

ANALYTICAL REPORT

Job Number: 280-96239-2

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 7:05 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: 280-96239-2

Qualifiers

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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: 280-96239-2

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 4/22/2017 12:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 8 coolers at receipt time were 0.1° C, 0.2° C, 0.8° C, 1.3° C, 1.4° C, 1.4° C, 2.8° C and 4.1° C.

Receipt Exceptions

Please note that the samples were not logged in the order in which they are listed on the chain of custody.

The Nitrocellulose 353.2_Nitrocell and Nitroguanidine 8330_NGu analyses will be performed at TestAmerica Sacramento.

No volume for Perchlorate 6860 analysis was received at the laboratory for sample BKGmw-024-042017-GW (280-96239-2). As such, this analysis cannot be performed. The client was notified on 4/24/2017.

No volume for Sulfide 9034 was received at the laboratory for sample BKGmw-510-042017-GW (280-96239-18). As such, this analysis cannot be performed. The client was notified on 4/24/2017.

1 x 250mL unpreserved amber and 2 x 250mL unpreserved poly bottles were not received at the laboratory for sample 510-042017-GW (280-96239-18). Sufficient volume remains for analysis. ~100mL was split off of a 1L unpreserved amber for the Anions 9056A and Alkalinity 2320B analyses. Sufficient 1L ambers remain to proceed with analysis. The client was notified on 4/24/2017.

Please note that the Nitrate and Nitrite 9056A volumes were received at the laboratory with limited time remaining in the 48 hour method holding time for samples BKGmw-024-042017-GW (280-96239-2) and BKGmw-023-042017-GW (280-96239-3). It is TestAmerica's policy to analyze all samples within holding times; however, the laboratory cannot guarantee that hold times will be met when samples are received with less than half the hold time remaining. The client was notified on 4/24/2017.

The FedEx delivery was delayed due to a malfunctioning aircraft. Due to this delay, it is unlikely that the Hexavalent Chromium 7196A analyses were performed within hold time. The laboratory has been asked for the analysis times; the client will be notified. BKGmw-021-042117-GW (280-96239-1), BKGmw-022-042117-GW (280-96239-17), BKGmw-510-042117-GW (280-96239-18) and LL1mw-084-042117-GW (280-96239-19)

The chain of custody requested only "Metals 6010" for sample BKGmw-021-042117-GW (280-96239-1); however, 6020A and 7470A were also logged, per the predetermined scope of work. The client was notified on 4/24/2017.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. There was no method selected for sample TB-042117-2 on the chain of custody. VOCs 8260B analysis was logged per the containers received. The client was notified on 4/24/2017.

On Saturday 4/22/2017, the Hexavalent Chromium volume for sample LL1mw-084-042117-GW was logged with the rest of the sample volume for this sample; however, as the Hexavalent Chromium volume has a later sample time, it was logged as a separate sample on Monday 4/24/2017. Sample LL1mw-084-042117-GW sample time of 1010 is laboratory sample 280-96239-12; the Hexavalent Chromium sample LL1mw-084-042117-GW sample time of 1550 is laboratory sample 280-96239-19. The Hexavalent Chromium analysis for sample 280-96239-12 was cancelled after the laboratory identified this result as sample 280-96239-19; the sample volume collected at 1550 was analyzed. LL1mw-084-042117-GW (280-96239-12) and LL1mw-084-042117-GW (280-96239-19)

The Non-DOD method SM20 4500_CN_I are reported under job 280-96239-2 with standard data qualifiers applied. All DOD methods/analytes are reported under job 280-96239-1.

FREE CYANIDE

Sample LL1mw-084-042117-GW (280-96239-12) 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: 280-96239-2

Client Sample ID: LL1mw-084-042117-GW

Lab Sample ID: 280-96239-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Cyanide, Free	3.5	J	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: 280-96239-2

Client Sample ID: LL1mw-084-042117-GW

Lab Sample ID: 280-96239-12

Date Collected: 04/21/17 10:10

Matrix: Water

Date Received: 04/22/17 12:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Free	3.5	J	10	2.0	ug/L		04/28/17 11:15	04/29/17 12:39	1

Default Detection Limits

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

TestAmerica Job ID: 280-96239-2

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: 280-96239-2

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

QC Association Summary

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

TestAmerica Job ID: 280-96239-2

General Chemistry

Prep Batch: 371422

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-96239-12	LL1mw-084-042117-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	

Analysis Batch: 371518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-96239-12	LL1mw-084-042117-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

Lab Chronicle

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

TestAmerica Job ID: 280-96239-2

Client Sample ID: LL1mw-084-042117-GW

Lab Sample ID: 280-96239-12

Date Collected: 04/21/17 10:10

Matrix: Water

Date Received: 04/22/17 12:00

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 12:39	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: 280-96239-2

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: 280-96239-2

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: 280-96239-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-96239-12	LL1mw-084-042117-GW	Water	04/21/17 10:10	04/22/17 12:00

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver

Job No.: 280-96239-2

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: 280-96239-2

SDG No.: _____

Project: Camp Ravenna, OH

Client Sample ID
LL1mw-084-042117-GW

Lab Sample ID
280-96239-12

Comments:

1B-IN
 INORGANIC ANALYSIS DATA SHEET
 GENERAL CHEMISTRY

Client Sample ID: LL1mw-084-042117-GW

Lab Sample ID: 280-96239-12

Lab Name: TestAmerica Denver

Job No.: 280-96239-2

SDG ID.: _____

Matrix: Water

Date Sampled: 04/21/2017 10:10

Reporting Basis: WET

Date Received: 04/22/2017 12:00

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
	Cyanide, Free	3.5	10	2.0	ug/L	J		1	SM 4500 CN I

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96239-2

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.: 280-96239-2

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							

7A-IN
 LAB CONTROL SAMPLE
 GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96239-2

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.: 280-96239-2
 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.: 280-96239-2

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.: 280-96239-2
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: 280-96239-2

SDG Number: _____

Matrix: Water

Instrument ID: WC_Alp 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: 280-96239-2
SDG Number: _____
Matrix: Water Instrument ID: WC_Alp 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.: 280-96239-2

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
280-96239-12	04/28/2017 11:15	371422		50	50

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-96239-2

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.: 280-96239-2

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	
280-96239-K-12	LL1mw-084-042117 -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							
280-96239-K-12	LL1mw-084-042117 -GW	SM 4500 CN I, SM 4500 CN I	T						

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.: 280-96239-2

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: _____

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.: 280-96239-2

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				
280-96239-K-12-A	LL1mw-084-042117 -GW	SM 4500 CN I	T	50 mL	50 mL				
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

File name: C:\FLOW_4\C042917.RST

Date: 29-Apr-17

Operator: JML

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

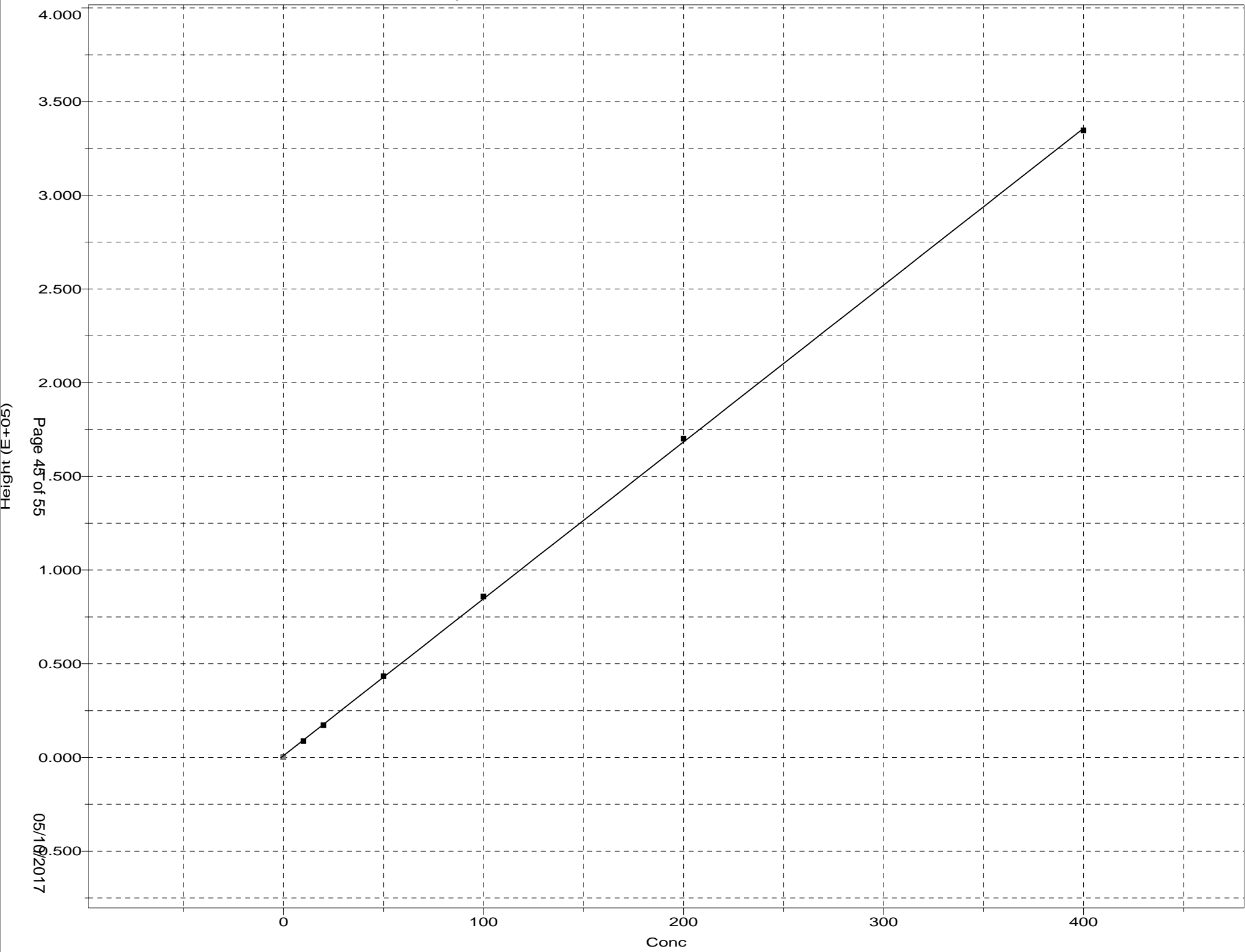
b: 8.3688e+02

Corr Coef: 0.999960

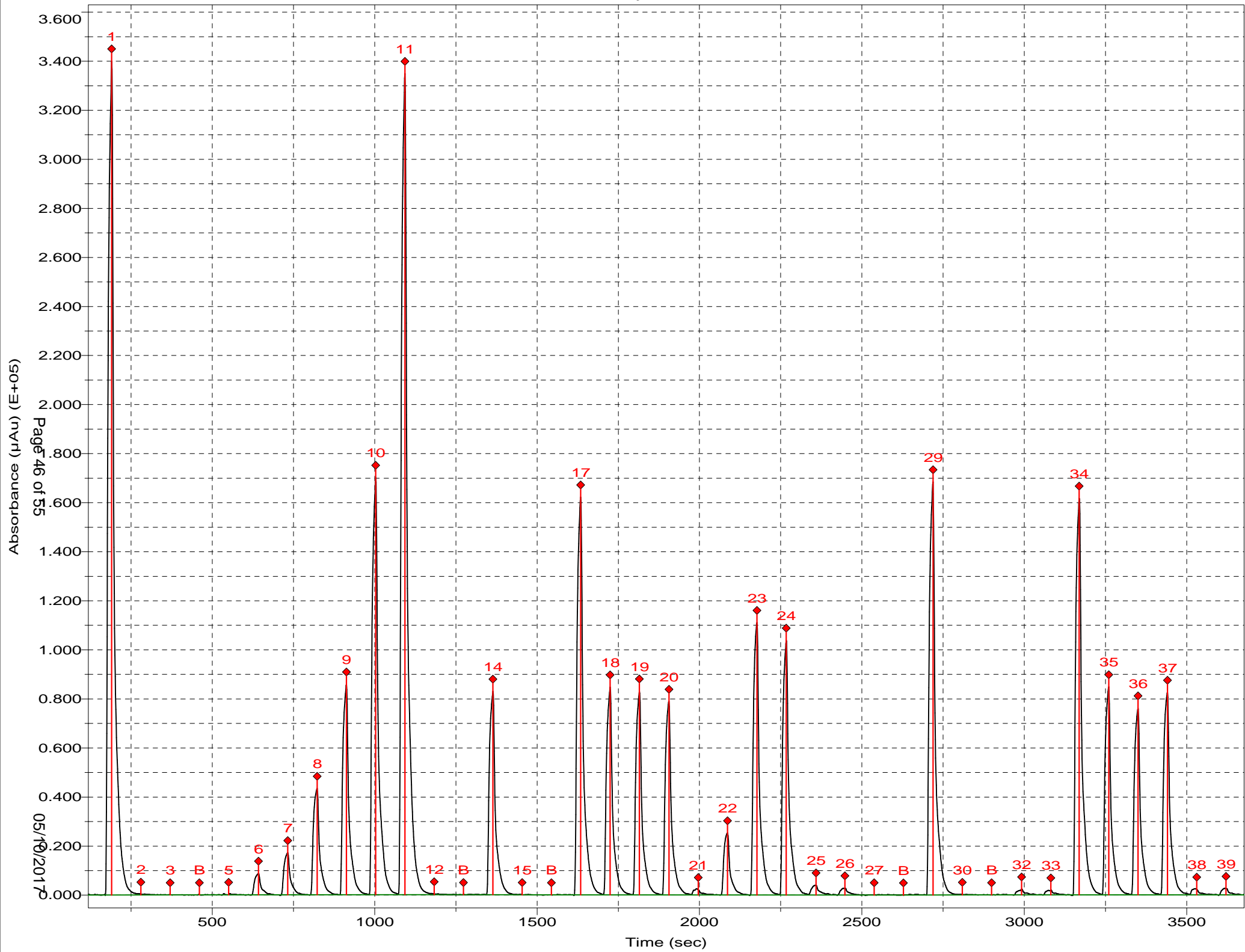
Carryover: 0.0861%

No Drift Peaks

Cyanide, Total:Calibration 1: Peak 5-75



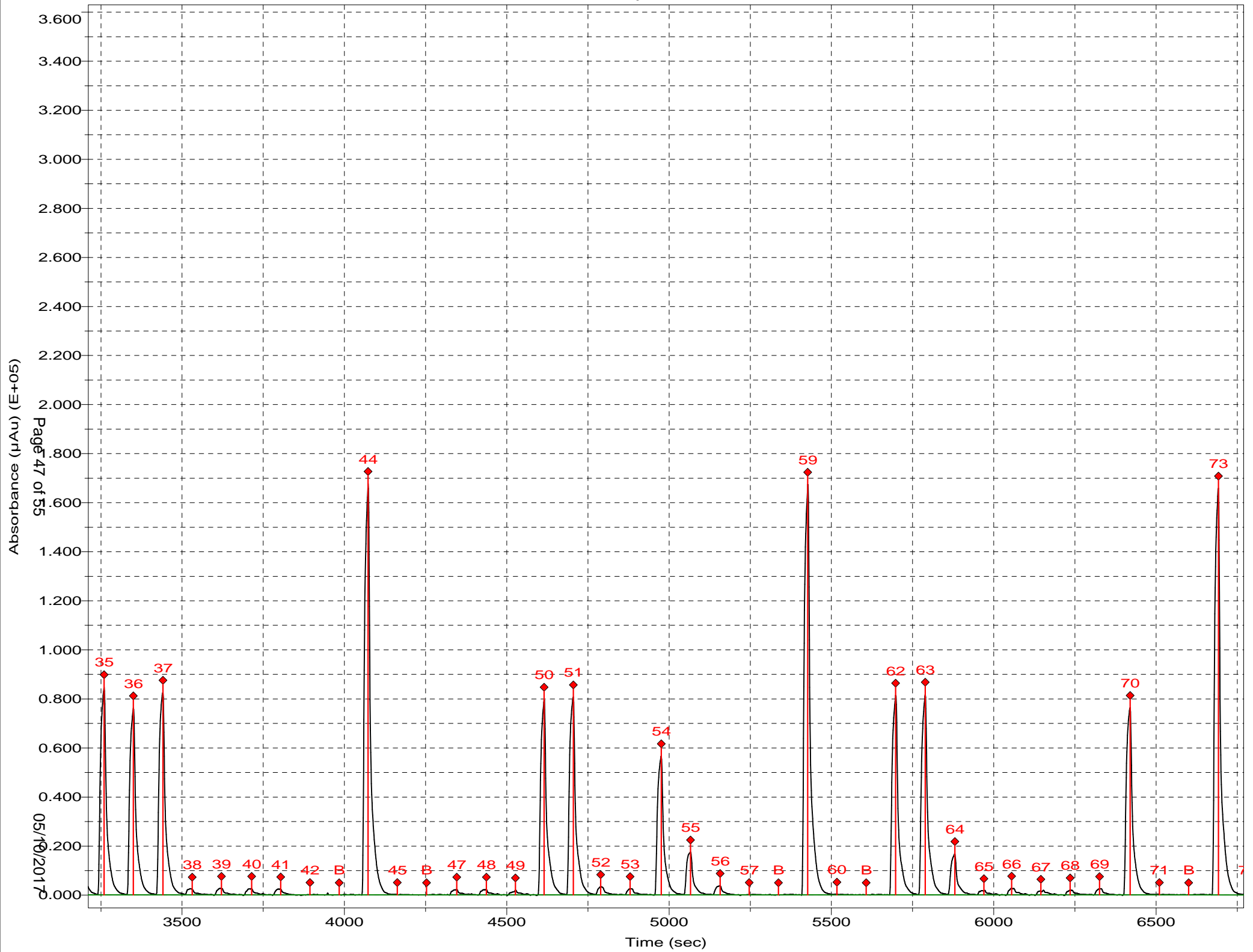
Channel 1: Cyanide, Total



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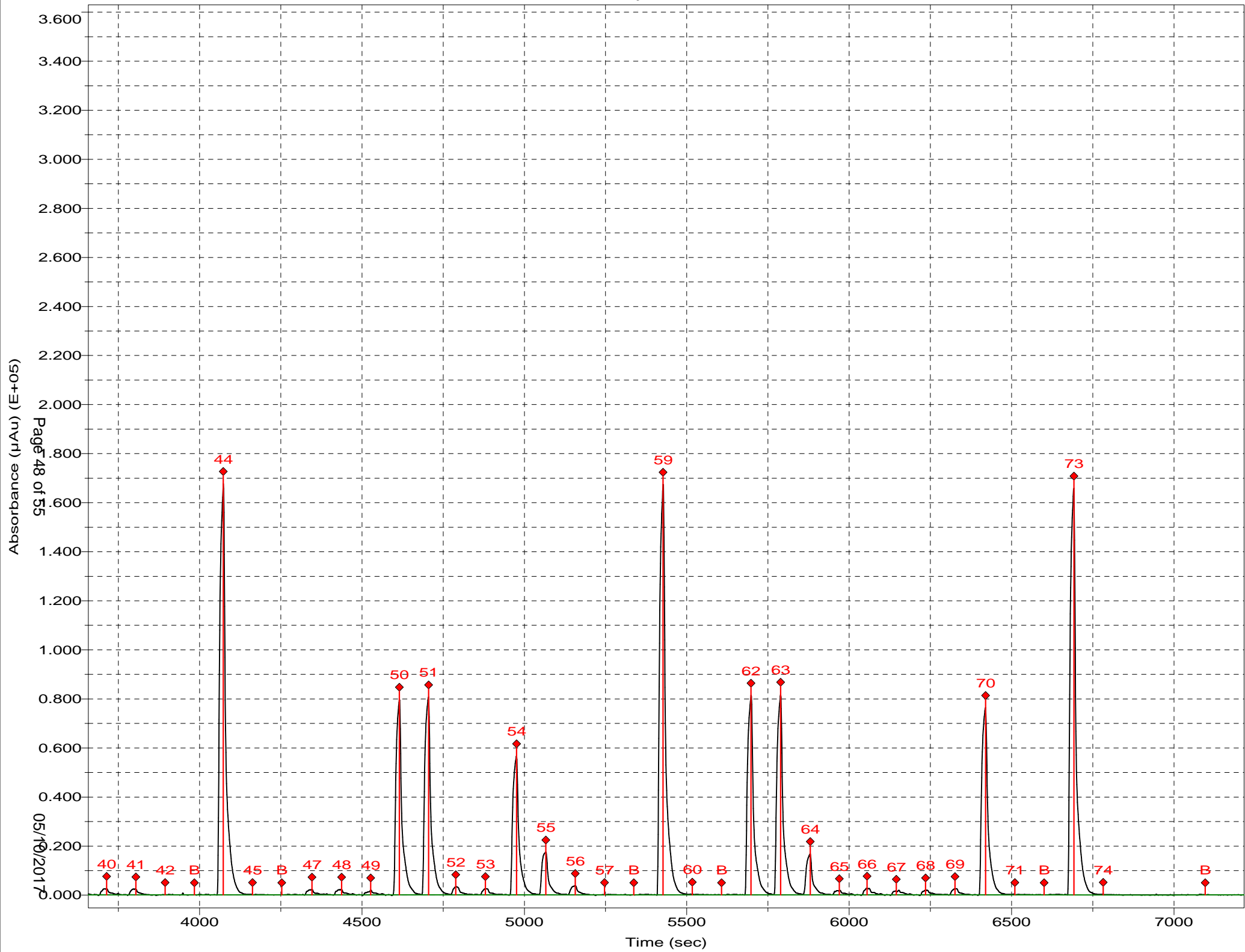
Channel 1: Cyanide, Total



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Channel 1: Cyanide, Total



Shipping and Receiving Documents

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: _____ Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH Site: _____		Lab PM: McEntee, Patrick J E-Mail: patrick.mcEntee@testamericainc.com Carrier Tracking No(s): 810486072970	
Sampler: Kroenke Phone: 330.388.1598		Analysis Requested Due Date Requested: _____ TAT Requested (days): Standard	
PO #: 0091979 WO #: 076003.009.007 TestAmerica Project #: 28014271 SSOW#: _____		Total Number of Containers: _____	
Sample Identification Sample ID: LLMW-084-042117-6W Sample ID: BK6 MW-022-042117-6W Sample ID: BK6 MW-021-042117-6W Sample ID: BK6 MW-510-042117-6W Sample ID: BK6 MW-021-042117-6W		Special Instructions/Note: Checked by WTW	
Sample Date: 4/21/17 Sample Time: 1550 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Other): W	Field Filtered Sample (Yes or No): N Perform MS/MSD (Yes or No): N	Preservation Code: G Matrix (Water, Solid, Other): W	Date/Time: 4/21/17 1550
Sample Date: 4/21/17 Sample Time: 1545 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Other): W	Field Filtered Sample (Yes or No): N Perform MS/MSD (Yes or No): N	Preservation Code: G Matrix (Water, Solid, Other): W	Date/Time: 4/21/17 1545
Sample Date: 4/21/17 Sample Time: 1455 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Other): W	Field Filtered Sample (Yes or No): N Perform MS/MSD (Yes or No): N	Preservation Code: G Matrix (Water, Solid, Other): W	Date/Time: 4/21/17 1455
Sample Date: 4/21/17 Sample Time: 1436 Sample Type (C=comp, G=grab): G Matrix (Water, Solid, Other): W	Field Filtered Sample (Yes or No): N Perform MS/MSD (Yes or No): N	Preservation Code: G Matrix (Water, Solid, Other): W	Date/Time: 4/21/17 1436
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		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	
Deliverable Requested: I, II, III, IV, Other (specify) _____		Special Instructions/QC Requirements: _____	
Empty Kit/Relinquished by: Kroenke Relinquished by: _____ Relinquished by: _____		Method of Shipment: _____ Date: 4/21/17 1830 Date/Time: 4/21/17 1830 Date/Time: 4/22/17 1200 Date/Time: _____	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No Custody Seal No.: _____		Cooler Temperature(s) °C and Other Remarks: 1.1, 2.8, 0.2, 0.8, 0.1, 4.1, 1.4, 1.3, 12#7, -0.0 4/22/17 GP	

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: _____ Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Background Study Site: _____		Sampler: Multiple, hexavalent lead Lab PM: McEntee, Patrick J Phone: 330 388 1578 E-Mail: patrick.mcintee@testamericainc.com		Job #: 80412300074377 Page: 804 800 7366 Page: 804 860 7903 Job #: _____			
Due Date Requested: _____ TAT Requested (days): Standard		Analysis Requested					
FO #: 0091979 WO #: 076003.009.007 TestAmerica Project #: 28014271 SSOW#: _____		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No VOCs 826B <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No SVOCs 827D - phthalate, nitroaromatics, phenols <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No PAHs 827D_SIM (LW) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No PCBs 8082A (L - TL) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Explosives 833B <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Pesticides 8081B (LV) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Total Cyanide 9012B <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Total Metals 6010C/6020A/470A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Alkalinity 232B <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Anions 9056A - Chloride & Sulfate, Nitrate & Nitrite - 48 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Hour HTI <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Slide 9034 <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Total Number of Containers: 353.2 N.H. Quantities: 8330 N.H. Quantities: 8330 # Bottles: _____					
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=soil, BT=tissue, A=air)	Preservation Code	Special Instructions/Note:
BK6 MW-024-042017-GW	4/20/17	1535	G	W		X 23	
BK6 MW-023-042017-GW	4/20/17	1455	G	W		X 23	
BK6 MW-D18-042017-GW	4/20/17	1453	G	W		4	
BK6 MW-509-042017-GW	4/20/17	1513	G	W		2	
BK6 MW-017-042017-GW	4/20/17	1555	G	W		4	
BK6 MW-017-042017-GF	4/20/17	1555	G	W		1	
TB-042117				W			

Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological
 Deliverable Requested: I, II, III, IV, Other (specify) _____

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: Amanda Date/Time: 4/21/17 1500 Company: ATC
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: _____

Received by: RC Date/Time: 4/21/17 1500 Company: TestAmerica
 Received by: _____ Date/Time: 4/22/17 1200 Company: TAD
 Received by: _____ Date/Time: _____ Company: _____

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): 810486072169 810486072158 Job #:	
Due Date Requested: TAT Requested (days): <i>Standard</i>		Analysis Requested Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> VOCs 826B A N SVOCs 827D - phthalate, nitroaromatics, phenols A N PAHs 827D, SIM (LV) N N PCBs 8082A (LL - 1L) N N Explosives 833B N N Pesticides 8081B (LVI) N N Total Cyanide 9012B B D Total Metals 6010C/6020A/7470A N N Alkalinity 232B N N Anions 9056A - Chloride & Sulfate, Nitrate & Nitrite - 48 N N Hour HTI N N Sulfide 9034 N N	
Sample Identification BKGMW-022-042117-610 BKGMW-022-012 BKGMW-510-042117-610		Matrix (W=Water, S=Soil, G=Gravel/Sand, BT=Tissue, A=Air) Sample Type (C=Comp, G=grab) Preservation Code: Sample Time Sample Date 1545 4/21/17 6 10 1455 4/21/17 6 10	
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		Special 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	
Deliverable Requested: I, II, III, IV, Other (specify) Empty Kit Relinquished by:		Special Instructions/OC Requirements: Method of Shipment:	
Relinquished by: <i>Shvenclo</i> Relinquished by: Relinquished by:		Received by: <i>HTC</i> Received by: Received by:	
Date/Time: 4/21/17 Date/Time: Date/Time:		Date/Time: 4/21/17 1830 Date/Time: 4/22/17 1200 Date/Time:	
Company: <i>Shvenclo</i> Company: Company:		Company: <i>HTC</i> Company: Company:	
Custody Seals Intact: Yes <input type="checkbox"/> No <input type="checkbox"/>		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: 303 388 1518 Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Load Line 1 Site:		Lab PM: McEnlee, Patrick J Carrier Tracking No(s): 804800727D E-Mail: patrick.mcenlee@testamericainc.com			
Due Date Requested: TAT Requested (days): Standard		Analysis Requested Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No VOCs 8260B <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N SVOCs 8270D - phthalates <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N SVOCs 8270D - phthalates, phthalates, phenols <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N PAHs 8270D SIM (LV) <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N PCBs 8082A (LL - 1L) <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Explosives 8330B <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Pesticides 8081B (LV) <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Total Cyanide 9012B <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Free Cyanide 4500 CN <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Total Metals 6010C/6020A/7470A <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Hexavalent Chromium 7196A - 24 Hour HTI <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Alkalinity 2320B <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Sulfide 9034 <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Anions 9056A - Sulfate, Nitrate & Nitrite - 48 Hour HTI <input checked="" type="checkbox"/> A <input type="checkbox"/> N <input type="checkbox"/> N Total Number of Containers: 633			
PO #: 0091979 WO #: 076003.009.007 TestAmerica Project #: 28014271 SSOW#:		Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2O45 Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify) Other: Checked by WTW			
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=volatile)	Preservation Code: (BT=Issue, A=Air)
LL1MW-0810-042117-6W	4/21/17	1440	G	W	W
LL5MW-001-042117-6W	4/21/17	1443	G	W	W
TB-042117-6W-2	-	-	G	W	W
LL1MW-0810-042117-6W-2	4/21/17	1440	G	W	W

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological
 Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: A. Browne Date/Time: 4/21/17 1830 Company: ATC
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Special Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/OC Requirements:

Method of Shipment: _____
 Date: _____
 Received by: _____ Date/Time: 4/21/17 1830 Company: Fedex
 Received by: _____ Date/Time: 4/22/17 1200 Company: TAD
 Received by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No
 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: [blank] Email: heather.miner@cardno-gs.com Project Name: Ravenna, OH - Load Line 1 Site: [blank]		Sampler: <i>Multiplex/hoenke lead</i> Lab PM: McEntee, Patrick J Phone: 330 388 1598 E-Mail: patrick.mcEntee@testamericainc.com		Carrier Tracking No(s): 7 810480061010		COC No: Page: Page: Job #:																		
Due Date Requested: TAT Requested (days): <i>Standard</i> FO #: 0091979 WO #: 076003-009-007 TestAmerica Project #: 28014271 SSOW#: [blank]		Analysis Requested																						
Sample Identification Sample ID: LL1mw-081-042117-6w LL1mw-080-042117-6w LL1mw-085-042117-6w LL1mw-084-042117-6w -tet-KSK		Sample Date 04/21/17 04/21/17 04/21/17 04/21/17	Sample Time 11:30 10:15 12:12 10:10	Sample Type (C=comp, G=grab) G G G G	Matrix (W=water, S=solid, O=soil, BT=tissue, A=air) W W W W	Preservation Code: N W W W	Field Filtered Sample (Yes or No) N N N N	Perform MS/MSD (Yes or No) X X X X	VOCs 8280B A N N N	SVOCs 8270D - phthalates N N N N	SVOCs 8270D - phthalates, nitroaromatics, phenols N N N N	PAHs 8270D SIM (LVI) N N N N	PCBs 8082A (LL - TL) N N N N	Explosives 8330B N N N N	Pesticides 8081B (LVI) N N N N	Total Cyanide 9012B B B B B	Free Cyanide 4500 CN I D D D D	Total Metals 6010C/6020A/470A N N N N	Hexavalent Chromium 7196A - 24 Hour HTI N N N N	Alkalinity 2320B N N N N	Sulfide 9034 B/C/N B/C/N B/C/N B/C/N	Anions 9056A - Sulfate, Nitrate & Nitrite - 48 Hour HTI X X X X	Total Number of Containers X X X X	Special Instructions/Note: 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:		Date:		Method of Shipment:																				
Relinquished by: <i>Hoehnke</i>		Date/Time: 4/21/17 1500		Received by: <i>RE [Signature]</i>																				
Relinquished by:		Date/Time:		Received by: <i>JAD</i>																				
Relinquished by:		Date/Time:		Received by:																				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:																				

Login Sample Receipt Checklist

Client: Cardno TEC, Inc

Job Number: 280-96239-2

Login Number: 96239
List Number: 1
Creator: Parrott, Gregg S

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.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
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	False	Refer to Job Narrative for details.
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	