Report of Mercury Analysis
IC Traps

Project: 200454.0000.0000
Report Date: March 7, 2014

Prepared for:
Gary Hunt
TRC Environmental
21 Griffin Road North
Windsor, CT 06095

Brooks Rand Labs
Project ID: TRC-LW1401

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Case Narrative

Shipping and Receiving

On February 5, 2014, Brooks Rand Labs (BRL) received four (4) iodated carbon (IC) traps at 11:40 A.M. in a box at ambient temperature. The chain-of-custody (COC) form requested analysis for total mercury (Hg). The COC form did not list sample collection dates. The samples were received and stored securely according to BRL standard operating procedures (SOP) and EPA methodology.

Preservation and Holding Time

All method and SOP requirements for preservation and holding time were satisfied.

Total Mercury in IC Traps by EPA Method 324/1631 (SOP BR-0007)

All samples are prepared in accordance with EPA Method 324 and analyzed in accordance with EPA Method 1631. Samples are digested with nitric acid and sulfuric acid at 90^{o}C for 4 hours, oxidized with bromine monochloride (BrCl) and then analyzed with stannous chloride ($SnCl_2$) reduction, single gold amalgamation, and cold vapor atomic fluorescence spectroscopy (CVAFS) detection using a Brooks Rand Instruments MERX-T CVAFS Mercury Automated-Analyzer.

The results were method blank-corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

Samples were reported on a ng/trap basis.

Samples results that were less than the MDL were qualified **U** and reported at the MDL.

Sequence 1400137

Instrument calibration, meeting all quality control criteria, was successfully achieved on the day of sample analysis.

Batch B140197

The sample *B'ville-Hg-Spike* (1406018-04) was spiked with 50 ng of Hg at BRL before shipping to the client. The client ran air through this trap, just like the other samples. If the initial sample was *B'ville-Hg-1-Col* (1406018-02), the percent recovery of the spiked trap was 94%. If the initial sample was *B'ville-Hg-1-Pri* (1406018-01), the percent recovery of the spiked trap was 49.8%.

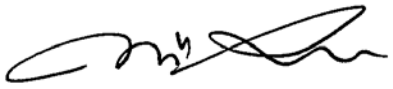
The method blank (BLK) BLK5 was a trap blank prepared at BRL with an un-used trap to show that the IC material stored in a trap is not a source of Hg itself. The result for BLK was non-detectable at 0.5 ng/trap. It was not included with the other BLKs that were prepared with the batch since it is not used to correct results.

The blank spike (BS) BS1 was an IC trap that was spiked with 50 ng of Hg at the same time the as the spiked trap sent to the client.

Aside from concentration qualifiers, all data was reported without qualification and all associated quality control sample results met the acceptance criteria.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more details, please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Lydia Greaves
Project Manager
lydia@brooksrand.com



Mi Sun Um
Data Manager
misun@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction
IBL	instrument blank		

Definition of Data Qualifiers

(Effective 9/23/09)

B	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Result is estimated.
J	Estimated value. A full explanation is presented in the narrative.
J-M	Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N	Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M	Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N	Spike recovery was not within acceptance criteria. Result is estimated.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
B'ville-Hg-1-Pri	1406018-01	IC Trap	Sample	unknown	02/05/2014
B'ville-Hg-1-Col	1406018-02	IC Trap	Sample	unknown	02/05/2014
Lucketts-Hg-1	1406018-03	IC Trap	Sample	unknown	02/05/2014
B'ville-Hg-Spike	1406018-04	IC Trap	Field Spike	unknown	02/05/2014

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	IC Trap	EPA 324/1631 Manual	02/17/2014	02/20/2014	B140197	1400137

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
B'ville-Hg-1-Col										
1406018-02	Hg	IC Trap	NA	1.1	U	1.1	3.3	ng/m³	B140197	1400137
B'ville-Hg-1-Pri										
1406018-01	Hg	IC Trap	NA	22.1		1.1	3.3	ng/m³	B140197	1400137
B'ville-Hg-Spike										
1406018-04	Hg	IC Trap	NA	47.0		1.1	3.3	ng/m³	B140197	1400137
Lucketts-Hg-1										
1406018-03	Hg	IC Trap	NA	1.1	U	1.1	3.3	ng/m³	B140197	1400137

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Accuracy & Precision Summary

Batch: B140197
Lab Matrix: IC Trap
Method: EPA 324/1631 Manual

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B140197-BS1	**Laboratory Fortified Blank (1350014)**						
	Hg		50.00	50.7	ng/m³	101% 80-120	
B140197-BS2	**Laboratory Fortified Blank (1350014)**						
	Hg		100.0	107.3	ng/m³	107% 80-120	

Method Blanks & Reporting Limits

Batch: B140197
Matrix: IC Trap
Method: EPA 324/1631 Manual
Analyte: Hg

Sample	Result	Units
B140197-BLK1	0.2	ng/m³
B140197-BLK2	0.08	ng/m³
B140197-BLK3	0.05	ng/m³
B140197-BLK4	0.002	ng/m³

Average: 0.1 **Standard Deviation:** 0.1 **MDL:** 1.1
Limit: 2.2 **Limit:** 0.7 **MRL:** 3.3

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Instrument Calibration

Sequence: 1400137
Instrument: THG-05
Date: 02/20/2014
Analyte: Hg

Total Mercury and Mercury Speciation by CVAFS
Method: EPA 324/1631 Manual

Lab ID	True Value	Result	Units	REC & Limits	
1400137-IBL1		1.8	pg of Hg		
1400137-IBL2		1.8	pg of Hg		
1400137-IBL3		2.2	pg of Hg		
1400137-IBL4		1.7	pg of Hg		
1400137-CAL1	10.00	9.5	pg of Hg	95%	
1400137-CAL2	25.00	24.9	pg of Hg	100%	
1400137-CAL3	100.0	100.4	pg of Hg	100%	
1400137-CAL4	500.0	511.6	pg of Hg	102%	
1400137-CAL5	2500	2514	pg of Hg	101%	
1400137-CAL6	10000	10250	pg of Hg	103%	
1400137-ICV1	1568	1625	pg of Hg	104%	90-110
1400137-CCB1		3.8	pg of Hg		
1400137-CCV1	1000	1007	pg of Hg	101%	90-110
1400137-CCB2		2.3	pg of Hg		
1400137-CCB3		2.1	pg of Hg		
1400137-CCB4		1.9	pg of Hg		
1400137-CCV2	500.0	505.7	pg of Hg	101%	90-110
1400137-CCB5		1.9	pg of Hg		
1400137-CCV3	500.0	513.2	pg of Hg	103%	90-110
1400137-CCB6		1.8	pg of Hg		

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Sample Containers

Lab ID: 1406018-01
Sample: B'ville-Hg-1-Pri
Comments: Primary Volume

Report Matrix: IC Trap
Sample Type: Sample

Collected: unknown
Received: 02/05/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap		09016	none	n/a		Cardboard Box

Lab ID: 1406018-02
Sample: B'ville-Hg-1-Col
Comments: Collocate Volume

Report Matrix: IC Trap
Sample Type: Sample

Collected: unknown
Received: 02/05/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap		09016	none	n/a		Cardboard Box

Lab ID: 1406018-03
Sample: Lucketts-Hg-1
Comments: Volume

Report Matrix: IC Trap
Sample Type: Sample

Collected: unknown
Received: 02/05/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap		09016	none	n/a		Cardboard Box

Lab ID: 1406018-04
Sample: B'ville-Hg-Spike
Comments: Spike

Report Matrix: IC Trap
Sample Type: Field Spike

Collected: unknown
Received: 02/05/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap		09019	none	n/a		Cardboard Box

Shipping Containers

Cardboard Box

Received: February 5, 2014 11:40
Tracking No: 521442180661 via FedEx
Coolant Type: None
Temperature: ambient

Description: Cardboard Box
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

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Chain of Custody Record

Page_____of_____

1406018

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TRC Environmental	Address: 21 Griffin Road North, Windsor, CT	COC receipt confirmation? Y / N If so, by: email / fax (circle one)
Contact: Gary Hunt		Email:ghunt@trcsolutions.com
Client project ID: 200454.0000.0000	Phone #:	Fax #:
PO #:		

Requested TAT in business days:
☒ 20 (standard)
☐ 15
☐ 10
☐ 5
☐ Other ____
Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Misc: Sampler (initials)	Misc: Matrix type	Misc: # of containers	Misc: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As / Se species (specify)	Analyses required: % Solids	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	B'ville-Hg- 1 -Pri										X								Primary Volume:
2	B'ville-Hg- 1 -Col										X								Collocate Volume:
3	Lucketts-Hg- 1										~~X~~								volume:
4	~~FBB-Hg~~																		~~field blank~~
5	B'ville-Hg-Spike										X								Spike
6																			
7																			
8																			
9																			
10																			

Relinquished by: S. Boyle	Date: 2-4-2014	Time: 14:30	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date:	Time:
Shipping carrier:	# of coolers:		BRL work order ID:	BRL project ID:	

ORIGIN ID:EHTA (860) 298-6346
THERESA BREAULT
TRC
21 GRIFFIN ROAD NORTH

WINDSOR, CT 06095
UNITED STATES US

SHIP DATE: 04FEB14
ACTWGT: 1.5 LB
CAD: 929335/CAFE2704

BILL SENDER

TO

BROOKS RAND LLC
3958 SIXTH AVE NORTHWEST
SAMPLE RECIEVING
SEATTLE WA 98107
(206) 632-6206
DEPT: STACK

REF: 200454.0000.0000

518C1/562F/6F03

FedEx Express

J1911130052390126

TRK# 0201 5214 4218 0661

WED - 05 FEB 10:30A
PRIORITY OVERNIGHT

NC BFIA

98107
WA-US SEA

Part # 156148-434 RRT2 10/12

Sample Calculations

CVAFS

EPA 1631, IC Trap

$$\frac{\frac{CFD}{A} - \frac{BF_d}{A_d}}{I * 1000}$$

C – result produced at the instrument, pg
F – final volume of the sample preparation, mL
D – dilution factor of any dilution of the preparation made at the instrument (*1)
A – analyzed volume of the prep or dilution of the prep, mL
B- the mean of the method blank instrument result, pg
F_d – default final prep volume for the method used for the method blanks, 40 mL
A_d – default analyzed volume for the method used for the method blanks, 0.1 mL
I – aliquot of sample prepared, g.

ANALYSIS SEQUENCE

1400137

Brooks Rand Labs

Instrument: THG-05

Lab Number	Batch #	Analysis	Order	STD ID	Source ID	BRL Project #	Due	Comments
1400137-IBL1	1400137	QC	1		-			
1400137-IBL2	1400137	QC	2		-			
1400137-IBL3	1400137	QC	3		-			
1400137-IBL4	1400137	QC	4		-			
1400137-CAL1	1400137	QC	5	1407002	-			
1400137-CAL2	1400137	QC	6	1407003	-			
1400137-CAL3	1400137	QC	7	1407004	-			
1400137-CAL4	1400137	QC	8	1407005	-			
1400137-CAL5	1400137	QC	9	1407006	-			
1400137-CAL6	1400137	QC	10	1407007	-			
1400137-ICV1	1400137	QC	11	1407008	-			
1400137-CCB1	1400137	QC	12		-			
1400137-CCV1	1400137	QC	13	1408017	-			
1400137-CCB2	1400137	QC	14		-			
1400137-CCB3	1400137	QC	15		-			
1400137-CCB4	1400137	QC	16		-			
B140197-BLK1	B140197	QC	17		-			
B140197-BLK2	B140197	QC	18		-			
B140197-BLK3	B140197	QC	19		-			
B140197-BLK4	B140197	QC	20		-			
B140197-BLK5	B140197	QC	21		-			
B140197-BS1	B140197	QC	22		-			
B140197-BS2	B140197	QC	23		-			
1406018-01	B140197	Hg-IC-70:30+BrCl-MerxT	24			TRC-LW1401	2/27/2014	
1406018-02	B140197	Hg-IC-70:30+BrCl-MerxT	25			TRC-LW1401	2/27/2014	
1406018-03	B140197	Hg-IC-70:30+BrCl-MerxT	26			TRC-LW1401	2/27/2014	

ANALYSIS SEQUENCE

1400137

Brooks Rand Labs

Instrument: THG-05

Lab Number	Batch #	Analysis	Order	STD ID	Source ID	BRL Project #	Due	Comments
1400137-CCV2	1400137	QC	27	1407009	-			
1400137-CCB5	1400137	QC	28		-			
1406018-04	B140197	Hg-IC-70:30+BrCl-MerxT	29			TRC-LW1401	2/27/2014	
1407008-01	B140197	Hg-IC-70:30+BrCl-MerxT	30			TRC-LW1401	3/5/2014	
1407008-02	B140197	Hg-IC-70:30+BrCl-MerxT	31			TRC-LW1401	3/5/2014	
1407008-03	B140197	Hg-IC-70:30+BrCl-MerxT	32			TRC-LW1401	3/5/2014	
1407008-04	B140197	Hg-IC-70:30+BrCl-MerxT	33			TRC-LW1401	3/5/2014	
1400137-CCV3	1400137	QC	34	1407009	-			
1400137-CCB6	1400137	QC	35		-			

SOP(s)/Rev#(s):BR-007 Rev 002

THg Analysis Benchsheet: THg MERX-T

Sequence:_ 1400137 _ Batches: B140197

Analyst: BJT Date: 2/20/14 Instrument ID: THG 5

10 ng/mL std ID: 14060030 $SnCl_2$ ID: 14050206

1 ng/mL std ID: 14060031 NH_2OH-HCl ID: 14060264

ICV std ID: 14060032 Balance ID: —

* all sample volumes are determined volumetrically unless otherwise noted

	Run# / Pos #	BRL Sample ID	Analyze Vol *(mL)	Dilution Factor	Analysis Comments / for spiked QC: Source ID, standard ID, and spike volume
	1	Rinse	--		
	2	Rinse	--		
	3	SEQ-IBL1	--		
	4	SEQ-IBL2	--		
	5	SEQ-IBL3	--		
	6	SEQ-IBL4	--		
	7	SEQ-CAL1	0.01		1 ng/mL
	8	SEQ-CAL2	0.025		1 ng/mL
	9	SEQ-CAL3	0.1		1 ng/mL
	10	SEQ-CAL4	0.05		10 ng/mL
	11	SEQ-CAL5	0.25		10 ng/mL
	12	SEQ-CAL6	1		10 ng/mL
	13	SEQ-ICV1	1		NIST 1641d
	14	SEQ-CCB1	--		
	15	SEQ-CCV	0.05		10 ng/mL double Spiked.
	16	SEQ-CCB	--		
	17	SEQ-CCB	--		
	18	SEQ-CCB	--		
	19	B140197-BLK1	0.1		
	20	B140197-BLK2	0.1		
	21	B140197-BLK3	0.1		
	22	B140197-BLK4	0.1		
	23	B140197-BLK5	0.1		
	24	B140197-BS1	0.1		

	25	B140197-BS2	0.1		
	26	1406018-01	0.1		
	27	1406018-02	0.1		
	28	1406018-03	0.1		
	29	SEQ-CCV	0.05		10 ng/mL
	30	SEQ-CCB	--		
	31	1406018-04	0.1		
	32	1407008-01	0.1		
	33	1407008-02	0.1		
	34	1407008-03	0.1		
	35	1407008-04	0.1		
	36	SEQ-CCV	0.05		10 ng/mL
	37	SEQ-CCB	--		
	38				
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2/24/14
BJ

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2/21/14
1300

THg IC Traps

Brooks Rand Labs

THg Biota Prep Benchsheet

SOP / Revision #: ~~BR-0002 Rev~~ BR-0007 Rev. 002

Prepped By: AAP

Batch: B140197

Preparation Start Date/Time*: 2.17.14/1300

* Time is when the first reagents are added.

Preparation End Date/Time**: 2/18/14 @ 0730

** Time is when the last sample is brought upto volume

Sample ID	Sample Mass (g)
1406018-01	
1406018-02	
1406018-03	
1406018-04	
1407008-01	
1407008-02	
1407008-03	
⊛ 1407008-04	
B140197-BLK1	—
B140197-BLK2	—
B140197-BLK3	—
B140197-BLK4	—
B140197-BS1	—
B140197-BS2	—
⊛ BLK5	—

2/17/14 BJT

Sample ID	Sample Mass (g)

2/17/14 BJT

Sample ID	Sample Mass (g)

2/17/14 BJT

Batch QC ID	Sample Source	Spike vol (uL)	Spike conc (ng/mL)	Spike/CRM ID	Spike Witness
✩ BS1	—			2/17/14 BJT	
BS2	—	100	1000	1350014	2/17/14 BJT

2.17.14 MP

~~Target Temp/Time 1: 70 C/1 hour~~ 2/17/14 BJT

Target Temp/Time 2: 90-100 C/~~3~~ 4hr hrs 2/17/14 BJT

Temp/Time 1 (measured / corrected): ~~/~~ 2/17/14 BJT

Temp/Time 2 (measured / corrected): 90 / 89°C / 1319

Balance ID: —

Thermometer ID: 009509

Final Dilution Vol: 40mL

Reagent	ID
5.6mL ~~7 mL~~ HNO_3	1350076
2.4mL ~~3 mL~~ H_2SO_4	1344029
up to 40mL w/ 35/~~0.5 mL~~ BrCl	1349009

2/17/14 BJT

Comments:

⊛ spiked @ 50ng (trap itself)

✩ BS1 was a spiked trap. Spiked at 50ng w/1350014 (1.15.14 BJT)

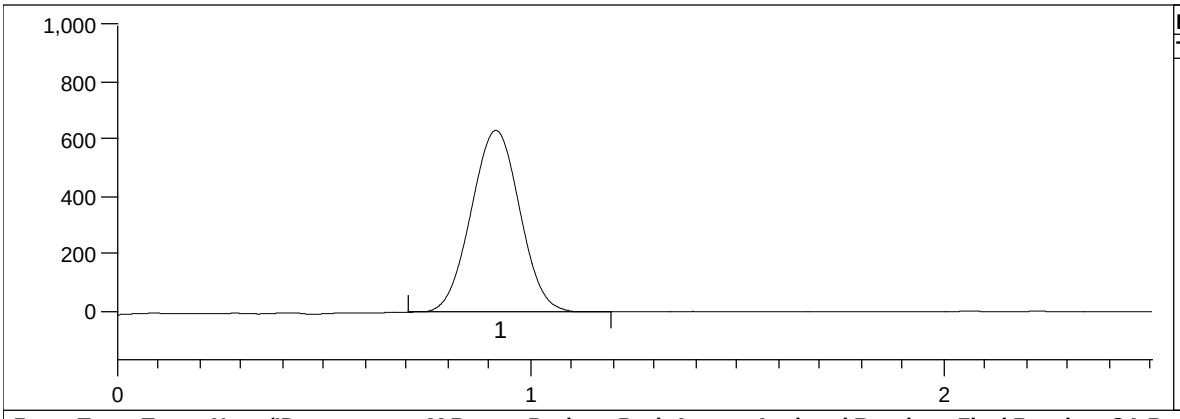
⊛ IC trap w/nothing purged onto it.

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

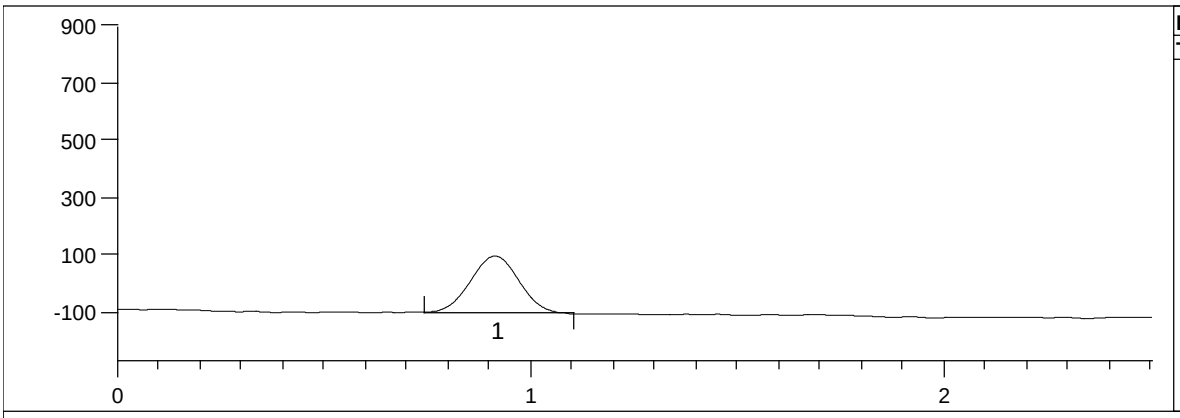


Date: 2/20/14
Time: 9:59 AM

Peak	rt	Area
1	0.91	52,699

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
1	X	S	RINSE		1	52,699	3.23	0.00		< HS	accept

Notes

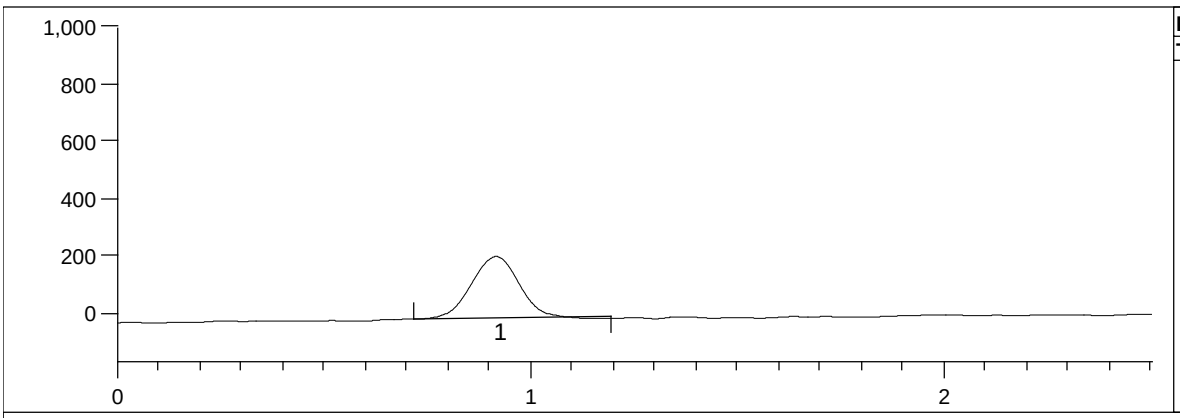


Date: 2/20/14
Time: 10:06 AM

Peak	rt	Area
1	0.91	16,578

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
2	Y	S	RINSE		1	16,578	-0.267	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 10:13 AM

Peak	rt	Area
1	0.91	18,355

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
3	X	IBL	SEQ-IBL1		1	18,355	1.78		1.78	< 10	accept

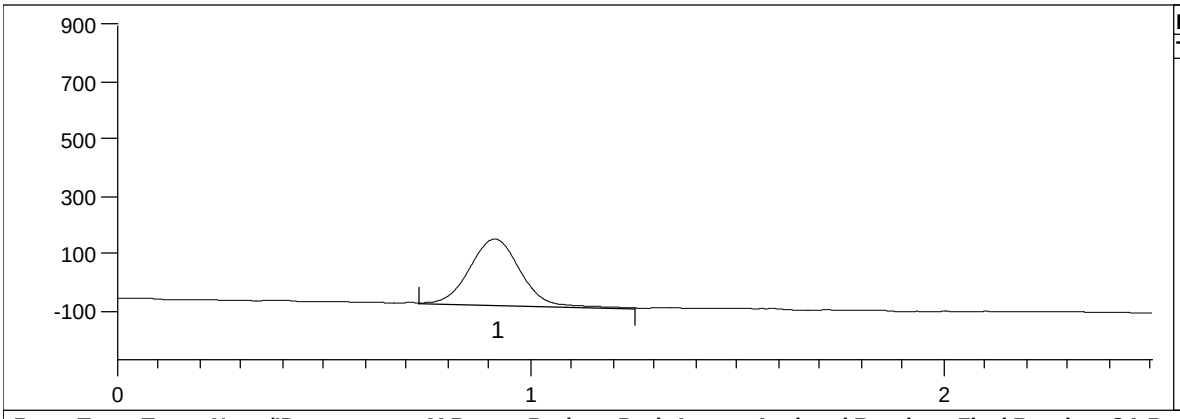
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

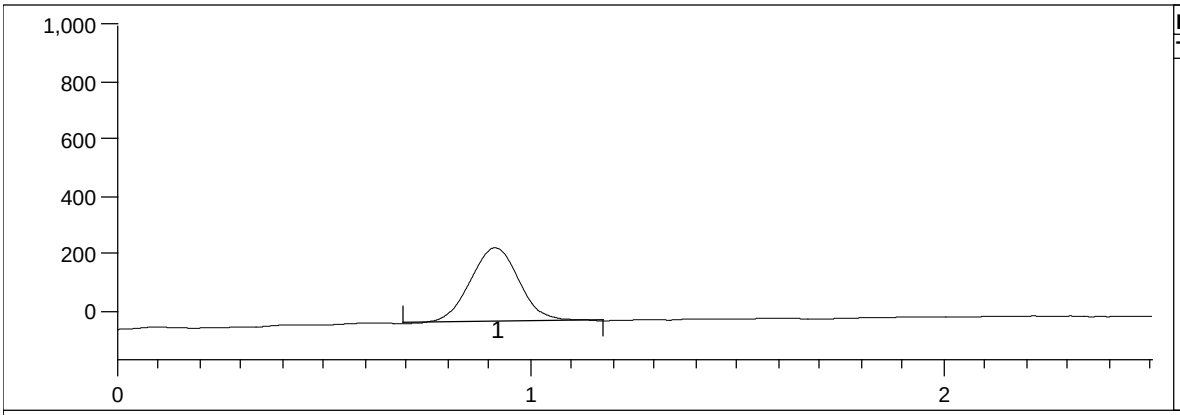


Date: 2/20/14
Time: 10:20 AM

Peak	rt	Area
1	0.91	18,981

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
4	Y	IBL	SEQ-IBL2		1	18,981	1.84		1.84	< 10	accept

Notes

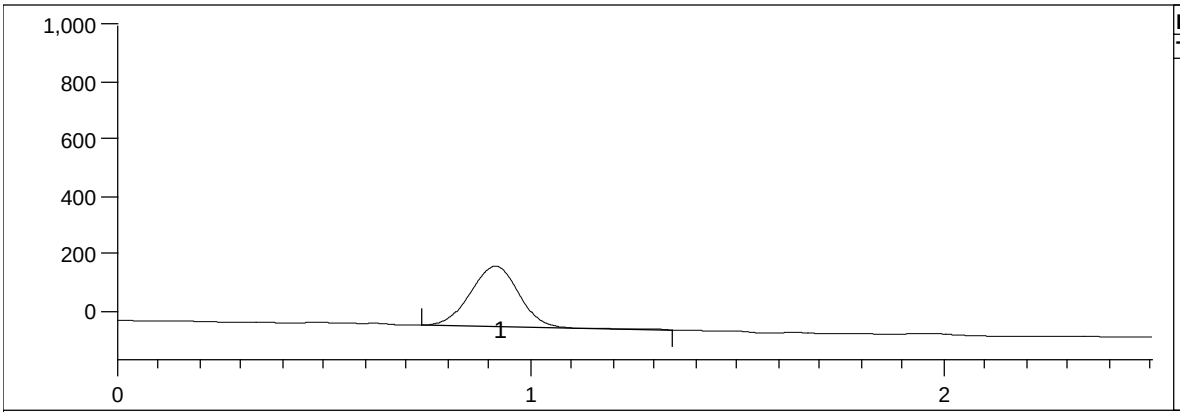


Date: 2/20/14
Time: 10:27 AM

Peak	rt	Area
1	0.91	22,490

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
5	X	IBL	SEQ-IBL3		1	22,490	2.18		2.18	< 10	accept

Notes



Date: 2/20/14
Time: 10:34 AM

Peak	rt	Area
1	0.91	17,532

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
6	Y	IBL	SEQ-IBL4		1	17,532	1.70		1.70	< 10	accept

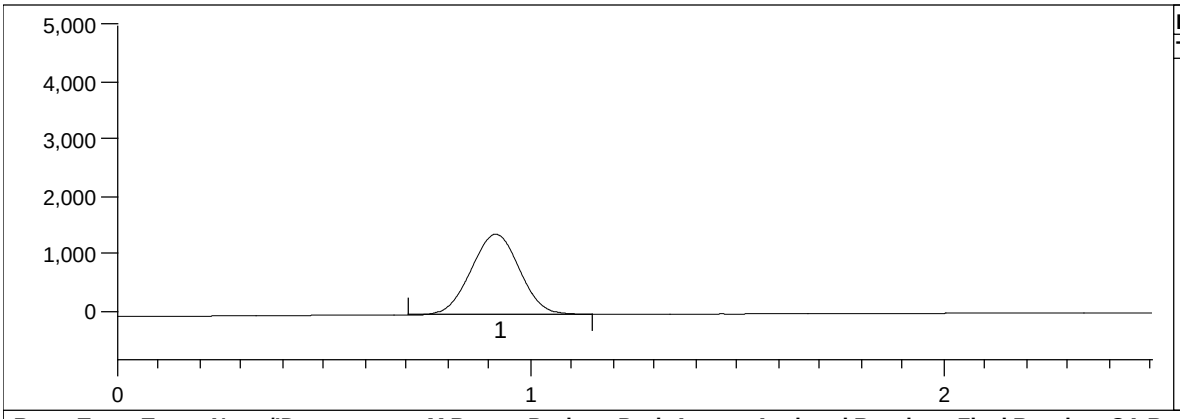
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

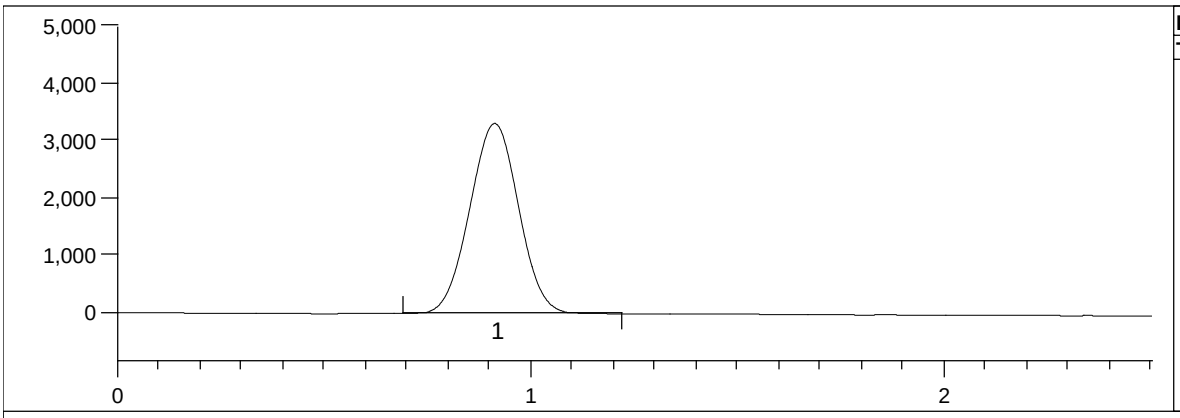


Date: 2/20/14
Time: 10:41 AM

Peak	rt	Area
1	0.91	117,420

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
7	X	STD	SEQ-CAL1		1	117,420	9.50		95.0	75-125	accept

Notes

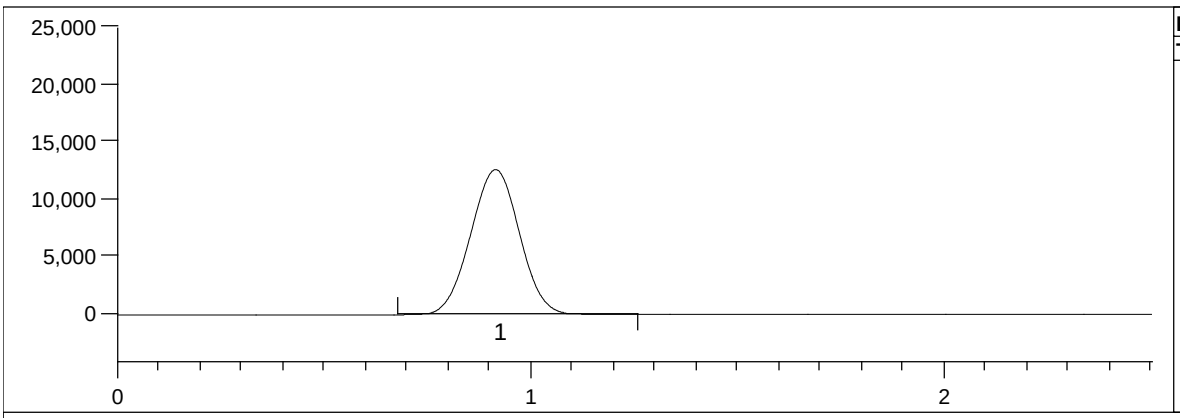


Date: 2/20/14
Time: 10:48 AM

Peak	rt	Area
1	0.91	276,387

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
8	Y	STD	SEQ-CAL2		1	276,387	24.9		99.5	75-125	accept

Notes



Date: 2/20/14
Time: 10:55 AM

Peak	rt	Area
1	0.91	1,056,574

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
9	X	STD	SEQ-CAL3		1	1,056,574	100.		100.	75-125	accept

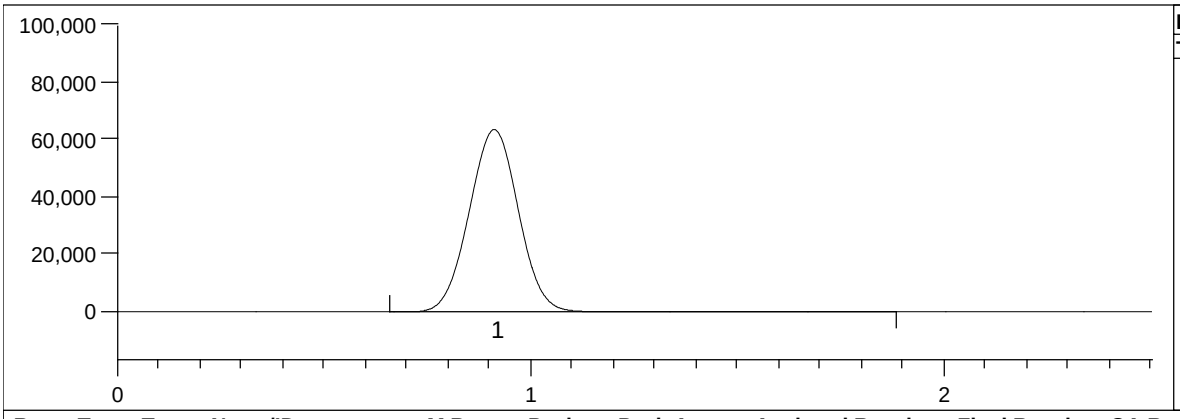
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

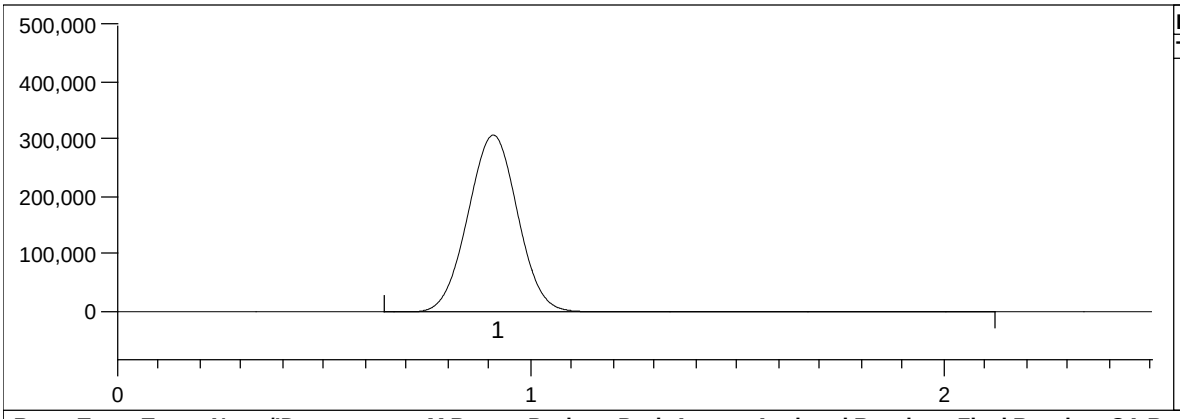


Date: 2/20/14
Time: 11:02 AM

Peak	rt	Area
1	0.91	5,303,755

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
10	Y	STD	SEQ-CAL4		1	5,303,755	512		102	75-125	accept

Notes

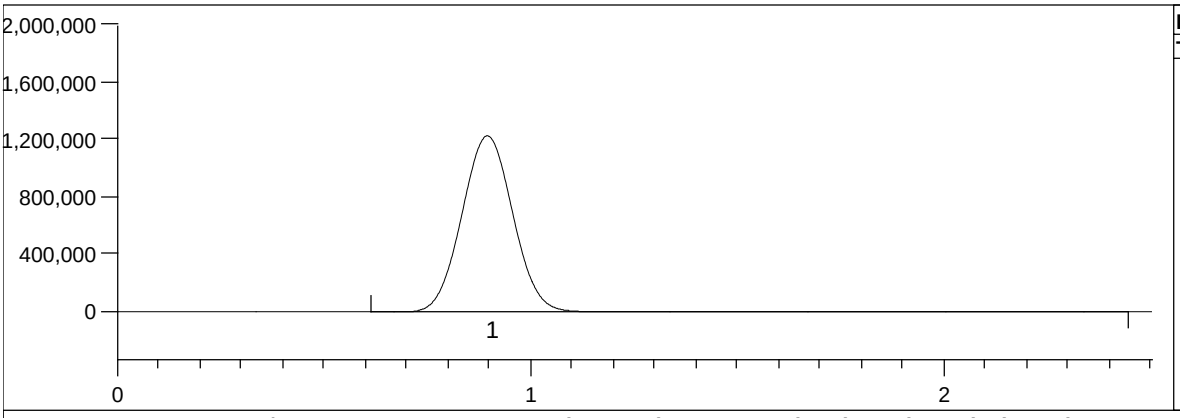


Date: 2/20/14
Time: 11:09 AM

Peak	rt	Area
1	0.90	25,989,210

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
11	X	STD	SEQ-CAL5		1	25,989,210	2,510		101	75-125	accept

Notes



Date: 2/20/14
Time: 11:16 AM

Peak	rt	Area
1	0.89	105,935,556

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
12	Y	STD	SEQ-CAL6		1	105,935,556	10,300		103	75-125	accept

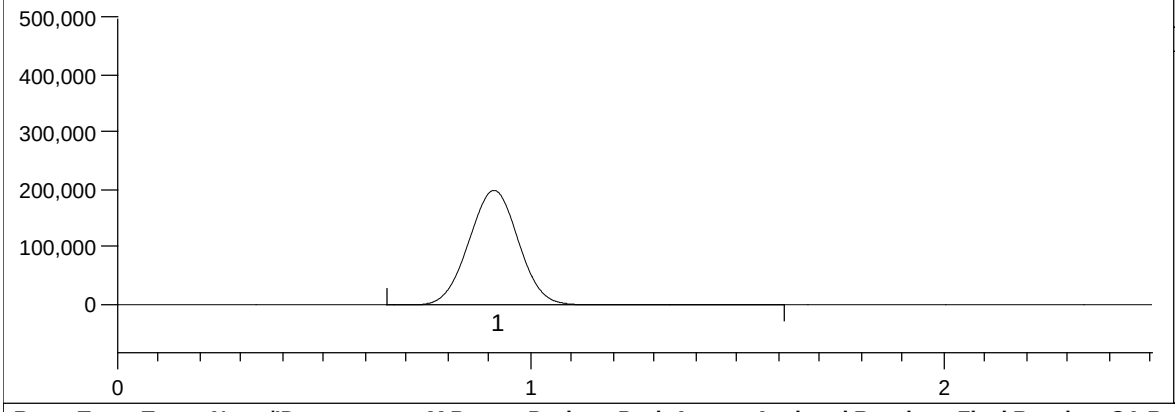
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

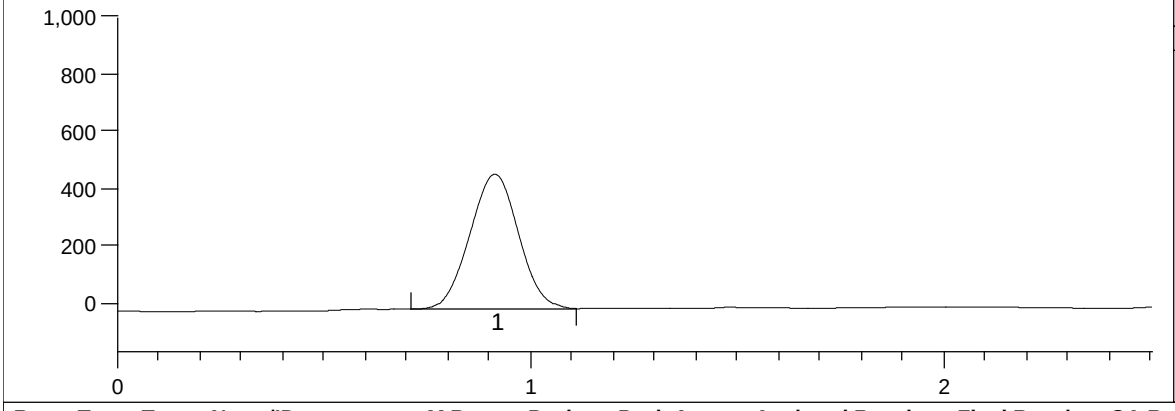


Date: 2/20/14
Time: 11:23 AM

Peak	rt	Area
1	0.91	16,804,386

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
13	X	ICV	SEQ-ICV1		1	16,804,386	1,630		104	85-115	accept

Notes

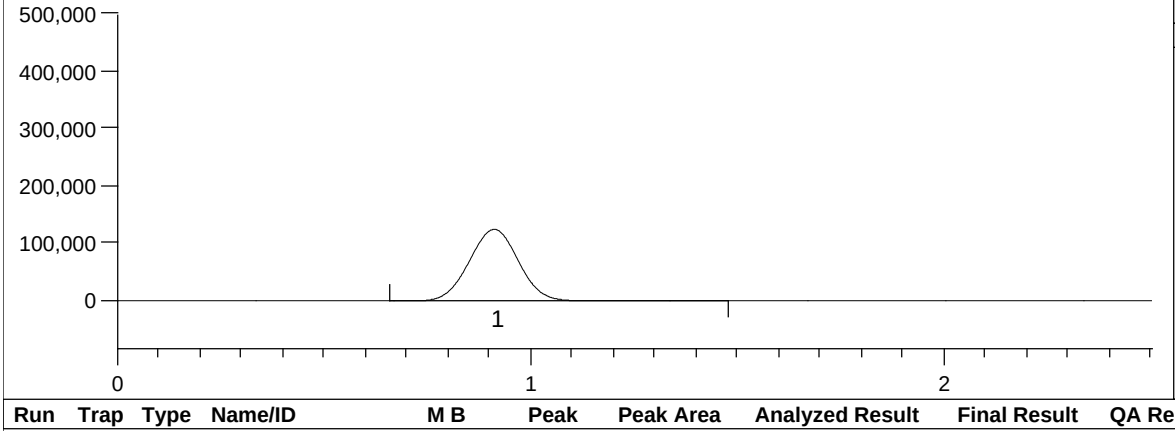


Date: 2/20/14
Time: 11:30 AM

Peak	rt	Area
1	0.91	39,154

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
14	Y	CCB	SEQ-CCB		1	39,154	3.79		3.79	< 10	accept

Notes



Date: 2/20/14
Time: 11:37 AM

Peak	rt	Area
1	0.91	10,423,299

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
15	X	CCV	SEQ-CCV		1	10,423,299	1,010		101	77-123	accept

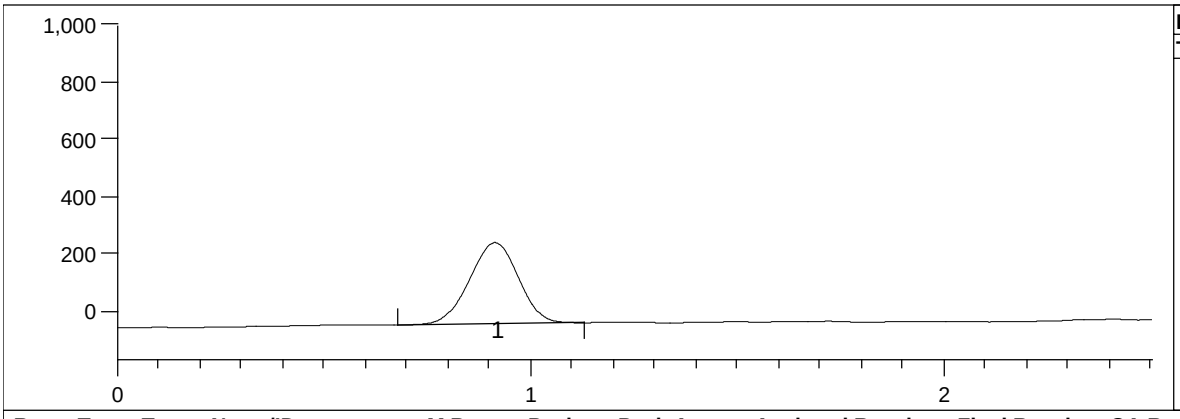
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

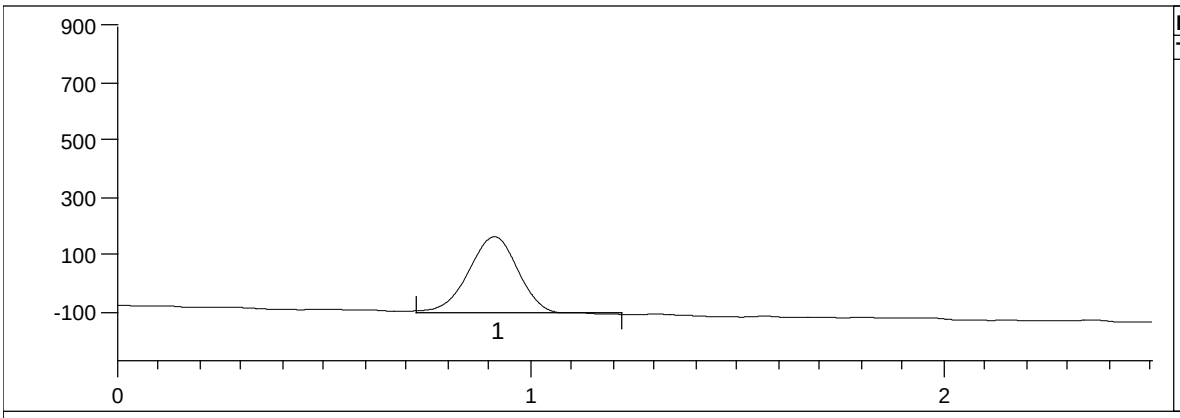


Date: 2/20/14
Time: 11:44 AM

Peak	rt	Area
1	0.91	23,996

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
16	Y	CCB	SEQ-CCB		1	23,996	2.32		2.32	< 10	accept

Notes

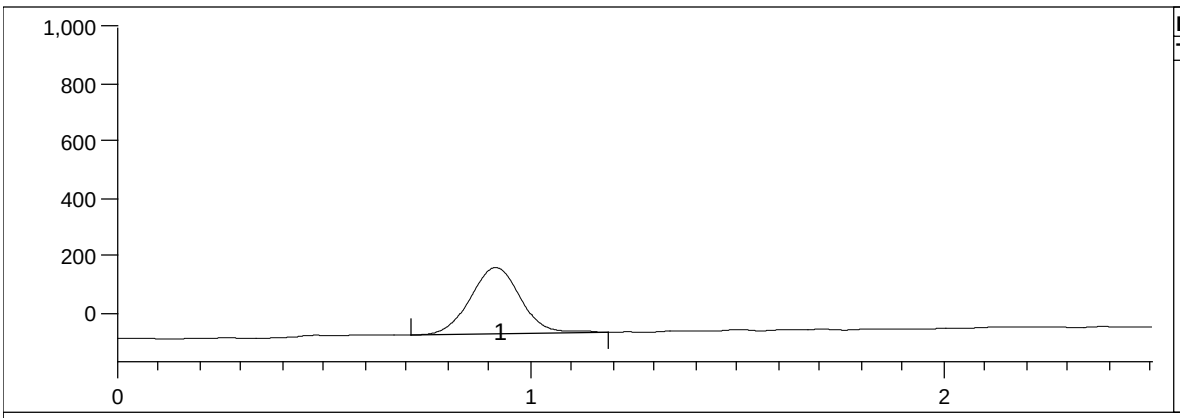


Date: 2/20/14
Time: 11:51 AM

Peak	rt	Area
1	0.91	21,968

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
17	X	CCB	SEQ-CCB		1	21,968	2.13		2.13	< 10	accept

Notes



Date: 2/20/14
Time: 11:58 AM

Peak	rt	Area
1	0.91	20,128

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
18	Y	CCB	SEQ-CCB		1	20,128	1.95		1.95	< 10	accept

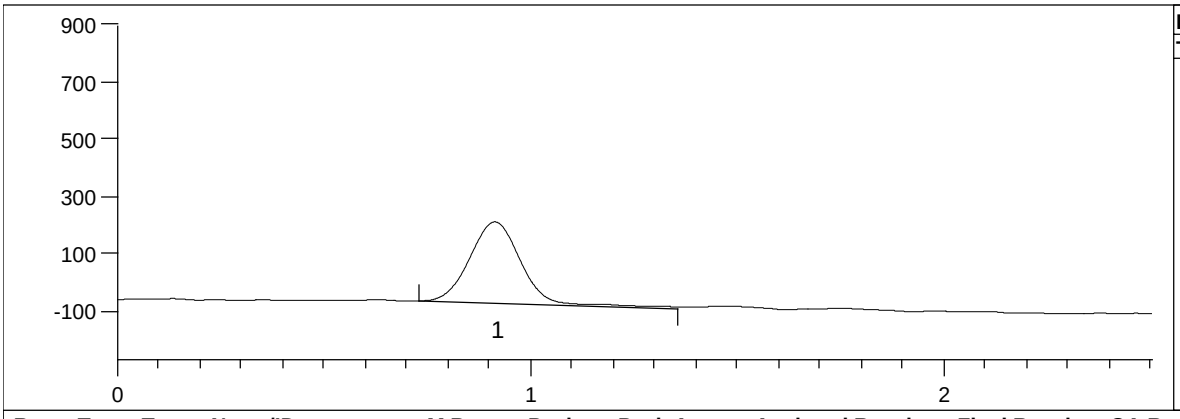
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

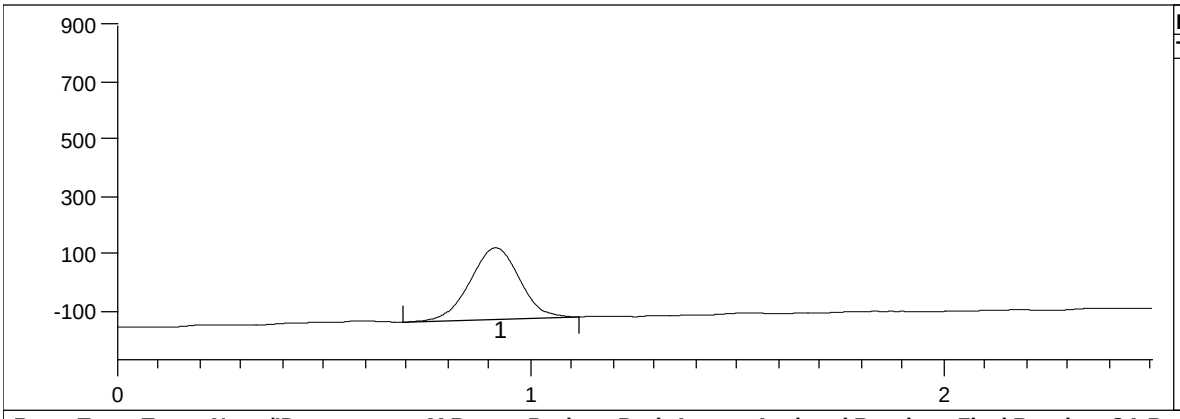


Date: 2/20/14
Time: 12:05 PM

Peak	rt	Area
1	0.91	23,495

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
19	X	S	B140197-BLK1		1	23,495	0.402	0.00		< HS	accept

Notes

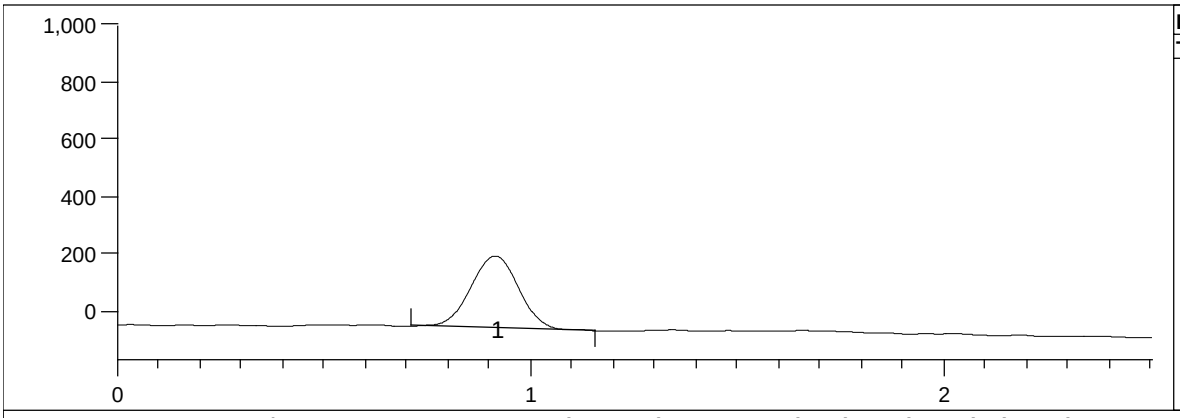


Date: 2/20/14
Time: 12:12 PM

Peak	rt	Area
1	0.91	21,312

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
20	Y	S	B140197-BLK2		1	21,312	0.191	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 12:19 PM

Peak	rt	Area
1	0.91	20,685

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
21	X	S	B140197-BLK3		1	20,685	0.130	0.00		< HS	accept

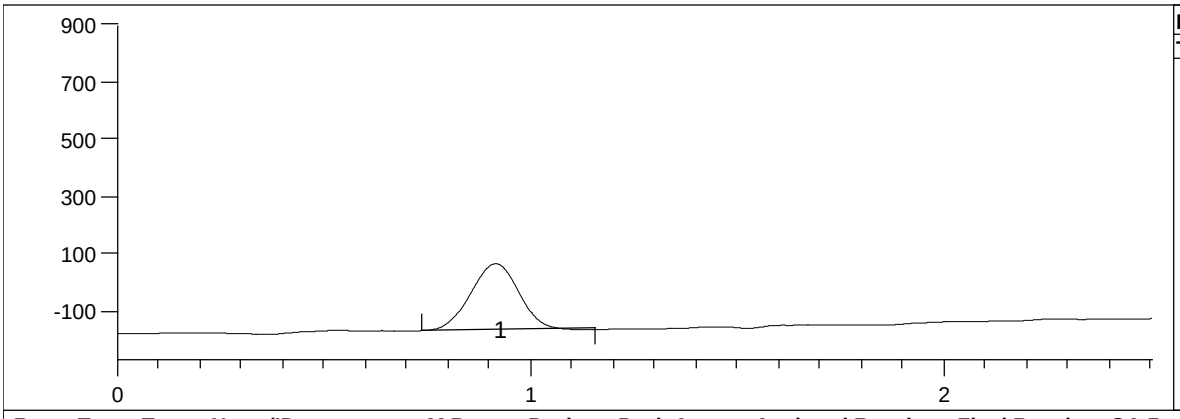
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

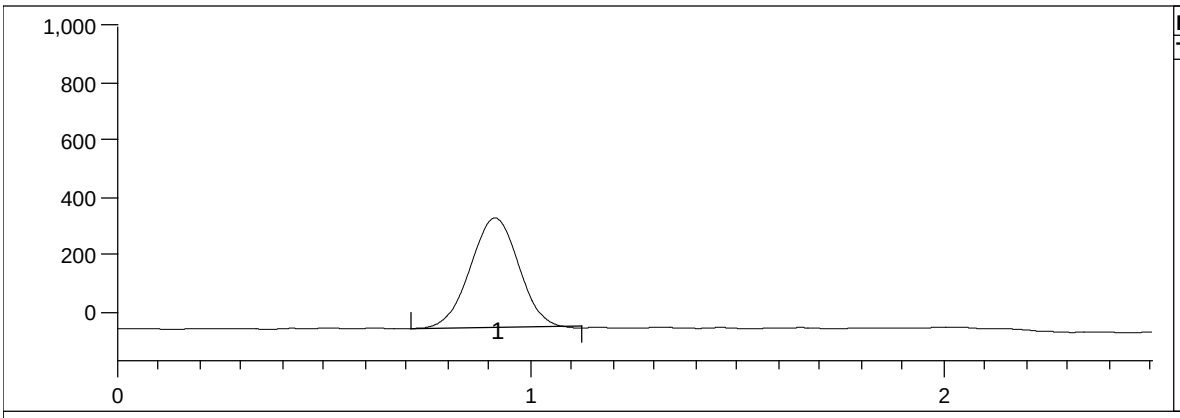


Date: 2/20/14
Time: 12:26 PM

Peak	rt	Area
1	0.91	19,404

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
22	Y	S	B140197-BLK4		1	19,404	0.00624	0.00		< HS	accept

Notes

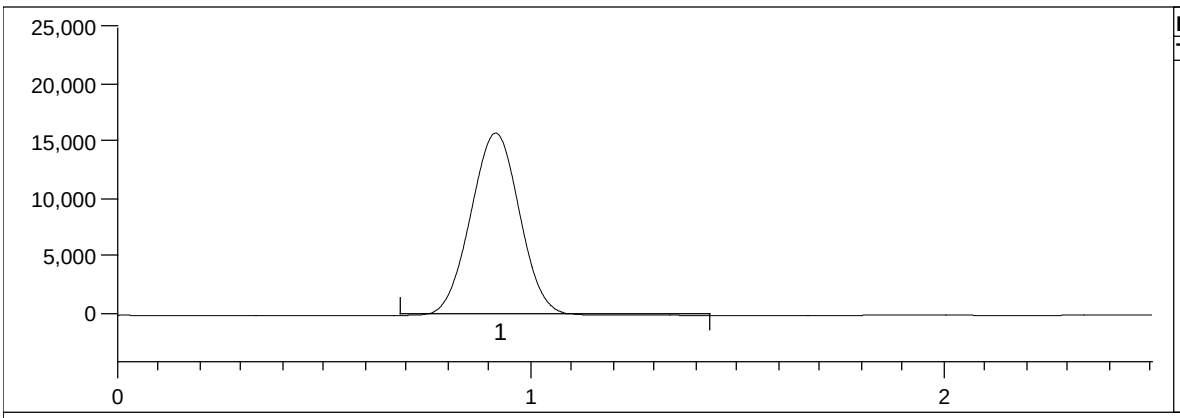


Date: 2/20/14
Time: 12:33 PM

Peak	rt	Area
1	0.91	32,154

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
23	X	S	B140197-BLK5		1	32,154	1.24	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 12:40 PM

Peak	rt	Area
1	0.91	1,329,431

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
24	Y	S	B140197-BS1		1	1,329,431	127	0.00		< HS	accept

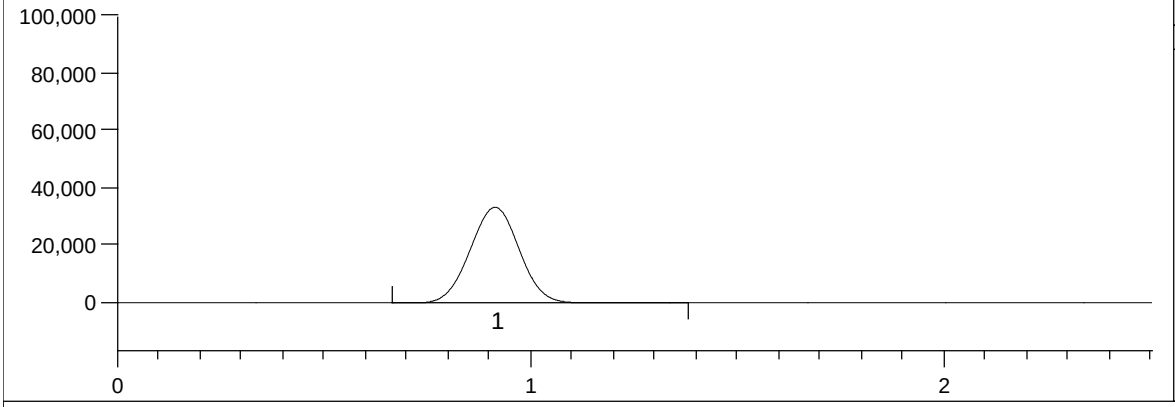
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

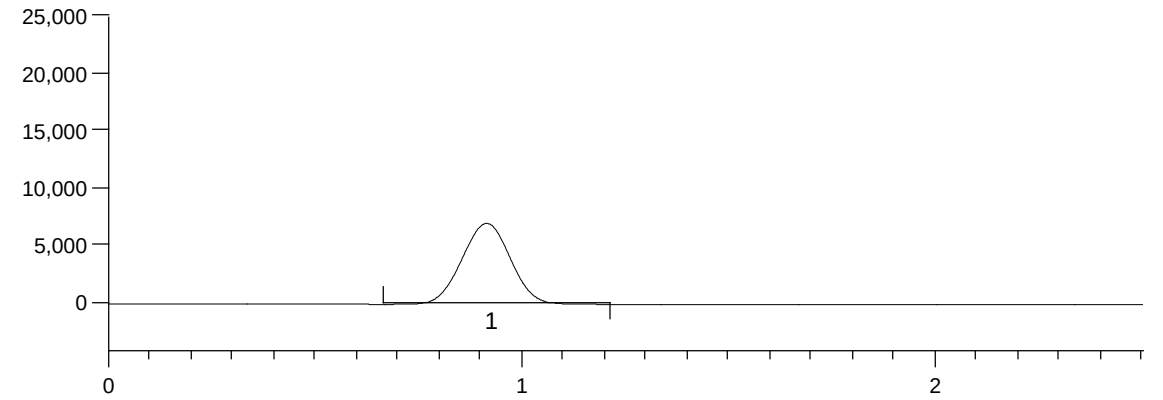


Date: 2/20/14
Time: 12:47 PM

Peak	rt	Area
1	0.91	2,790,838

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
25	X	S	B140197-BS2		1	2,790,838	268	0.00		< HS	accept

Notes

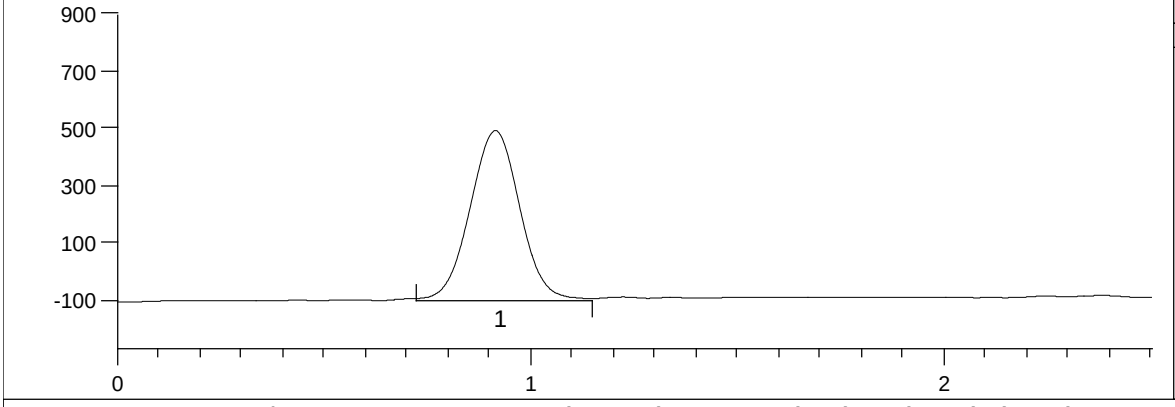


Date: 2/20/14
Time: 12:54 PM

Peak	rt	Area
1	0.91	592,681

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
26	Y	S	1406018-01		1	592,681	55.5	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 1:01 PM

Peak	rt	Area
1	0.91	48,064

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
27	X	S	1406018-02		1	48,064	2.78	0.00		< HS	accept

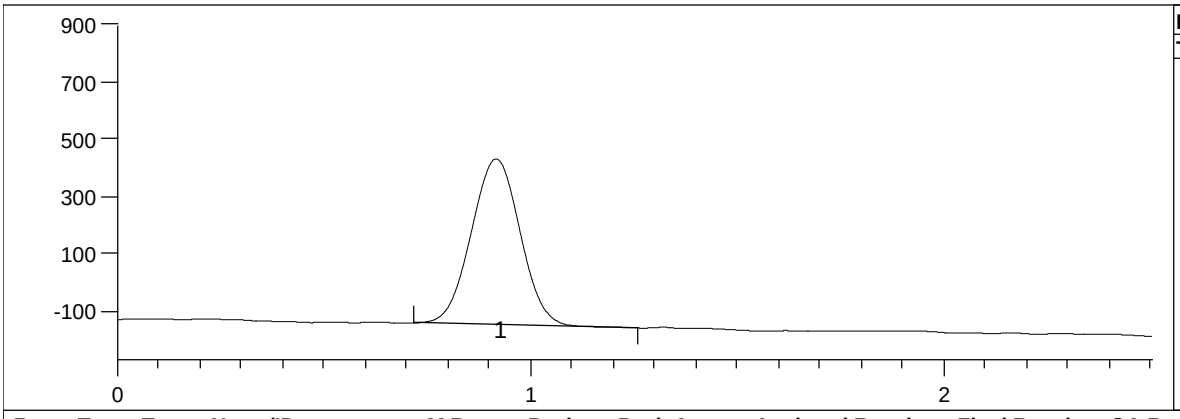
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

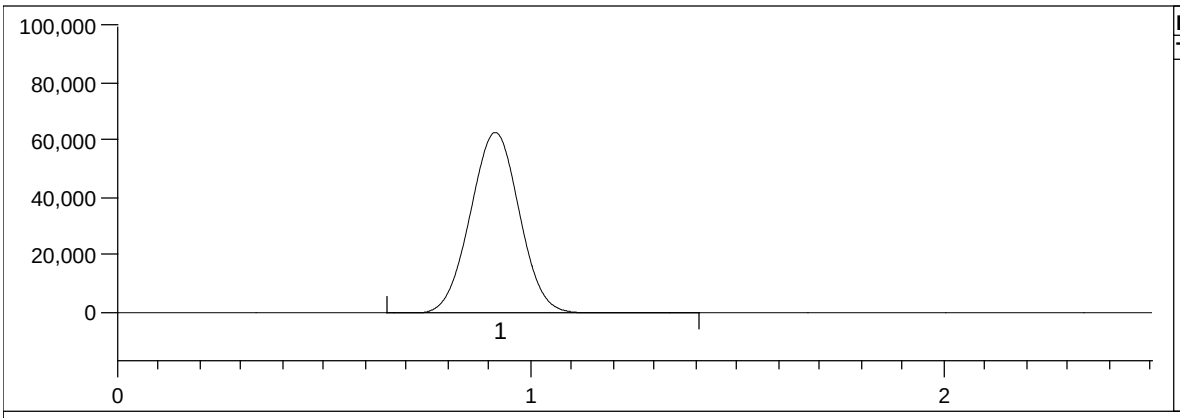


Date: 2/20/14
Time: 1:08 PM

Peak	rt	Area
1	0.91	47,987

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
28	Y	S	1406018-03		1	47,987	2.77	0.00		< HS	accept

Notes

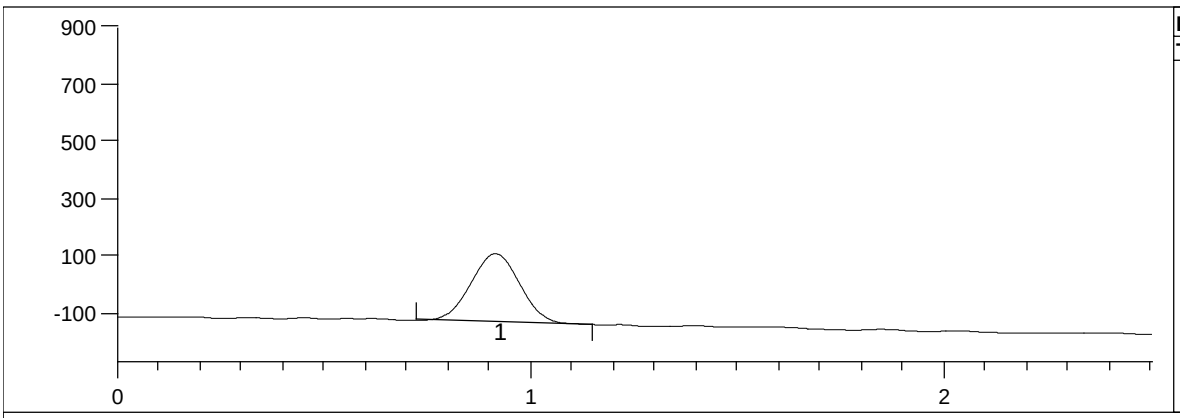


Date: 2/20/14
Time: 1:15 PM

Peak	rt	Area
1	0.91	5,242,067

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
29	X	CCV	SEQ-CCV		1	5,242,067	506		101	77-123	accept

Notes



Date: 2/20/14
Time: 1:22 PM

Peak	rt	Area
1	0.91	20,134

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
30	Y	CCB	SEQ-CCB		1	20,134	1.95		1.95	< 10	accept

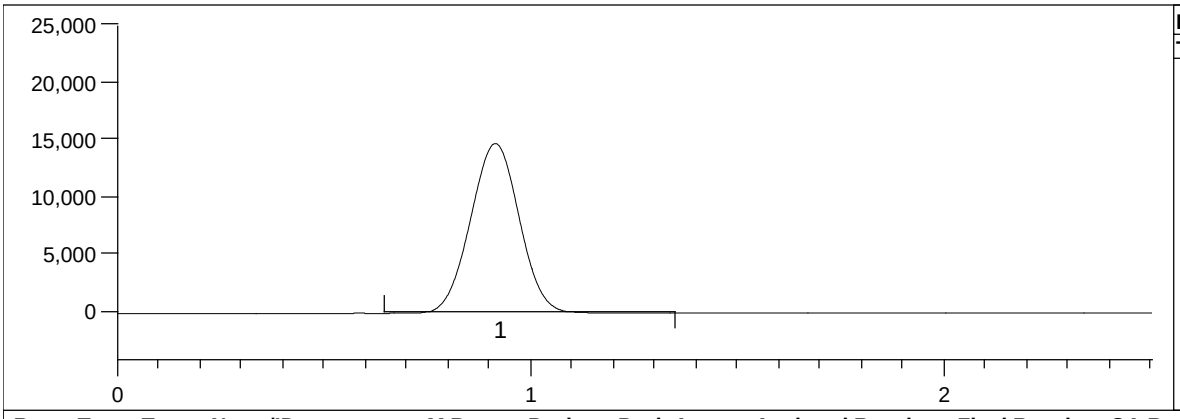
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

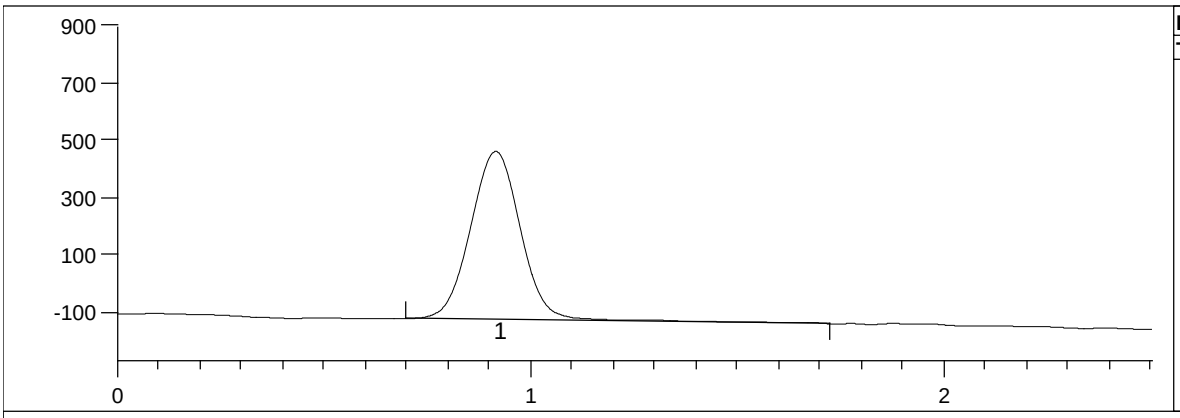


Date: 2/20/14
Time: 1:29 PM

Peak	rt	Area
1	0.91	1,233,881

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
31	X	S	1406018-04		1	1,233,881	118	0.00		< HS	accept

Notes

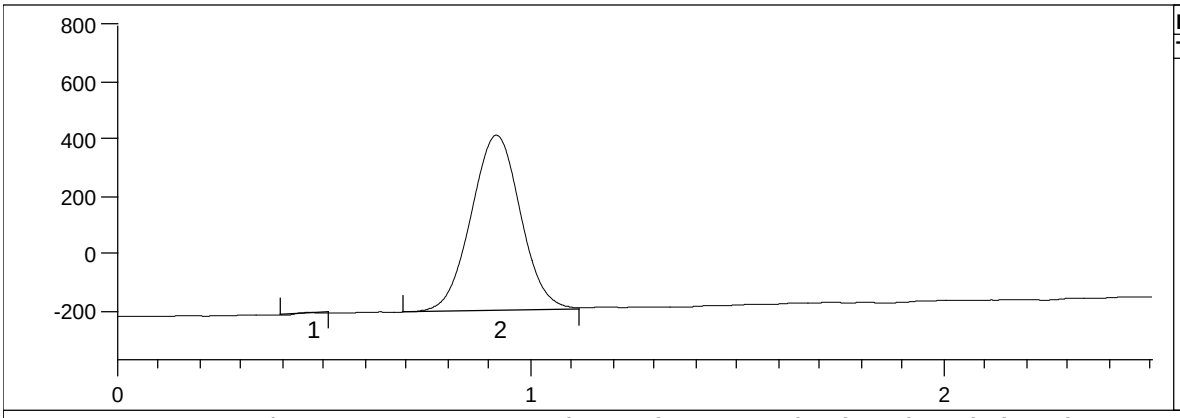


Date: 2/20/14
Time: 1:36 PM

Peak	rt	Area
1	0.91	50,918

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
32	Y	S	1407008-01		1	50,918	3.06	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 1:43 PM

Peak	rt	Area
1	0.46	259
2	0.91	50,831

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
33	X	S	1407008-02		2	50,831	3.05	0.00		< HS	accept

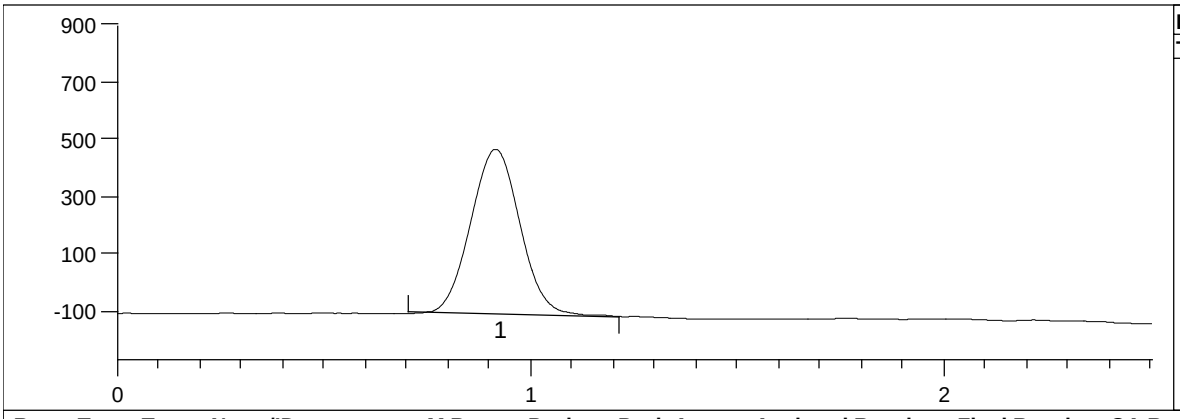
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

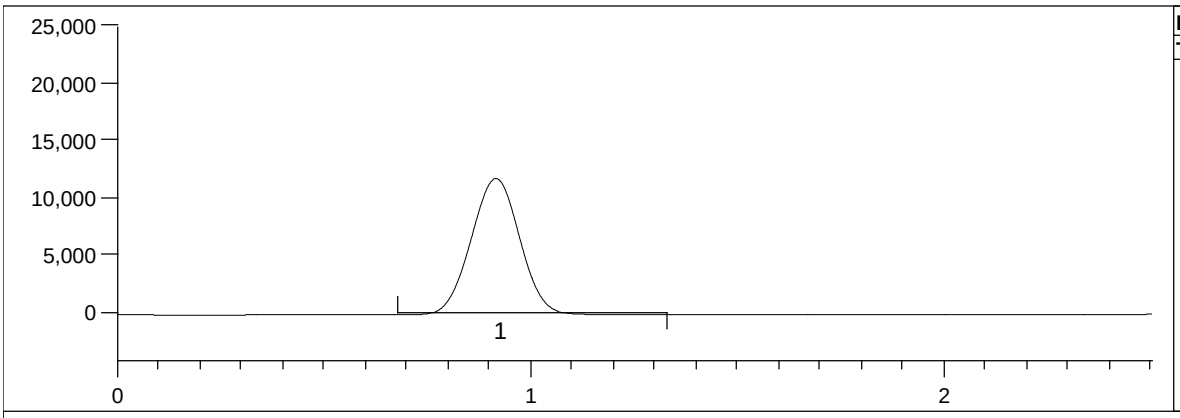


Date: 2/20/14
Time: 1:50 PM

Peak	rt	Area
1	0.91	48,805

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
34	Y	S	1407008-03		1	48,805	2.85	0.00		< HS	accept

Notes

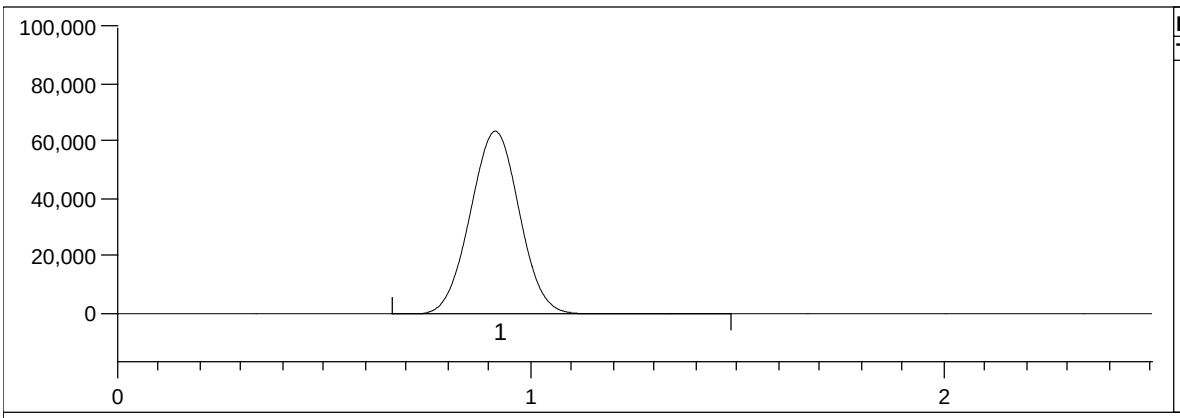


Date: 2/20/14
Time: 1:57 PM

Peak	rt	Area
1	0.91	991,844

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
35	X	S	1407008-04		1	991,844	94.2	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 2:04 PM

Peak	rt	Area
1	0.91	5,319,903

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
36	Y	CCV	SEQ-CCV		1	5,319,903	513		103	77-123	accept

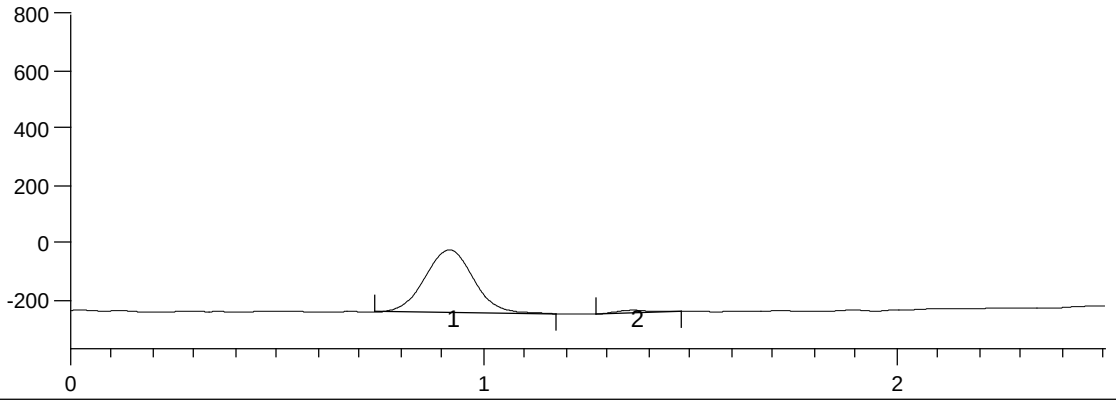
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT



Date: 2/20/14
Time: 2:11 PM

Peak	rt	Area
1	0.91	18,304
2	1.36	594

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
37	X	CCB	SEQ-CCB		1	18,304	1.77		1.77	< 10	accept

Notes

Report of Mercury Analysis
IC Traps

Project: 200454.0000.0000
Samples Collected: February 7, 2014
Report Date: March 7, 2014

Prepared for:
Gary Hunt
TRC Environmental
21 Griffin Road North
Windsor, CT 06095

Brooks Rand Labs
Project ID: TRC-LW1401

3958 6th Ave. NW
Seattle WA 98107
P: 206-632-6206
F: 206-632-6017
E: brl@brooksrand.com
www.brooksrand.com

Table of Contents

Case Narrative

Shipping and Receiving

On February 11, 2014, Brooks Rand Labs (BRL) received four (4) iodated carbon (IC) traps at 09:48 A.M. in a box with blue ice and at a temperature of 0.7°C. The chain-of-custody (COC) form requested analysis for total mercury (Hg). The samples were received and stored securely according to BRL standard operating procedures (SOP) and EPA methodology.

Preservation and Holding Time

All method and SOP requirements for preservation and holding time were satisfied.

Total Mercury in IC Traps by EPA Method 324/1631 (SOP BR-0007)

All samples are prepared in accordance with EPA Method 324 and analyzed in accordance with EPA Method 1631. Samples are digested with nitric acid and sulfuric acid at 90°C for 4 hours, oxidized with bromine monochloride (BrCl) and then analyzed with stannous chloride ($SnCl_2$) reduction, single gold amalgamation, and cold vapor atomic fluorescence spectroscopy (CVAFS) detection using a Brooks Rand Instruments MERX-T CVAFS Mercury Automated-Analyzer.

The results were method blank-corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

Samples were reported on a ng/trap basis.

Samples results that were less than the MDL were qualified **U** and reported at the MDL.

Sequence 1400137

Instrument calibration, meeting all quality control criteria, was successfully achieved on the day of sample analysis.

Batch B140197

The sample *FBB-Hg-1* (1407008-04) was listed as a field blank and was the only sample that had a detectable Hg concentration. Since the preparation requires the removal of the IC from the glass trap, the original trap and plastic bag was not preserved. It cannot be confirmed whether this sample was switched with another sample.

The method blank (BLK) BLK5 was a trap blank prepared at BRL with an un-used trap to show that the IC material stored in a trap is not a source of Hg itself. The result for BLK was non-detectable at 0.5 ng/trap. It was not included with the other BLKs that were prepared with the batch since it is not used to correct results.

The blank spike (BS) BS1 was an IC trap that was spiked with 50 ng of Hg at the same time the as the spiked trap sent to the client.

Aside from concentration qualifiers, all data was reported without qualification and all associated quality control sample results met the acceptance criteria.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more details, please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Lydia Greaves
Project Manager
lydia@brooksrand.com

Mi Sun Um
Data Manager
misun@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction
IBL	instrument blank		

Definition of Data Qualifiers

(Effective 9/23/09)

B	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Result is estimated.
J	Estimated value. A full explanation is presented in the narrative.
J-M	Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N	Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M	Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N	Spike recovery was not within acceptance criteria. Result is estimated.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
B'ville-Hg-2-Pri	1407008-01	IC Trap	Sample	02/07/2014	02/11/2014
B'ville-Hg-2-col	1407008-02	IC Trap	Sample	02/07/2014	02/11/2014
Lucketts-Hg-2	1407008-03	IC Trap	Sample	02/07/2014	02/11/2014
FBB-Hg-1	1407008-04	IC Trap	Field Blank	02/07/2014	02/11/2014

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	IC Trap	EPA 324/1631 Manual	02/17/2014	02/20/2014	B140197	1400137

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
B'ville-Hg-2-col										
1407008-02	Hg	IC Trap	NA	1.1	U	1.1	3.3	ng/m³	B140197	1400137
B'ville-Hg-2-Pri										
1407008-01	Hg	IC Trap	NA	1.1	U	1.1	3.3	ng/m³	B140197	1400137
FBB-Hg-1										
1407008-04	Hg	IC Trap	NA	37.6		1.1	3.3	ng/m³	B140197	1400137
Lucketts-Hg-2										
1407008-03	Hg	IC Trap	NA	1.1	U	1.1	3.3	ng/m³	B140197	1400137

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Accuracy & Precision Summary

Batch: B140197
Lab Matrix: IC Trap
Method: EPA 324/1631 Manual

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B140197-BS1	**Laboratory Fortified Blank (1350014)**						
	Hg		50.00	50.7	ng/m³	101% 80-120	
B140197-BS2	**Laboratory Fortified Blank (1350014)**						
	Hg		100.0	107.3	ng/m³	107% 80-120	

Method Blanks & Reporting Limits

Batch: B140197
Matrix: IC Trap
Method: EPA 324/1631 Manual
Analyte: Hg

Sample	Result	Units
B140197-BLK1	0.2	ng/m³
B140197-BLK2	0.08	ng/m³
B140197-BLK3	0.05	ng/m³
B140197-BLK4	0.002	ng/m³

Average: 0.1 **Standard Deviation:** 0.1 **MDL:** 1.1
Limit: 2.2 **Limit:** 0.7 **MRL:** 3.3

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Instrument Calibration

Sequence: 1400137
Instrument: THG-05
Date: 02/20/2014
Analyte: Hg

Total Mercury and Mercury Speciation by CVAFS
Method: EPA 324/1631 Manual

Lab ID	True Value	Result	Units	REC & Limits	
1400137-IBL1		1.8	pg of Hg		
1400137-IBL2		1.8	pg of Hg		
1400137-IBL3		2.2	pg of Hg		
1400137-IBL4		1.7	pg of Hg		
1400137-CAL1	10.00	9.5	pg of Hg	95%	
1400137-CAL2	25.00	24.9	pg of Hg	100%	
1400137-CAL3	100.0	100.4	pg of Hg	100%	
1400137-CAL4	500.0	511.6	pg of Hg	102%	
1400137-CAL5	2500	2514	pg of Hg	101%	
1400137-CAL6	10000	10250	pg of Hg	103%	
1400137-ICV1	1568	1625	pg of Hg	104%	90-110
1400137-CCB1		3.8	pg of Hg		
1400137-CCV1	1000	1007	pg of Hg	101%	90-110
1400137-CCB2		2.3	pg of Hg		
1400137-CCB3		2.1	pg of Hg		
1400137-CCB4		1.9	pg of Hg		
1400137-CCV2	500.0	505.7	pg of Hg	101%	90-110
1400137-CCB5		1.9	pg of Hg		
1400137-CCV3	500.0	513.2	pg of Hg	103%	90-110
1400137-CCB6		1.8	pg of Hg		

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Sample Containers

Lab ID: 1407008-01
Sample: B'ville-Hg-2-Pri
Comments: Primary Volume

Report Matrix: IC Trap
Sample Type: Sample

Collected: 02/07/2014
Received: 02/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap	trap	09016	none	n/a		Cardboard Box

Lab ID: 1407008-02
Sample: B'ville-Hg-2-col
Comments: Collocate Volume

Report Matrix: IC Trap
Sample Type: Sample

Collected: 02/07/2014
Received: 02/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap	trap	09016	none	n/a		Cardboard Box

Lab ID: 1407008-03
Sample: Lucketts-Hg-2
Comments: Volume

Report Matrix: IC Trap
Sample Type: Sample

Collected: 02/07/2014
Received: 02/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap	trap	09016	none	n/a		Cardboard Box

Lab ID: 1407008-04
Sample: FBB-Hg-1
Comments: Field Blank

Report Matrix: IC Trap
Sample Type: Field Blank

Collected: 02/07/2014
Received: 02/11/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap	trap	09016	none	n/a		Cardboard Box

Shipping Containers

Cardboard Box

Received: February 11, 2014 9:48
Tracking No: 521442180948 via FedEx
Coolant Type: Blue Ice
Temperature: 0.7 °C

Description: Cardboard Box
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

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MEANINGFUL METALS DATA
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Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

Page_____of_____

1407008

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TRC Environmental	Address: 21 Griffin Road North, Windsor, CT	COC receipt confirmation? Y / N If so, by: email / fax (circle one)
Contact: Gary Hunt		Email:ghunt@trcsolutions.com
Client project ID: 200454.0000.0000	Phone #:	Fax #:
PO #:		

Requested TAT in business days:
☒ 20 (standard)
☐ 15
☐ 10
☐ 5
☐ Other ____
Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Misc: Sampler (initials)	Misc: Matrix type	Misc: # of containers	Misc: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As / Se species (specify)	Analyses required: % Solids	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	B'ville-Hg- 2 -Pri	2-7-14	16:46	SD							X								Primary Volume:
2	B'ville-Hg- 2 -Col	2-7-14	16:46	SD							X								Collocate Volume:
3	Lucketts-Hg- 2	2-7-14	15:43	SD							X								volume:
4	FBB-Hg- 1	2-7-14	16:46	SD															field blank
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: S. Bayles	Date: 2-9-14	Time: 17:00	Relinquished by: / Date: / Time:
Received by:	Date:	Time:	Received at BRL by: / Date: 2-10-14 / Time: 09:15
Shipping carrier:	# of coolers:		BRL work order ID: / BRL project ID:

ORIGIN ID:EHTA (860) 298-6346
THERESA BREAULT
TRC
21 GRIFFIN ROAD NORTH

WINDSOR, CT 06095
UNITED STATES US

SHIP DATE: 10FEB14
ACTWGT: 1.4 LB
CAD: 929335/CAFE2704

BILL SENDER

TO MICHELLE BRISCOE
BROOKS RAND LLC
3958 SIXTH AVE NORTHWEST
SAMPLE RECIEVING
SEATTLE WA 98107
(206) 632-6206
DEPT: STACK

0.78

REF: OHGENL.0000.0000 300330

FedEx Express

J1311306520126

TRK# 0201 5214 4218 0948

TUE - 11 FEB 10:30A
PRIORITY OVERNIGHT

NC BFIA

090116

98107
WA-US SEA

Part # 156148-434 RIT2 09/13

Sample Calculations

CVAFS

EPA 1631, IC Trap

$$\frac{\frac{CFD}{A} - \frac{BF_d}{A_d}}{I * 1000}$$

C – result produced at the instrument, pg
F – final volume of the sample preparation, mL
D – dilution factor of any dilution of the preparation made at the instrument (*1)
A – analyzed volume of the prep or dilution of the prep, mL
B- the mean of the method blank instrument result, pg
F_d – default final prep volume for the method used for the method blanks, 40 mL
A_d – default analyzed volume for the method used for the method blanks, 0.1 mL
I – aliquot of sample prepared, g.

ANALYSIS SEQUENCE

1400137

Brooks Rand Labs

Instrument: THG-05

Lab Number	Batch #	Analysis	Order	STD ID	Source ID	BRL Project #	Due	Comments
1400137-IBL1	1400137	QC	1		-			
1400137-IBL2	1400137	QC	2		-			
1400137-IBL3	1400137	QC	3		-			
1400137-IBL4	1400137	QC	4		-			
1400137-CAL1	1400137	QC	5	1407002	-			
1400137-CAL2	1400137	QC	6	1407003	-			
1400137-CAL3	1400137	QC	7	1407004	-			
1400137-CAL4	1400137	QC	8	1407005	-			
1400137-CAL5	1400137	QC	9	1407006	-			
1400137-CAL6	1400137	QC	10	1407007	-			
1400137-ICV1	1400137	QC	11	1407008	-			
1400137-CCB1	1400137	QC	12		-			
1400137-CCV1	1400137	QC	13	1408017	-			
1400137-CCB2	1400137	QC	14		-			
1400137-CCB3	1400137	QC	15		-			
1400137-CCB4	1400137	QC	16		-			
B140197-BLK1	B140197	QC	17		-			
B140197-BLK2	B140197	QC	18		-			
B140197-BLK3	B140197	QC	19		-			
B140197-BLK4	B140197	QC	20		-			
B140197-BLK5	B140197	QC	21		-			
B140197-BS1	B140197	QC	22		-			
B140197-BS2	B140197	QC	23		-			
1406018-01	B140197	Hg-IC-70:30+BrCl-MerxT	24			TRC-LW1401	2/27/2014	
1406018-02	B140197	Hg-IC-70:30+BrCl-MerxT	25			TRC-LW1401	2/27/2014	
1406018-03	B140197	Hg-IC-70:30+BrCl-MerxT	26			TRC-LW1401	2/27/2014	

ANALYSIS SEQUENCE

1400137

Brooks Rand Labs

Instrument: THG-05

Lab Number	Batch #	Analysis	Order	STD ID	Source ID	BRL Project #	Due	Comments
1400137-CCV2	1400137	QC	27	1407009	-			
1400137-CCB5	1400137	QC	28		-			
1406018-04	B140197	Hg-IC-70:30+BrCl-MerxT	29			TRC-LW1401	2/27/2014	
1407008-01	B140197	Hg-IC-70:30+BrCl-MerxT	30			TRC-LW1401	3/5/2014	
1407008-02	B140197	Hg-IC-70:30+BrCl-MerxT	31			TRC-LW1401	3/5/2014	
1407008-03	B140197	Hg-IC-70:30+BrCl-MerxT	32			TRC-LW1401	3/5/2014	
1407008-04	B140197	Hg-IC-70:30+BrCl-MerxT	33			TRC-LW1401	3/5/2014	
1400137-CCV3	1400137	QC	34	1407009	-			
1400137-CCB6	1400137	QC	35		-			

SOP(s)/Rev#(s):BR-007 Rev 002

THg Analysis Benchsheet: THg MERX-T

Sequence:_ 1400137 _ Batches: B140197

Analyst: BJT Date: 2/20/14 Instrument ID: THG 5

10 ng/mL std ID: 14060030 $SnCl_2$ ID: 14050206

1 ng/mL std ID: 14060031 NH_2OH-HCl ID: 14060264

ICV std ID: 14060032 Balance ID: —

* all sample volumes are determined volumetrically unless otherwise noted

	Run# / Pos #	BRL Sample ID	Analyze Vol *(mL)	Dilution Factor	Analysis Comments / for spiked QC: Source ID, standard ID, and spike volume
	1	Rinse	--		
	2	Rinse	--		
	3	SEQ-IBL1	--		
	4	SEQ-IBL2	--		
	5	SEQ-IBL3	--		
	6	SEQ-IBL4	--		
	7	SEQ-CAL1	0.01		1 ng/mL
	8	SEQ-CAL2	0.025		1 ng/mL
	9	SEQ-CAL3	0.1		1 ng/mL
	10	SEQ-CAL4	0.05		10 ng/mL
	11	SEQ-CAL5	0.25		10 ng/mL
	12	SEQ-CAL6	1		10 ng/mL
	13	SEQ-ICV1	1		NIST 1641d
	14	SEQ-CCB1	--		
	15	SEQ-CCV	0.05		10 ng/mL double spiked.
	16	SEQ-CCB	--		
	17	SEQ-CCB	--		
	18	SEQ-CCB	--		
	19	B140197-BLK1	0.1		
	20	B140197-BLK2	0.1		
	21	B140197-BLK3	0.1		
	22	B140197-BLK4	0.1		
	23	B140197-BLK5	0.1		
	24	B140197-BS1	0.1		

	25	B140197-BS2	0.1		
	26	1406018-01	0.1		
	27	1406018-02	0.1		
	28	1406018-03	0.1		
	29	SEQ-CCV	0.05		10 ng/mL
	30	SEQ-CCB	--		
	31	1406018-04	0.1		
	32	1407008-01	0.1		
	33	1407008-02	0.1		
	34	1407008-03	0.1		
	35	1407008-04	0.1		
	36	SEQ-CCV	0.05		10 ng/mL
	37	SEQ-CCB	--		
	38				
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2/24/14
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2/21/14
1300

THg IC Traps

Brooks Rand Labs

THg Biota Prep Benchsheet

SOP / Revision #: ~~BR-0002 Rev ____~~ BR-0007 Rev. 002

Prepped By: AAP

Batch: B140197

Preparation Start Date/Time*: 2.17.14/1300

* Time is when the first reagents are added.

Preparation End Date/Time**: 2/18/14 @ 0730

** Time is when the last sample is brought upto volume

Sample ID	Sample Mass (g)
1406018-01	
1406018-02	
1406018-03	
1406018-04	
1407008-01	
1407008-02	
1407008-03	
⊛ 1407008-04	
B140197-BLK1	—
B140197-BLK2	—
B140197-BLK3	—
B140197-BLK4	—
B140197-BS1	—
B140197-BS2	—
✱ BLK5	—

2/17/14 BJT

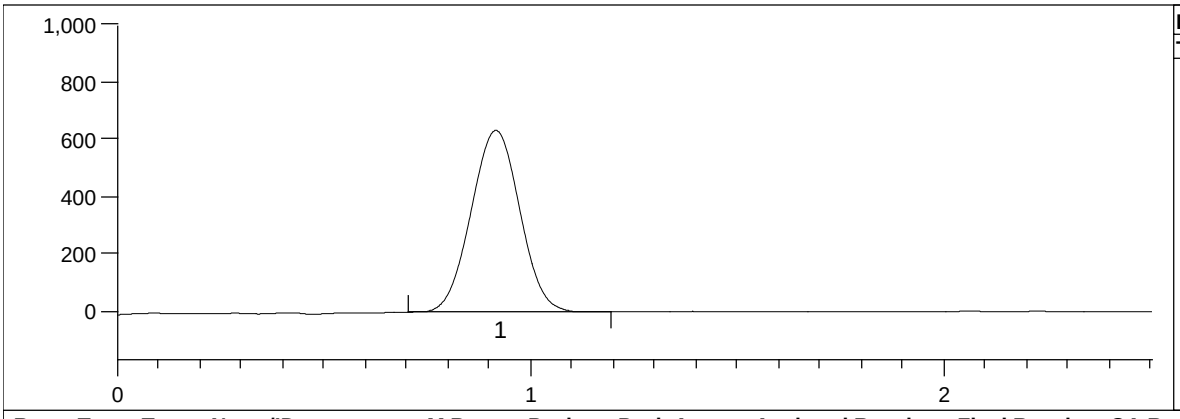
Sample ID	Sample Mass (g)

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

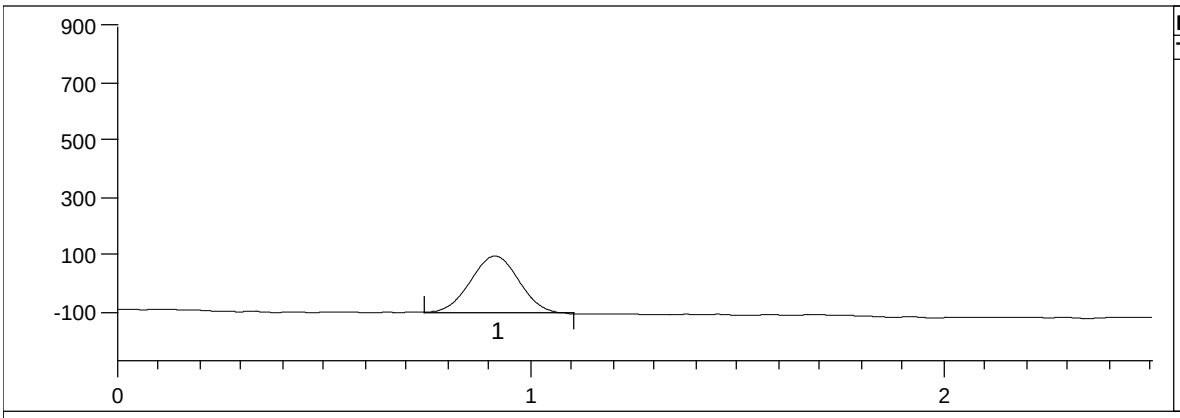


Date: 2/20/14
Time: 9:59 AM

Peak	rt	Area
1	0.91	52,699

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
1	X	S	RINSE		1	52,699	3.23	0.00		< HS	accept

Notes

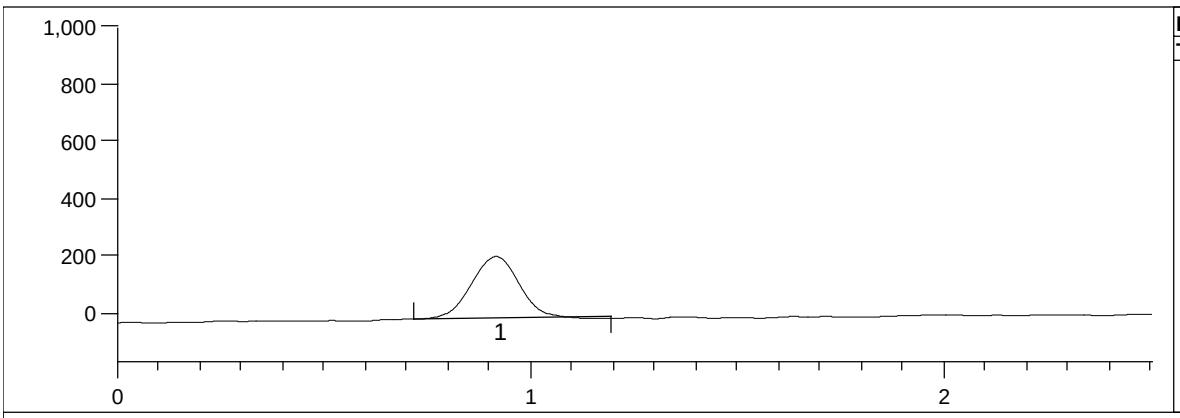


Date: 2/20/14
Time: 10:06 AM

Peak	rt	Area
1	0.91	16,578

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
2	Y	S	RINSE		1	16,578	-0.267	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 10:13 AM

Peak	rt	Area
1	0.91	18,355

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
3	X	IBL	SEQ-IBL1		1	18,355	1.78		1.78	< 10	accept

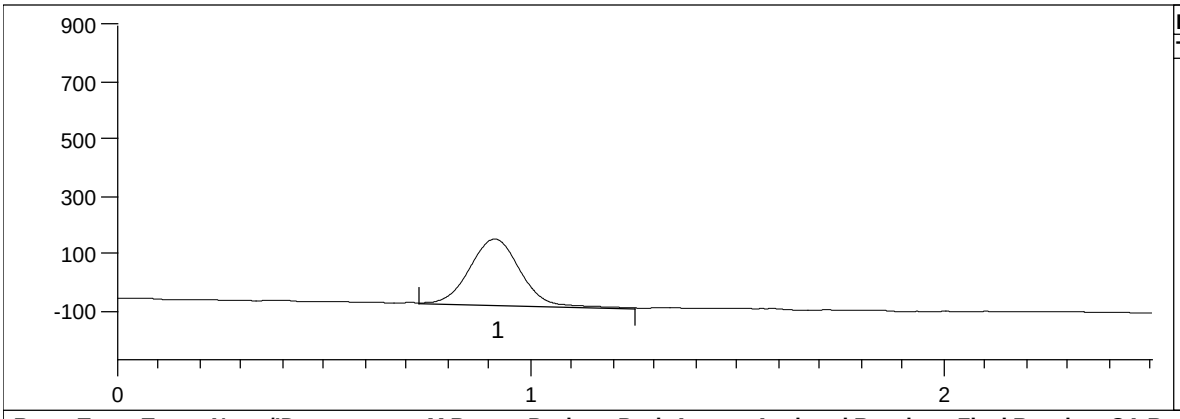
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

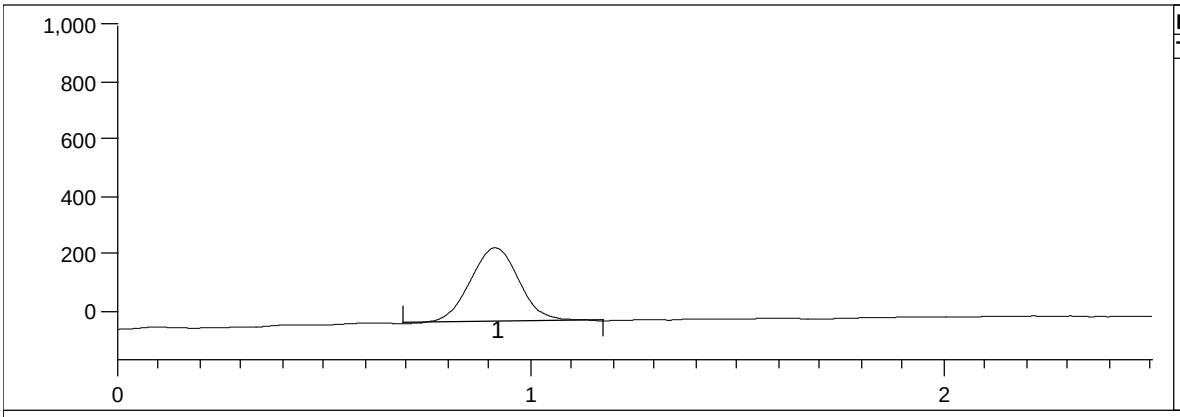


Date: 2/20/14
Time: 10:20 AM

Peak	rt	Area
1	0.91	18,981

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
4	Y	IBL	SEQ-IBL2		1	18,981	1.84		1.84	< 10	accept

Notes

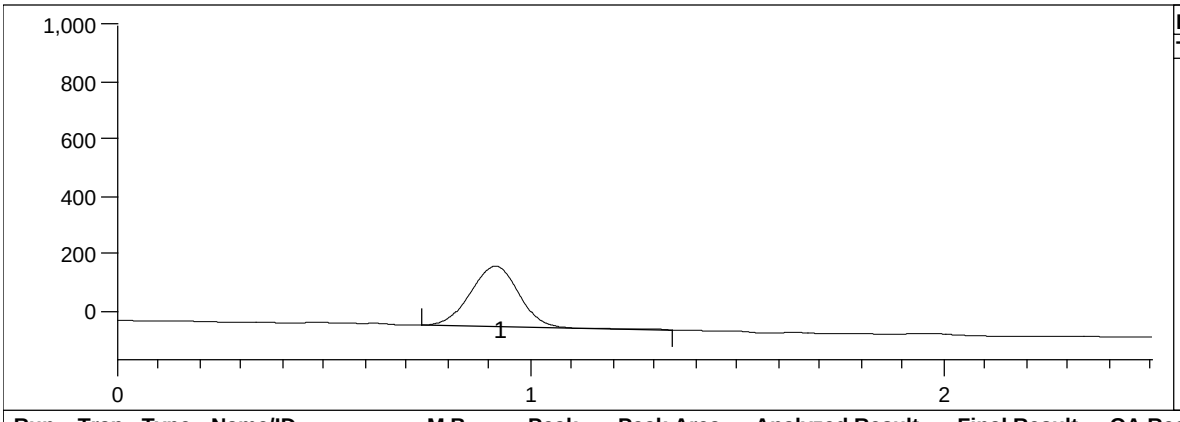


Date: 2/20/14
Time: 10:27 AM

Peak	rt	Area
1	0.91	22,490

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
5	X	IBL	SEQ-IBL3		1	22,490	2.18		2.18	< 10	accept

Notes



Date: 2/20/14
Time: 10:34 AM

Peak	rt	Area
1	0.91	17,532

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
6	Y	IBL	SEQ-IBL4		1	17,532	1.70		1.70	< 10	accept

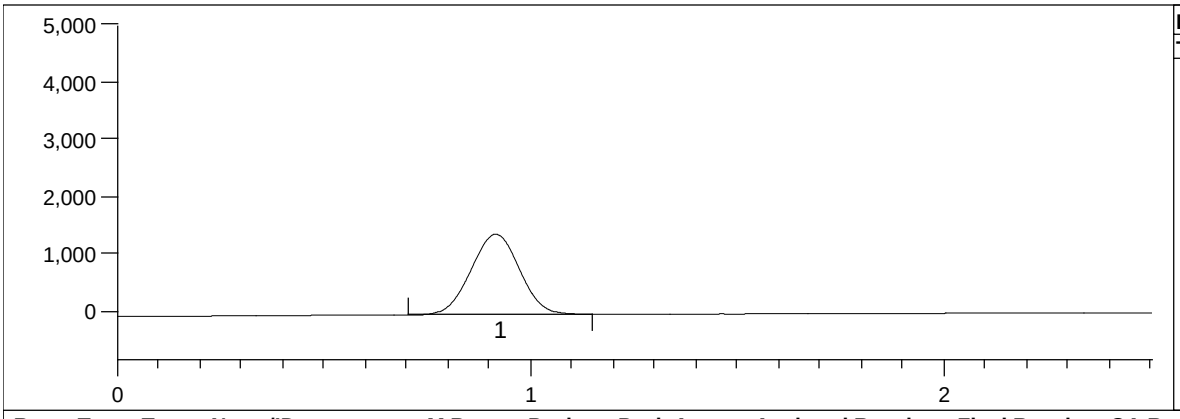
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

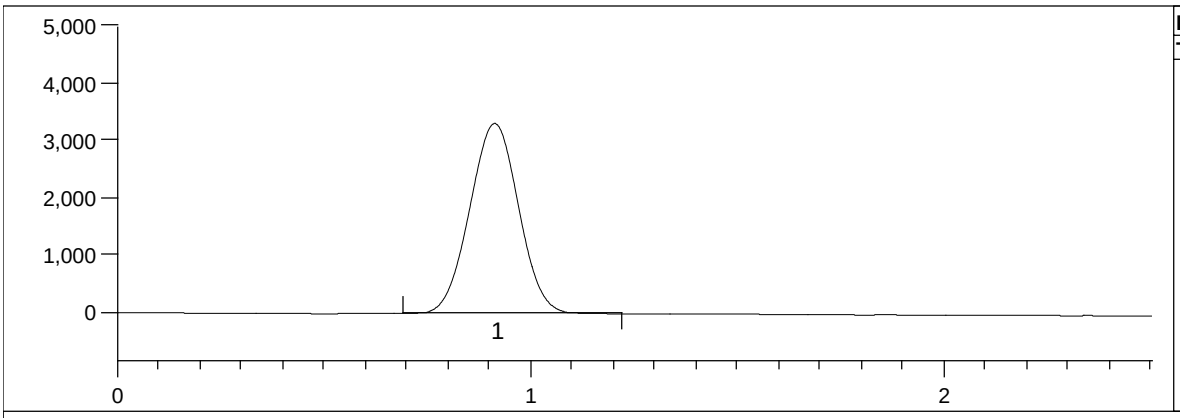


Date: 2/20/14
Time: 10:41 AM

Peak	rt	Area
1	0.91	117,420

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
7	X	STD	SEQ-CAL1		1	117,420	9.50		95.0	75-125	accept

Notes

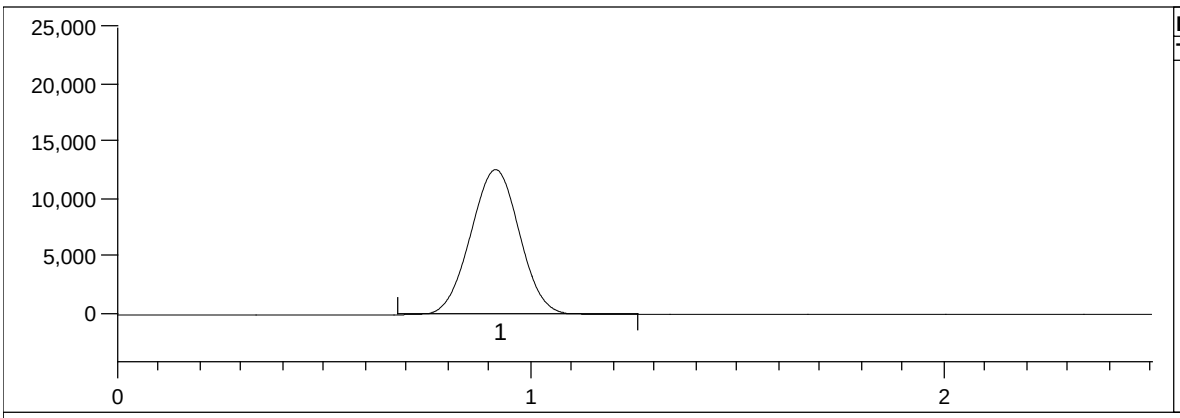


Date: 2/20/14
Time: 10:48 AM

Peak	rt	Area
1	0.91	276,387

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
8	Y	STD	SEQ-CAL2		1	276,387	24.9		99.5	75-125	accept

Notes



Date: 2/20/14
Time: 10:55 AM

Peak	rt	Area
1	0.91	1,056,574

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
9	X	STD	SEQ-CAL3		1	1,056,574	100.		100.	75-125	accept

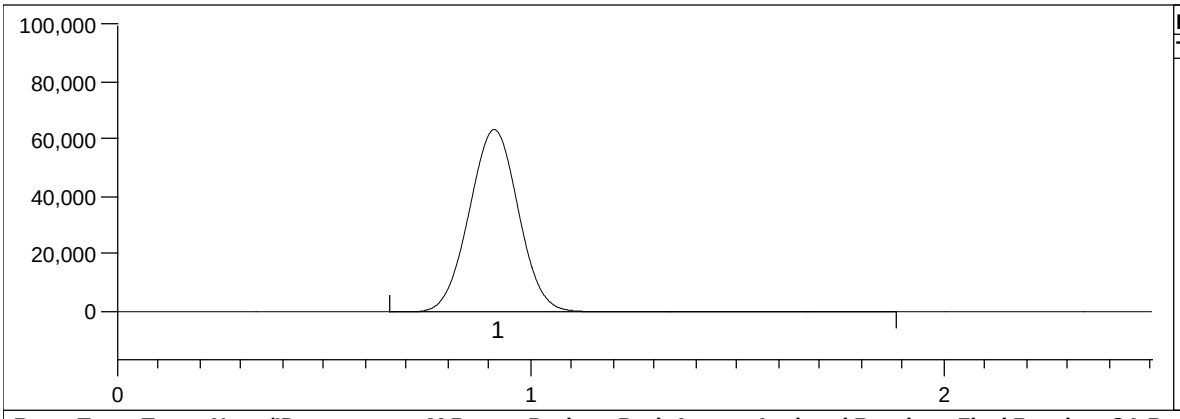
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

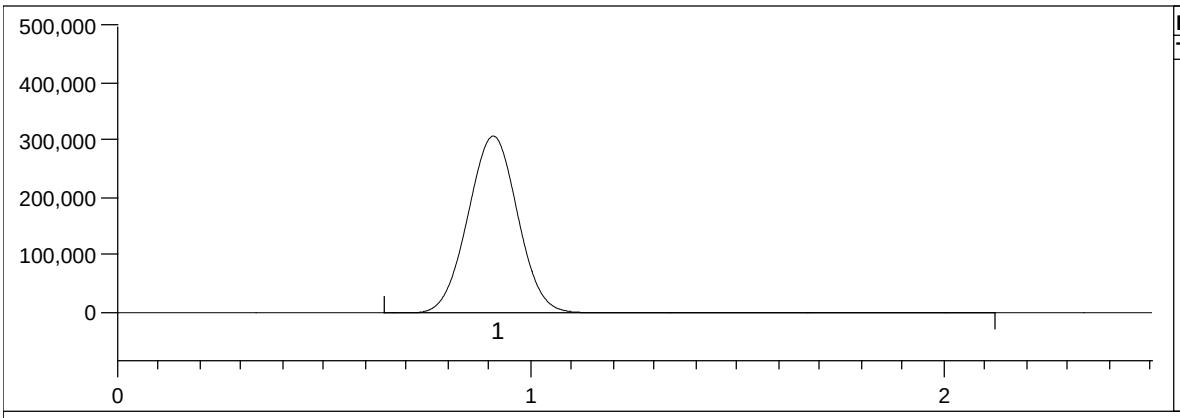


Date: 2/20/14
Time: 11:02 AM

Peak	rt	Area
1	0.91	5,303,755

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
10	Y	STD	SEQ-CAL4		1	5,303,755	512		102	75-125	accept

Notes

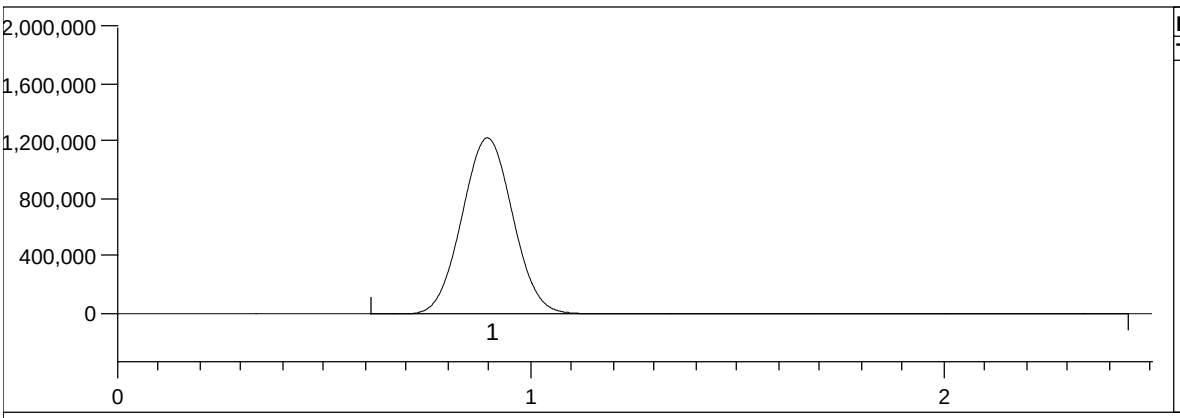


Date: 2/20/14
Time: 11:09 AM

Peak	rt	Area
1	0.90	25,989,210

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
11	X	STD	SEQ-CAL5		1	25,989,210	2,510		101	75-125	accept

Notes



Date: 2/20/14
Time: 11:16 AM

Peak	rt	Area
1	0.89	105,935,556

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
12	Y	STD	SEQ-CAL6		1	105,935,556	10,300		103	75-125	accept

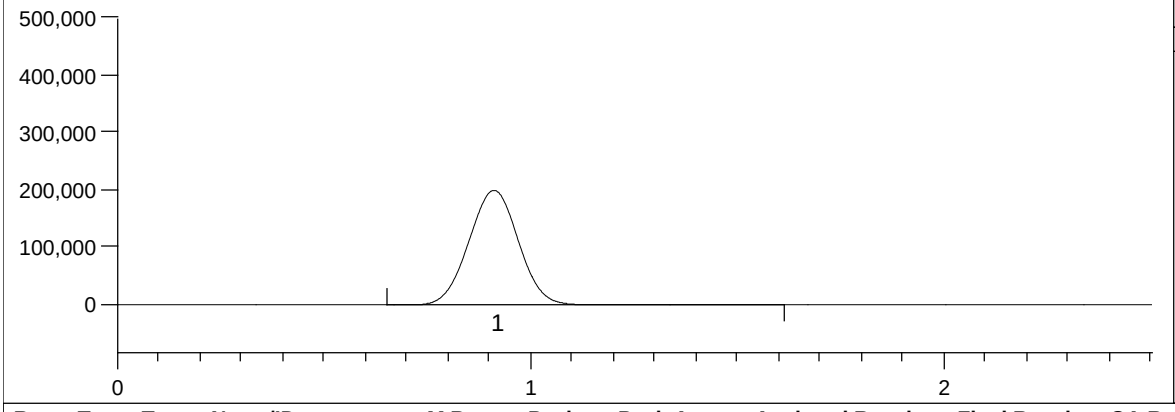
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

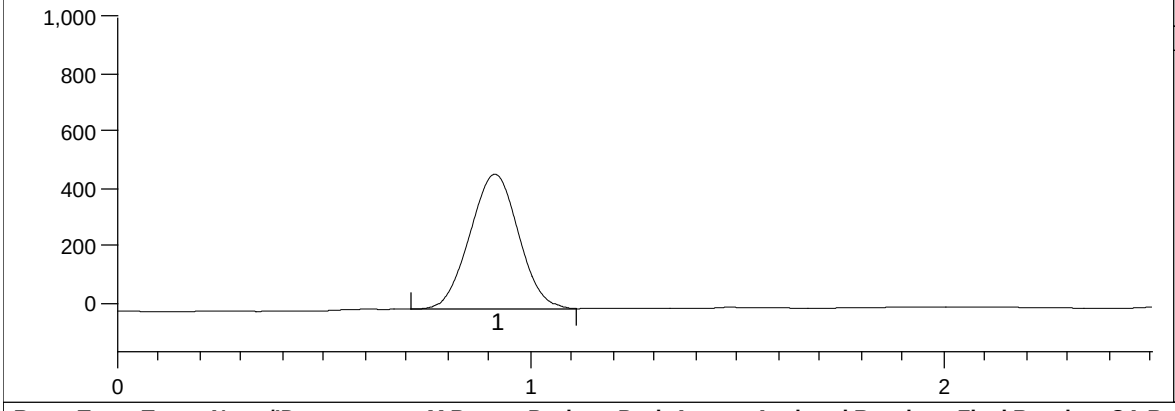


Date: 2/20/14
Time: 11:23 AM

Peak	rt	Area
1	0.91	16,804,386

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
13	X	ICV	SEQ-ICV1		1	16,804,386	1,630		104	85-115	accept

Notes

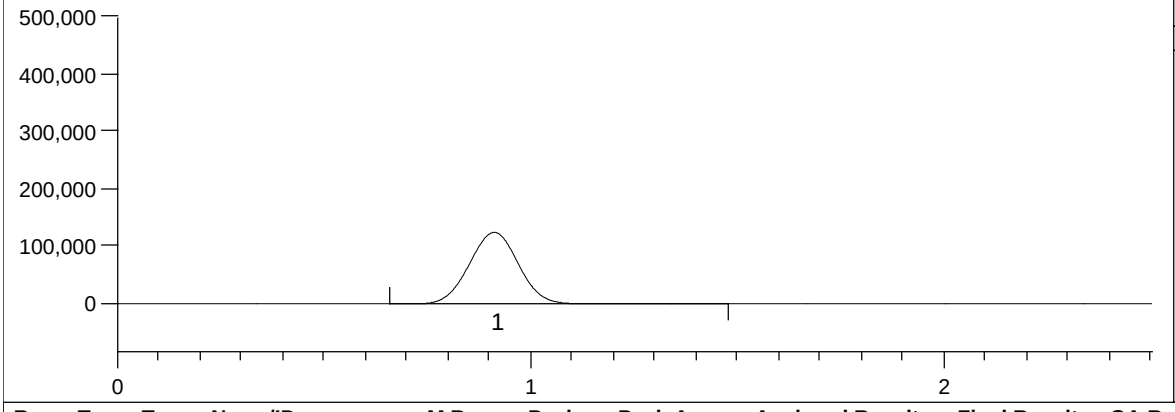


Date: 2/20/14
Time: 11:30 AM

Peak	rt	Area
1	0.91	39,154

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
14	Y	CCB	SEQ-CCB		1	39,154	3.79		3.79	< 10	accept

Notes



Date: 2/20/14
Time: 11:37 AM

Peak	rt	Area
1	0.91	10,423,299

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
15	X	CCV	SEQ-CCV		1	10,423,299	1,010		101	77-123	accept

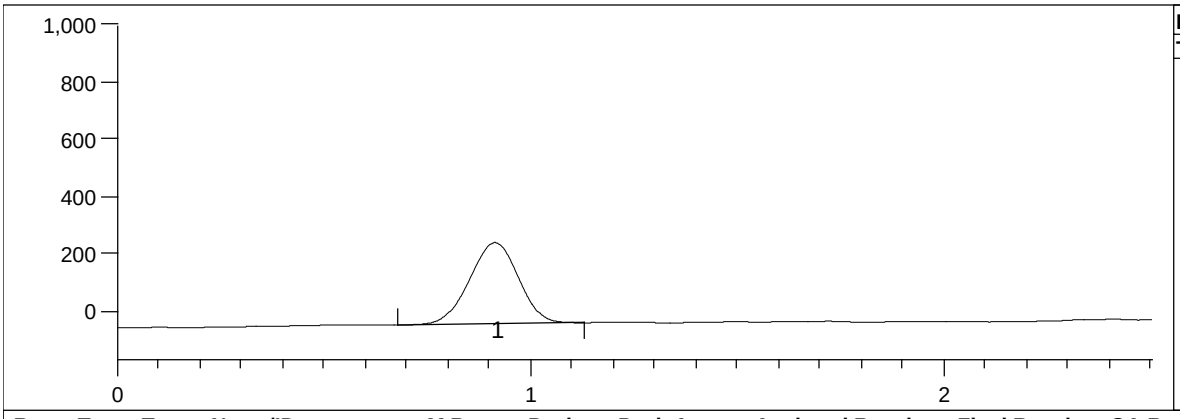
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

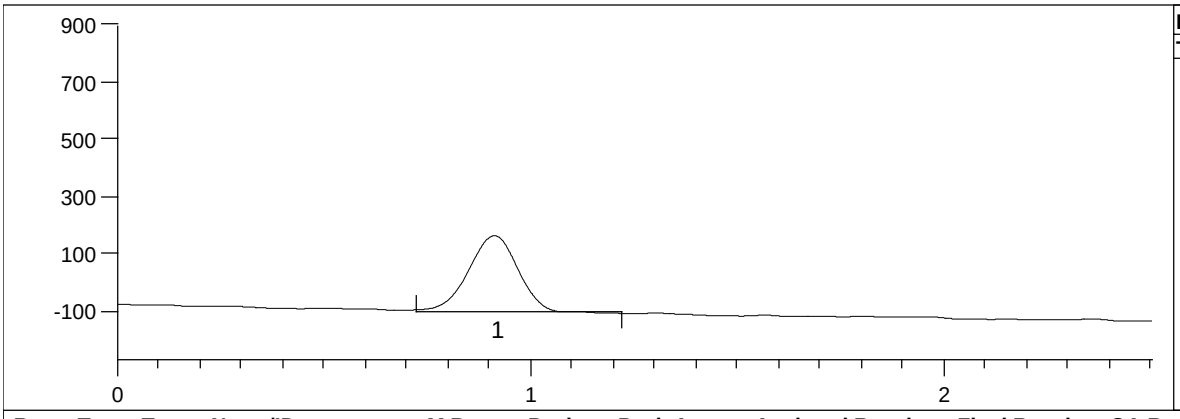


Date: 2/20/14
Time: 11:44 AM

Peak	rt	Area
1	0.91	23,996

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
16	Y	CCB	SEQ-CCB		1	23,996	2.32		2.32	< 10	accept

Notes

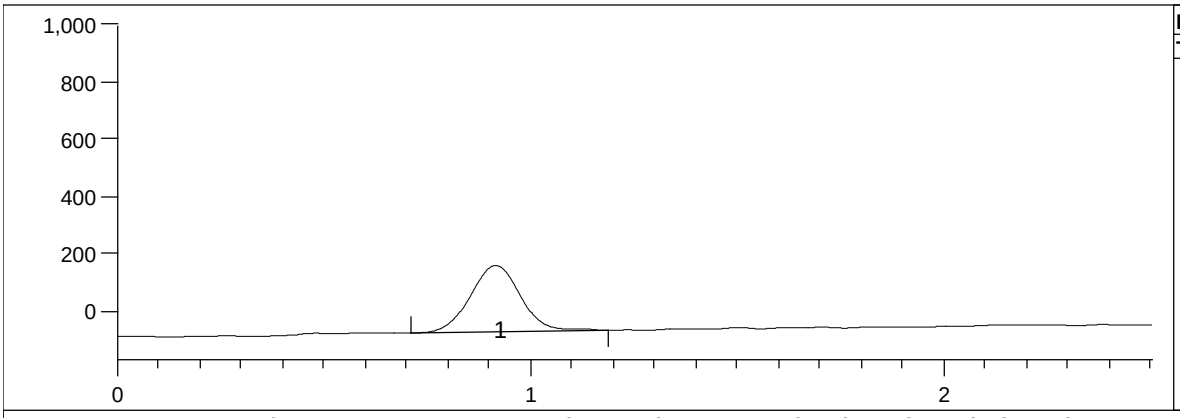


Date: 2/20/14
Time: 11:51 AM

Peak	rt	Area
1	0.91	21,968

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
17	X	CCB	SEQ-CCB		1	21,968	2.13		2.13	< 10	accept

Notes



Date: 2/20/14
Time: 11:58 AM

Peak	rt	Area
1	0.91	20,128

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
18	Y	CCB	SEQ-CCB		1	20,128	1.95		1.95	< 10	accept

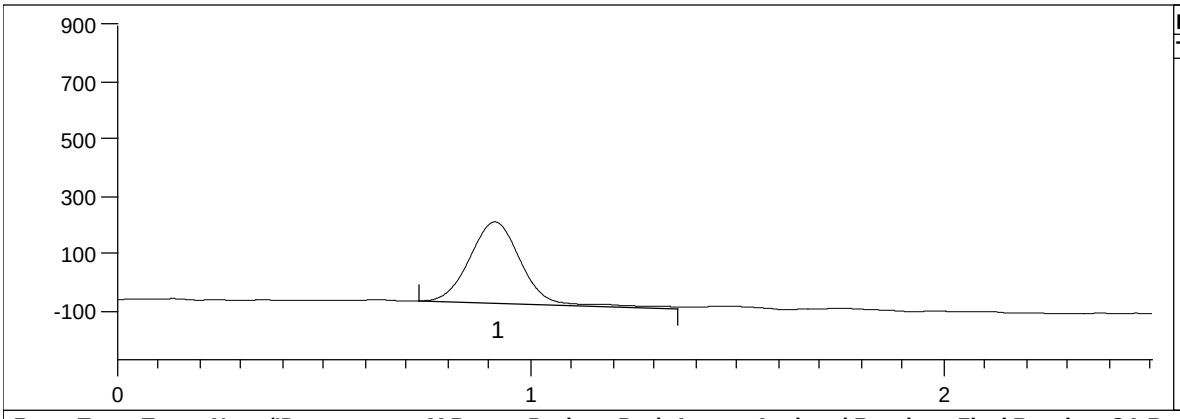
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

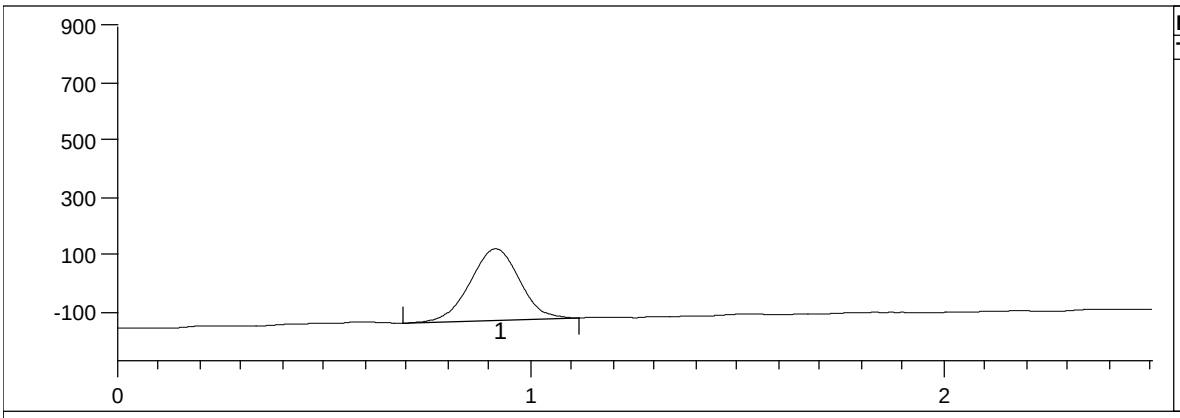


Date: 2/20/14
Time: 12:05 PM

Peak	rt	Area
1	0.91	23,495

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
19	X	S	B140197-BLK1		1	23,495	0.402	0.00		< HS	accept

Notes

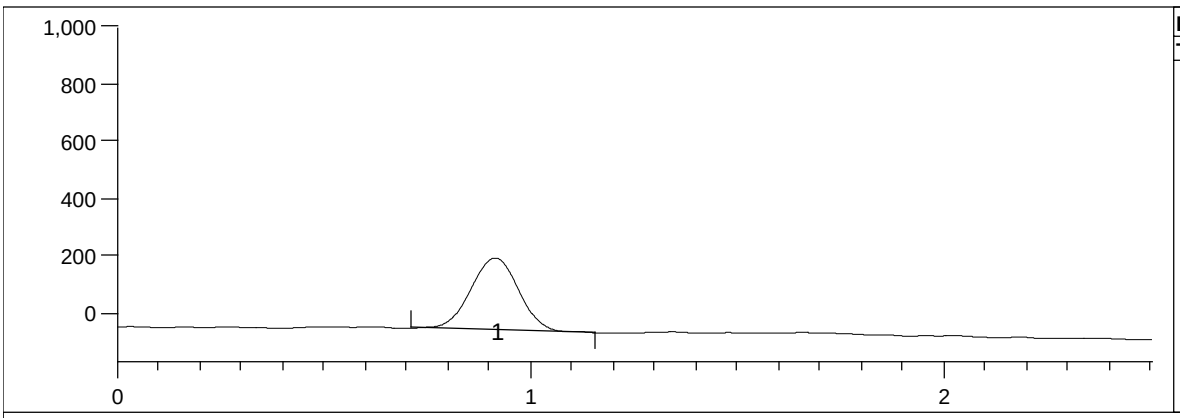


Date: 2/20/14
Time: 12:12 PM

Peak	rt	Area
1	0.91	21,312

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
20	Y	S	B140197-BLK2		1	21,312	0.191	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 12:19 PM

Peak	rt	Area
1	0.91	20,685

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
21	X	S	B140197-BLK3		1	20,685	0.130	0.00		< HS	accept

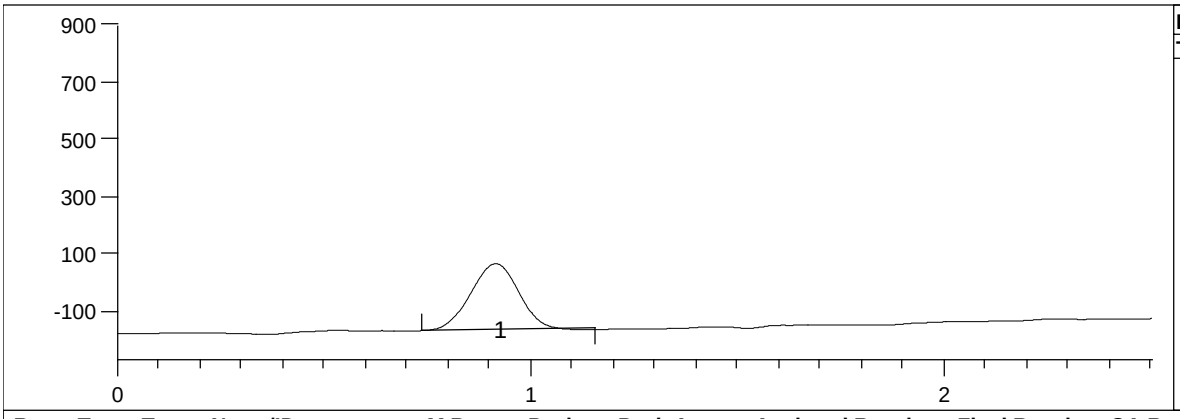
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

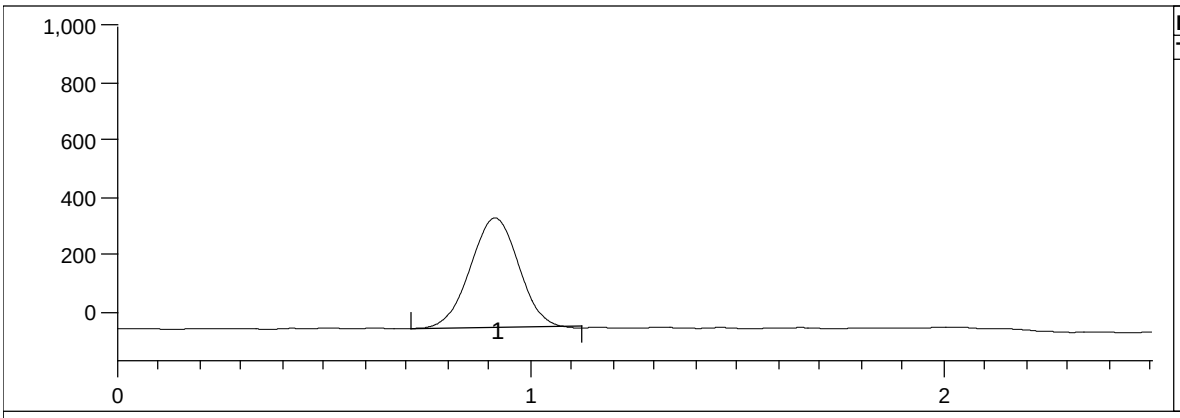


Date: 2/20/14
Time: 12:26 PM

Peak	rt	Area
1	0.91	19,404

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
22	Y	S	B140197-BLK4		1	19,404	0.00624	0.00		< HS	accept

Notes

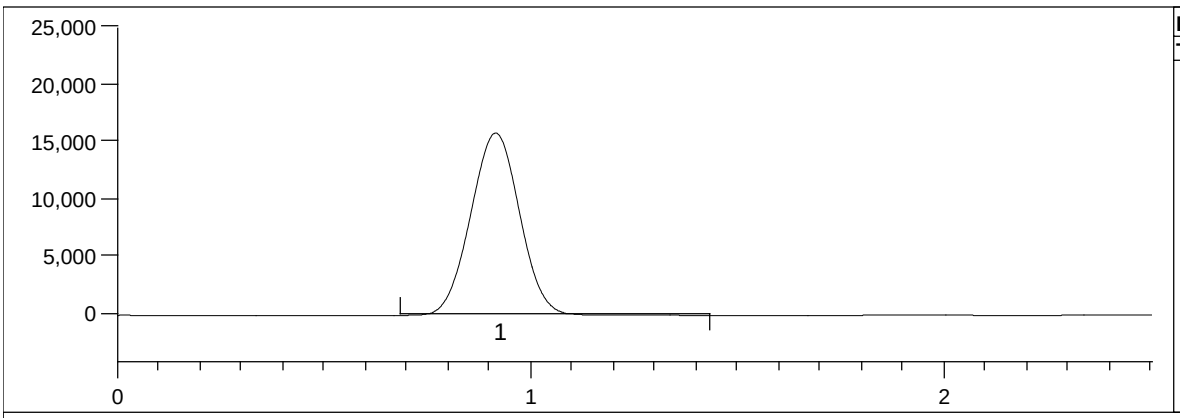


Date: 2/20/14
Time: 12:33 PM

Peak	rt	Area
1	0.91	32,154

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
23	X	S	B140197-BLK5		1	32,154	1.24	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 12:40 PM

Peak	rt	Area
1	0.91	1,329,431

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
24	Y	S	B140197-BS1		1	1,329,431	127	0.00		< HS	accept

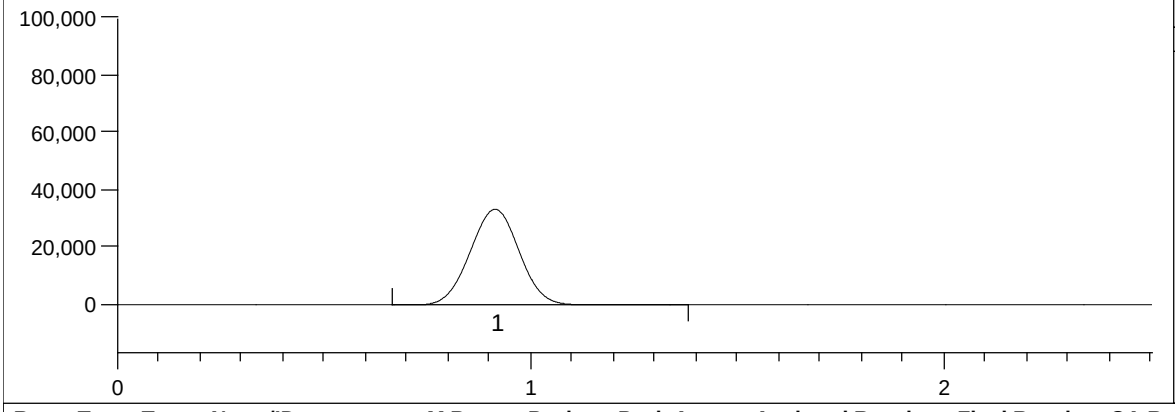
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

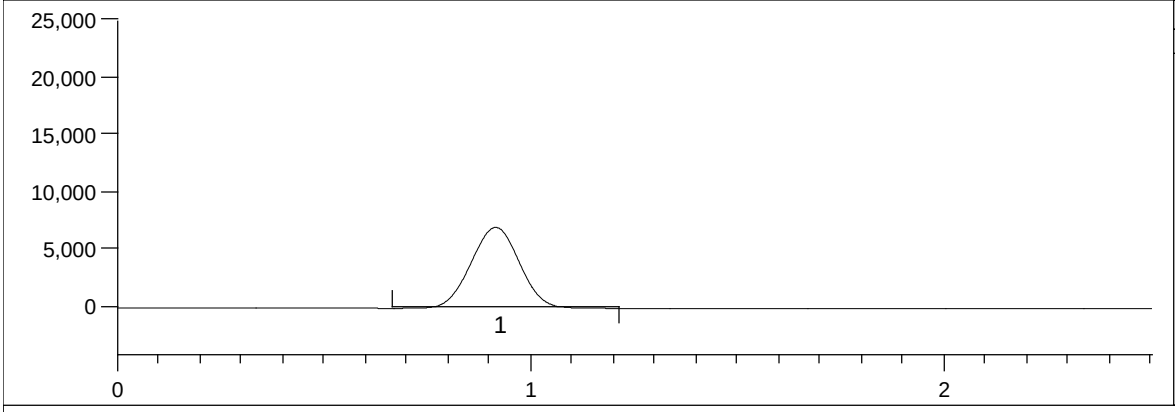


Date: 2/20/14
Time: 12:47 PM

Peak	rt	Area
1	0.91	2,790,838

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
25	X	S	B140197-BS2		1	2,790,838	268	0.00		< HS	accept

Notes

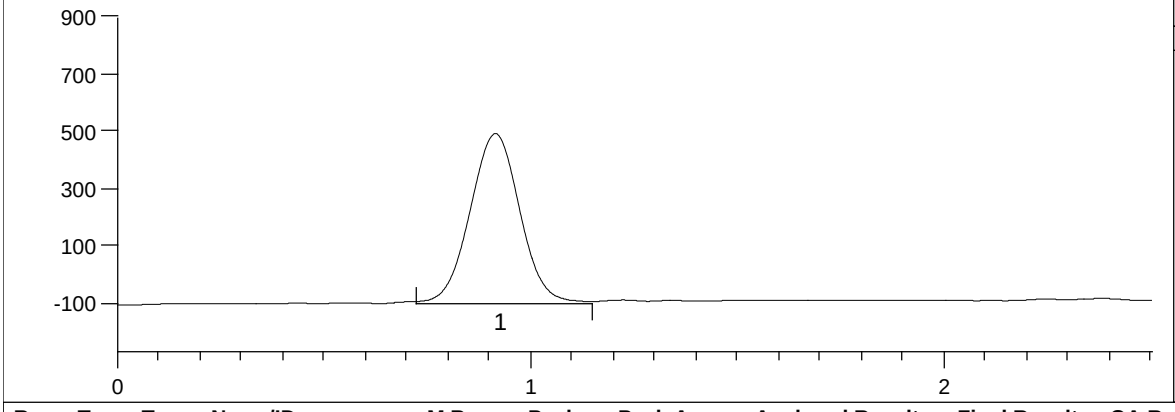


Date: 2/20/14
Time: 12:54 PM

Peak	rt	Area
1	0.91	592,681

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
26	Y	S	1406018-01		1	592,681	55.5	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 1:01 PM

Peak	rt	Area
1	0.91	48,064

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
27	X	S	1406018-02		1	48,064	2.78	0.00		< HS	accept

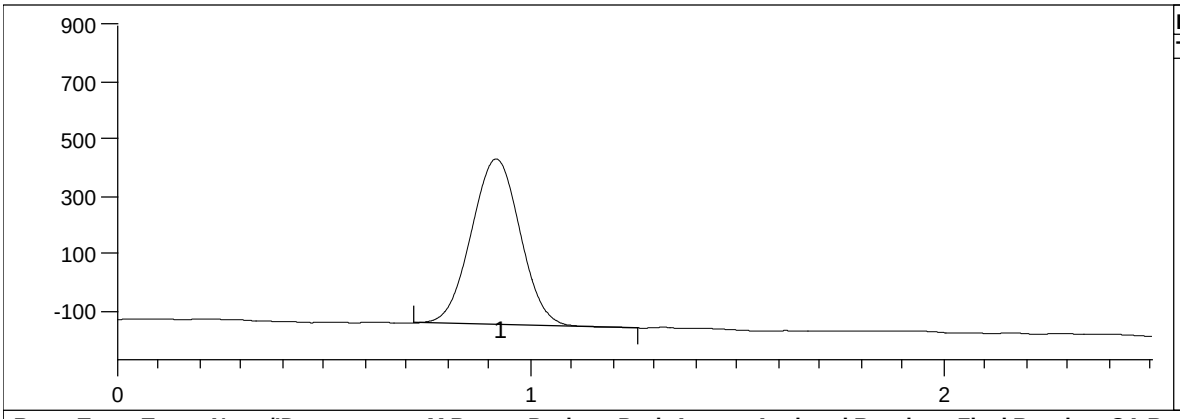
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

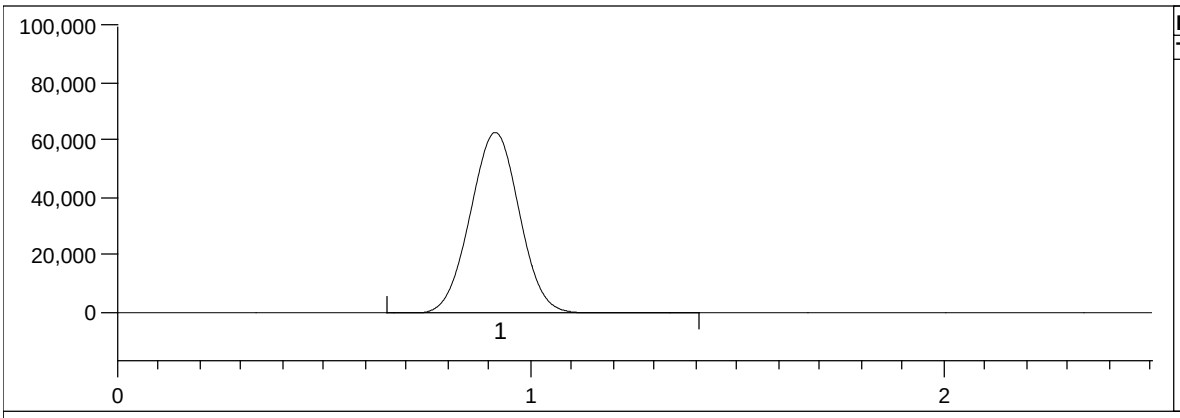


Date: 2/20/14
Time: 1:08 PM

Peak	rt	Area
1	0.91	47,987

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
28	Y	S	1406018-03		1	47,987	2.77	0.00		< HS	accept

Notes

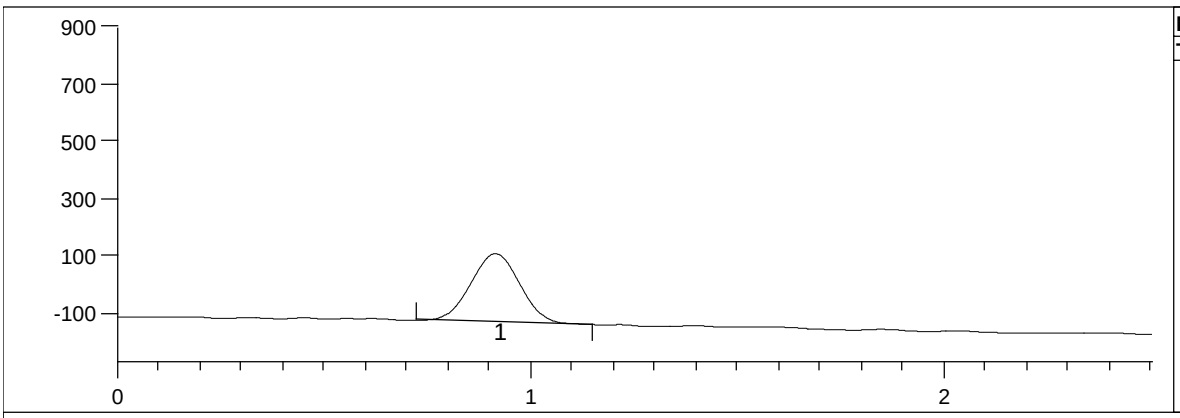


Date: 2/20/14
Time: 1:15 PM

Peak	rt	Area
1	0.91	5,242,067

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
29	X	CCV	SEQ-CCV		1	5,242,067	506		101	77-123	accept

Notes



Date: 2/20/14
Time: 1:22 PM

Peak	rt	Area
1	0.91	20,134

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
30	Y	CCB	SEQ-CCB		1	20,134	1.95		1.95	< 10	accept

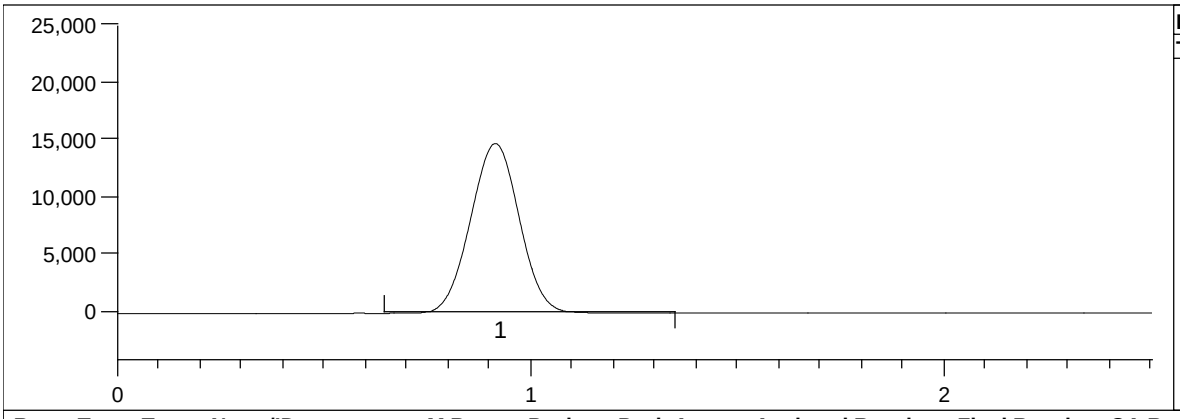
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

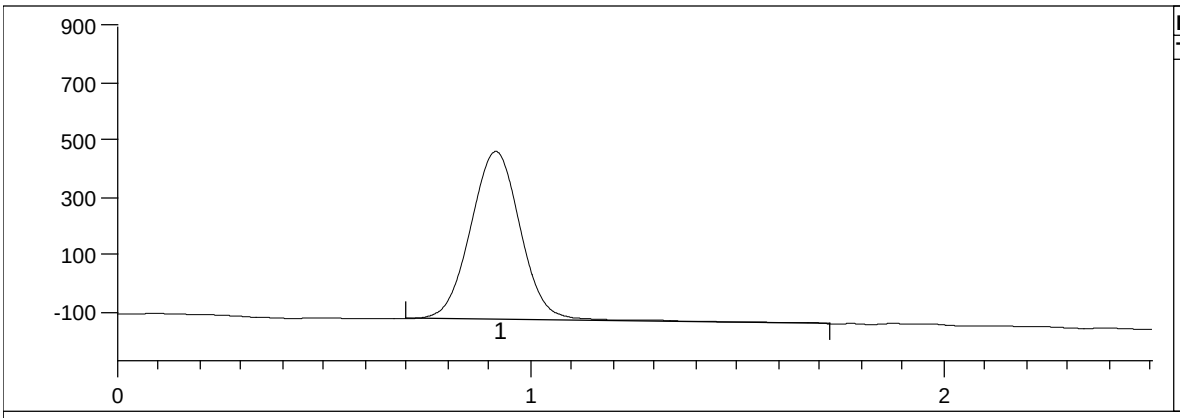


Date: 2/20/14
Time: 1:29 PM

Peak	rt	Area
1	0.91	1,233,881

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
31	X	S	1406018-04		1	1,233,881	118	0.00		< HS	accept

Notes

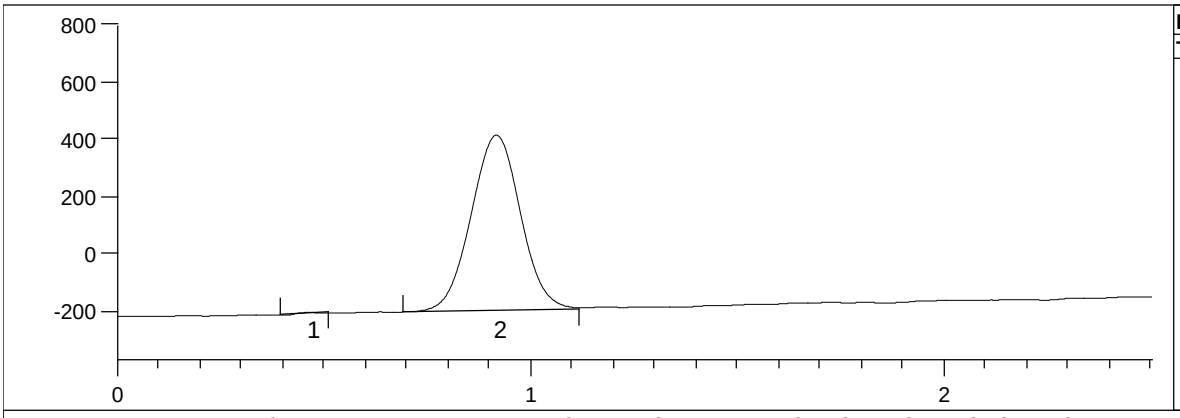


Date: 2/20/14
Time: 1:36 PM

Peak	rt	Area
1	0.91	50,918

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
32	Y	S	1407008-01		1	50,918	3.06	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 1:43 PM

Peak	rt	Area
1	0.46	259
2	0.91	50,831

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
33	X	S	1407008-02		2	50,831	3.05	0.00		< HS	accept

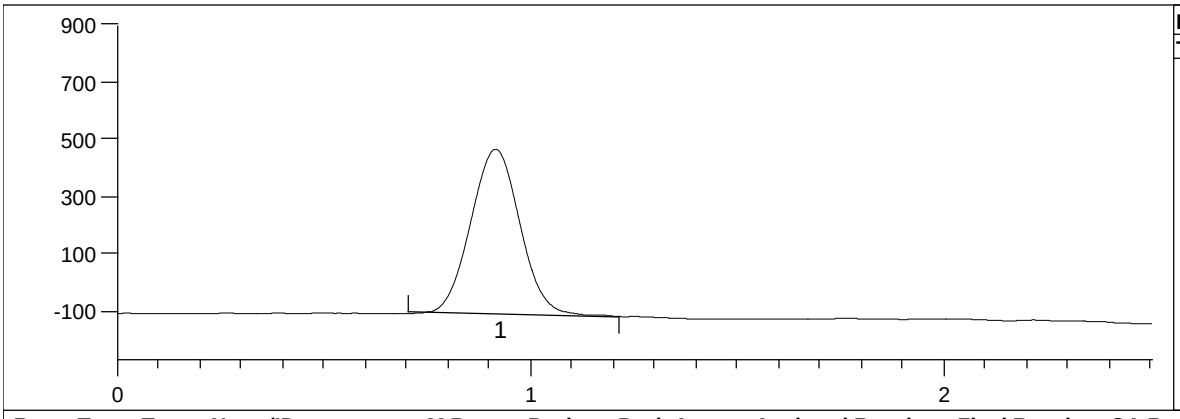
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT

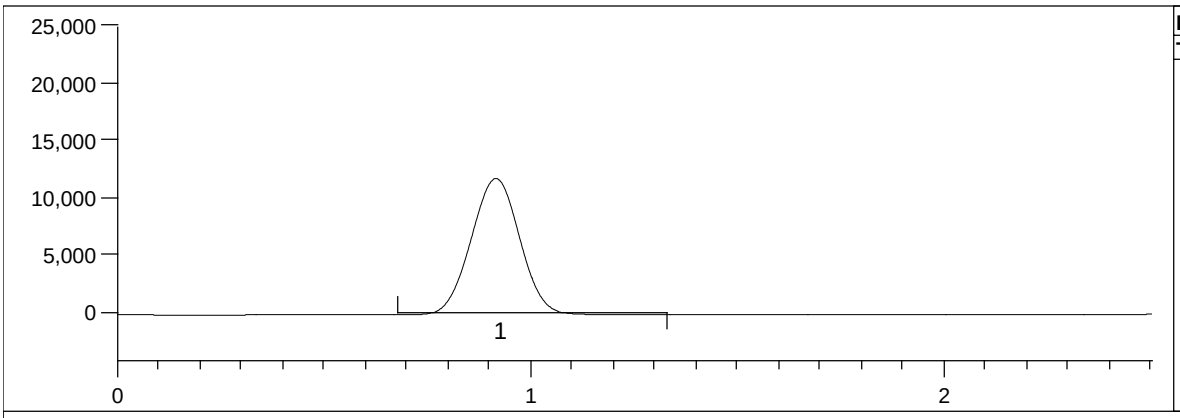


Date: 2/20/14
Time: 1:50 PM

Peak	rt	Area
1	0.91	48,805

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
34	Y	S	1407008-03		1	48,805	2.85	0.00		< HS	accept

Notes

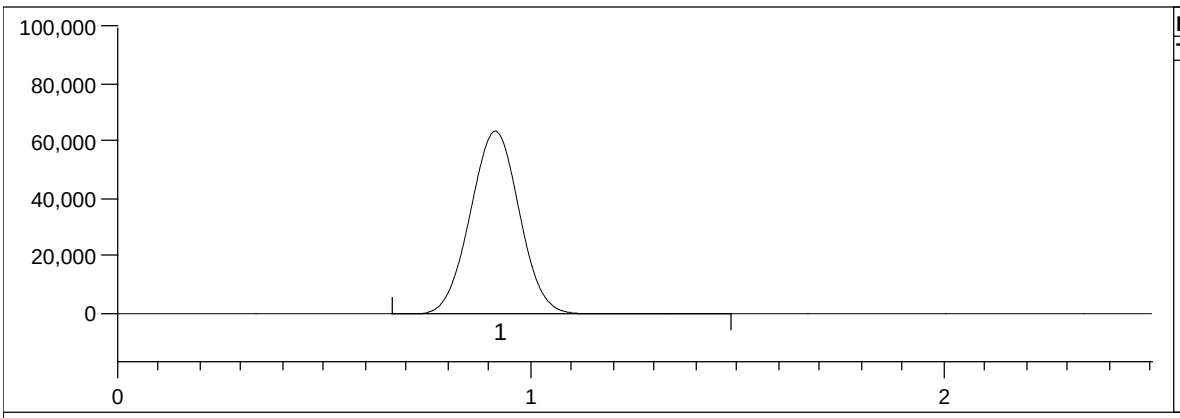


Date: 2/20/14
Time: 1:57 PM

Peak	rt	Area
1	0.91	991,844

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
35	X	S	1407008-04		1	991,844	94.2	0.00		< HS	accept

Notes



Date: 2/20/14
Time: 2:04 PM

Peak	rt	Area
1	0.91	5,319,903

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
36	Y	CCV	SEQ-CCV		1	5,319,903	513		103	77-123	accept

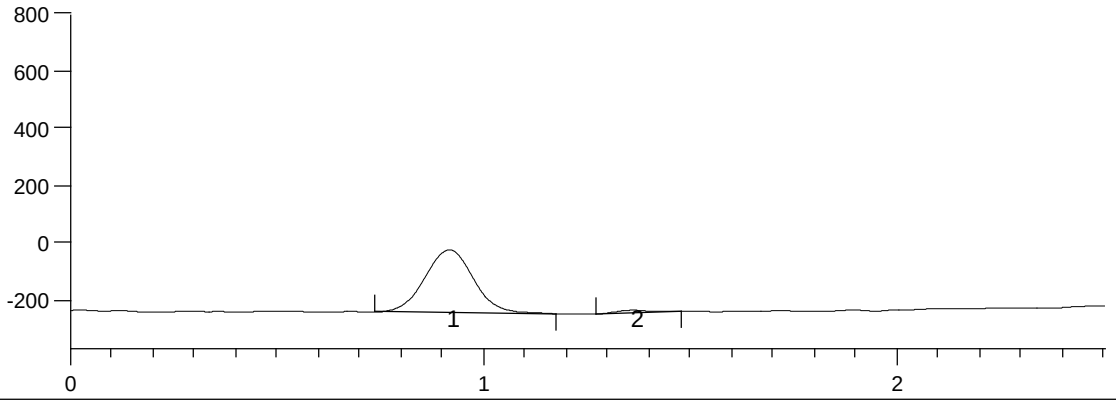
Notes

Peak Report

Batch Number: B140197
Method Number: CVAFS BR-0007

Project Number(s): 1400137
Instrument ID: THG-05

Date Analyzed: 2/20/14
Analyst Name: BJT



Date: 2/20/14
Time: 2:11 PM

Peak	rt	Area
1	0.91	18,304
2	1.36	594

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
37	X	CCB	SEQ-CCB		1	18,304	1.77		1.77	< 10	accept

Notes

Report of Mercury Analysis
IC Traps

Project: 200454.0000.0000
Samples Collected: February 27, 2014
Report Date: March 27, 2014

Prepared for:
Gary Hunt
TRC Environmental
21 Griffin Road North
Windsor, CT 06095

Brooks Rand Labs
Project ID: TRC-LW1401

3958 6th Ave. NW
Seattle WA 98107
P: 206-632-6206
F: 206-632-6017
E: brl@brooksrand.com
www.brooksrand.com

Table of Contents

Case Narrative

Shipping and Receiving

On March 4, 2014, Brooks Rand Labs (BRL) received three (3) iodated carbon (IC) traps at 10:00 A.M. in a box with blue ice that had thawed and at ambient temperature. The chain-of-custody (COC) form requested analysis for total mercury (Hg). The samples were received and stored securely according to BRL standard operating procedures (SOP) and EPA methodology.

Preservation and Holding Time

All method and SOP requirements for preservation and holding time were satisfied.

Total Mercury in IC Traps by EPA Method 324/1631 (SOP BR-0007)

All samples are prepared in accordance with EPA Method 324 and analyzed in accordance with EPA Method 1631. Samples are digested with nitric acid and sulfuric acid at 90°C for 4 hours, oxidized with bromine monochloride (BrCl) and then analyzed with stannous chloride ($SnCl_2$) reduction, single gold amalgamation, and cold vapor atomic fluorescence spectroscopy (CVAFS) detection using a Brooks Rand Instruments MERX-T CVAFS Mercury Automated-Analyzer.

The results were method blank-corrected as described in the calculations section of the relevant BRL SOP(s) and may have been evaluated using reporting limits that have been adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details.

Samples were reported on a ng/trap basis.

Samples results that were less than the MDL were qualified **U** and reported at the MDL.

Sequence 1400206

Instrument calibration, meeting all quality control criteria, was successfully achieved on the day of sample analysis.

Batch B140366

Aside from concentration qualifiers, all data was reported without qualification and all associated quality control sample results met the acceptance criteria.

We certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. BRL, an accredited laboratory, certifies that the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more details, please see the *Report Information* page in your report. Please feel free to contact us if you have any questions regarding this report.

Lydia Greaves
Project Manager
lydia@brooksrand.com

Mi Sun Um
Data Manager
misun@brooksrand.com

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction
IBL	instrument blank		

Definition of Data Qualifiers

(Effective 9/23/09)

B	Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E	An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H	Holding time and/or preservation requirements not met. Result is estimated.
J	Estimated value. A full explanation is presented in the narrative.
J-M	Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N	Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M	Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N	Spike recovery was not within acceptance criteria. Result is estimated.
R	Rejected, unusable value. A full explanation is presented in the narrative.
U	Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X	Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BRL.

3958 6th Avenue NW Seattle WA 98107 · P(206) 632-6206 · F(206) 632-6017 · brl@brooksrand.com · www.brooksrand.com

Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
B'ville-Hg-3-Pri	1410010-01	IC Trap	Sample	02/27/2014	03/04/2014
B'ville-Hg-3-Col	1410010-02	IC Trap	Sample	02/27/2014	03/04/2014
FBB-Hg-2	1410010-03	IC Trap	Field Blank	02/27/2014	03/04/2014

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	IC Trap	EPA 324/1631 Manual	03/11/2014	03/12/2014	B140366	1400206

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
B'ville-Hg-3-Col										
1410010-02	Hg	IC Trap	NA	3.1	B	1.1	3.3	ng/m³	B140366	1400206
B'ville-Hg-3-Pri										
1410010-01	Hg	IC Trap	NA	1.3	B	1.1	3.3	ng/m³	B140366	1400206
FBB-Hg-2										
1410010-03	Hg	IC Trap	NA	1.1	U	1.1	3.3	ng/m³	B140366	1400206

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Accuracy & Precision Summary

Batch: B140366
Lab Matrix: IC Trap
Method: EPA 324/1631 Manual

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B140366-BS1	**Laboratory Fortified Blank (1350014)**						
	Hg		100.0	102.6	ng/m³	103% 80-120	
B140366-DUP1	**Duplicate (1410010-01)**						
	Hg	1.3		1.4	ng/m³		4% 10
B140366-PS1	**Post Spike (1410010-01)**						
	Hg	1.3	200.0	203.7	ng/m³	101% 85-115	

Method Blanks & Reporting Limits

Batch: B140366
Matrix: IC Trap
Method: EPA 324/1631 Manual
Analyte: Hg

Sample	Result	Units
B140366-BLK1	0.3	ng/m³
B140366-BLK2	0.2	ng/m³
B140366-BLK3	0.2	ng/m³
B140366-BLK4	0.2	ng/m³

Average: 0.2 **Standard Deviation:** 0.1 **MDL:** 1.1
Limit: 2.2 **Limit:** 0.7 **MRL:** 3.3

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Instrument Calibration

Sequence: 1400206
Instrument: THG-05
Date: 03/12/2014
Analyte: Hg

Total Mercury and Mercury Speciation by CVAFS
Method: EPA 324/1631 Manual

Lab ID	True Value	Result	Units	REC & Limits	
1400206-IBL1		2.5	pg of Hg		
1400206-IBL2		2.0	pg of Hg		
1400206-IBL3		2.0	pg of Hg		
1400206-IBL4		2.0	pg of Hg		
1400206-CAL1	10.00	10.0	pg of Hg	100%	
1400206-CAL2	25.00	24.8	pg of Hg	99%	
1400206-CAL3	100.0	100.7	pg of Hg	101%	
1400206-CAL4	500.0	490.9	pg of Hg	98%	
1400206-CAL5	2500	2532	pg of Hg	101%	
1400206-CAL6	10000	10040	pg of Hg	100%	
1400206-ICV1	1568	1628	pg of Hg	104%	90-110
1400206-CCB1		4.1	pg of Hg		
1400206-CCV1	500.0	500.6	pg of Hg	100%	90-110
1400206-CCB2		2.8	pg of Hg		
1400206-CCB3		2.6	pg of Hg		
1400206-CCB4		2.3	pg of Hg		
1400206-CCV2	500.0	493.8	pg of Hg	99%	90-110
1400206-CCB5		2.9	pg of Hg		
1400206-CCV3	500.0	486.6	pg of Hg	97%	90-110
1400206-CCB6		2.3	pg of Hg		

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Project ID: TRC-LW1401
PM: Lydia Greaves

Client PM: Gary Hunt
Client PO: 200454.0000.0000

Sample Containers

Lab ID: 1410010-01
Sample: B'ville-Hg-3-Pri
Report Matrix: IC Trap
Sample Type: Sample
Collected: 02/27/2014
Received: 03/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap			none	n/a		Cooler

Lab ID: 1410010-02
Sample: B'ville-Hg-3-Col
Report Matrix: IC Trap
Sample Type: Sample
Collected: 02/27/2014
Received: 03/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap			none	n/a		Cooler

Lab ID: 1410010-03
Sample: FBB-Hg-2
Report Matrix: IC Trap
Sample Type: Field Blank
Collected: 02/27/2014
Received: 03/04/2014

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	IC Trap			none	n/a		Cooler

Shipping Containers

Cooler

Received: March 4, 2014 10:00
Tracking No: 521452181738 via FedEx
Coolant Type: Blue Ice
Temperature: ambient

Description: Cooler
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

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BROOKS RAND LABS
MEANINGFUL METALS DATA
3958 6th Avenue NW
Seattle, WA 98107
Phone: 206-632-6206
Fax: 206-632-6017
samples@brooksrand.com
www.brooksrand.com

Chain of Custody Record

Page_____of_____

White: LAB COPY
Yellow: CUSTOMER COPY

Client: TRC Environmental	Address: 21 Griffin Road North, Windsor, CT	COC receipt confirmation? Y / N If so, by: email / fax (circle one)
Contact: Gary Hunt		Email:ghunt@trcsolutions.com
Client project ID: 200454.0000.0000	Phone #:	Fax #:
PO #:		

Requested TAT in business days:
☒ 20 (standard)
☐ 15
☐ 10
☐ 5
☐ Other ____

Surcharges apply for expedited turn around times.

	Sample ID	Collection: Date	Collection: Time	Misc: Sampler (initials)	Misc: Matrix type	Misc: # of containers	Misc: Field filtered? (Y/N)	Field Preservation: Unpreserved / ice only	Field Preservation: HCl / HNO_3 (circle one)	Field Preservation: Other (specify)	Analyses required: Total Hg, EPA 1631	Analyses required: Methyl Hg, EPA 1630	Analyses required: ICP-MS Metals (specify)	Analyses required: As / Se species (specify)	Analyses required: % Solids	Analyses required: Filtration	Analyses required: Other (specify)	Analyses required: Other (specify)	Comments
1	B'ville-Hg- 3 -Pri	2-27-2014	14:34								X								Primary Volume:
2	B'ville-Hg- 3 -Col	2-27	14:34								X								Collocate Volume:
3	[redacted]										X								volume:
4	FBB-Hg- 2	2-27	14:34																field blank
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: S. Boyko	Date:	Time:	Relinquished by:	Date:	Time:
Received by:	Date:	Time:	Received at BRL by:	Date: 3/4/14	Time: 10:00
Shipping carrier:	# of coolers:		BRL work order ID: 1410010	BRL project ID: TRC-200454	

Express

Align top of FedEx Express® Shipping Label here.

ORIGIN ID:EHTA (860) 298-6346
THERESA BREAULT
TRC
21 GRIFFIN ROAD NORTH

WINDSOR, CT 06095
UNITED STATES US

SHIP DATE: 03MAR14
ACTWGT: 1.9 LB
CAD: 929335/CAFE2704

BILL SENDER

TO

BROOKS RAND LLC
3958 SIXTH AVE NORTHWEST
SAMPLE RECIEVING
SEATTLE WA 98107
(206) 632-6206
DEPT: STACK

REF: OHGENL.0000.0000 300330

FedEx Express

TRK# 0201 5214 4218 1738

TUE - 04 MAR 10:30A
PRIORITY OVERNIGHT

NC BFIA

98107
WA-US SEA

Part # 156[illegible]434 RITZ 09/13

The World On Time.

Small Box

Sample Calculations

CVAFS

EPA 1631, IC Trap

$$\frac{\frac{CFD}{A} - \frac{BF_d}{A_d}}{I * 1000}$$

C – result produced at the instrument, pg
F – final volume of the sample preparation, mL
D – dilution factor of any dilution of the preparation made at the instrument (*1)
A – analyzed volume of the prep or dilution of the prep, mL
B- the mean of the method blank instrument result, pg
F_d – default final prep volume for the method used for the method blanks, 40 mL
A_d – default analyzed volume for the method used for the method blanks, 0.1 mL
I – aliquot of sample prepared, g.

ANALYSIS SEQUENCE

1400206

Brooks Rand Labs

Instrument: THG-05

Lab Number	Batch #	Analysis	Order	STD ID	Source ID	BRL Project #	Due	Comments
1400206-IBL1	1400206	QC	1		-			
1400206-IBL2	1400206	QC	2		-			
1400206-IBL3	1400206	QC	3		-			
1400206-IBL4	1400206	QC	4		-			
1400206-CAL1	1400206	QC	5	1411004	-			
1400206-CAL2	1400206	QC	6	1411005	-			
1400206-CAL3	1400206	QC	7	1411006	-			
1400206-CAL4	1400206	QC	8	1411007	-			
1400206-CAL5	1400206	QC	9	1411008	-			
1400206-CAL6	1400206	QC	10	1411009	-			
1400206-ICV1	1400206	QC	11	1411010	-			
1400206-CCB1	1400206	QC	12		-			
1400206-CCV1	1400206	QC	13	1411011	-			
1400206-CCB2	1400206	QC	14		-			
1400206-CCB3	1400206	QC	15		-			
1400206-CCB4	1400206	QC	16		-			
1410033-01RE1	B140365	Hg-W-BrCl-MERX-TR	17			VSO-QU1101	3/19/2014	Added 3/13/2014 by BJT
1410033-01RE1	B140365	Hg-W-BrCl-MERX-Diss	18			VSO-QU1101	1/1/1980	Added 3/13/2014 by BJT
B140365-MS6	B140365	QC	19		1410033-01RE1			
1410035-13RE1	B140365	Hg-W-BrCl-MERX-Diss	20			E2C-EM1301	3/31/2014	Added 3/13/2014 by BJT
1410027-02RE1	B140365	Hg-W-BrCl-MERX-TR	21			EPR-PA1401	3/18/2014	Added 3/13/2014 by BJT
1400206-CCV2	1400206	QC	22	1411011	-			
1400206-CCB5	1400206	QC	23		-			
B140366-BLK1	B140366	QC	24		-			
B140366-BLK2	B140366	QC	25		-			
B140366-BLK3	B140366	QC	26		-			

ANALYSIS SEQUENCE

1400206

Brooks Rand Labs

Instrument: THG-05

Lab Number	Batch #	Analysis	Order	STD ID	Source ID	BRL Project #	Due	Comments
B140366-BLK4	B140366	QC	27		-			
B140366-BS1	B140366	QC	28		-			
1410010-01	B140366	Hg-IC-70:30+BrCl-MerxT	29			TRC-LW1401	3/26/2014	
B140366-DUP1	B140366	QC	30		1410010-01			
B140366-PS1	B140366	QC	31		1410010-01			
1410010-02	B140366	Hg-IC-70:30+BrCl-MerxT	32			TRC-LW1401	3/26/2014	
1410010-03	B140366	Hg-IC-70:30+BrCl-MerxT	33			TRC-LW1401	3/26/2014	
1400206-CCV3	1400206	QC	34	1411011	-			
1400206-CCB6	1400206	QC	35		-			

SOP(s)/Rev#(s):BR-0067 Rev 4F.2

THg Analysis Benchsheet: THg MERX-T

Sequence:_1400206 Batches:_Reruns B140365, 366

Analyst:_BJT Date:_3/12/14 Instrument ID: THG-05

CWB 3/20/14

10 ng/mL std ID: 1410072 $SnCl_2$ ID: 1405026

1 ng/mL std ID: 1410073 NH_2OH-HCl ID: 1406026

ICV std ID: 1410074 Balance ID: /

* all sample volumes are determined volumetrically unless otherwise noted

	Run# / Pos #	BRL Sample ID	Analyze Vol *(mL)	Dilution Factor	Analysis Comments / for spiked QC: Source ID, standard ID, and spike volume
	1	Rinse	--		
	2	Rinse	--		
	3	SEQ-IBL1	--		
	4	SEQ-IBL2	--		
	5	SEQ-IBL3	--		
	6	SEQ-IBL4	--		
	7	SEQ-CAL1	0.01		1 ng/mL
	8	SEQ-CAL2	0.025		1 ng/mL
	9	SEQ-CAL3	0.1		1 ng/mL
	10	SEQ-CAL4	0.05		10 ng/mL
	11	SEQ-CAL5	0.25		10 ng/mL
	12	SEQ-CAL6	1		10 ng/mL
	13	SEQ-ICV1	1		NIST 1641d
	14	SEQ-CCB1	--		
	15	SEQ-CCV	0.05		10 ng/mL
	16	SEQ-CCB	--		
	17	SEQ-CCB	--		
	18	SEQ-CCB	--		
	19	1410033-01RE1	2.5		
	20	B140365-MS6	2.5		01RE1 (0.020mL 10ng/mL)
	21	1410035-13RE1	1		
	22	1410027-02RE1	1		
	23	SEQ-CCV	0.05		10 ng/mL
	24	SEQ-CCB	--		

	25	B140366-BLK1	0.1		
	26	B140366-BLK2	0.1		
	27	B140366-BLK3	0.1		
	28	B140366-BLK4	0.1		
	29	B140366-BS1	0.1		
	30	1410010-01	0.1		
	31	B140366-DUP1	0.1		1410010-01
	32	B140366-PS1	0.1		10-01 (0.050mL of 10ng/mL)
	33	1410010-02	0.1		
	34	1410010-03	0.1		
	35	SEQ-CCV	0.05		10 ng/mL
	36	SEQ-CCB	--		
	37	V-HCl-1	0.200		VAT Testing March
	38	-2			
	39	-3			
	40	-4			
	41	-HNO3-4			
	42	-7			
	43	-8			
	44	-9			
	45				
	46			3/13/14 BJT	
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Brooks Rand Labs

THg IC Trap Prep Benchsheet

Prepped By: BJT Batch: B140366

Preparation Start Date/Time*: 3/11/14 @ 1230 Preparation End Date/Time**: 3/12/14 @ 0920

* Time is when the first reagents are added. ** Time is when the last sample is brought upto volume

Sample ID	number of Traps
1410010-01	1
1410010-02	1
1410010-03	1
B140366-BLK1	—
B140366-BLK2	—
B140366-BLK3	—
B140366-BLK4	—
B140366BS1	—

3/10/14 BJT

Sample ID	number of Traps

3/10/14 BJT

Sample ID	number of Traps

3/10/14 BJT

Batch QC ID	Spike vol (uL)	Spike ID	standard Concentration	Spike Witness
~~BS1~~	~~N/A~~			3/10/14 BJT
BS1	100	135014	1000ng/mL	TRJ 3.11.14
		CWB 3/20/14		

Final Dilution Vol: 40mL

Reagent	ID
2.4mL H2SO4	132 3009
5.6mL HNO3	1350078
35% BrCl	1349009

1411021

Comments:

Target temp 90°C for 4 hours

Thermometer ID PL-13.

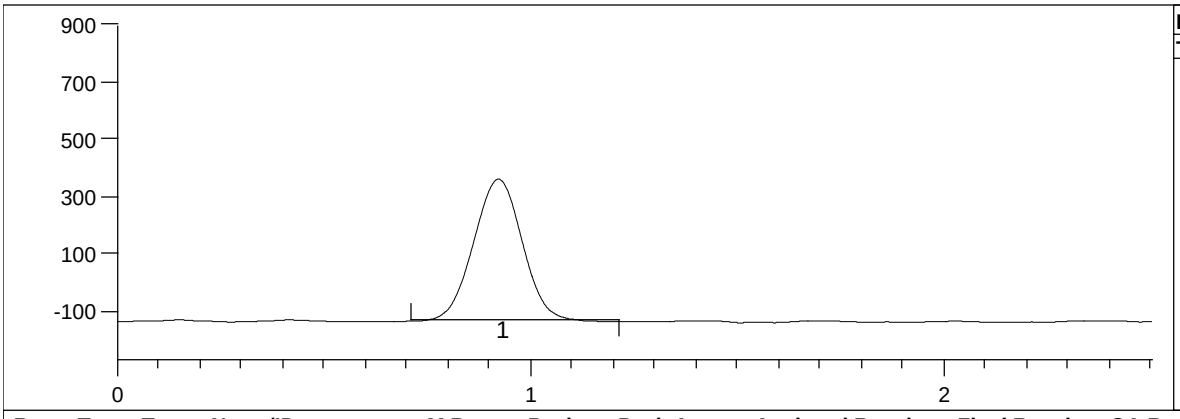
Temperature 85/84.

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

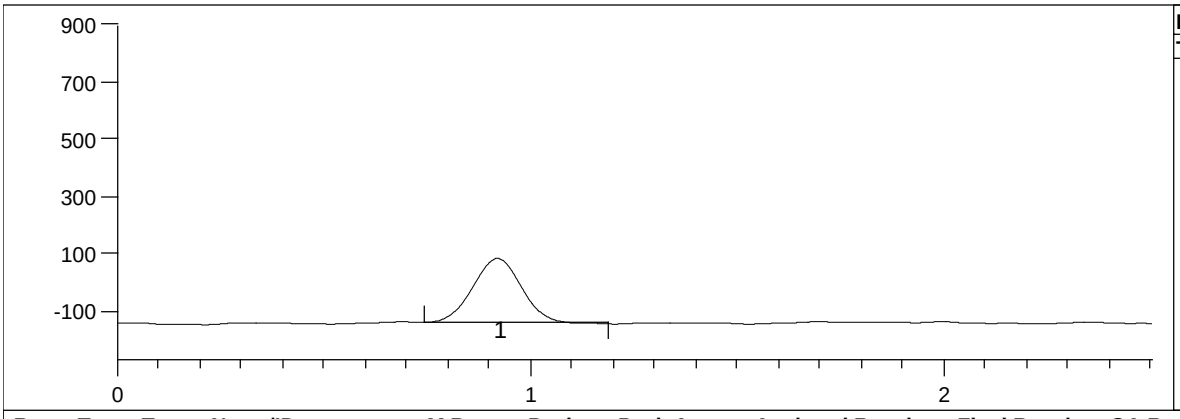


Date: 3/12/14
Time: 12:12 PM

Peak	rt	Area
1	0.92	41,580

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
1	X	S	RINSE		1	41,580	1.89	0.00		< HS	accept

Notes

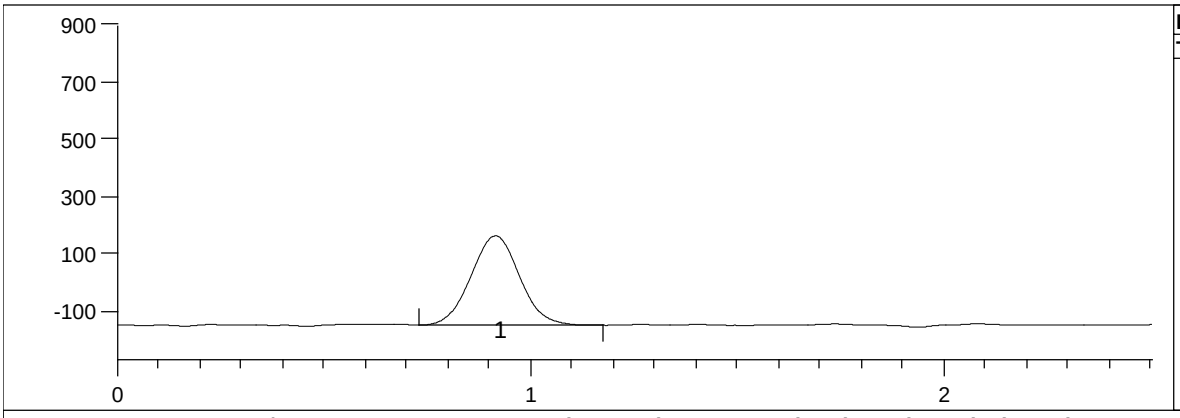


Date: 3/12/14
Time: 12:19 PM

Peak	rt	Area
1	0.91	18,950

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
2	Y	S	RINSE		1	18,950	-0.287	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 12:26 PM

Peak	rt	Area
1	0.91	25,852

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
3	X	IBL	SEQ-IBL1		1	25,852	2.48		2.48	< 10	accept

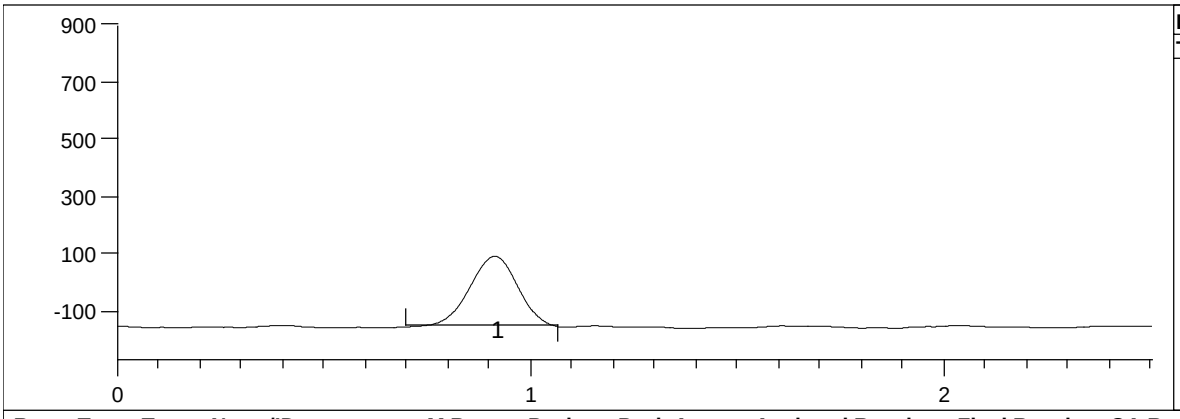
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

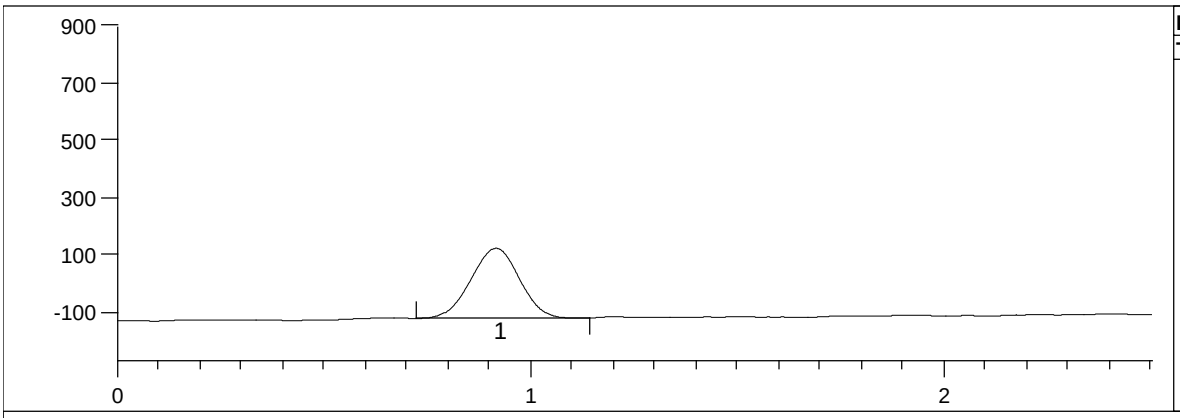


Date: 3/12/14
Time: 12:33 PM

Peak	rt	Area
1	0.91	20,434

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
4	Y	IBL	SEQ-IBL2		1	20,434	1.96		1.96	< 10	accept

Notes

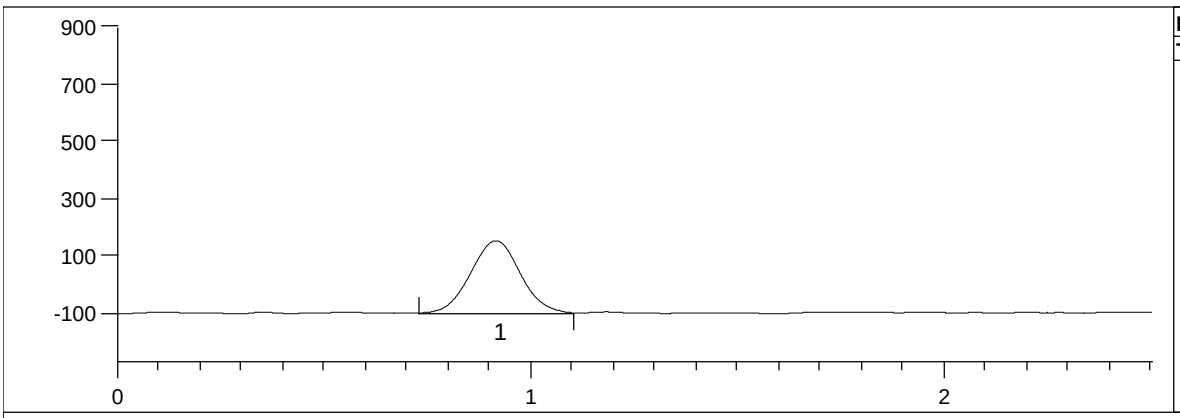


Date: 3/12/14
Time: 12:40 PM

Peak	rt	Area
1	0.91	20,471

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
5	X	IBL	SEQ-IBL3		1	20,471	1.97		1.97	< 10	accept

Notes



Date: 3/12/14
Time: 12:47 PM

Peak	rt	Area
1	0.91	20,996

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
6	Y	IBL	SEQ-IBL4		1	20,996	2.02		2.02	< 10	accept

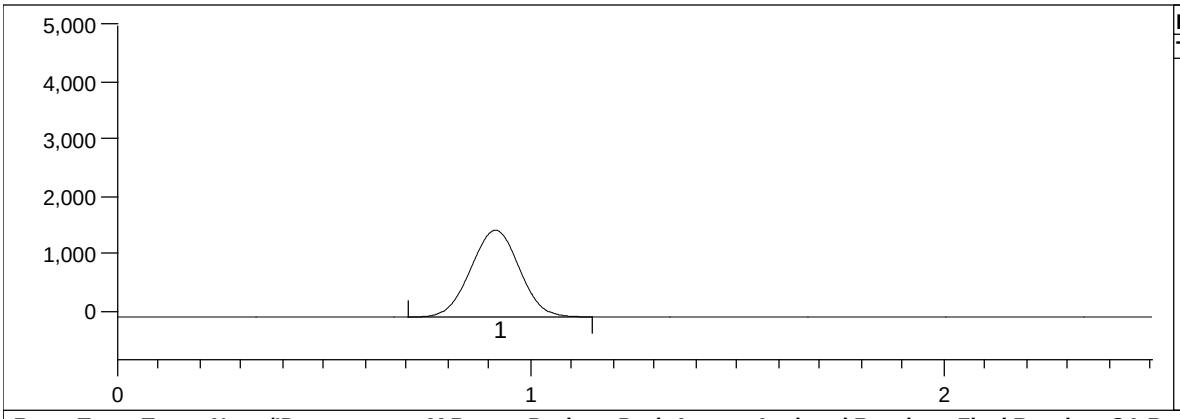
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

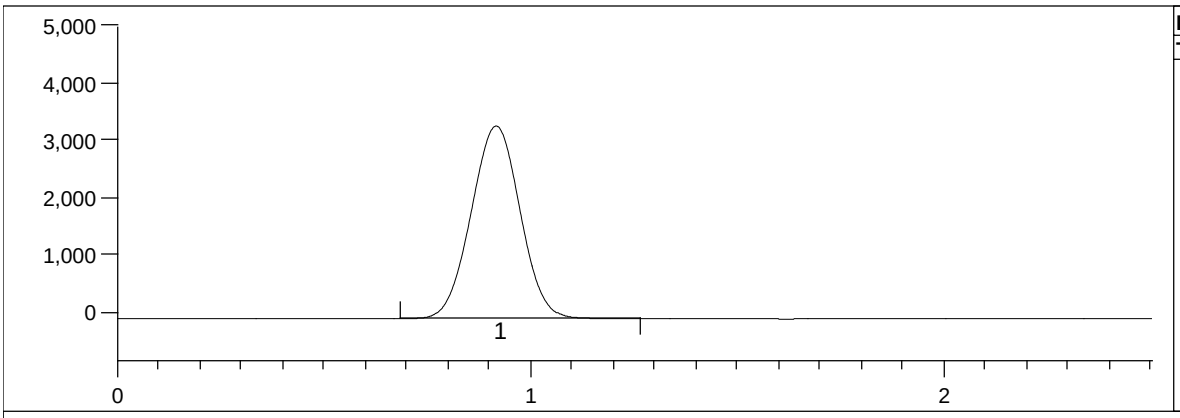


Date: 3/12/14
Time: 12:54 PM

Peak	rt	Area
1	0.91	126,168

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
7	X	STD	SEQ-CAL1		1	126,168	10.0		100.	75-125	accept

Notes

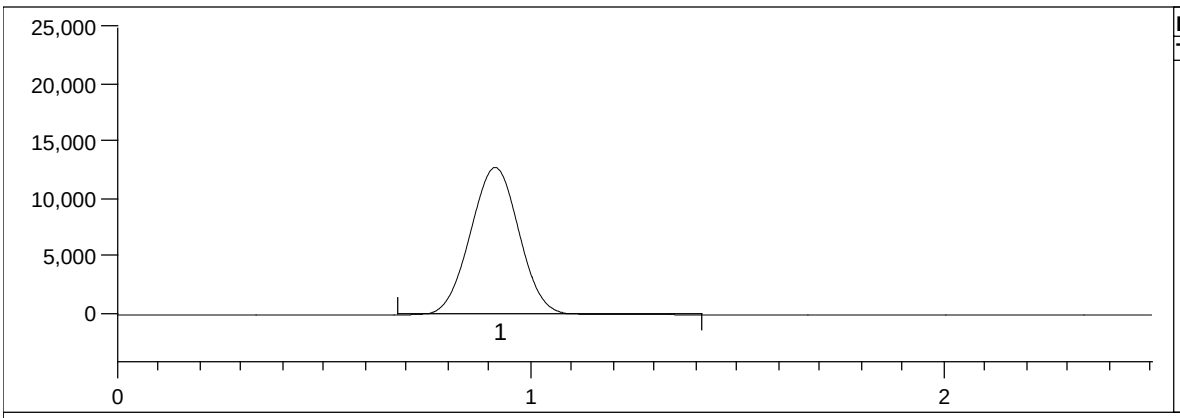


Date: 3/12/14
Time: 1:01 PM

Peak	rt	Area
1	0.91	280,528

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
8	Y	STD	SEQ-CAL2		1	280,528	24.8		99.4	75-125	accept

Notes



Date: 3/12/14
Time: 1:08 PM

Peak	rt	Area
1	0.91	1,070,816

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
9	X	STD	SEQ-CAL3		1	1,070,816	101		101	75-125	accept

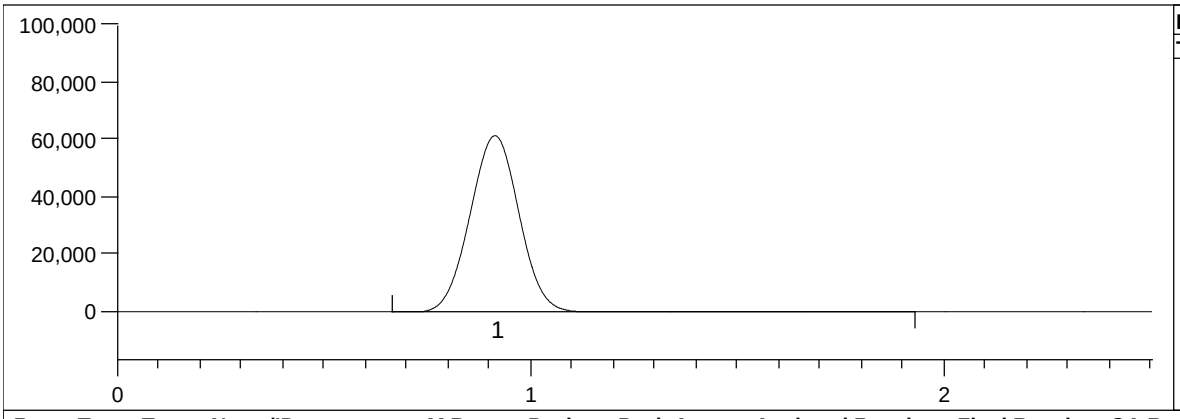
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

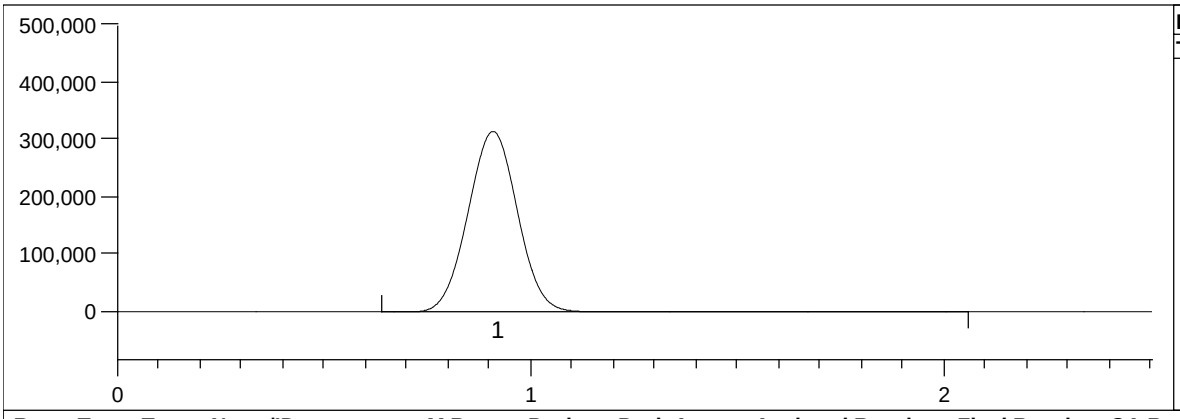


Date: 3/12/14
Time: 1:15 PM

Peak	rt	Area
1	0.91	5,132,702

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
10	Y	STD	SEQ-CAL4		1	5,132,702	491		98.2	75-125	accept

Notes

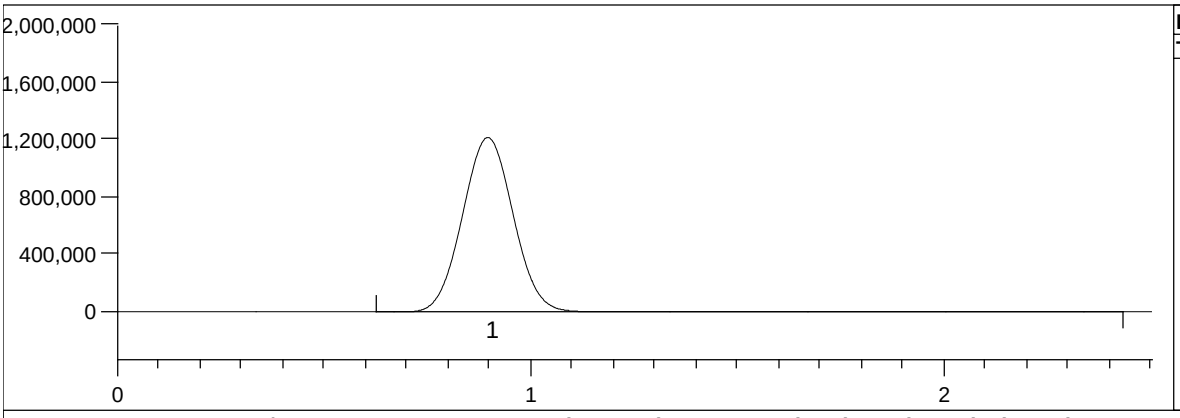


Date: 3/12/14
Time: 1:22 PM

Peak	rt	Area
1	0.90	26,378,693

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
11	X	STD	SEQ-CAL5		1	26,378,693	2,530		101	75-125	accept

Notes



Date: 3/12/14
Time: 1:29 PM

Peak	rt	Area
1	0.89	104,555,463

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
12	Y	STD	SEQ-CAL6		1	104,555,463	10,000		100.	75-125	accept

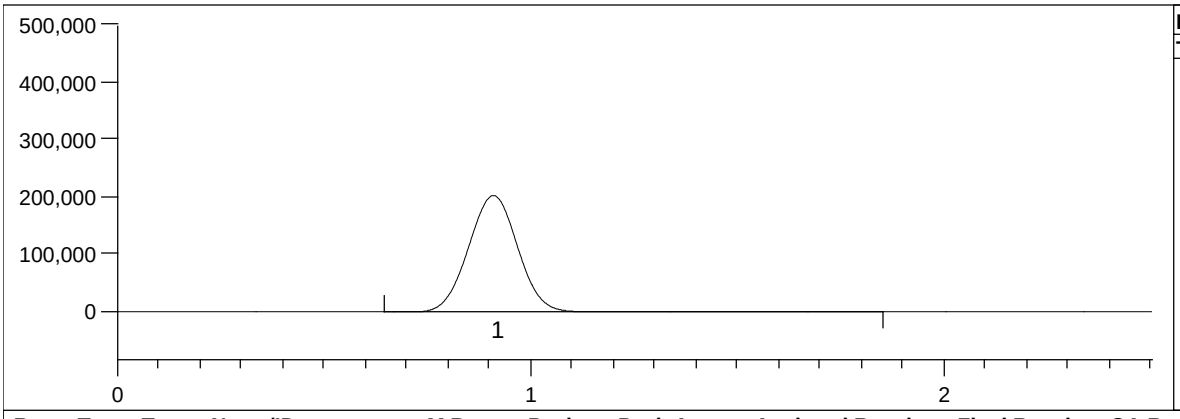
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

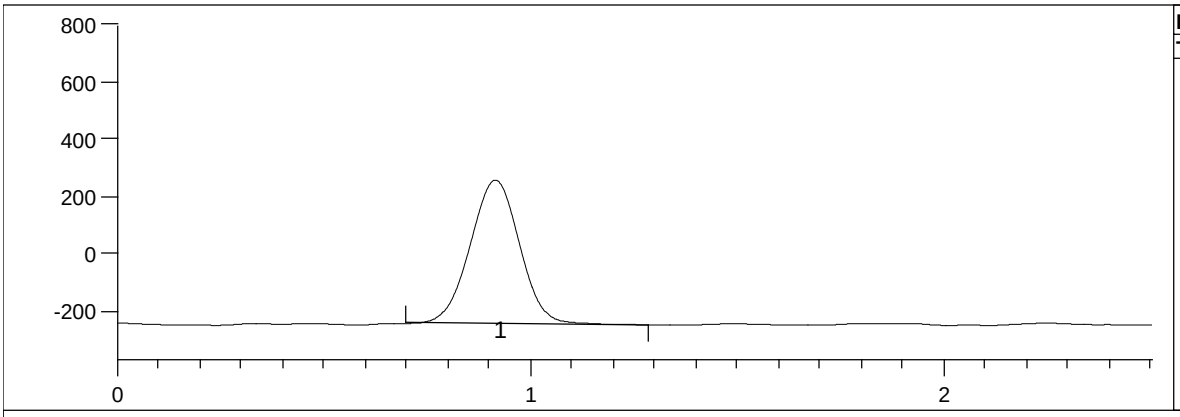


Date: 3/12/14
Time: 1:36 PM

Peak	rt	Area
1	0.90	16,971,638

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
13	X	ICV	SEQ-ICV1		1	16,971,638	1,630		104	85-115	accept

Notes

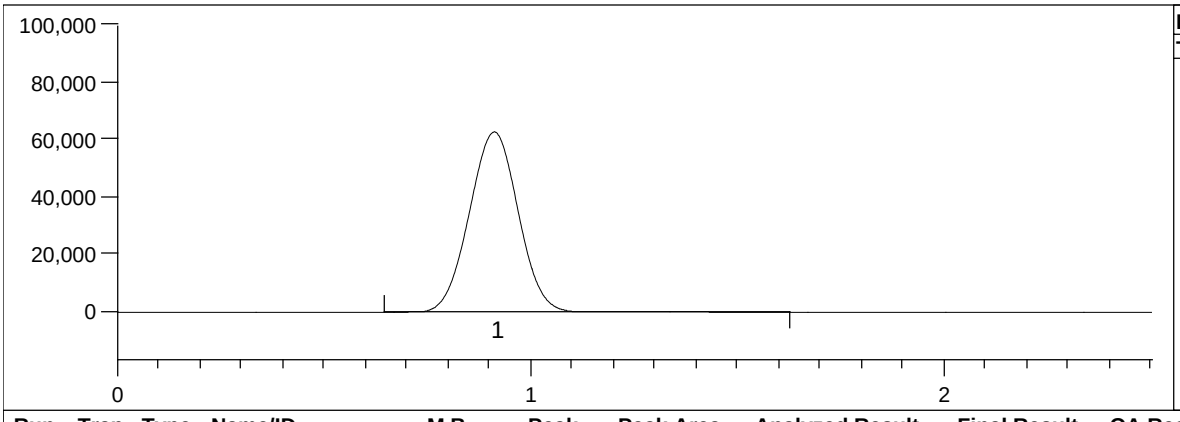


Date: 3/12/14
Time: 1:43 PM

Peak	rt	Area
1	0.91	42,565

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
14	Y	CCB	SEQ-CCB		1	42,565	4.09		4.09	< 10	accept

Notes



Date: 3/12/14
Time: 1:50 PM

Peak	rt	Area
1	0.91	5,233,920

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
15	X	CCV	SEQ-CCV		1	5,233,920	501		100.	77-123	accept

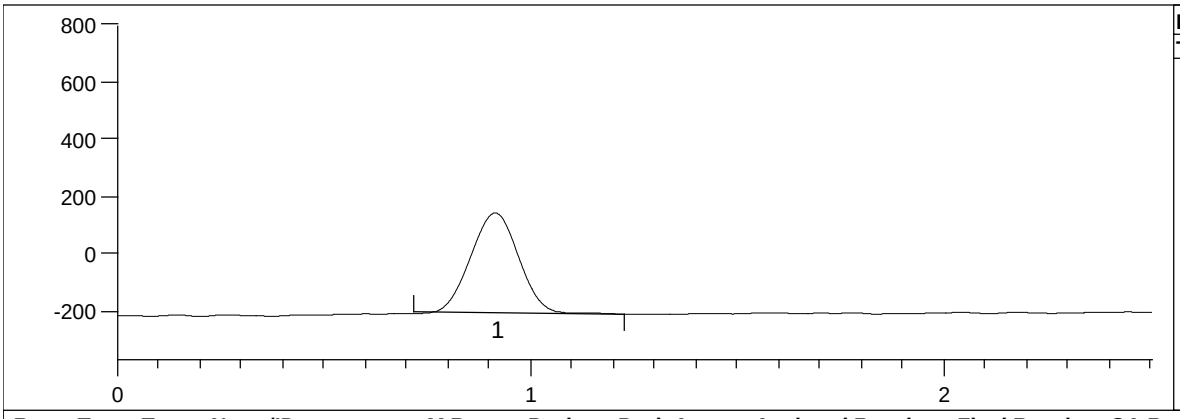
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

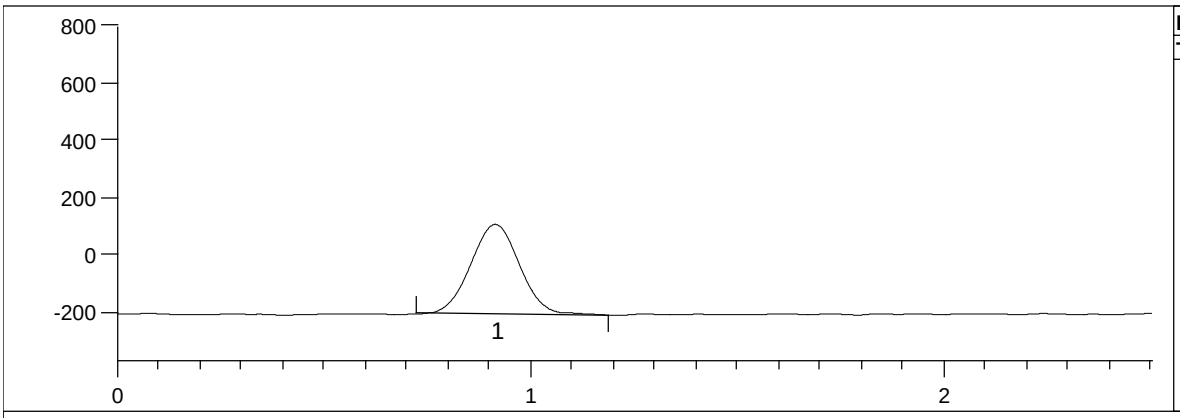


Date: 3/12/14
Time: 1:57 PM

Peak	rt	Area
1	0.91	29,423

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
16	Y	CCB	SEQ-CCB		1	29,423	2.83		2.83	< 10	accept

Notes

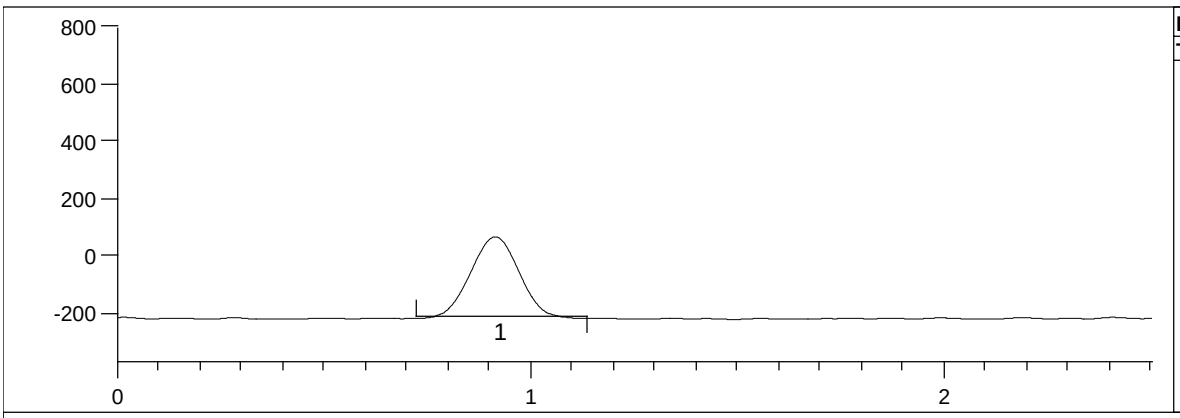


Date: 3/12/14
Time: 2:04 PM

Peak	rt	Area
1	0.91	26,626

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
17	X	CCB	SEQ-CCB		1	26,626	2.56		2.56	< 10	accept

Notes



Date: 3/12/14
Time: 2:11 PM

Peak	rt	Area
1	0.91	23,948

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
18	Y	CCB	SEQ-CCB		1	23,948	2.30		2.30	< 10	accept

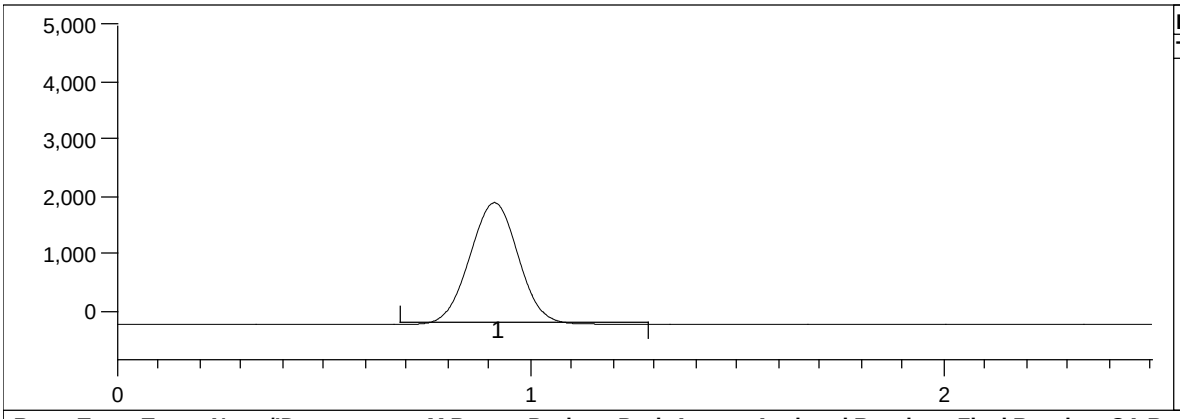
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

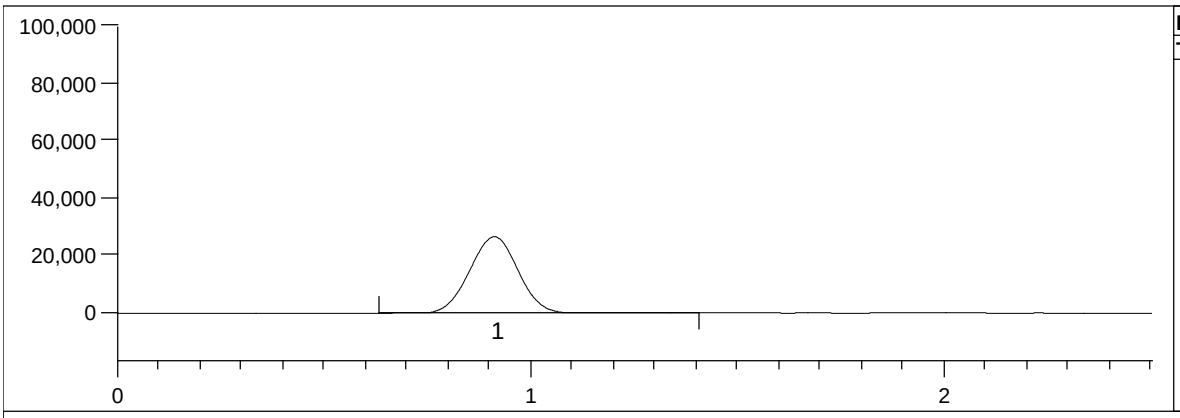


Date: 3/12/14
Time: 2:18 PM

Peak	rt	Area
1	0.91	177,118

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
19	X	S	1410033-01RE1		1	177,118	14.9	0.00		< HS	accept

Notes

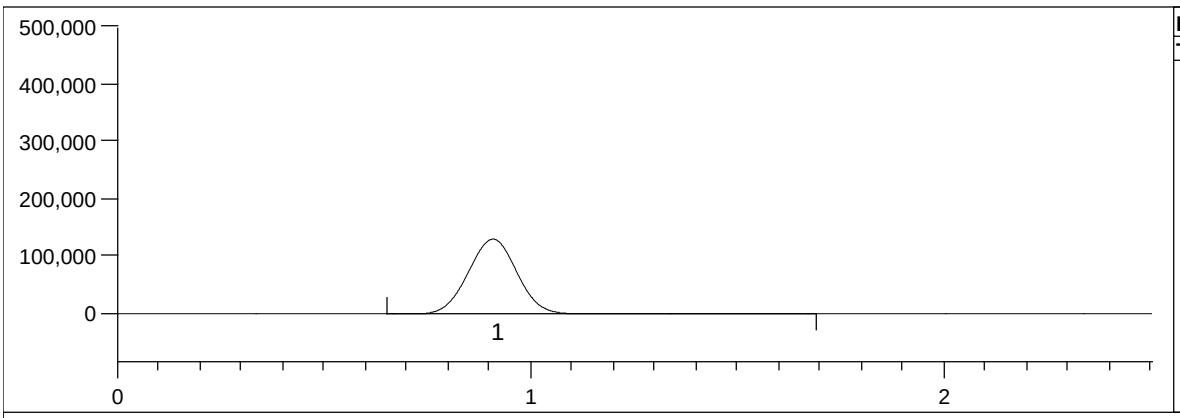


Date: 3/12/14
Time: 2:25 PM

Peak	rt	Area
1	0.91	2,219,145

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
20	Y	S	B140365-MS6		1	2,219,145	211	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 2:32 PM

Peak	rt	Area
1	0.90	10,823,621

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
21	X	S	1410035-13RE1		1	10,823,621	1,040	0.00		< HS	accept

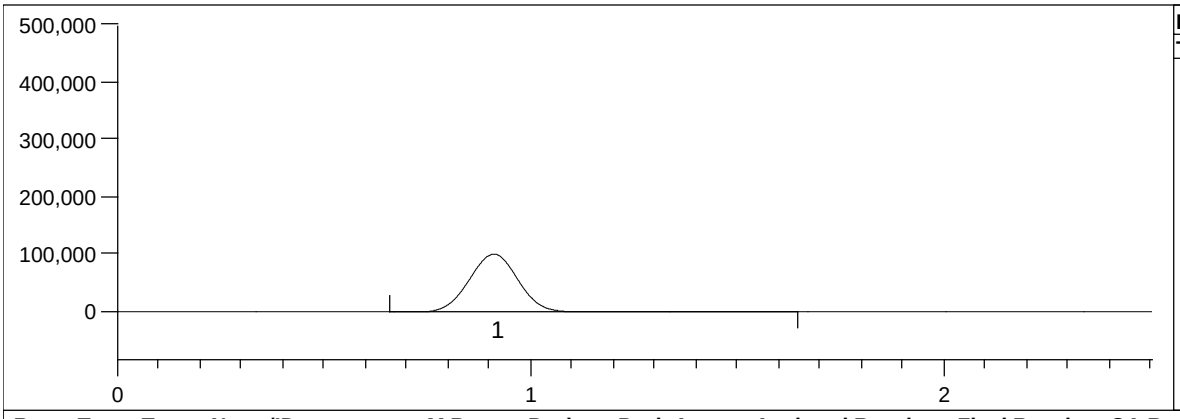
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

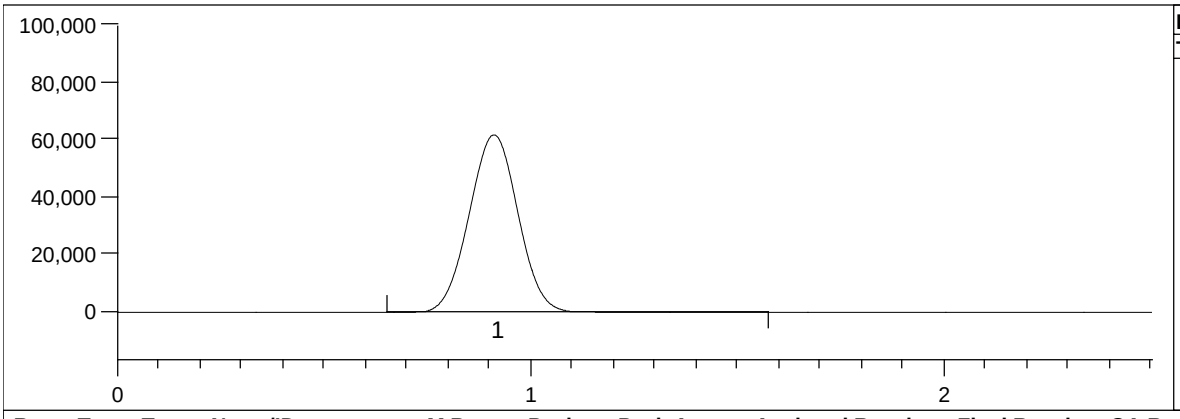


Date: 3/12/14
Time: 2:39 PM

Peak	rt	Area
1	0.91	8,393,752

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
22	Y	S	1410027-02RE1		1	8,393,752	804	0.00		< HS	accept

Notes

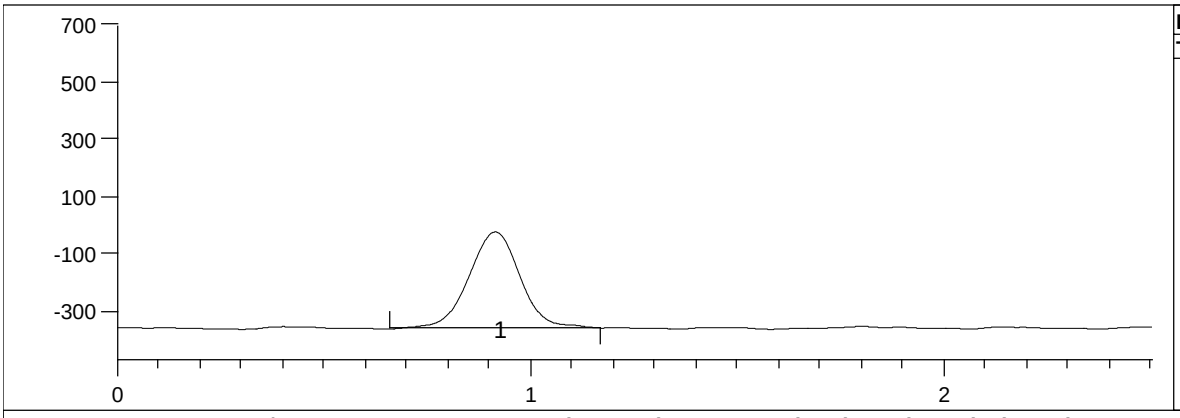


Date: 3/12/14
Time: 2:46 PM

Peak	rt	Area
1	0.91	5,162,457

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
23	X	CCV	SEQ-CCV		1	5,162,457	494		98.8	77-123	accept

Notes



Date: 3/12/14
Time: 2:53 PM

Peak	rt	Area
1	0.91	29,770

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
24	Y	CCB	SEQ-CCB		1	29,770	2.86		2.86	< 10	accept

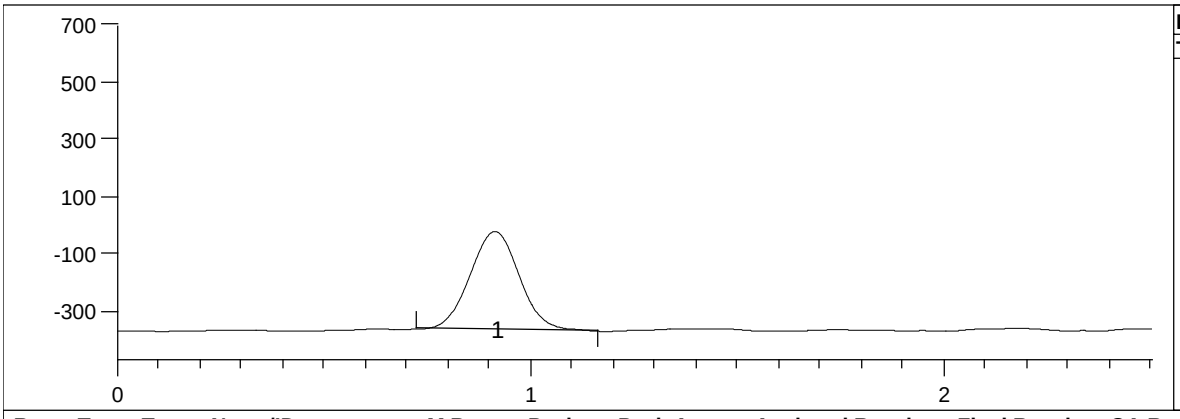
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

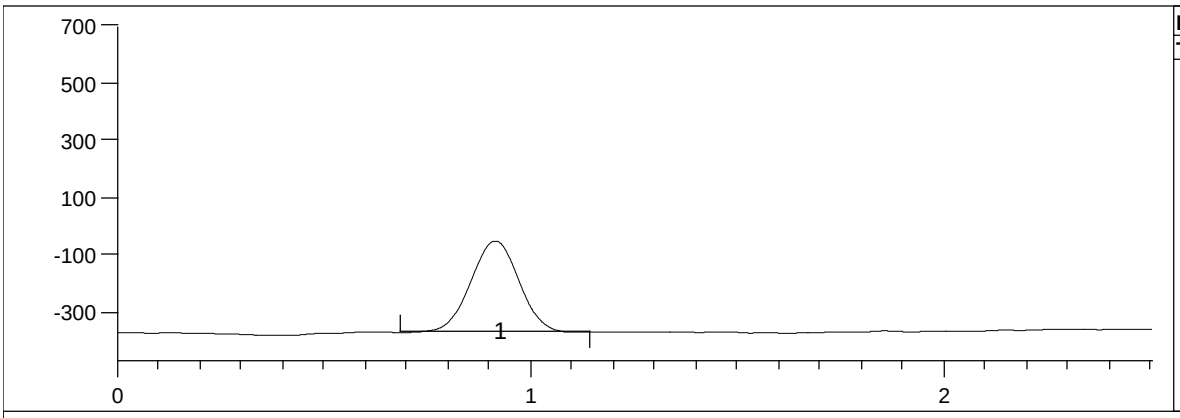


Date: 3/12/14
Time: 3:00 PM

Peak	rt	Area
1	0.91	29,030

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
25	X	S	B140366-BLK1		1	29,030	0.681	0.00		< HS	accept

Notes

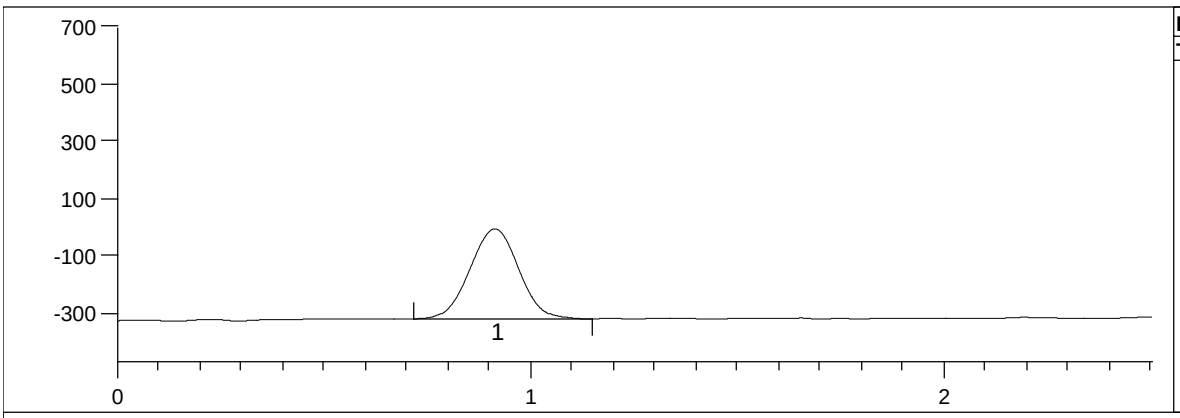


Date: 3/12/14
Time: 3:07 PM

Peak	rt	Area
1	0.91	26,691

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
26	Y	S	B140366-BLK2		1	26,691	0.457	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 3:14 PM

Peak	rt	Area
1	0.91	26,080

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
27	X	S	B140366-BLK3		1	26,080	0.398	0.00		< HS	accept

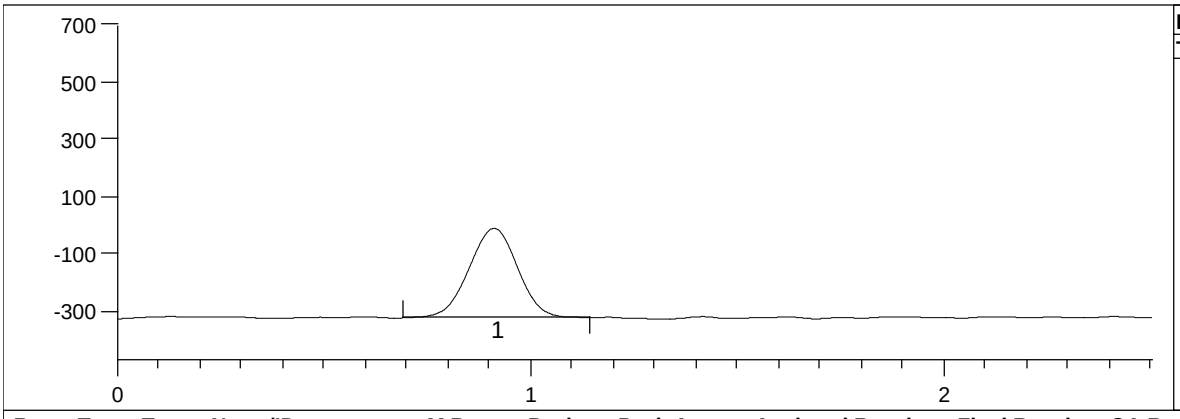
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

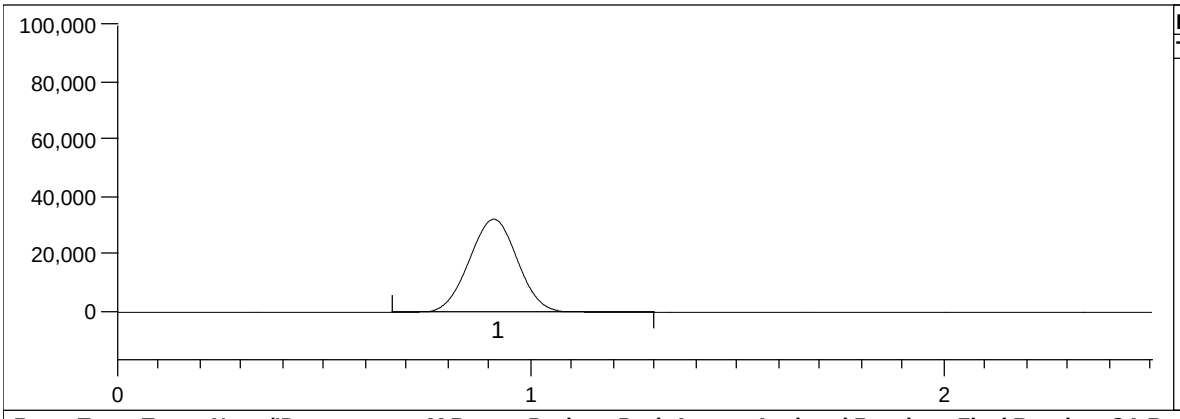


Date: 3/12/14
Time: 3:21 PM

Peak	rt	Area
1	0.91	26,146

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
28	Y	S	B140366-BLK4		1	26,146	0.404	0.00		< HS	accept

Notes

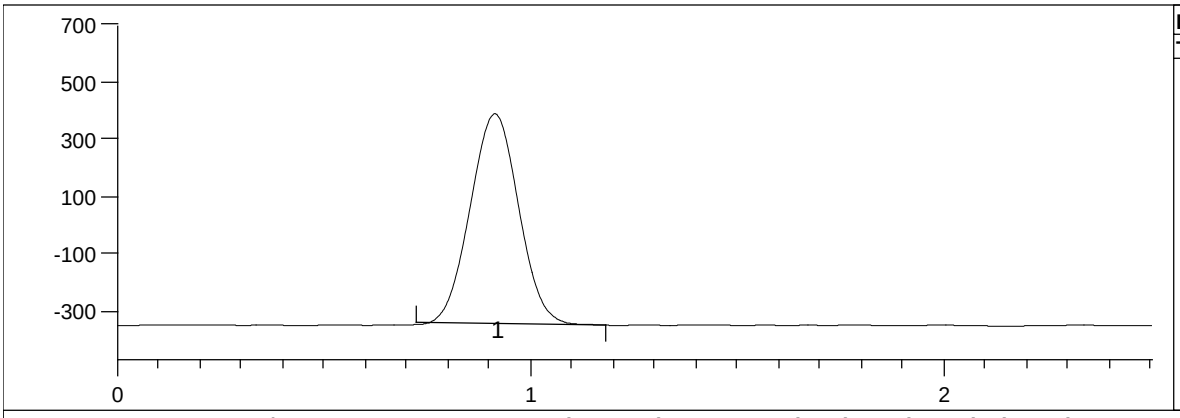


Date: 3/12/14
Time: 3:28 PM

Peak	rt	Area
1	0.90	2,697,919

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
29	X	S	B140366-BS1		1	2,697,919	257	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 3:35 PM

Peak	rt	Area
1	0.91	60,970

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
30	Y	S	1410010-01		1	60,970	3.75	0.00		< HS	accept

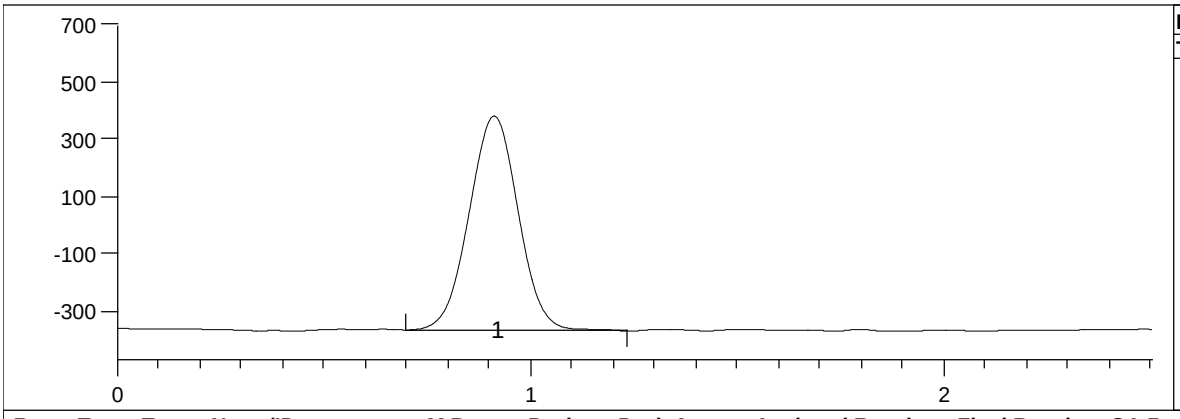
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

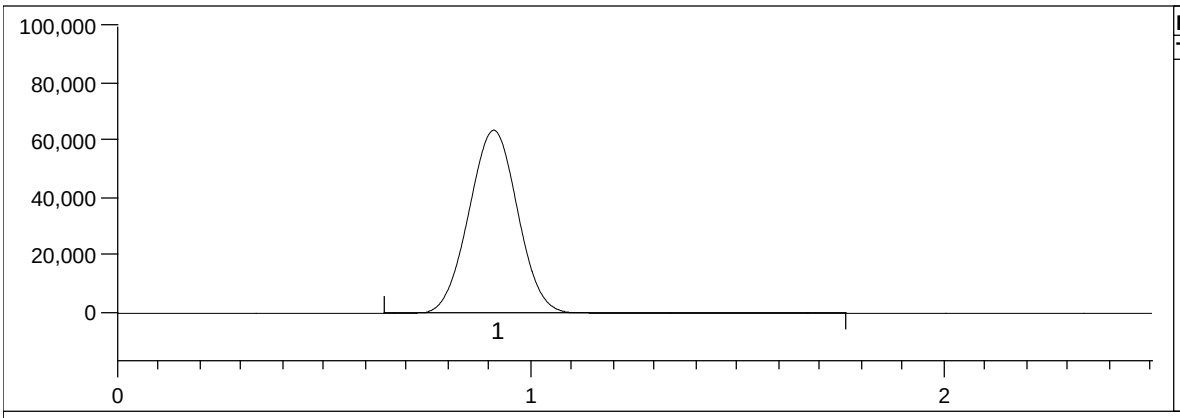


Date: 3/12/14
Time: 3:42 PM

Peak	rt	Area
1	0.91	62,383

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
31	X	S	B140366-DUP1		1	62,383	3.88	0.00		< HS	accept

Notes

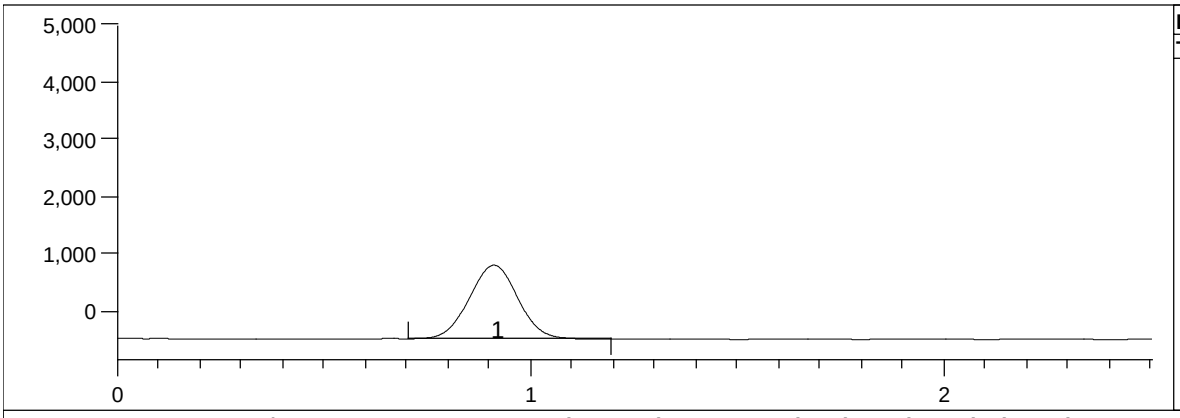


Date: 3/12/14
Time: 3:49 PM

Peak	rt	Area
1	0.90	5,328,653

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
32	Y	S	B140366-PS1		1	5,328,653	510.	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 3:56 PM

Peak	rt	Area
1	0.91	106,462

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
33	X	S	1410010-02		1	106,462	8.12	0.00		< HS	accept

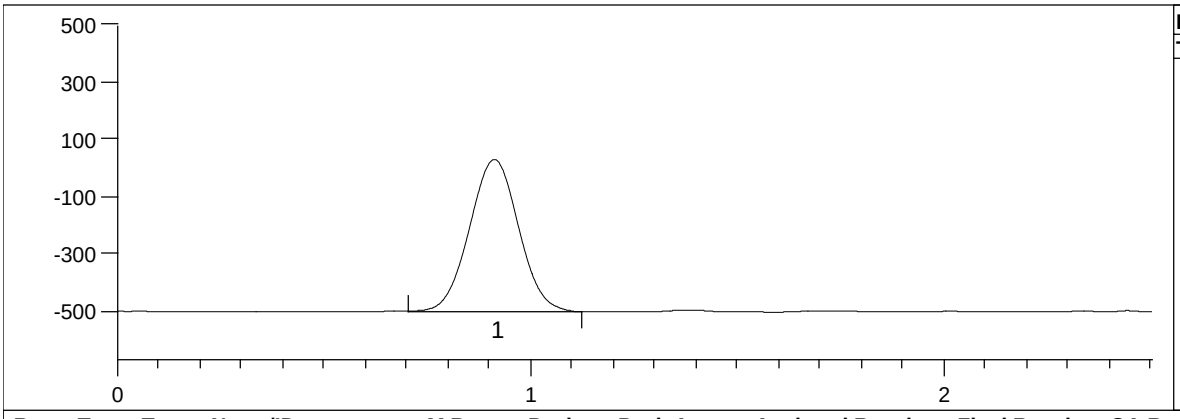
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

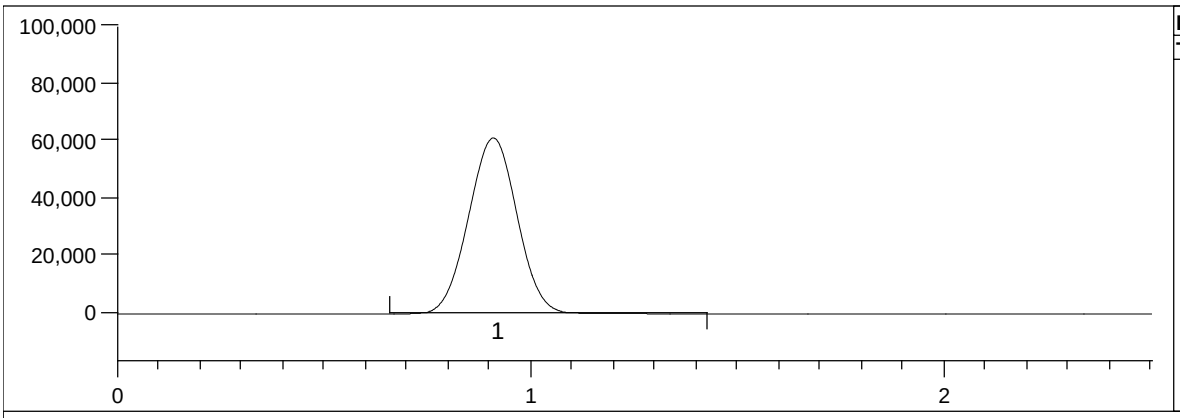


Date: 3/12/14
Time: 4:03 PM

Peak	rt	Area
1	0.91	44,007

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
34	Y	S	1410010-03		1	44,007	2.12	0.00		< HS	accept

Notes

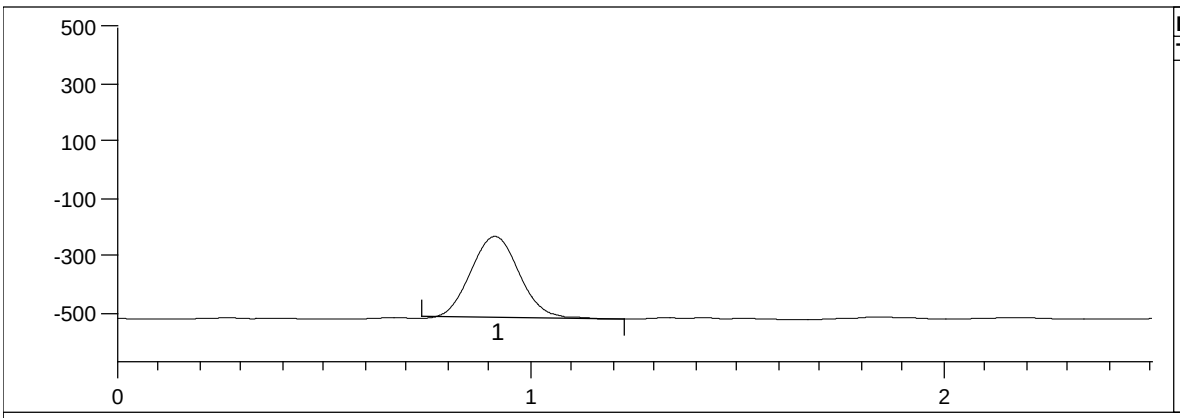


Date: 3/12/14
Time: 4:10 PM

Peak	rt	Area
1	0.90	5,087,936

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
35	X	CCV	SEQ-CCV		1	5,087,936	487		97.3	77-123	accept

Notes



Date: 3/12/14
Time: 4:17 PM

Peak	rt	Area
1	0.91	24,089

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
36	Y	CCB	SEQ-CCB		1	24,089	2.31		2.31	< 10	accept

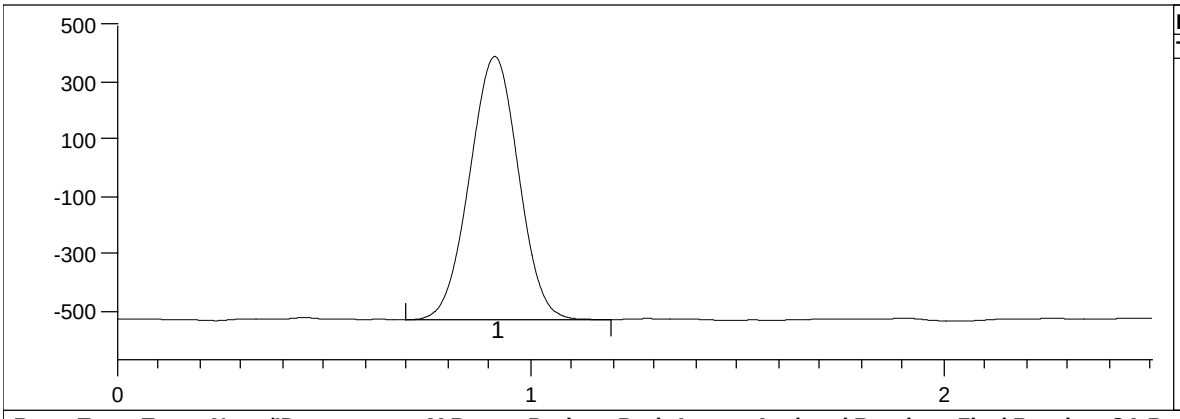
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

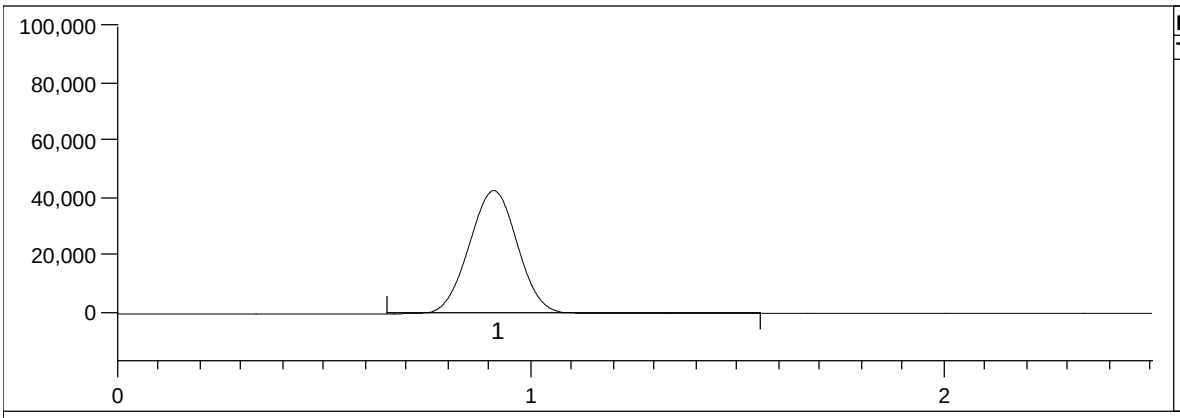


Date: 3/12/14
Time: 4:24 PM

Peak	rt	Area
1	0.91	76,430

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
37	X	S	V-HCL-1		1	76,430	5.23	0.00		< HS	accept

Notes

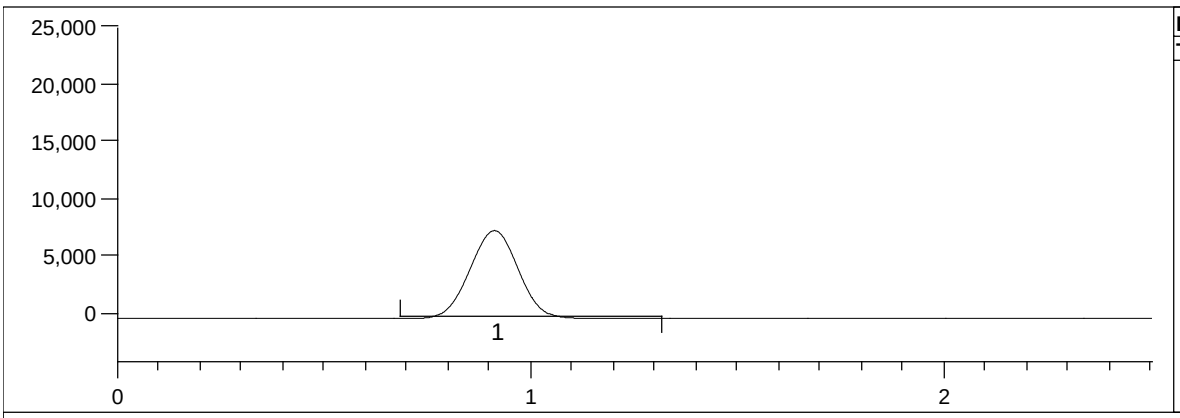


Date: 3/12/14
Time: 4:31 PM

Peak	rt	Area
1	0.90	3,567,050

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
38	Y	S	V-HCL-2		1	3,567,050	341	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 4:38 PM

Peak	rt	Area
1	0.91	639,759

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
39	X	S	V-HCL-3		1	639,759	59.3	0.00		< HS	accept

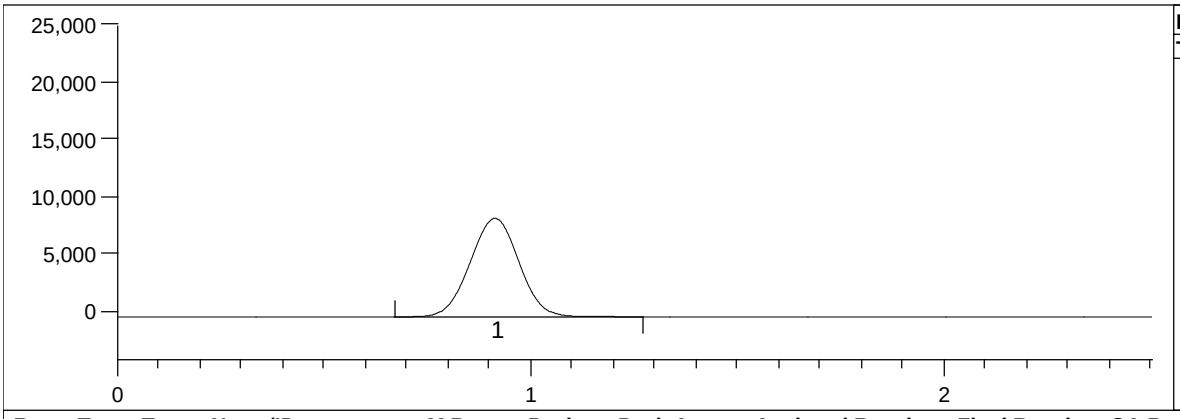
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

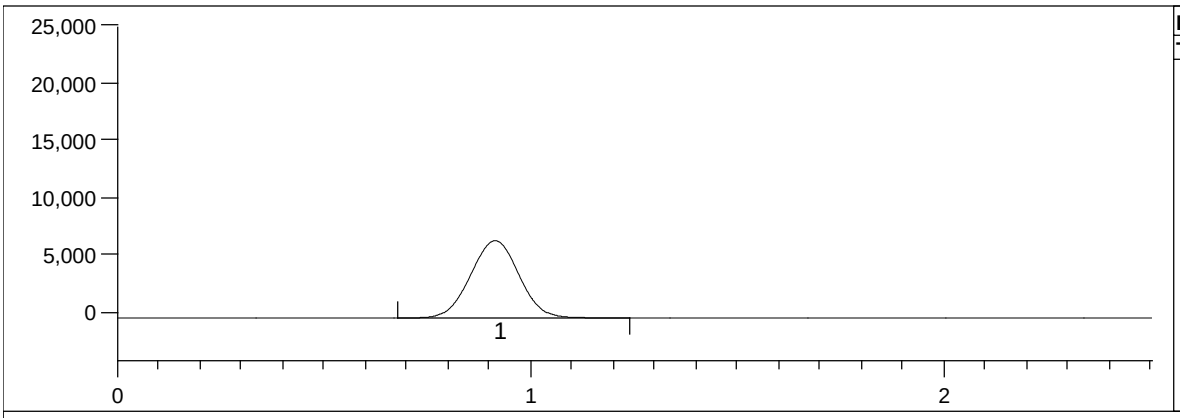


Date: 3/12/14
Time: 4:45 PM

Peak	rt	Area
1	0.91	716,460

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
40	Y	S	V-HCL-4		1	716,460	66.7	0.00		< HS	accept

Notes

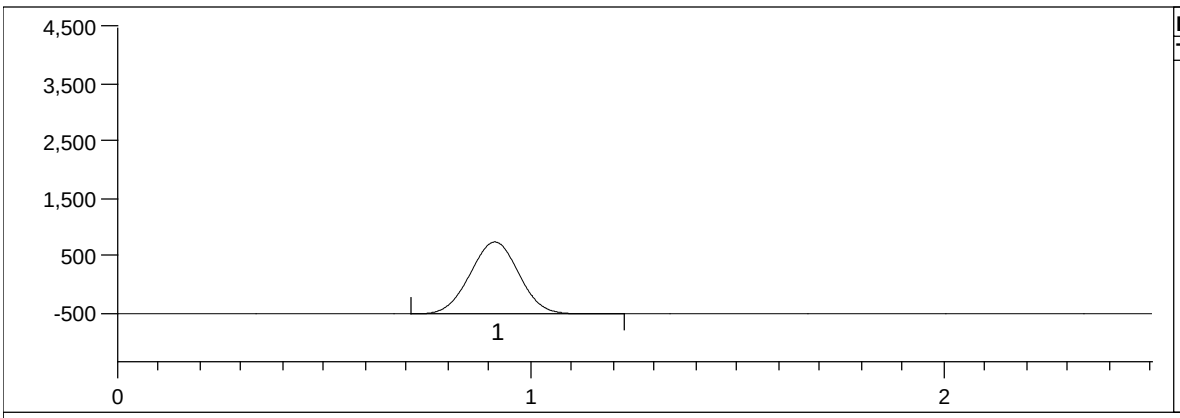


Date: 3/12/14
Time: 4:52 PM

Peak	rt	Area
1	0.91	560,140

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
41	X	S	V-HNO3-4		1	560,140	51.7	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 4:59 PM

Peak	rt	Area
1	0.91	103,358

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
42	Y	S	V-HNO3-7		1	103,358	7.82	0.00		< HS	accept

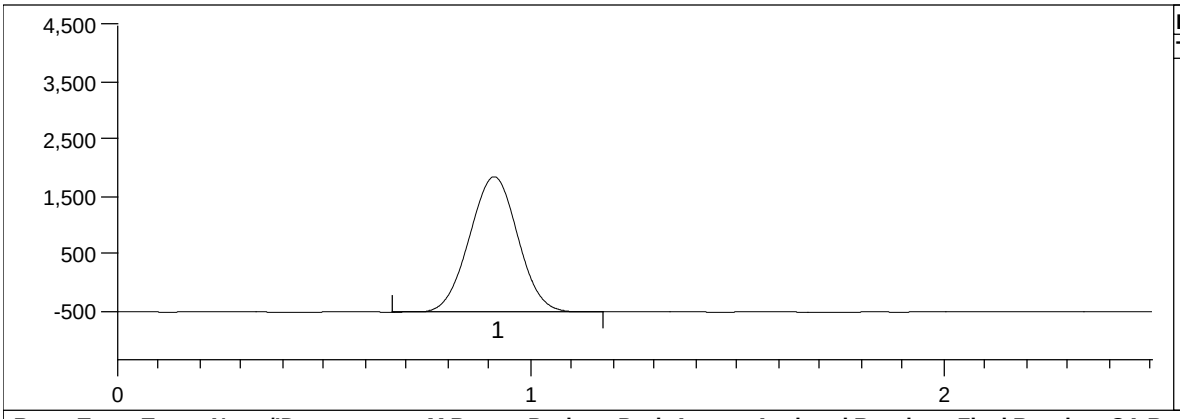
Notes

Peak Report

Batch Number: B140365, 366
Method Number: CVAFS BR-0006

Project Number(s): 1400206
Instrument ID: THG-05

Date Analyzed: 3/12/14
Analyst Name: BJT

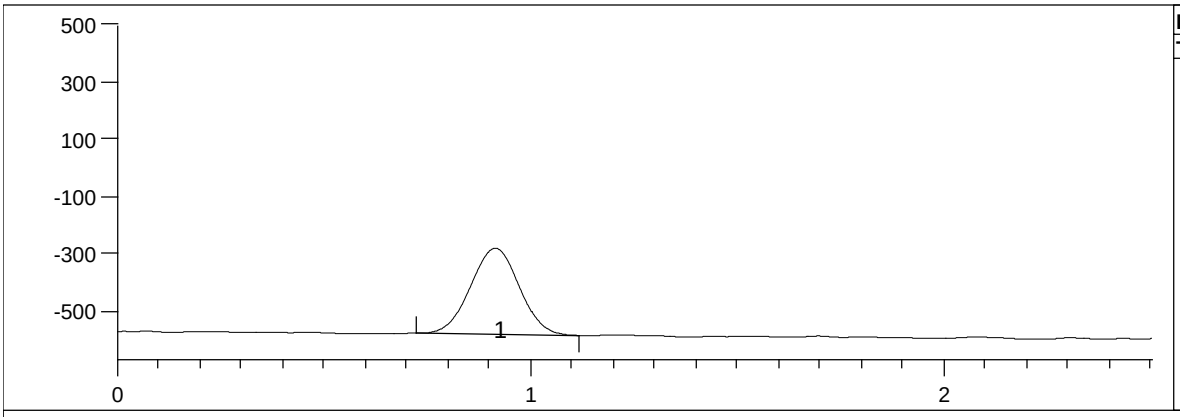


Date: 3/12/14
Time: 5:06 PM

Peak	rt	Area
1	0.91	195,279

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
43	X	S	V-HNO3-8		1	195,279	16.6	0.00		< HS	accept

Notes



Date: 3/12/14
Time: 5:13 PM

Peak	rt	Area
1	0.91	24,972

Run	Trap	Type	Name/ID	M B	Peak	Peak Area	Analyzed Result	Final Result	QA Results	Criteria	Notes
44	Y	S	V-HNO3-9		1	24,972	0.291	0.00		< HS	accept

Notes