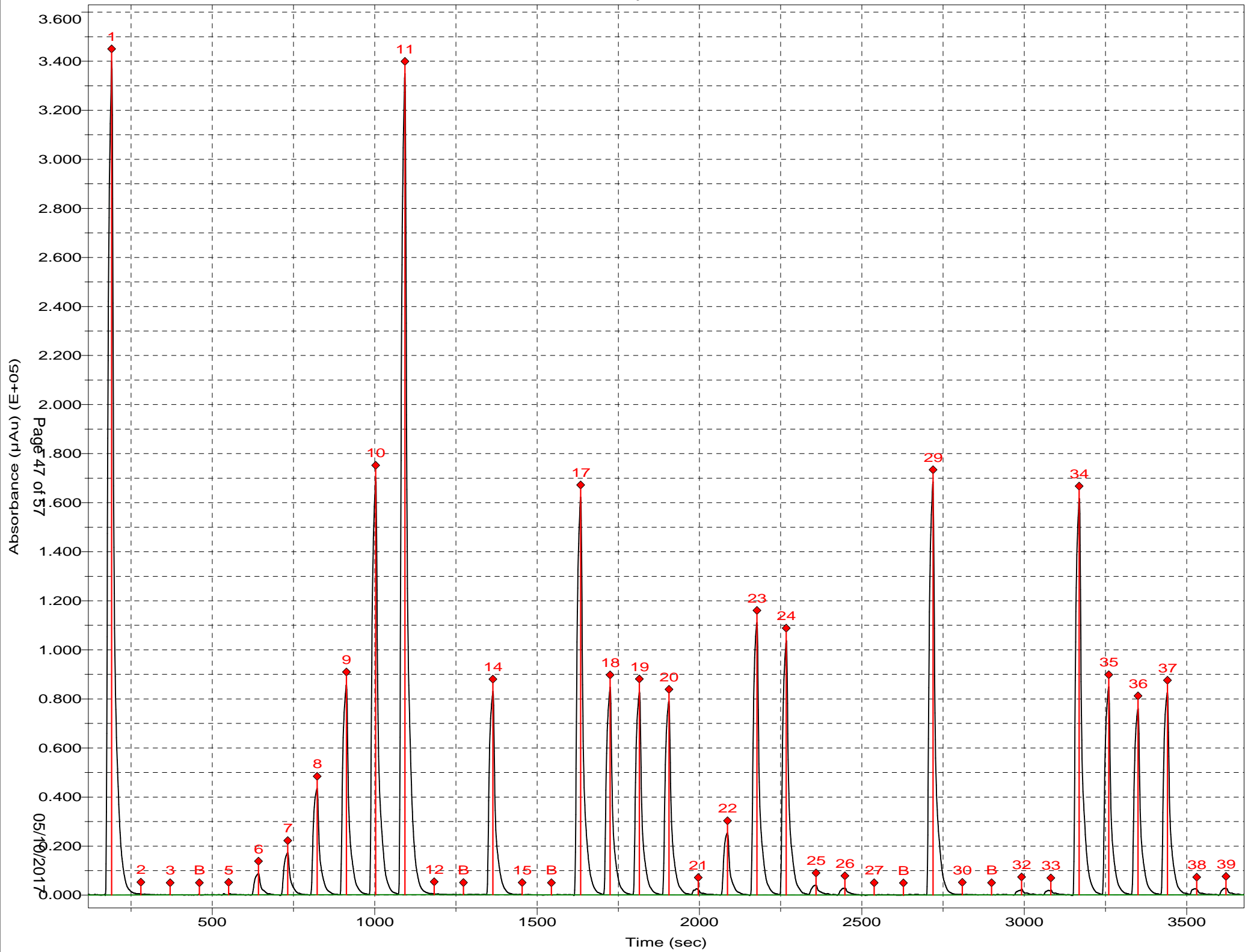
Carryover: 0.0861%

No Drift Peaks

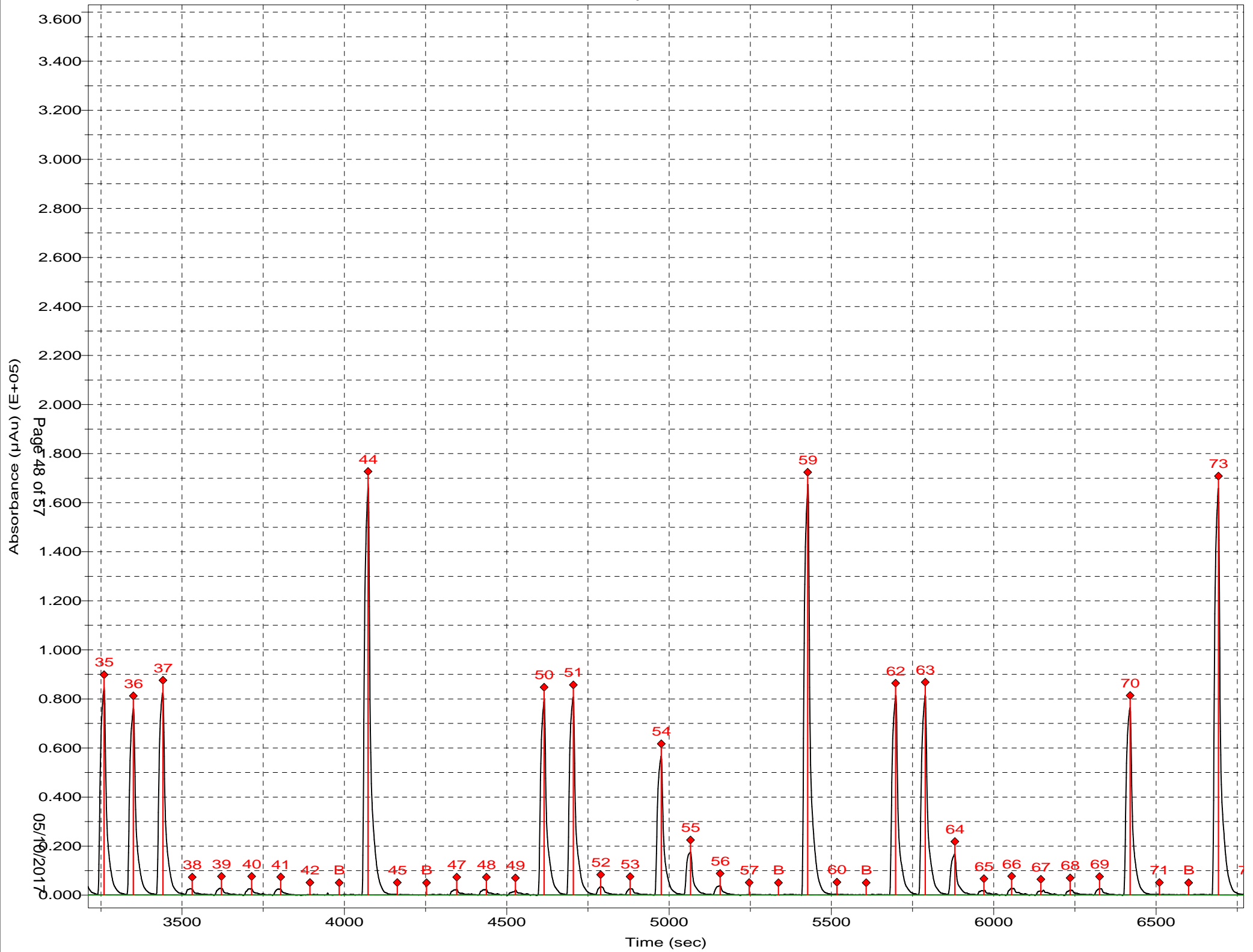
Cyanide, Total:Calibration 1: Peak 5-75



Channel 1: Cyanide, Total



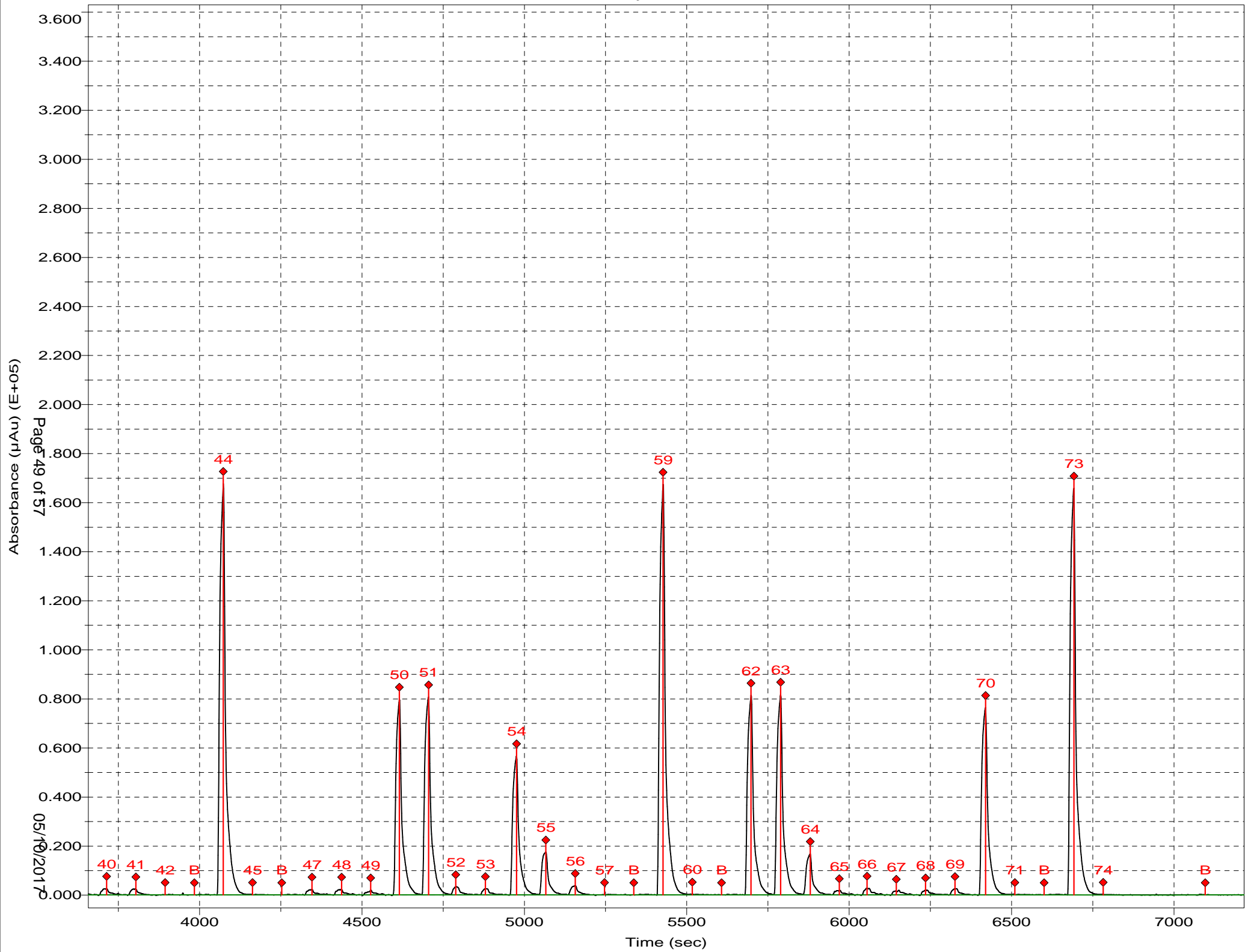
Channel 1: Cyanide, Total



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05/10/2017

Channel 1: Cyanide, Total



Shipping and Receiving Documents

Client Information Client Contact: Ms. Heather Miner Company: Cardno TEC, Inc Address: 1658 Cole Boulevard Suite 190 City: Golden State, Zip: CO, 80401 Phone: 303-273-0231 Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Facility-Wide Site: Camp Ravenna		Lab PM: McEntee, Patrick J E-Mail: patrick.mcEntee@testamericainc.com Carrier Tracking No(s): 810486071388 Job #: 810486071789						
Due Date Requested: TAT Requested (days): Standard		Analysis Requested VOCs 8260B SVOCs 8270D - phthalates SVOCs 8270D - phthalates, nitroaromatics, phenols PAHs 8270D_S1M (LIV) PCBs 8082A (L1 - 1L) Explosives 8330B Pesticides 8081B (LVI) Total Cyanide 9012B Total Metals 6010C/8020A/7470A Alkalinity 2320B						
Sample Identification Sample ID: FWG MW-015 - 041717-6W FWG MW-016 - 041717-6W FWG MW-004 - 041717-6W	Sample Date 04/17/17 04/17/17 04/17/17	Sample Time 1157 1148 1147	Sample Type G G G	Matrix W W W	Field Filtered Sample Type or No.	VOCs 8260B SVOCs 8270D - phthalates SVOCs 8270D - phthalates, nitroaromatics, phenols PAHs 8270D_S1M (LIV) PCBs 8082A (L1 - 1L) Explosives 8330B Pesticides 8081B (LVI) Total Cyanide 9012B Total Metals 6010C/8020A/7470A Alkalinity 2320B	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: Checked by WTW	Special Instructions/Note: Checked by WTW
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Deliverable Requested I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months		Special Instructions/QC Requirements:		
Empty Kit Relinquished by:		Date:		Method of Shipment:		Relinquished by: <i>Heather Miner</i> Company: <i>Cardno TEC</i> Relinquished by: <i>Patrick McEntee</i> Company: <i>Cardno TEC</i> Relinquished by: <i>Patrick McEntee</i> Company: <i>Cardno TEC</i>		
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 2.8, 1.2, 0.7 DEPT 70.0 Transfer RP 4-19-17		Date Time: 04/18/17 1500 Date Time: 04/18/17 1500 Date Time: 04-19-17 0900		

Chain of Custody Record

Client Information Client Contact: Ms. Heather Miner Company: Cardno TEC, Inc Address: 1658 Cole Boulevard Suite 190 City: Golden State, Zip: CO, 80401 Phone: 0091979 Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Lead Line 1 Site:		Sampler: TRANS WITHUS Lab PM: McEntee, Patrick J E-Mail: patrick.mcEntee@testamericainc.com Phone: 303-273-0231 Carrier Tracking No(s): 8104 810071388 Job #: 2104 86071399		Due Date Requested: TAT Requested (days): Standard PO #: 0091979 WO #: 076003.009.007 TestAmerica Project #: 28014271 SSOW#:		Analysis Requested VOCs 8269B SVOCs 8270D - phthalates SVOCs 8270D - phthalates, phenols PAHs 8270D SIM (LV) PCBs 8082A (LL - 1L) Explosives 8330B Pesticides 8081B (LV) Total Cyanide 9012B Free Cyanide 4500 CN J Total Metals 6010C/6020A/7470A Hexavalent Chromium 7196A - 24 Hour HTI Alkalinity 2320B Sulfide 9034 Anions 9056A - Sulfate, Nitrate & Nitrite - 48 Hour HTI Total Number of Containers		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)		Special Instructions/Note: checked by WTW											
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=soil, B=flora, A=air)	Field Filtered (Sample # or No.)	VOCs 8269B	SVOCs 8270D - phthalates	SVOCs 8270D - phthalates, phenols	PAHs 8270D SIM (LV)	PCBs 8082A (LL - 1L)	Explosives 8330B	Pesticides 8081B (LV)	Total Cyanide 9012B	Free Cyanide 4500 CN J	Total Metals 6010C/6020A/7470A	Hexavalent Chromium 7196A - 24 Hour HTI	Alkalinity 2320B	Sulfide 9034	Anions 9056A - Sulfate, Nitrate & Nitrite - 48 Hour HTI	Total Number of Containers	
LL MW-064-04817-6W	04/18/17	1205	G	W	N	X	X				X				X						
LL MW-087-041817-6W	04/18/17	1037	G	W	N	X	X				X				X						
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological																					
Deliverable Requested: I, II, III, IV, Other (specify)																					
Empty Kit Relinquished by:																					
Relinquished by: AW Date: 04/18/17 1500 Company: ATC																					
Relinquished by: AW Date: 4/18/17-1603 Company: 238																					
Relinquished by: AW Date: 4/18/17-1500 Company: 1500																					
Relinquished by: AW Date: 4-18-17 Company: TRAD																					
Relinquished by: AW Date: 4-19-17 Company:																					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No																					
Cooler Temperature(s) °C and Other Remarks:																					

Chain of Custody Record

Client Information Client Contact: Ms Heather Miner Company: Cardno TEC, Inc Address: 1658 Cole Boulevard Suite 190 City: Golden State, Zip: CO, 80401 Phone: 303-273-0231 Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Erie Burning Grounds Site: Camp Ravenna		Lab PVI: McEntee, Patrick J E-Mail: patrick.mcEntee@testamericainc.com Carrier Tracking No(s): 910486071388 Lab PVI: Travis Withers Phone: 303-273-0231		Due Date Requested: TAT Requested (days): Standard		PO #: 0091979 WO #: Project #: 28014271 SOW#:		Sample Identification EB6 MW- 125- 041717-6W EB6 MW- 131- 041717-6W		Sample Date 4/17/17 4/17/17		Sample Type (C=comp, G=grab) G G		Matrix (W=water, S=solid, O=wastoid, BT=tissue, A=air) W W		Filtered Sample (Yes or No) N N		4600 CNJ - Free Cyanide 9012B, PDS - Cyanide, Total X X		Analysis Requested 9012B, PDS - Cyanide, Total X X		Carrier Tracking No(s): 910486071388 Lab PVI: Travis Withers Phone: 303-273-0231		Preservation Codes: A - HCL B - NaOH C - AsNaO2 D - Niinc Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)		Total Number of Containers 2 1		Special Instructions/Note: checked by BTW	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological										Deliverable Requested, I, II, III, IV, Other (specify)																					
Empty KIT Relinquished by:										Date:																					
Relinquished by: [Signature]										Date/Time: 04/18/17 1500																					
Relinquished by: [Signature]										Date/Time: 4/18/17-1603																					
Relinquished by: [Signature]										Date/Time:																					
Custody Seal No.:										Cooler Temperature(s) °C and Other Remarks:																					

Chain of Custody Record

Client Information Client Contact: Ms. Heather Miner Company: Cardno TEC, Inc Address: 1658 Cole Boulevard, Suite 190 City: Golden State, Zip: CO, 80401 Phone: 303-273-0231 Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Sharon Conglomerate Site:		Lab PM: McEntee, Patrick J E-Mail: patrick.mcEntee@testamericainc.com Camer Tracking No(s): 810486071599 Job #:	
Due Date Requested: TAT Requested (days): Standard		Analysis Requested SVOCs 8270D - phthalates Explosives 8330B Pesticides 8081B (VI) Total Metals 6010C/6020A/7470A	
PO #: 0091979 WO #: 076003.009.007 TestAmerica Project #: 28014271 SSO#:	Sample Date: 04/18/17 Sample Time: 1035 Sample Type (C=comp, G=grab): G Matrix (W=water, S=solid, O=water, A=air): W	Total Number of Containers: 7 Special Instructions/Note: Checked by WTW	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:
Sample Identification SCFmw-004-041817-6W			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological			
Deliverable Requested <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months			
Special Instructions/QC Requirements:			
Relinquished by: [Signature]		Received by: [Signature]	
Relinquished by: [Signature]		Received by: [Signature]	
Relinquished by: [Signature]		Received by: [Signature]	
Date/Time: 04/18/17 1500 Date/Time: 4/18/17 1603		Date/Time: 4/18/17 1500 Date/Time: 4-19-17 0900	
Company: [Signature]		Company: [Signature]	
Company: [Signature]		Company: [Signature]	
Company: [Signature]		Company: [Signature]	
Cooler Temperature(s) °C and Other Remarks:			

Chain of Custody Record

Client Information Client Contact: Ms. Heather Miner Company: Cardno TEC, Inc Address: 1658 Cole Boulevard Suite 190 City: Golden State, Zip: CO, 80401 Phone: 0091979 Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Background Study Site:		Lab PM: McEntee, Patrick J E-Mail: patrick.mcEntee@testamericainc.com Carrier Tracking No(s): 810180071789 Lab Name: 810180071789 Job #:				
Due Date Requested: TAT Requested (days): Standard		Analysis Requested VOCs 8269B SVOCs 8270D - phthalate, nitroaromatics, phenols PAHs 8270D_SIM (LV) PCBs 8022A (L - TL) Explosives 8330B Pesticides 8081B (LV) Total Cyanide 9012B Total Metals 6010C/6020A/7470A Alkalinity 2320B Arions 9056A - Chloride & Sulfate, Nitrate & Nitrite - Hour HTI Sulfide 9034 ION NITRATE OR CHLORIDE				
Sample Identification BKGMW-008-041817-GW	Sample Date 04/18/17	Sample Time 1330	Sample Type G	Matrix W=water, S=solid, O=wastefoil, BT= tissue, AS=AP	Preservation Code W	Special Instructions/Note: Checked by UTW
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological Deliverable Requested: I, II, III, IV, Other (specify)						
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements:						
Empty Kit Relinquished by: Relinquished by: [Signature] Relinquished by: [Signature] Relinquished by: [Signature]						
Date: 4/18/17 1500 Date/Time: 4/18/17 1603 Date/Time:						
Received by: [Signature] Received by: [Signature] Received by: [Signature]						
Company: ATC Company: 260 Company:						
Cooler Temperature(s) °C and Other Remarks:						

Chain of Custody Record

Client Information	Sampler: <u>Heather Miner</u> Lab PM: <u>McEntee, Patrick J</u> Client Contact: <u>Ms. Heather Miner</u> Phone: <u>303-273-0231</u> E-Mail: <u>patrick.mcEntee@testamericainc.com</u>	Carrier Tracking No(s): <u>810480071789</u> COC No: _____ Page: _____ Job #: _____	
Company: Cardio TEC, Inc	Due Date Requested: _____ TAT Requested (days): <u>Standard</u>		
Address: 1658 Cole Boulevard, Suite 190	PO #: <u>0091979</u> W/O #: <u>076003.009.007</u> TestAmerica Project #: <u>28014271</u> SSO#: _____		
City: Golden	Project Name: <u>CAMP RAVENNA</u> Ravenna, OH - Ramsdell Quarry Landfill		
State, Zip: CO, 80401	Matrix (Swab, Swastol, Swastol, BTEX, AAR)		
Phone: _____	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)
Email: <u>heather.miner@cardio-gs.com</u>	<u>04/18/17</u>	<u>1400</u>	<u>G</u>
Preservation Codes: M - Hexane N - None O - AsNaO2 P - Nitric Acid Q - Na2SO4 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4.5 X - EDTA Y - EDA Z - other (specify)	Special Instructions/Note: <u>Checked by WTW</u>	Total Number of Containers: _____ Anions 9056 - Sulfate, Nitrate & Nitrite - 48 Hour HTI Sulfide 9034 2320B Hexavalent Chromium 7196A - 24 Hour HTI Total Metals 6010C6020A7470A Free Cyanide 4500 CN Total Cyanide 9012B Pesticides 8081B (LVI) Explosives 830B PCBs 8082A (LL - 1L) PHS 8270D SIM (LVI) SVOCs 8270D - phthalates, phenols SVOCs 8270D - phthalates, phenols SVOCs 8260B	
Sample Identification: <u>QRLmw-014-01017-610</u>			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological			
Deliverable Requested: I, II, III, IV, Other (specify) _____			
Empty Kit Relinquished by: _____ Date: _____			
Relinquished by: <u>[Signature]</u> Date/Time: <u>04/18/17</u>			
Relinquished by: <u>[Signature]</u> Date/Time: <u>4/18/17-1603</u>			
Relinquished by: _____ Date/Time: _____			
Custody Seal No.: _____ Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No			
Cooler Temperature(s) °C and Other Remarks: _____			

Login Sample Receipt Checklist

Client: Cardno TEC, Inc

Job Number: 280-96051-2

Login Number: 96051
List Number: 1
Creator: Pottruff, Reed W

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	No sample date and/or time on COC, logged in per container labels.
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	