Chain of Custody Documentation

ARI Job ID: TZ84, TZ97

(C)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: T284	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: ERM	Phone: 425 214 0458	Date: 12/2/11	Ice Present? Y
Client Contact: Mike Mendes		No. of Coolers: 5	Cooler Temps: 0.6 - 3.7
Client Project Name: 126			
Client Project #: 178296.07	Samplers: Cyrus | Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	VOCs 8260	TPH-GX & DX	TEC	SVOC full-scan + cPAH	Alkalinity	TOX	TSS	Anions Cl, SO4, NO3	Notes/Comments
MW-28-120211	12/2/11	1155	Water	24	X	X	X	X	X	X	X	X	additional analyses continued on page 2
DUP-120211-2	12/2/11	0700	Water	3	X								
TB-120211-1	12/2/11	1156	Water	2	X	TPH-GX							VOCs & TPH GX
MW-29-120211	12/2/11	1347	Water	26	X	X	X	X	X	X	X	X	
DUP-120211-3	12/2/11	0815	Water	6				X					

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: Cyrus Gorman	Printed Name: A. Vogardsen	Printed Name	Printed Name
	Company: ERM	Company: ARI	Company	Company
	Date & Time: 12/2/11 1510	Date & Time: 12/2/11 1510	Date & Time	Date & Time

T284:00003

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

(C)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: TZ84	Turn-around Requested: Standard	Page: 2 of 2	
ARI Client Company: ERM	Phone: 425 214 0458	Date: 12/2/11	Ice Present? Y
Client Contact: Mike Mendes		No. of Coolers: 5	Cooler Temps: 0.6 - 3.7
Client Project Name: TZG			
Client Project #: 128296	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Total Phosphate	Ammonia	TBT	Total / Mobility + Hardness (1)	* Dissolved Metals (2)	* Total / Dissolved As			Notes/Comments
Continued from page 1													
MW-28-120211	12/2/11	1155	water	24	X	X	X	X	X				MS/MSD for Ammonia
MW-29-120211	12/2/11	1347	water	26	X	X	X	X	X				MS/MSD for TBT
DUP-120211-3	12/2/11	0815	water	6						X			

Comments/Special Instructions
* Dissolved metals samples filtered in the field

Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
Printed Name: Cyrus Gorny	Printed Name: A. Volgardsen	Printed Name	Printed Name
Company: Erm	Company: ARI	Company	Company
Date & Time: 12/2/11 1510	Date & Time: 12/2/11 1510	Date & Time	Date & Time

TZ84.hazl

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

(1) Total Metals = As, Cr, Cu, Ag, Zn, Al, Fe, Mn, Ca, K, Mg, Na, Sb, Be, Cd, Pb, Ni, Se, Tl & Hg

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

(2) Dissolved metals = As, Cr, Cu, Ag, Zn, Al, Fe, Mn, Sb, Be, Cd, Pb, Ni, Se, Tl & Hg

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client ERM Project Name RG

COC No(s) _____ (NA) Delivered by Fed-Ex UPS Courier Hand Delivered Other _____

Assigned ARI Job No TZ84 Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc.) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 3.1 0.6 1.0 1.2 3.7

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90941669

Cooler Accepted by TV Date 12/2/11 Time 1510

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? (Bubble Wrap) (Wet Ice) Gel Packs Baggies (Foam Block) Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? YES (NO)

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA (YES) NO

Were all VOC vials free of air bubbles? NA YES (NO)

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI. NA 12/1/11

Was Sample Split by ARI (NA) YES Date/Time _____ Equipment _____ Split by _____

Samples Logged by JM Date 12/5/11 Time 715

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
MW-28S-120211	MW-28-120211		
MW-29S-120211	MW-29-120211		

Additional Notes, Discrepancies, & Resolutions:

MW-29S-120211 = Sim in 4 of 5

Entered ID from bottles.

By: JM Date 12/5/11

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	• • •	● ● ●

Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

PRESERVATION VERIFICATION 12/05/11
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ84**

Inquiry Number: NONE
Analysis Requested: 12/05/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: JM
Sample Set Used: Yes-481
Validatable Package: Yes
Deliverables:

PC: Sue D.
VTSR: 12/02/11

Project #: 128296.07
Project: RG
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27871 **TZ84A**	MW-28S-120211			pass			TOT pass		pass			pass										
11-27872 **TZ84B**	MW-29S-120211			↓			TOT ↓		↓			↓										
11-27873 **TZ84C**	DUP-120211-3			↓			TOT ↓		↓			↓										
11-27876 **TZ84F**	MW-28S-120211			↓			DIS ↓		↓			↓				Y						
11-27877 **TZ84G**	MW-29S-120211			↓			DIS ↓		↓			↓				Y						
11-27878 **TZ84H**	DUP-120211-3			↓			DIS ↓		↓			↓				Y						

TZ84 : 00006

Checked By JM Date 12/5/11

(A)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: T297	Turn-around Requested: Standard
ARI Client Company: ERM	Phone: 425 214 0458
Client Contact: Mike Meades	
Client Project Name: RG	
Client Project #: 128296.07	Samplers: Cyrus / Matt

Page: 1 of 2

Date: 12/5/11 Ice Present? Y

No. of Coolers: 6 Cooler Temps: 0.2 - 5.5

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	VOCs 8260	TPH-Gx & Dx	TOC	SVOC full-scan & SIM cPAHs	Alkalinity	TOX	TSS	Anions Cl, SO4, NO3	Notes/Comments
MW-30S-120511	12/5/11	0813	Water	30	X	X	X	X	X	X	X	X	MS/MSD for SVOCs / cPAHs
FB-120511-1	12/5/11	0815	water	3	X								
DUP-120511-1	12/5/11	0600	water	4		TPH-Dx							TPH-Dx & TBT as listed on page 2
TB-120511-1	12/5/11	0820	water	2	X	TPH-Gx							VOCs / TPH-Gx
MW-31S-120511	12/5/11	1041	water	31	X	X	X	X	X	X	X	X	MS/MSD for Chrome + VOCs
DUP-120511-2	12/5/11	0615	water	4		TPH-Gx							TPH-Gx + total dissolved metals
MW-33S-120511	12/5/11	1353	water	12			X	X	X	X	X	X	
DUP-120511-3	12/5/11	0640	water	4				X					

Analysis Requested

Comments/Special Instructions

Relinquished by: (Signature)	Received by: (Signature)	Relinquished by (Signature)	Received by: (Signature)
Printed Name: Cyrus Gorman	Printed Name: Jose Ulgar	Printed Name:	Printed Name:
Company: ERM	Company: ARI	Company:	Company:
Date & Time: 12/5/11 1508	Date & Time: 12/5/11 1506	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

listed on page 2 →

← see page 2 for list of metals

← SHORT HOLD TIME CHEX Chrome

T297 : 128296.07

③ total Metals - Cr, Cu, Hg, Zn, Ca, K, Mg, Na (A) Al, Fe, Mn

④ Dissolved metals = Cr, Cu, Ag, Zn, Al, Fe, Mn

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

ARI Assigned Number: T797	Turn-around Requested: Standard
ARI Client Company: EIM	Phone: 425 214 0458
Client Contact: Mike Mendes	
Client Project Name: R6	
Client Project #: 128296.07	Samplers: Cyrus / Matt

Page: 2 of 2

Date: 12/5/11 Ice Present? Y

No. of Coolers: 6 Cooler Temps: 0.2 - 5.5

Sample ID	Date	Time	Matrix	No. Containers	Total Phosphate	Ammonia	TBT	Total Metals ①	*Dissolved Metals ②	Hardness	Hex Chrome	Total metals ③	Dissolved metals ④	Notes/Comments: Total Metals ⑤	Notes/Comments: Dissolved Metals ⑥
continued from page 1														continued from page 1	
MW-305-120511	12/5/11	0813	water	30	X	X	X	X	X	X					
DUP-120511-1	12/5/11	0600	water	4			X								
MW-315-120511	12/5/11	1041	water	31	X	X	X	X	X	X	X			MS / MSD Hex Chrome	
DUP-120511-2	12/5/11	0615	water	4								X	X		
MW-335-120511	12/5/11	1353	water	12	X					X				X	X

Comments/Special Instructions
* Dissolved metals samples filtered in the Field
- call Cyrus 1 w/ questions 206 550 6890

Relinquished by: (Signature)	Printed Name	Company	Date & Time
	Cyrus Gorman	EIM	12/5/11 1508

Received by: (Signature)	Printed Name	Company	Date & Time
	Jose Ugas	ART	12/5/11 15:08

Relinquished by: (Signature)	Printed Name	Company	Date & Time

Received by: (Signature)	Printed Name	Company	Date & Time

⑤ Total Metals = As, Cr, Cu, Ag, Zn, Ca, K, Mg, Na, Al, Fe, Mn

⑥ Dissolved metals = As, Cr, Cu, Ag, Zn, Al, Fe, Mn

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

① Total Metals = As, Cr, Cu, Ag, Zn, Al, Fe, Mn, Ca, K, Mg, Na, Sb, Be, Cd, Pb, Ni, Sc, Tl & Hg

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

② Dissolved metals = As, Cr, Cu, Ag, Zn, Al, Fe, Mn, Sb, Be, Cd, Pb, Ni, Sc, Tl & Hg

Subject: RE: TZ97 RG Sample Receipt and COCs
From: Shira DeGrood <Shira.DeGrood@erm com>
Date: 3 12 PM
To: Cheronne Oreiro <cheronneo@anlabs com>
CC: Mike Mendes <Mike.Mendes@erm.com>, Sue Dunnihoo <sue@anlabs com>

Hi Cheronne,

Two edits to this receipt...Please add TPH-G to the field blank (see attached COC). Also, there was an error on the log for 11-27943-TZ97F, noted in the attached file.

Thanks,
Shira

Shira DeGrood, R.G.
Main: +1 503 488-5282
Direct: +1 503 621-5911
Cell: +1 503 961-4845
Fax: +1 503 488-5142
shira.degrood@erm.com

-----Original Message-----
From: Cheronne Oreiro [mailto:cheronneo@anlabs.com]
Sent: Tuesday, December 06, 2011 12:11 PM
To: Shira DeGrood
Cc: Mike Mendes; Sue Dunnihoo
Subject: TZ97 RG Sample Receipt and COCs

Hi Shira,

Please see attached.
Thanks,
-Cheronne

--
NOTE: ARI will close early on Friday, Dec. 23 and be closed Monday, Dec 26th.

Cheronne Oreiro
Project Manager
Analytical Resources, Inc.
4611 S. 134th Place, Suite 100
Tukwila, WA 98168-3240
cheronneo@anlabs.com
(206)-695-6214

This correspondence contains confidential information from Analytical Resources, Inc. (ARI) The information contained herein is intended solely for the use of the individual(s) named above. If you are not the intended recipient, any copying, distribution, disclosure, or use of the text and/or attached document(s) is strictly prohibited.

If you have received this correspondence in error, please notify sender immediately. Thank you.

This message contains information which may be confidential, proprietary, privileged, or otherwise protected by law from disclosure or use by a third party. If you have received this message in error, please contact us immediately at (925) 946-0455 and take the steps necessary to delete the message completely from your computer system. Thank you.

Please visit ERM's web site: http://www.erm.com

Attachments

TZ97_receipt pdf	23 1 KB
20111206145957101 pdf	712 KB

TZ84 : 00026 12/6/2011 3:17 PM

(A)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: T797	Turn-around Requested: Standard
ARI Client Company: ERM	Phone: 425 214 0458
Client Contact: Mike Mendes	
Client Project Name: RG	
Client Project #: 128296.07	Samplers: Cyrus / Matt
Page: 1 of 2	
Date: 12/5/11	Ice Present? Y
No. of Coolers: 6	Cooler Temps: 0.2 - 5.5

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	VOCs 8260	TPH-Gx & Dx	TOC	SVOC full scan & SIM cPAHs Alkalinity	TDX	TSS	Anions Cl, SO4, NO3	Notes/Comments
MW-305-120511	12/5/11	0813	Water	30	X	X	X	X	X	X	X	MS/MSD for SVOCs / cPAHs
FB-120511-1	12/5/11	0815	water	3	X	TPH-Gx						
DUP-120511-1	12/5/11	0600	water	4		TPH-Dx						TPH-Dx & TBT as listed on page 2
TB-120511-1	12/5/11	0820	water	2	X	TPH-Gx						VOCs / TPH-Gx
MW-315-120511	12/5/11	1041	water	31	X	X	X	X	X	X	X	MS/MSD for Chrome + VOCs
DUP-120511-2	12/5/11	0615	water	4		TPH-Gx						TPH-Gx + total dissolved metals
MW-335-120511	12/5/11	1353	water	12			X	X	X	X	X	
DUP-120511-3	12/5/11	0640	water	4				X				

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Cyrus Gorman	Printed Name: Josa Ugas	Printed Name:	Printed Name:
	Company: ERM	Company: ARI	Company:	Company:
	Date & Time: 12/5/11 1508	Date & Time: 12/5/11 1506	Date & Time:	Date & Time:

2 SHORT HOLD TIME CHEX (chrome)

Results on page 2 ↔ See page 2 for list of metals

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client ERM Project Name RG

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No TZ84 Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2.0-6 0 °C for chemistry) 1.5 4.8 1.6 0.2 4.4 5.5

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619

Cooler Accepted by JH (AV) Date 12/5/11 Time 1508

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? (Bubble Wrap) (Wet Ice) Gel Packs Baggies (Foam Block) Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA (YES) NO

Were all VOC vials free of air bubbles? NA (YES) NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI NA 12/1/11

Was Sample Split by ARI (NA) YES Date/Time _____ Equipment: _____ Split by: _____

Samples Logged by JH Date 12/6/11 Time 857

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By _____ Date _____

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• •	• • •	● ● ●

Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

PRESERVATION VERIFICATION 12/06/11
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ97**

Inquiry Number:
Analysis Requested: 12/06/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: JM
Sample Set Used: Yes-481
Validatable Package: Yes
Deliverables:

PC: Sue D.
VTSR: 12/05/11

Project #: 128296.07
Project: RG
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27938 **TZ97A**	MW-30S-120511			pH>2			TOT pH>2		pH>2			pH>2										
11-27939 **TZ97B**	MW-31S-120511			↓			TOT		↓			↓										
11-27940 **TZ97C**	MW-33S-120511						TOT		↓			↓										
11-27943 **TZ97F**	DUP-120511-2						TOT															
11-27946 **TZ97I**	MW-30S-120511						DIS									Y						
11-27947 **TZ97J**	MW-31S-120511						DIS									Y						
11-27948 **TZ97K**	MW-33S-120511						DIS									Y						
11-27949 **TZ97L**	DUP-120511-2						DIS									Y						

128h : 000012

Checked By JM Date 12/6/11

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: TZ84, TZ97

ANALYTICAL
RESOURCES
INCORPORATED

Narrative

Client: ERM-West, Inc.
Project: RG Fall GW Sampling, 128296.07
ARI Job Nos.: TZ84 & TZ97

Sample receipt

Four water samples and a trip blank were received on December 2, 2011 under ARI job TZ84. The cooler temperatures measured by IR thermometer following ARI SOP were 0.6, 1.0, 1.2, 3.1, and 3.7°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

Seven water samples and a trip blank were received on December 5, 2011 under ARI job TZ97. The cooler temperatures measured by IR thermometer following ARI SOP were 0.2, 1.5, 1.6, 4.4, 4.8, and 5.5°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

The TOX analysis was subcontracted to Columbia Analytical Services in Kelso, WA. All data have been included in this package.

Volatiles by SW8260

The samples and associated laboratory QC were analyzed within recommended holding times.

The initial calibrations were within method requirements.

The 12/7/11 continuing calibration (CCAL) was outside the 20% control limit high for Bromomethane, Chloroethane, and Trichlorofluoromethane. All detected results associated with this CCAL have been flagged with a "Q" qualifier. No further corrective action was taken.

The 12/12/11 CCAL was outside the 20% control limit high for Bromomethane and Trichlorofluoromethane, and was out low for Acrolein, trans-1,4-Dichloro-2-butene, and 1,2-Dibromo-3-chloropropane. All detected results associated with this CCAL have been flagged with a "Q" qualifier. No further corrective action was taken.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blanks were clean at the reporting limits.

The LCSD percent recoveries of Bromomethane, Chloroethane, Trichlorofluoromethane, and 2,2-Dichloropropane were outside the control limits high for **LCS-120711**. All LCS percent recoveries were within control limits. No corrective action was taken.

The LCS percent recovery of Acrolein fell outside the control limits low for **LCS-121211**. All other percent recoveries were within control limits. No corrective action was taken.

The matrix spike and matrix spike duplicate percent recoveries of 2-Chloroethylvinylether and trans-1,4-Dichloro-2-butene were outside advisory control limits for sample **MW-31S-120511**. No corrective action is required for matrix QC.

Semivolatiles by SW8270

The samples and associated laboratory QC were extracted and analyzed within recommended holding times.

The initial calibrations were within method requirements.

The continuing calibration was outside the 20% control limit high for 4-Nitrophenol and Butylbenzylphthalate. All detected results for these compounds have been flagged with a "Q" qualifier. No further corrective action was taken.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

Bis(2-Ethylhexyl)phthalate was present in **MB-120811** at a level that was greater than ½ the reporting limit. All detected results for this compound have been flagged with a "B" qualifier. No further corrective action was taken.

The LCS percent recoveries of 4-Nitrophenol, Butylbenzylphthalate, and Benzo(a)anthrancene were outside the control limits high for **LCS-120811**. All other percent recoveries were within control limits. No corrective action was taken.

Several matrix spike and matrix spike duplicate percent recoveries were outside advisory control limits high for sample **MW-30S-120511**. No corrective action is required for matrix QC.

SIM PAHs by SW8270

The samples and associated laboratory QC were extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements. Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limit. The LCS percent recoveries were within control limits.

The matrix spike and matrix spike duplicate percent recoveries were within advisory control limits.

Tributyltin by Krone 1988 SIM

The samples and associated laboratory QC were extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements. Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limit. The LCS percent recovery was within control limits.

The matrix spike and matrix spike duplicate percent recoveries were within advisory control limits.

NWTPH-Dx

The samples were extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits. The LCS and LCSD percent recoveries were within control limits.

NWTPH-Gx

The samples were analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limit. The LCS and LCSD percent recoveries were within control limits.

Total and Dissolved Metals by SW6010/6020/7470

The samples and associated laboratory QC were digested and analyzed within recommended holding times.

Initial calibrations were within limits.

The ninth continuing calibration verification (CCV) was outside the control limits high for beryllium. No sample results were associated with this CCV. No corrective action was taken.

The method blanks were clean at the detection limits. The LCS percent recoveries were within control limits.

The total metals matrix spike percent recovery of iron was outside the control limits high for sample **MW-30S-120511**. The sample concentration exceeded the spike concentration by a factor of four or more. No corrective action was taken.

The duplicate RPDs were within control limits.

Conventional Parameters

The samples and associated laboratory QC were prepared and analyzed within recommended holding times.

The method blanks were clean at the detection limits. The LCS percent recovery was within control limits.

The SRM percent recoveries were within limits.

The matrix spike percent recovery of Total Phosphorus was outside the control limits high for sample **MW-30S-120511**. All other quality control parameters were met for this analysis. No corrective action was taken.

The matrix spike percent recoveries of Insoluble and Soluble Hexavalent Chromium were outside the control limits low for sample **MW-31S-120511**. All other quality control parameters were met for this analysis. No corrective action was taken.

The replicate RPDs were within control limits.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ84
Client: ERM-West
Project Event: 128296.07
Project Name: RG

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-28S-120211	TZ84A	11-27871	Water	12/02/11 11:55	12/02/11 15:10
2.	MW-29S-120211	TZ84B	11-27872	Water	12/02/11 13:47	12/02/11 15:10
3.	DUP-120211-3	TZ84C	11-27873	Water	12/02/11 08:15	12/02/11 15:10
4.	DUP-120211-2	TZ84D	11-27874	Water	12/02/11 07:00	12/02/11 15:10
5.	TB-120211-1	TZ84E	11-27875	Water	12/02/11	12/02/11 15:10
6.	MW-28S-120211	TZ84F	11-27876	Water	12/02/11 11:55	12/02/11 15:10
7.	MW-29S-120211	TZ84G	11-27877	Water	12/02/11 13:47	12/02/11 15:10
8.	DUP-120211-3	TZ84H	11-27878	Water	12/02/11 08:15	12/02/11 15:10

Printed 12/05/11

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ97
Client: ERM-West
Project Event: 128296.07
Project Name: RG

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-30S-120511	TZ97A	11-27938	Water	12/05/11 08:13	12/05/11 15:08
2.	MW-31S-120511	TZ97B	11-27939	Water	12/05/11 10:41	12/05/11 15:08
3.	MW-33S-120511	TZ97C	11-27940	Water	12/05/11 13:53	12/05/11 15:08
4.	FB-120511-1	TZ97D	11-27941	Water	12/05/11 08:15	12/05/11 15:08
5.	DUP-120511-1	TZ97E	11-27942	Water	12/05/11 06:00	12/05/11 15:08
6.	DUP-120511-2	TZ97F	11-27943	Water	12/05/11 06:15	12/05/11 15:08
7.	TB-120511-1	TZ97G	11-27944	Water	12/05/11	12/05/11 15:08
8.	DUP-120511-3	TZ97H	11-27945	Water	12/05/11 06:40	12/05/11 15:08
9.	MW-30S-120511	TZ97I	11-27946	Water	12/05/11 08:13	12/05/11 15:08
10.	MW-31S-120511	TZ97J	11-27947	Water	12/05/11 10:41	12/05/11 15:08
11.	MW-33S-120511	TZ97K	11-27948	Water	12/05/11 13:53	12/05/11 15:08
12.	DUP-120511-2	TZ97L	11-27949	Water	12/05/11 06:15	12/05/11 15:08

Printed 12/06/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

TZ84 : 00020

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

TZ84 : 00021

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

TZ84 : 00022

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1907-1	PCB 1660	20	ACETONE	11/01/12
2#		BCOC PEST	10	ACETONE	NA
3	1885-1	PEST	01/02/10	ACETONE	12/15/11
4	1885-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1902-4	EPH	1500	MECL2	10/04/12
6	1919-2	PCP	12.5/125	ACETONE	10/15/12
7	1888-1	ABN	100	MEOH	08/30/12
8	1916-2	TBT	2.5	MECL2	11/23/12
9	1918-2	PORE TBT	.125/.25	MECL2	11/23/12
10					
11	1860-4	TPHD	15000	ACETONE	05/12/12
12					
13	1838-4	LOW PCB	2	ACETONE	01/31/12
14					
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1906-4	1,4-DIOXANE	100	MEOH	04/30/12
17	1869-4	1248 PCB	10	ACETONE	06/14/12
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1873-2	AK103	7500	ACETONE	01/02/12
20	1886-4	PNA	100	ACETONE	01/07/12
21	1874-3	SKY/BHT	100	MEOH	01/14/12
22	1864-3	HERB	02 to 2500	MEOH	12/03/11
23	1887-2	EXTRA PNA	15	ACETONE	08/25/12
24					
25#		DIPHENYL	100	MEOH	NA
26	1904-2	OP-PEST	25	MEOH	02/10/12
27		STEROLS	200	MEOH	NA
28#		ADD. PEST	2	ACETONE	NA
29#		DECANES	100	MEOH	NA

TZ84 : 00023

LCS SOLUTIONS

30		EDB/DBCP	0.2	MEOH	NA
31	1909-2	TERPINEOL	100	MEOH	02/14/12
32	1876-1	GUAIACOL	50-200	ACETONE	01/05/12
33		RETENE	100	MEOH	NA
34	1867-3	CONGENERS	0.5	ACETONE	03/14/12
35	1875-3	ALKYL PNA A	10	MEOH	07/18/12
36		ALKYL PNA B	10	MEOH	NA
37		CAR/PERY	100	ACETONE	NA
38	1904-1	ABN ACID	200-450	MEOH	04/21/12
39	1853-4	BENZIDINE	500	MEOH	04/30/12
40	1851-3	PBDE	0.5	MEOH	04/22/12
50	1900-1	FULL RESIN	250	ACETONE	08/12/12
51		DDTS	0.01	ACETONE	NA
52		1232 PCB	20	ACETONE	NA
53	1919-1	DALAPON	50	MEOH	08/22/12
54		T-CHLORDANE	10	ACETONE	NA
55		TOXAPHENE	50	ACETONE	NA
56	1917-1	ABN BASE	50-200	MEOH	05/31/12
	#=PROJECT SPECIFIC SOLUTION				
	*=REVERIFIED SOLUTION				

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1906-5	ABN	100/150	MEOH	04/30/12
B	1917-2	SIM PNA	15/75	ACETONE	05/30/12
C	NA	SIM ABN	25/37.5	MEOH	NA
D	1907-4	LOW PCB	0.2	ACETONE	12/16/11
E	1900-2	HERB	62.5	MEOH	10/06/12
F	1896-2	PCP	12.5	ACETONE	12/09/11
G	1906-3	d8-DIOXANE	100	MEOH	04/30/12
H	1847-2	OP-PEST	25	ACETONE	03/23/12
I	1896-3	LOW S. PNA	1.5	ACETONE	09/22/12
J	1915-4	TBT-PORE	0.125	MECL2	11/23/12
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1915-3	TBT	2.5	MECL2	11/23/12
M	1888-4	EPH	1500	MECL2	04/04/12
N	1914-2	PCB	2	ACETONE	05/28/12
O	1914-4	TPH	450	MECL2	02/04/12
P	1895-4	HCID	2250	MECL2	02/04/12
Q	NA	EDB	1	MEOH	NA
R	1886-3	RESIN ACID	250	ACETONE	02/19/12
S	1864-1	PBDE	.5	MEOH	05/21/12
T	1884-2	ALKYL PNA	10	MEOH	07/15/12
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11

TZ84 : 00025

Spike Recovery Control Limits for Analysis of Aqueous Samples Volatile Organic Compounds (VOA) EPA SW-846 Methods 8260C 10 mL Purge Volume [1,6]

Effective: 8/30/2010

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI Control Limits	ARI ME Control Limits[2]
LCS Spike Recovery [5]		
Dichlorodifluoromethane	69 - 122	60 - 131
Chloromethane	76 - **120**	69 - 123
Vinyl Chloride	**80 - 120**	75 - 123
Bromomethane	71 - 120	63 - 129
Chloroethane	**80 - 120**	75 - 124
1,1,2-Trichloro-1,2,2-trifluoroethane	**80** - 121	76 - 128
Acrolein	69 - 126	60 - 136
Acetone	71 - **120**	64 - **120**
1,1-Dichloroethene	**80 - 120**	79 - 122
Bromoethane	**80 - 120**	80 - 121
Methyl Iodide	76 - 120	69 - 127
Methylene Chloride	**80 - 120**	77 - **120**
Acrylonitrile	79 - **120**	74 - **120**
Methyl tert-Butyl Ether	**80 - 120**	77 - 121
Carbon Disulfide	**80 - 120**	78 - 121
trans-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Vinyl Acetate	**80 - 120**	76 - **120**
1,1-Dichloroethane	**80 - 120**	**80 - 120**
2-Butanone	**80 - 120**	76 - **120**
2,2-Dichloropropane	**80 - 120**	77 - 120
cis-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Chloroform	**80 - 120**	**80 - 120**
Bromodichloromethane	**80 - 120**	**80 - 120**
1,1,1-Trichloroethane	**80 - 120**	**80 - 120**
1,1-Dichloropropene	**80 - 120**	**80 - 120**
Carbon Tetrachloride	**80 - 120**	**80** - 123
1,2-Dichloroethane	**80 - 120**	**80 - 120**
Benzene	**80 - 120**	**80 - 120**
Trichloroethene	**80 - 120**	**80** - 120
1,2-Dichloropropane	**80 - 120**	**80 - 120**
Bromochloromethane	**80 - 120**	**80 - 120**
Dibromomethane	**80 - 120**	**80 - 120**
2-Chloroethylvinylether	**80 - 120**	75 - **120**
4-Methyl-2-Pentanone	**80 - 120**	78 - **120**
cis-1,3-Dichloropropene	**80 - 120**	**80 - 120**
Toluene	**80 - 120**	**80 - 120**
trans-1,3-Dichloropropene	**80 - 120**	**80 - 120**

TZ84 : 00026

2-Hexanone	**80 - 120**	75 - **120**
1,1,2-Trichloroethane	**80 - 120**	**80 - 120**
1,3-Dichloropropane	**80 - 120**	**80 - 120**
Tetrachloroethene	**80 - 120**	**80 - 120**
Dibromochloromethane	**80 - 120**	**80 - 120**
Ethylene Dibromide	**80 - 120**	**80 - 120**
Chlorobenzene	**80 - 120**	**80 - 120**
Ethylbenzene	**80 - 120**	**80** - 121
1,1,2,2-Tetrachloroethane	**80 - 120**	78 - **120**
m,p-Xylene	**80 - 120**	**80 - 120**
o-Xylene	**80 - 120**	**80 - 120**
Styrene	**80 - 120**	**80** - 122
Trichlorofluoromethane	**80 - 120**	78 123
Isopropylbenzene	**80 - 120**	79 - 121
Bromoform	**80 - 120**	79 - **120**
1,1,1,2-Tetrachloroethane	**80 - 120**	**80 - 120**
1,2,3-Trichloropropane	**80 - 120**	77 - **120**
trans-1,4-Dichloro-2-butene	74 - 122	66 - 130
n-Propylbenzene	**80 - 120**	80 - **120**
Bromobenzene	**80 - 120**	78 - **120**
1,3,5-Trimethylbenzene	**80 - 120**	**80** - 120
2-Chlorotoluene	**80 - 120**	80 - **120**
4-Chlorotoluene	**80 - 120**	**80 - 120**
tert-Butylbenzene	**80 - 120**	**80** - 121
1,2,4-Trimethylbenzene	**80 - 120**	**80** - 120
sec-Butylbenzene	**80 - 120**	**80** - 121
4-Isopropyltoluene	**80 - 120**	**80** - 123
1,3-Dichlorobenzene	**80 - 120**	**80 - 120**
1,4-Dichlorobenzene	**80 - 120**	**80 - 120**
n-Butylbenzene	**80 - 120**	**80** - 122
1,2-Dichlorobenzene	**80 - 120**	**80 - 120**
1,2-Dibromo-3-chloropropane	76 - **120**	71 - **120**
1,2,4-Trichlorobenzene	77 - **120**	71 - **120**
Hexachloro-1,3-butadiene	77 - 120	70 - 127
Naphthalene	76 - **120**	70 - **120**
1,2,3-Trichlorobenzene	79 - **120**	74 - **120**
MB/LCS Surrogate Recovery		
Dibromofluoromethane	**80 - 120**	(3)
d4-1,2-Dichloroethane	**80 - 120**	(3)
d8-Toluene	**80 - 120**	(3)
4-Bromofluorobenzene	**80 - 120**	(3)
d4-1,2-Dichlorobenzene	**80 - 120**	(3)
Sample Surrogate Recovery		
Dibromofluoromethane	**80 - 120**	(3)

TZ84 : 00027

d4-1,2-Dichloroethane	**80 - 120**	(3)
d8-Toluene	**80 - 120**	(3)
4-Bromofluorobenzene	**80 - 120**	(3)
D4-1,2-Dichlorobenzene	**80 - 120**	(3)

(1) Control Limits calculated using all data generated 7/1/09 through 6/30/10.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard[4] as beyond the LCS-CL but still within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances require corrective action.
(3) Marginal Exceedances not allowed for surrogate standards. A corrective action is required for each surrogate recovery outside of the control limit range.
(4) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(5) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(6) Highlighted control limits (**bold font**) are adjusted from the calculated values as follows:

a) ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
b) Control limits for analyzes with no separate preparation procedure are adjusted to reflect the minimum uncertainty in the calibration of the instrument allowed by the referenced analytical method.

TZ84 : 00028

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
LCS Spike Recovery [8]				
Phenol [3]	50 - **100**	43 - 103	16 - **100**	6 - **100**
Bis-(2-chloroethyl) ether	52 - **100**	45 - 105	41 - 112	29 - 124
2-Chlorophenol	56 - **100**	49 - 103	43 - 111	32 - 122
1,3-Dichlorobenzene	23 - **100**	15 - **100**	32 - **100**	22 - 103
1,4-Dichlorobenzene	25 - **100**	17 - **100**	32 - **100**	22 - 103
Benzyl Alcohol	19 - 100	**10** - 114	22 - 100	9 - 113
1,2-Dichlorobenzene	30 - **100**	22 - **100**	34 - **100**	24 - 104
2-Methylphenol	52 - **100**	44 - 106	36 - 110	24 - 122
2,2'-oxybis(1-chloropropane)	32 - 111	19 - 124	29 - 118	14 - 133
4-Methylphenol	53 - 102	45 - 110	38 - 104	27 - 115
N-Nitroso-di-n-propylamine	43 - 104	33 - 114	38 - 115	25 - 128
Hexachloroethane	12 - **100**	**10** - **100**	24 - **100**	13 - 100
Nitrobenzene	33 - 125	18 - 140	45 - 106	35 - 116
Isophorone	57 - 115	47 - 125	55 - 119	44 - 130
2-Nitrophenol	56 - 102	48 - 110	46 - 118	34 - 130
2,4-Dimethyphenol	29 - **100**	20 - **100**	28 - 105	15 - 118
Bis-(2-chloroethoxy) methane	54 - 101	46 - 109	44 - 118	32 - 130
Benzoic Acid [3]	**10** - 131	**10** - 151	11 - **100**	**10** - **100**
2,4-Dichlorophenol	56 - 104	48 - 112	43 - 121	30 - 134
1,2,4-Trichlorobenzene	27 - **100**	18 - **100**	35 - **100**	25 - 107
Naphthalene	45 - **100**	38 - **100**	36 - 111	24 - 124
4-Chloroaniline [3]	**10** - 139	**10** - 161	10 - 174	**10** - 201
2-Chloronaphthalene	45 - **100**	37 - 105	39 - 118	26 - 131
Hexachlorobutadiene	**10** - **100**	**10** - **100**	24 - **100**	12 - 108
4-Chloro-3-methylphenol	53 - 109	44 - 118	45 - 122	32 - 135
2-Methylnaphthalene	46 - **100**	38 - 100	45 - 103	35 - 113
Hexachlorocyclopentadiene	**10** - **100**	**10** - **100**	23 - 108	**10** - 122
2,4,6-Trichlorophenol	58 - 108	50 - 116	48 - 122	36 - 134
2,4,5-Trichlorophenol	58 - 107	50 - 115	48 - 122	36 - 134
2-Nitroaniline	50 - 107	41 - 117	48 - 118	36 - 130
Dimethylphthalate	58 - 107	50 - 115	50 - 120	38 - 132
Acenaphthylene	57 - 100	50 - 107	50 - 119	39 - 131
2,6-Dinitrotoluene	58 - 112	49 - 121	48 - 133	34 - 147
3-Nitroaniline [3]	21 - 150	**10** - 172	54 - 140	40 - 154
Acenaphthene	51 - **100**	43 - 106	41 - 120	28 - 133
2,4-Dinitrophenol	12 - 169	**10** - 195	23 - 176	**10** - 202

TZ84 : 00029

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Dibenzofuran	57 - 100	50 - 107	51 - 114	41 - 125
4-Nitrophenol [3]	35 - 119	21 - 133	13 - **100**	**10** - **100**
2,4-Dinitrotoluene	58 - 117	48 - 127	51 - 134	37 - 148
Fluorene	56 - 104	48 - 112	50 - 120	38 - 132
Diethylphthlalate	52 - 111	42 - 121	48 - 122	36 - 134
4-Chlorophenyl-phenyl ether	55 - 104	47 - 112	50 - 118	39 - 129
4-Nitroaniline	49 - 112	39 - 123	42 - 136	26 - 152
4,6-Dinitro-2-Methylphenol	13 - 139	**10** - 160	32 - 121	17 - 136
N-Nitrosodiphenylamine	60 - 136	47 - 149	58 - 141	44 - 155
4-Bromophenyl-phenyl ether	55 - 103	47 - 111	50 - 122	38 - 134
Hexachlorobenzene	54 - 106	45 - 115	47 - 125	34 - 138
Pentachlorophenol	46 - 114	35 - 125	35 - 130	19 - 146
Phenanthrene	56 - 102	48 - 110	49 - 120	37 - 132
Anthracene	56 - 101	49 - 109	53 - 116	43 - 127
Carbazole	60 - 108	52 - 116	57 - 122	46 - 133
Di-n-butylphthalate	56 - 112	47 - 121	57 - 121	46 - 132
Fluoranthene	57 - 110	48 - 119	56 - 119	46 - 130
Pyrene	48 - 119	36 - 131	37 - 143	19 - 161
Butylbenzylphthalate	51 - 114	41 - 125	34 - 152	14 - 172
Benzo(a)Anthracene	55 - 105	47 - 113	49 - 129	36 - 142
3,3'-Dichlorbenzidine [3]	**10** - 128	**10** - 148	50 - 128	37 - 141
Chrysene	55 - 104	47 - 112	45 - 128	31 - 142
bis(2-Ethylhexyl) phthalate	28 - 164	**10** - 187	57 - 133	44 - 146
Di-n-octylphthalate	57 - 107	49 - 115	52 - 120	41 - 131
Benzofluoranthene(s) (Total)	30 - 160[10]	30 - 160[10]	30 - 160[10]	30 - 160[10]
Benzo(a)Pyrene	45 - 103	35 - 113	46 - 109	36 - 120
Indeno(1,2,3-cd)Pyrene	35 - 118	21 - 132	34 - 136	17 - 153
Dibenz(a,h)anthracene	42 - 119	29 - 132	41 - 134	26 - 150
Benzo(g,h,i)Perylene	39 - 123	25 - 137	41 - 133	26 - 148
Aniline [3]	**10** - **100**	**10** - **100**	28 - 126	12 - 142
1,2-Diphenylhydrazine /Azobenzene	57 - 109	48 - 118	55 - 119	44 - 130
N-Nitrosodimethylamine	49 - **100**	41 - 104	31 - **100**	21 - 105
1-Methylnaphthalene	46 - **100**	37 - 107	43 - 115	31 - 127
1,4-Dioxane	40 - **100**	30 - 108	30 - 160 [4]	30 - 160 [4]
Pyridine	-	-	25 - **100**	15 - **100**
Tributyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Dibutyl Phenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]

TZ84 : 00030

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME [1,2]	Separatory Funnel [1]	Separatory Funnel - ME [1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Butyl Diphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Triphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Butylated Hydroxytoluene (BHT)	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
MB / LCS Surrogate Recovery				
d4-2-Chlorophenol	53 - 100	(5)	49 - 101	(5)
d4-1,2-Dichlorobenzene	38 - **100**	(5)	40 - **100**	(5)
2,4,6-Tribromophenol	52 - 123	(5)	51 - 122	(5)
2-Fluorophenol	46 - **100**	(5)	31 - **100**	(5)
d5-Phenol [3]	50 - 100	52 - 108	19 - **100**	12 - **100**
d5-Nitrobenzene	46 - 100	(5)	46 - 101	(5)
2-Fluorobiphenyl	49 - **100**	(5)	49 - 103	(5)
d14-p-Terphenyl	53 - 119	(5)	49 - 130	(5)
d8-1,4-Dioxane	45 - **100**	(5)	30 - 160 [4]	(5)
Sample Surrogate Recovery				
d4-2-Chlorophenol	44 - **100**	(5)	23 - 104	(5)
d4-1,2-Dichlorobenzene	32 - **100**	(5)	22 - **100**	(5)
2,4,6-Tribromophenol	48 - 118	(5)	22 - 125	(5)
2-Fluorophenol	38 - **100**	(5)	18 - **100**	(5)
d5-Phenol	41 - **100**	32 - 104	**10** - **100**	17 - **100**
d5-Nitrobenzene	39 - **100**	(5)	21 - 106	(5)
2-Fluorobiphenyl	42 - **100**	(5)	26 - 104	(5)
d14-p-Terphenyl	26 - 114	(5)	11 - 132	(5)
d8-1,4-Dioxane	32 - **100**	(5)	30 - 160 [4]	(5)

(1) Control Limits calculated using all data generated 1/1/07 through 12/1/07.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard [6] as beyond the CL but still within the ME limits. ARI defines ME limits as between 3 and 4 standard deviations around the mean with upper limit ≥ 100%. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances in an analysis require corrective action.
(3) These are "**poor performers**" defined in the DoD QSM[7] as compounds that "produce low mean recoveries and high standard deviations, resulting in wide LCS control limits with particularly low lower control limits (sometimes-negative values). ARI does not control batch acceptance based on these compounds since there is a high level of uncertainty in their recovery."
(4) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. **DO NOT** use these limits as the sole reason to reject the data from a batch of analyses.
(5) Marginal Exceedances not allowed for surrogate unless it is a "poor performer".
(6) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(7) Page 182 of: **Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3 Final, March 2005** Prepared By Environmental Data Quality Workgroup, Department of Navy, Lead Service (Based On National Environmental Laboratory Accreditation Conference (NELAC) Chapter 5 (Quality Systems) NELAC Voted Version – 5 June 2003
(8) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(9) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(10) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

TZ84 : 00031

DL[1], LOD[2], LOQ[3] and Control Limits Summary
Analysis of Water Samples for PNA
EPA Method 8270 – SIM
ARI Analyses: PNSWLL & PNSWSL

Separatory Funnel (EPA Method 3510C) or Liq-Liq (EPA Method 3520C) Extraction using 500 mL sample with extract concentrated to 0.5 mL final volume. ARI Bench Sheet 3053F or 3054F

LOD Spike level = LOQ = 0.1ppb

Analyte	DL[1] µg/L	LOD[2] µg/L	LOQ[3] µg/L	LCS Control Limit[4,5]	Replicate RPD[6]
Naphthalene	0.020	**0.050**	**0.1**	37 – 100	≤ 40
2-Methylnaphthalene	0.020	**0.050**	**0.1**	34 – 107	≤ 40
Acenaphthylene	0.024	**0.050**	**0.1**	32 – 104	≤ 40
Acenaphthene	0.015	**0.050**	**0.1**	40 – 102	≤ 40
Dibenzofuran	0.016	**0.050**	**0.1**	44 – 104	≤ 40
Fluorene	0.019	**0.050**	**0.1**	43 – 114	≤ 40
Phenanthrene	0.026	**0.050**	**0.1**	43 – 116	≤ 40
Anthracene	0.025	**0.050**	**0.1**	30 – 121	≤ 40
Fluoranthene	0.021	**0.050**	**0.1**	46 – 138	≤ 40
Pyrene	0.028	**0.050**	**0.1**	47 – 124	≤ 40
Benzo(a)anthracene	0.023	**0.050**	**0.1**	38 – 134	≤ 40
Chrysene	0.026	**0.050**	**0.1**	52 – 112	≤ 40
Benzo(b)fluoranthene	0.027	**0.050**	**0.1**	49 – 123	≤ 40
Benzo(k)fluoranthene	0.027	**0.050**	**0.1**	50 – 127	≤ 40
Benzo(a)pyrene	0.059	**0.075**	**0.1**	24 – 118	≤ 40
Indeno(1,2,3-cd)pyrene	0.029	**0.050**	**0.1**	32 – 123	≤ 40
Dibenz(a,h)anthracene	0.042	**0.050**	**0.1**	30 – 127	≤ 40
Benzo(g,h,i)perylene	0.030	**0.050**	**0.1**	26 – 124	≤ 40
1-Methylnaphthalene	0.016	**0.050**	**0.1**	30 – 160[7]	≤ 40
Perylene	0.061	**0.075**	**0.1**	30 – 160[7]	≤ 40
Surrogate Standard Recovery			**MB / LCS**	**Samples**	**RPD**
2-Methylnapthalene-d_{10}			40 – 110	33 – 107	≤ 40
Dibenzo(a,h)anthracene-d_{14}			33 – 140	**10** – 142	≤ 40

(1) Detection Limit (DL) as defined in ARI SOP 1018S
(2) Limit of Detection (LOD) as defined in ARI SOP 1018S
(3) Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(4) Highlighted control limits (**bold font**) are adjusted from the calculated values to reflect that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(5) Control limits calculated using all data from 6/1/10 through 5/31/11.
(6) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$
(7) Default limits pending generation of historic limits for total benzofluoranthenes and 1-Methylnaphthalene.

TZ84 : 00032

Quality Control Summary for Butyl Tin Compounds
EPA Methods 8270D – SIM

Analyte	DL[1]	LOD[1]	LOQ[1]	Spike Recovery Limits (%)[2,3]			RPD[4]
				LCS	MB/LCS Surrogate	Sample Surrogate	
TBTWSI – Aqueous Samples (Separatory Funnel Extraction – 100 to 0.5 mL) EPA Method 3510C – ARI Benchsheet TBT#1 – 3043F							
Tributyl Tin Ion[5]	0.043 µg/L	0.096 µg/L	0.193 µg/L	30-160	--	--	≤ 40
Dibutyl Tin Ion[5]	0.096 µg/L	0.216 µg/L	0.433 µg/L	30-160	--	--	≤ 40
Butyl Tin Ion[5]	0.108 µg/L	0.153 µg/L	0.306 µg/L	30-160	--	--	≤ 40
Tripentyl Tin	--	--	--	--	30-160	30-160	≤ 40
Tripropyl Tin	--	--	--	--	30-160	30-160	≤ 40
TBTWSI – Pore Water Samples (Separatory Funnel Extraction – 150 to 0.5 mL) EPA Method 3510C – ARI Benchsheet TBT #3 – 3047F							
Tributyl Tin Ion[6]	--	--	0.0052 µg/L	30-160	--	--	≤ 40
Dibutyl Tin Ion[6]	--	--	0.0077µg/L	30-160	--	--	≤ 40
Butyl Tin Ion[6]	--	--	0.0054 µg/L	30-160	--	--	≤ 40
Tripentyl Tin	--	--	--	--	30-160	30-160	≤ 40
Tripropyl Tin	--	--	--	--	30-160	30-160	≤ 40
TBTSMI – Soil / Sediment Samples (Microwave Extraction – 5g dry wt to 0.5mL) EPA Method 3546 – ARI Benchsheet TBT#4 – 3064F							
Tributyl Tin Ion	1.52 µg/kg	1.93 µg/kg	3.86 µg/kg	40 – 144	--	--	≤ 40
Dibutyl Tin Ion	3.72 µg/kg	4.33 µg/kg	5.78 µg/kg	34 – 115	--	--	≤ 40
Butyl Tin Ion	2.95 µg/kg	3.06 µg/kg	4.08 µg/kg	**10** – 111	--	--	≤ 40
Tripentyl Tin	--	--	--	--	35 – 130	25 – 140	≤ 40
Tripropyl Tin	--	--	--	--	28 – 106	32 – 104	≤ 40

(1) Detection Limit (DL), limit of detection (LOD) and limit of quantation (LOQ) as defined in ARI SOP 1018S.
(2) Highlighted control limits (**bold font**) are adjusted from the calculated values to reflect that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(3) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. These limits are not used as the sole reason to reject data from a batch of of analyzes.
(4) Acceptance criteria for the relative percent difference (RPD) between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

(5) DL from ARI MDL study QD32
(6) ARI does not report concentrations below the LOQ (low calibration standard concentration) and does not, therefore, determine a DL or LOD for butyl tin analysis in interstitial (pore) water.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Quality Control Criteria
Total Petroleum Hydrocarbons
(Diesel & Motor Oil)

Analysis Code	Analyte[5]	LOD[1]	LOQ[2] ppm	Spike % Recovery Control Limits[3]			RPD[4]
				LCS	MB/LCS Surrogate	Sample Surrogate	
HCIWVX	NWTPH-HCID – Water Samples	--	0.50 [7]	--	--	50-150	≤ 40
HCISVX	NWTPH-HCID – Solid Samples	--	50 [7]	--	--	50-150	
Aqueous Samples – No Extract Clean-up – Separatory Funnel Extraction – 500 to 1.0 mL							
DIESWI	DRO – NWTPH-Dext (C_{12}-C_{24})	0.022	0.1	64-112	50-150	50-150	≤ 40
AK2WSI	DRO – AK102 (C_{10}-C_{25})	0.022	0.1	75-125 [6]	60-120	50-150	
OILWSI	RRO – NWTPH-Dext (C_{24}-C_{38})	0.044	0.2	64-112	50-150	50-150	
AK3WSI	RRO – AK103 (C_{25}-C_{36})	0.030 [8]	0.2	60-120 [6]	60-120	50-150	
Aqueous Samples – With Acid and/or Silica Gel Clean-up – Separatory Funnel Extraction – 500 to 1.0 mL							
DIESWI	DRO – NWTPH-Dext (C_{12}-C_{24})	0.039	0.1	61-104	50-150	50-150	≤ 40
AK2WSI	DRO – AK102 (C_{10}-C_{25})	0.042	0.1	75-125 [6]	60-120	50-150	
OILWSI	RRO – NWTPH-Dext (C_{24}-C_{38})	0.010	0.2	61-104	50-150	50-150	
AK3WSI	RRO – AK103 (C_{25}-C_{36})	0.030 [8]	0.2	60-120 [6]	60-120	50-150	
Solid Matrix Samples – No Extract Clean-up – Microwave Extraction – 10 g to 1 mL							
DIESMI	DRO – NWTPH-Dext (C_{12}-C_{24})	1.35	5	62-119	50-150	50-150	≤ 40
AK2SMI	DRO – AK102 (C_{10}-C_{25})	2.43	5	75-125 [6]	60-120	50-150	
OILSMI	RRO – NWTPH-Dext (C_{24}-C_{38})	2.48	10	62-119	50-150	50-150	
AK3SMI	RRO – AK103 (C_{25}-C_{36})	0.665 [9]	10	60-120 [6]	60-120	50-150	
Solid Matrix Samples – With Acid and/or Silica Gel Clean-up – Microwave Extraction – 10 g to 1 mL							
DIESMI	DRO – NWTPH-Dext (C_{12}-C_{24})	1.28	5	60-108	50-150	50-150	≤ 40
AK2SMI	DRO – AK102 (C_{10}-C_{25})	2.06	5	75-125 [6]	60-120	50-150	
OILSMI	RRO – NWTPH-Dext (C_{24}-C_{38})	1.57	10	60-108	50-150	50-150	
AK3SMI	RRO – AK103 (C_{25}-C_{36})	0.665 [9]	10	60-120 [6]	60-120	50-150	

(1) Limit of Detection as defined in ARI SOP 1018S.
(2) Limit of Quantitation as defined in ARI SOP 1018S. The spike concentration used to determine the LOD and the concentration of the lowest standard used to calibrate the GC-FID instrument.
(3) All surrogate recovery limits are specified in the published methods (AK102, AK103 & NWTPH-Dext). The surrogate standard is o-Terphenyl.
(4) Acceptance criteria for the relative percent difference (RPD) between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$
(5) DRO = Diesel Range Organics and RRO = Residual Range Organics as defined in the methods referenced in footnote 3.
(6) Method specified LCS acceptance limits.
(7) Method specified reporting limits
(8) MDL study QD55 completed 2/12/10
(9) MDL study QD35 completed 1/29/10

TZ84 : 00034

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Quality Control Criteria
Gasoline and BTEX

Method	Analyte	DL[1]	LOD[1]	LOQ[1]	Spike % Recovery Control Limits[3]			RPD[3]
					LCS	MB/LCS Surrogate	Sample Surrogate	
Aqueous Samples (DL, LOD & LOQ values in µg/L (ppb) for BTEX and mg/L (ppm) for gasoline								
NWTPH-G	Toluene – Naphthalene	0.057	0.125	0.25	75 – 124	--	--	≤ 40
8015B	2-methylpentane – 1,2,4-Trimethylbenzene	0.031	0.125	0.25	75 – 124	--	--	
WA-TPH-G	Toluene – nC_{12})	0.087	0.125	0.25	75 – 124	--	--	
AK-101	nC_6 – nC_{12}	0.032	0.050	0.10	75 – 124	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	**80 - 120**	**80** - 120	
	Bromobenzene	--	--	--	--	**80 - 120**	**80** - 120	
8021B	Benzene	0.094	0.5	1.0	73 – **120**	--	--	≤ 40
8021B	Toluene	0.113	0.5	1.0	73 – **120**	--	--	
8021B	Ethylbenzene	0.117	0.5	1.0	69 – **120**	--	--	
8021B	m/p-Xylene	0.265	1.0	2.0	72 – **120**	--	--	
8021B	o-Xylene	0.136	0.5	1.0	73 – **120**	--	--	
8021B	MTBE	0.412	0.5	1.0	30 – 182	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	79 – **120**	**80 - 120**	
	Bromobenzene	--	--	--	--	79 – **120**	**80 - 120**	
Solid Samples - (DL, LOD & LOQ values in µg/kg (ppb) for BTEX and mg/kg (ppm) for gasoline								
NWTPH-G	Toluene – Naphthalene	1.66	2.5	5	74 – 124	--	--	≤ 40
8015B	2-methylpentane – 1,2,4-Trimethylbenzene	1.57	2.5	5	74 – 124	--	--	
WA-TPH-G	Toluene – nC_{12})	1.54	2.5	5	74 – 124	--	--	
AK-101	nC_6 – nC_{12}	1.84	2.5	5	74 – 124	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	**80 - 120**	66-123	
	Bromobenzene	--	--	--	--	**80 - 120**	62-130	
8021B	Benzene	4.59	12.5	25	72 – **120**	--	--	≤ 40
8021B	Toluene	7.13	12.5	25	72 – **120**	--	--	
8021B	Ethylbenzene	4.98	12.5	25	71 – **120**	--	--	
8021B	m/p-Xylene	11.9	25.0	50	72 – **120**	--	--	
8021B	o-Xylene	6.23	12.5	25	72 – **120**	--	--	
8021B	MTBE	3.82	12.5	25	40 – 163	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	80 – **120**	68 – 124	
	Bromobenzene	--	--	--	--	77 – **120**	62 – 134	

(1) Detection Limit (DL), Limit of Detection (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S.

(2) Highlighted control limits (bold font) are adjusted from the calculated values as follows:

a) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.

b) Control limits for analytes with no separate preparation procedure are adjusted to reflect the minimum uncertainty in the calibration of the instrument allowed by the referenced analytical method.

(3) Acceptance criteria for the relative percent difference (RPD) between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

TZ84 : 00035

Quality Control Parameters for Metals Analysis using ICP-OES

	Aqueous Samples[2]			Spike Recovery		RPD[5]	Solids[3]	Tissue[4]
Analyte	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ mg/kg	LOQ mg/kg
Aluminum	7.57	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Antimony	6.28	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Arsenic	3.33	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Barium	1.33	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Beryllium	0.16	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Boron	7.39	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Cadmium	0.18	0.5	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Calcium	11.27	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Chromium	1.24	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Cobalt	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Copper	0.92	1.0	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Iron	7.50	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Lead	1.55	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Magnesium	9.61	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Manganese	0.28	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Molybdenum	0.79	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Nickel	3.86	5.0	**10**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Potassium	65.70	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Selenium	4.99	25	**50**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Silicon	8.17	30	**60**	75 – 125	80 – 120	≤ 20	**(6)**	**(6)**
Silver	0.43	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Sodium	11.35	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Strontium	0.09	1.0	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Thallium	3.10	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Tin	1.41	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**
Titanium	2.11	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Vanadium	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Zinc	1.45	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Tissue is reported on an "as received" (wet weight) basis using 2.5 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$
(6) ARI does not analyze for Silicon in solids or tissue samples

TZ84 : 00036

Quality Control Parameters for Metals Analysis using ICP-MS

Analyte	Mass	Aqueous Samples[2]			Spike Recovery		RPD[4]	Solids[3]
		DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ[1] mg/kg
Aluminum	27	1.601	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Antimony	121	0.010	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
	123	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #1	75	0.048	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #2	75	0.092	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Barium	135	0.020	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	137	0.019	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Beryllium	9	0.021	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Cadmium	111	0.010	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
	114	0.005	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Calcium	43	3.983	25	**50.0**	75 – 125	80 – 120	≤ 20	**50.0**
Chromium	52	0.045	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	53	0.118	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Cobalt	59	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Copper	63	0.158	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	65	0.236	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Iron	54	5.753	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
	57	3.876	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Lead	208	0.046	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Magnesium	24	0.297	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Manganese	55	0.022	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Molybdenum	98	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Nickel	60	0.079	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	62	0.089	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Potassium	39	2.944	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Selenium	82	0.127	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	78	0.324	0.25	**2.0**	75 – 125	80 – 120	≤ 20	**2.0**
Silver	107	0.008	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Sodium	23	2.833	50	**100.0**	75 – 125	80 – 120	≤ 20	**100.0**
Thorium	232	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Thallium	205	0.004	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Uranium	238	0.003	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Vanadium	51	0.043	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Zinc	66	0.497	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	67	0.531	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	68	0.524	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

TZ84 : 00037

Quality Control Parameters for Mercury Analysis using CVAA

	Aqueous Samples[2]			Spike Recovery		RPD[5]
	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS	
Mercury	0.0069	0.05	**0.10**[2]	75 – 125	80 – 120	≤ 20
Mercury (low level)	0.0026	0.01	**0.02**[3]	75 – 125	80 – 120	≤ 20
	Soil / Sediment / Tissue[4] Samples			**Spike Recovery**		**RPD[5]**
	DL[1] mg/kg	**LOD[1] mg/kg**	**LOQ[1] mg/kg**	**Matrix Spike**	**LCS**	
Mercury	0.0021	0.0125	**0.025**[3,4]	75 – 125	80 – 120	≤ 20

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 20 mL sample with 20 mL final volume
(3) 0.2 g sample with 50 mL final volume assuming 100% dry weight. Soil and sediment are reported on a dry weight basis.
(4) Tissue LOQ is 0.005 mg/kg as received (wet weight) based on 1 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

TZ84 : 00038

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Conventional Wet Chemistry

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI's Control Limits	
Sample Matrix:	Water	Soil / Sediment
Matrix Spike Recoveries	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 125	75 - 125
Chloride	75 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
Duplicate RPDs		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

TZ84 : 00039

Volatile Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-28S-120211**
Page 1 of 2 **SAMPLE**

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/07/11 17:04

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**5.0**	**2.0**	**J**
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	**Tetrachloroethene**	**0.2**	**0.2**	**J**
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-28S-120211**
 SAMPLE

Lab Sample ID: TZ84A QC Report No: TZ84-ERM-West
LIMS ID: 11-27871 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/07/11 17:04

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.5%
d8-Toluene	98.3%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-29S-120211**
Page 1 of 2 **SAMPLE**

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/07/11 17:31

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**0.4**	**J**
67-64-1	**Acetone**	**5.0**	**5.1**	
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	**1,1-Dichloroethane**	**0.2**	**0.2**	**J**
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-29S-120211**
 SAMPLE

Lab Sample ID: TZ84B QC Report No: TZ84-ERM-West
LIMS ID: 11-27872 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/07/11 17:31

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.4%
d8-Toluene	99.8%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: DUP-120211-2**
Page 1 of 2 **SAMPLE**

Lab Sample ID: TZ84D
LIMS ID: 11-27874
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/07/11 17:58

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	**Acetone**	**5.0**	**1.8**	**J**
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	**Tetrachloroethene**	**0.2**	**0.2**	
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: DUP-120211-2**
 SAMPLE

Lab Sample ID: TZ84D QC Report No: TZ84-ERM-West
LIMS ID: 11-27874 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/07/11 17:58

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.7%
d8-Toluene	100%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-120211-1**
 SAMPLE

Lab Sample ID: TZ84E
LIMS ID: 11-27875
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/07/11 18:25

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**0.4**	**J**
67-64-1	**Acetone**	**5.0**	**1.6**	**J**
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-120211-1**
 SAMPLE

Lab Sample ID: TZ84E QC Report No: TZ84-ERM-West
LIMS ID: 11-27875 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/07/11 18:25

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.9%
d8-Toluene	99.3%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	99.9%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ84-ERM-West
Project: RG
128296.07

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-120711	Method Blank	10	95.1%	99.6%	105%	100%	0
LCS-120711	Lab Control	10	96.3%	102%	102%	103%	0
LCSD-120711	Lab Control Dup	10	94.1%	100%	104%	103%	0
TZ84A	MW-28S-120211	10	96.5%	98.3%	106%	104%	0
TZ84B	MW-29S-120211	10	98.4%	99.8%	102%	102%	0
TZ84D	DUP-120211-2	10	98.7%	100%	103%	102%	0
TZ84E	TB-120211-1	10	97.9%	99.3%	101%	99.9%	0

	LCS/MB LIMITS	QC LIMITS
SW8260C		
(DCE) = d4-1,2-Dichloroethane	80-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 11-27871 to 11-27875

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-120711**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120711 QC Report No: TZ84-ERM-West
LIMS ID: 11-27871 Project: RG
Matrix: Water 128296.07
Data Release Authorized: Date Sampled: NA
Reported: 12/13/11 Date Received: NA

Instrument/Analyst LCS: NT2/PKC Sample Amount LCS: 10.0 mL
LCSD: NT2/PKC LCSD: 10.0 mL
Date Analyzed LCS: 12/07/11 10:04 Purge Volume LCS: 10.0 mL
LCSD: 12/07/11 10:31 LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	10.2	10.0	102%	10.7	10.0	107%	4.8%
Bromomethane	11.4 Q	10.0	114%	13.1 Q	10.0	131%	13.9%
Vinyl Chloride	10.4	10.0	104%	11.0	10.0	110%	5.6%
Chloroethane	10.3 Q	10.0	103%	13.3 Q	10.0	133%	25.4%
Methylene Chloride	10.0	10.0	100%	10.4	10.0	104%	3.9%
Acetone	48.7	50.0	97.4%	49.8	50.0	99.6%	2.2%
Carbon Disulfide	10.6	10.0	106%	10.7	10.0	107%	0.9%
1,1-Dichloroethene	9.7	10.0	97.0%	10.0	10.0	100%	3.0%
1,1-Dichloroethane	10.1	10.0	101%	10.6	10.0	106%	4.8%
trans-1,2-Dichloroethene	10.0	10.0	100%	10.6	10.0	106%	5.8%
cis-1,2-Dichloroethene	10.1	10.0	101%	10.4	10.0	104%	2.9%
Chloroform	10.0	10.0	100%	10.4	10.0	104%	3.9%
1,2-Dichloroethane	9.4	10.0	94.0%	9.6	10.0	96.0%	2.1%
2-Butanone	46.4	50.0	92.8%	44.2	50.0	88.4%	4.9%
1,1,1-Trichloroethane	10.3	10.0	103%	10.9	10.0	109%	5.7%
Carbon Tetrachloride	10.8	10.0	108%	11.5	10.0	115%	6.3%
Vinyl Acetate	9.3	10.0	93.0%	9.1	10.0	91.0%	2.2%
Bromodichloromethane	10.1	10.0	101%	10.3	10.0	103%	2.0%
1,2-Dichloropropane	9.8	10.0	98.0%	10.1	10.0	101%	3.0%
cis-1,3-Dichloropropene	10.2	10.0	102%	9.9	10.0	99.0%	3.0%
Trichloroethene	9.8	10.0	98.0%	10.2	10.0	102%	4.0%
Dibromochloromethane	10.0	10.0	100%	10.1	10.0	101%	1.0%
1,1,2-Trichloroethane	9.7	10.0	97.0%	9.4	10.0	94.0%	3.1%
Benzene	10.1	10.0	101%	10.6	10.0	106%	4.8%
trans-1,3-Dichloropropene	10.5	10.0	105%	10.0	10.0	100%	4.9%
2-Chloroethylvinylether	9.6	10.0	96.0%	9.2	10.0	92.0%	4.3%
Bromoform	10.2	10.0	102%	10.2	10.0	102%	0.0%
4-Methyl-2-Pentanone (MIBK)	52.4	50.0	105%	52.8	50.0	106%	0.8%
2-Hexanone	49.0	50.0	98.0%	50.1	50.0	100%	2.2%
Tetrachloroethene	9.9	10.0	99.0%	10.6	10.0	106%	6.8%
1,1,2,2-Tetrachloroethane	9.7	10.0	97.0%	9.9	10.0	99.0%	2.0%
Toluene	10.0	10.0	100%	10.1	10.0	101%	1.0%
Chlorobenzene	9.8	10.0	98.0%	10.2	10.0	102%	4.0%
Ethylbenzene	10.1	10.0	101%	10.8	10.0	108%	6.7%
Styrene	10.8	10.0	108%	11.3	10.0	113%	4.5%
Trichlorofluoromethane	9.8 Q	10.0	98.0%	12.6 Q	10.0	126%	25.0%
1,1,2-Trichloro-1,2,2-trifluoroetha	10.2	10.0	102%	10.1	10.0	101%	1.0%
m,p-Xylene	20.8	20.0	104%	22.1	20.0	110%	6.1%
o-Xylene	10.6	10.0	106%	11.3	10.0	113%	6.4%
1,2-Dichlorobenzene	9.9	10.0	99.0%	10.3	10.0	103%	4.0%
1,3-Dichlorobenzene	10.0	10.0	100%	10.2	10.0	102%	2.0%
1,4-Dichlorobenzene	9.8	10.0	98.0%	10.0	10.0	100%	2.0%
Acrolein	45.7	50.0	91.4%	47.5	50.0	95.0%	3.9%
Methyl Iodide	10.2	10.0	102%	10.0	10.0	100%	2.0%
Bromoethane	10.3	10.0	103%	10.7	10.0	107%	3.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-120711**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120711 QC Report No: TZ84-ERM-West
LIMS ID: 11-27871 Project: RG
Matrix: Water 128296.07

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	9.7	10.0	97.0%	10.0	10.0	100%	3.0%
1,1-Dichloropropene	10.2	10.0	102%	10.7	10.0	107%	4.8%
Dibromomethane	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
1,1,1,2-Tetrachloroethane	10.5	10.0	105%	11.5	10.0	115%	9.1%
1,2-Dibromo-3-chloropropane	10.4	10.0	104%	11.0	10.0	110%	5.6%
1,2,3-Trichloropropane	9.2	10.0	92.0%	9.3	10.0	93.0%	1.1%
trans-1,4-Dichloro-2-butene	9.7	10.0	97.0%	9.1	10.0	91.0%	6.4%
1,3,5-Trimethylbenzene	10.6	10.0	106%	11.0	10.0	110%	3.7%
1,2,4-Trimethylbenzene	10.6	10.0	106%	11.0	10.0	110%	3.7%
Hexachlorobutadiene	11.3	10.0	113%	11.7	10.0	117%	3.5%
Ethylene Dibromide	10.0	10.0	100%	9.6	10.0	96.0%	4.1%
Bromochloromethane	10.0	10.0	100%	10.2	10.0	102%	2.0%
2,2-Dichloropropane	11.5	10.0	115%	12.2	10.0	122%	5.9%
1,3-Dichloropropane	9.4	10.0	94.0%	9.4	10.0	94.0%	0.0%
Isopropylbenzene	10.4	10.0	104%	10.8	10.0	108%	3.8%
n-Propylbenzene	10.2	10.0	102%	10.5	10.0	105%	2.9%
Bromobenzene	9.6	10.0	96.0%	9.7	10.0	97.0%	1.0%
2-Chlorotoluene	10.1	10.0	101%	10.5	10.0	105%	3.9%
4-Chlorotoluene	10.0	10.0	100%	10.1	10.0	101%	1.0%
tert-Butylbenzene	10.6	10.0	106%	11.0	10.0	110%	3.7%
sec-Butylbenzene	10.6	10.0	106%	11.0	10.0	110%	3.7%
4-Isopropyltoluene	10.8	10.0	108%	11.2	10.0	112%	3.6%
n-Butylbenzene	10.8	10.0	108%	11.2	10.0	112%	3.6%
1,2,4-Trichlorobenzene	10.8	10.0	108%	11.4	10.0	114%	5.4%
Naphthalene	10.6	10.0	106%	11.2	10.0	112%	5.5%
1,2,3-Trichlorobenzene	11.0	10.0	110%	11.6	10.0	116%	5.3%
Methyl tert-Butyl Ether	10.1	10.0	101%	10.4	10.0	104%	2.9%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	96.3%	94.1%
d8-Toluene	102%	100%
Bromofluorobenzene	102%	104%
d4-1,2-Dichlorobenzene	103%	103%

4A
VOLATILE METHOD BLANK SUMMARY

Method Blank ID.

MB1207

Lab Name: ANALYTICAL RESOURCES INC

Client: ERM-WEST

ARI Job No: TZ84

Project: RG

Lab File ID: MB1207

Lab Sample ID: MB1207

Date Analyzed: 12/07/11

Time Analyzed: 1057

Instrument ID: NT2

Heated Purge: (Y/N) N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS1207	LCS1207	LCS1207	1004
02	LCS1207	LCS1207	LCS1207A	1031
03	MW-28S-12021	TZ84A	TZ84A	1704
04	MW-29S-12021	TZ84B	TZ84B	1731
05	DUP-120211-2	TZ84D	TZ84D	1758
06	TB-120211-1	TZ84E	TZ84E	1825
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-120711**
 METHOD BLANK

Lab Sample ID: MB-120711
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/07/11 10:57

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-120711**
 METHOD BLANK

Lab Sample ID: MB-120711 QC Report No: TZ84-ERM-West
LIMS ID: 11-27871 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/07/11 10:57

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.1%
d8-Toluene	99.6%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-30S-120511**
Page 1 of 2 **SAMPLE**

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/12/11 13:23

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	**Tetrachloroethene**	**0.2**	**0.2**	
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-30S-120511**
 SAMPLE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Date Analyzed: 12/12/11 13:23

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.0%
d8-Toluene	98.0%
Bromofluorobenzene	98.9%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 SAMPLE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/12/11 13:50

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 SAMPLE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Date Analyzed: 12/12/11 13:50

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.8%
d8-Toluene	98.3%
Bromofluorobenzene	99.8%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FB-120511-1**
Page 1 of 2 **SAMPLE**

Lab Sample ID: TZ97D
LIMS ID: 11-27941
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/12/11 15:11

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**1.6**	
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	**Toluene**	**0.2**	**0.2**	
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FB-120511-1**
 SAMPLE

Lab Sample ID: TZ97D
LIMS ID: 11-27941
Matrix: Water
Date Analyzed: 12/12/11 15:11

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.7%
d8-Toluene	99.6%
Bromofluorobenzene	99.7%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-120511-1**
 SAMPLE

Lab Sample ID: TZ97G
LIMS ID: 11-27944
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/12/11 15:37

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-120511-1**
 SAMPLE

Lab Sample ID: TZ97G
LIMS ID: 11-27944
Matrix: Water
Date Analyzed: 12/12/11 15:37

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.1%
d8-Toluene	101%
Bromofluorobenzene	99.0%
d4-1,2-Dichlorobenzene	98.0%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ97-ERM-West
Project: RG
128296.07

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-121211	Method Blank	10	93.7%	100%	99.0%	101%	0
LCS-121211	Lab Control	10	91.5%	101%	102%	101%	0
LCSD-121211	Lab Control Dup	10	95.8%	102%	102%	101%	0
TZ97A	MW-30S-120511	10	96.0%	98.0%	98.9%	103%	0
TZ97B	MW-31S-120511	10	96.8%	98.3%	99.8%	103%	0
TZ97BMS	MW-31S-120511	10	95.8%	102%	101%	101%	0
TZ97BMSD	MW-31S-120511	10	94.4%	103%	99.2%	97.9%	0
TZ97D	FB-120511-1	10	95.7%	99.6%	99.7%	102%	0
TZ97G	TB-120511-1	10	94.1%	101%	99.0%	98.0%	0

SW8260C	LCS/MB LIMITS	QC LIMITS
(DCE) = d4-1,2-Dichloroethane	80-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 11-27938 to 11-27944

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 MATRIX SPIKE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Instrument/Analyst MS: NT2/PKC
MSD: NT2/PKC
Date Analyzed MS: 12/12/11 14:17
MSD: 12/12/11 14:44

Sample Amount MS: 10.0 mL
MSD: 10.0 mL
Purge Volume MS: 10.0 mL
MSD: 10.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Chloromethane	< 0.5 U	10.5	10.0	105%	9.6	10.0	96.0%	9.0%
Bromomethane	< 1.0 U	12.0 Q	10.0	120%	10.7 Q	10.0	107%	11.5%
Vinyl Chloride	< 0.2 U	10.6	10.0	106%	9.9	10.0	99.0%	6.8%
Chloroethane	< 0.2 U	11.1	10.0	111%	10.4	10.0	104%	6.5%
Methylene Chloride	< 0.5 U	11.0	10.0	110%	10.4	10.0	104%	5.6%
Acetone	< 5.0 U	51.1	50.0	102%	47.4	50.0	94.8%	7.5%
Carbon Disulfide	< 0.2 U	11.5	10.0	115%	10.6	10.0	106%	8.1%
1,1-Dichloroethene	< 0.2 U	11.1	10.0	111%	10.3	10.0	103%	7.5%
1,1-Dichloroethane	< 0.2 U	10.4	10.0	104%	9.9	10.0	99.0%	4.9%
trans-1,2-Dichloroethene	< 0.2 U	11.0	10.0	110%	10.2	10.0	102%	7.5%
cis-1,2-Dichloroethene	< 0.2 U	10.4	10.0	104%	10.0	10.0	100%	3.9%
Chloroform	< 0.2 U	10.8	10.0	108%	10.2	10.0	102%	5.7%
1,2-Dichloroethane	< 0.2 U	9.8	10.0	98.0%	9.7	10.0	97.0%	1.0%
2-Butanone	< 5.0 U	47.7	50.0	95.4%	48.3	50.0	96.6%	1.2%
1,1,1-Trichloroethane	< 0.2 U	11.1	10.0	111%	10.5	10.0	105%	5.6%
Carbon Tetrachloride	< 0.2 U	11.2	10.0	112%	10.5	10.0	105%	6.5%
Vinyl Acetate	< 1.0 U	8.8	10.0	88.0%	8.9	10.0	89.0%	1.1%
Bromodichloromethane	< 0.2 U	10.7	10.0	107%	10.6	10.0	106%	0.9%
1,2-Dichloropropane	< 0.2 U	10.2	10.0	102%	10.2	10.0	102%	0.0%
cis-1,3-Dichloropropene	< 0.2 U	10.3	10.0	103%	10.7	10.0	107%	3.8%
Trichloroethene	< 0.2 U	10.5	10.0	105%	10.3	10.0	103%	1.9%
Dibromochloromethane	< 0.2 U	10.2	10.0	102%	10.2	10.0	102%	0.0%
1,1,2-Trichloroethane	< 0.2 U	10.5	10.0	105%	11.0	10.0	110%	4.7%
Benzene	< 0.2 U	10.5	10.0	105%	10.1	10.0	101%	3.9%
trans-1,3-Dichloropropene	< 0.2 U	10.8	10.0	108%	11.6	10.0	116%	7.1%
2-Chloroethylvinylether	< 1.0 U	< 1.0 U	10.0	NA	< 1.0 U	10.0	NA	NA
Bromoform	< 0.2 U	10.0	10.0	100%	10.3	10.0	103%	3.0%
4-Methyl-2-Pentanone (MIBK)	< 5.0 U	49.7	50.0	99.4%	51.2	50.0	102%	3.0%
2-Hexanone	< 5.0 U	46.4	50.0	92.8%	48.3	50.0	96.6%	4.0%
Tetrachloroethene	< 0.2 U	11.0	10.0	110%	10.5	10.0	105%	4.7%
1,1,2,2-Tetrachloroethane	< 0.2 U	9.2	10.0	92.0%	9.2	10.0	92.0%	0.0%
Toluene	< 0.2 U	10.7	10.0	107%	10.7	10.0	107%	0.0%
Chlorobenzene	< 0.2 U	10.2	10.0	102%	10.1	10.0	101%	1.0%
Ethylbenzene	< 0.2 U	10.5	10.0	105%	10.3	10.0	103%	1.9%
Styrene	< 0.2 U	10.9	10.0	109%	10.8	10.0	108%	0.9%
Trichlorofluoromethane	< 0.2 U	11.5 Q	10.0	115%	10.4 Q	10.0	104%	10.0%
1,1,2-Trichloro-1,2,2-trifl	< 0.2 U	11.2	10.0	112%	10.4	10.0	104%	7.4%
m,p-Xylene	< 0.4 U	21.3	20.0	106%	20.7	20.0	104%	2.9%
o-Xylene	< 0.2 U	10.8	10.0	108%	10.2	10.0	102%	5.7%
1,2-Dichlorobenzene	< 0.2 U	10.2	10.0	102%	9.6	10.0	96.0%	6.1%
1,3-Dichlorobenzene	< 0.2 U	10.2	10.0	102%	10.1	10.0	101%	1.0%
1,4-Dichlorobenzene	< 0.2 U	10.0	10.0	100%	9.9	10.0	99.0%	1.0%
Acrolein	< 5.0 U	51.7 Q	50.0	103%	48.5 Q	50.0	97.0%	6.4%
Methyl Iodide	< 1.0 U	11.5	10.0	115%	10.7	10.0	107%	7.2%
Bromoethane	< 0.2 U	11.1	10.0	111%	10.2	10.0	102%	8.5%
Acrylonitrile	< 1.0 U	9.3	10.0	93.0%	8.9	10.0	89.0%	4.4%
1,1-Dichloropropene	< 0.2 U	10.1	10.0	101%	9.8	10.0	98.0%	3.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 MATRIX SPIKE

Lab Sample ID: TZ97B QC Report No: TZ97-ERM-West
LIMS ID: 11-27939 Project: RG
Matrix: Water 128296.07

Analyte	Sample	MS		Spike Added-MS	MS Recovery	MSD		Spike Added-MSD	MSD Recovery	RPD
Dibromomethane	< 0.2 U	10.4		10.0	104%	10.1		10.0	101%	2.9%
1,1,1,2-Tetrachloroethane	< 0.2 U	10.9		10.0	109%	10.2		10.0	102%	6.6%
1,2-Dibromo-3-chloropropane	< 0.5 U	8.6	Q	10.0	86.0%	8.1	Q	10.0	81.0%	6.0%
1,2,3-Trichloropropane	< 0.5 U	9.2		10.0	92.0%	9.1		10.0	91.0%	1.1%
trans-1,4-Dichloro-2-butene	< 1.0 U	6.3	Q	10.0	63.0%	7.3	Q	10.0	73.0%	14.7%
1,3,5-Trimethylbenzene	< 0.2 U	10.6		10.0	106%	10.4		10.0	104%	1.9%
1,2,4-Trimethylbenzene	< 0.2 U	10.6		10.0	106%	10.4		10.0	104%	1.9%
Hexachlorobutadiene	< 0.5 U	12.0		10.0	120%	11.5		10.0	115%	4.3%
Ethylene Dibromide	< 0.2 U	10.7		10.0	107%	11.0		10.0	110%	2.8%
Bromochloromethane	< 0.2 U	11.0		10.0	110%	10.4		10.0	104%	5.6%
2,2-Dichloropropane	< 0.2 U	11.4		10.0	114%	10.4		10.0	104%	9.2%
1,3-Dichloropropane	< 0.2 U	9.7		10.0	97.0%	9.9		10.0	99.0%	2.0%
Isopropylbenzene	< 0.2 U	10.4		10.0	104%	10.3		10.0	103%	1.0%
n-Propylbenzene	< 0.2 U	10.0		10.0	100%	10.1		10.0	101%	1.0%
Bromobenzene	< 0.2 U	9.9		10.0	99.0%	10.2		10.0	102%	3.0%
2-Chlorotoluene	< 0.2 U	10.0		10.0	100%	9.9		10.0	99.0%	1.0%
4-Chlorotoluene	< 0.2 U	9.8		10.0	98.0%	10.0		10.0	100%	2.0%
tert-Butylbenzene	< 0.2 U	10.8		10.0	108%	10.6		10.0	106%	1.9%
sec-Butylbenzene	< 0.2 U	10.7		10.0	107%	10.4		10.0	104%	2.8%
4-Isopropyltoluene	< 0.2 U	10.9		10.0	109%	10.6		10.0	106%	2.8%
n-Butylbenzene	< 0.2 U	10.7		10.0	107%	10.3		10.0	103%	3.8%
1,2,4-Trichlorobenzene	< 0.5 U	10.6		10.0	106%	10.0		10.0	100%	5.8%
Naphthalene	< 0.5 U	8.9		10.0	89.0%	8.5		10.0	85.0%	4.6%
1,2,3-Trichlorobenzene	< 0.5 U	10.0		10.0	100%	9.6		10.0	96.0%	4.1%
Methyl tert-Butyl Ether	< 0.5 U	10.2		10.0	102%	9.7		10.0	97.0%	5.0%

Reported in µg/L (ppb)

NA-No recovery due to high concentration of analyte in original sample, calculated negative recovery, or undetected spike.
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 MATRIX SPIKE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/12/11 14:17

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.2	---	
75-00-3	Chloroethane	0.2	---	
75-09-2	Methylene Chloride	0.5	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.2	---	
75-35-4	1,1-Dichloroethene	0.2	---	
75-34-3	1,1-Dichloroethane	0.2	---	
156-60-5	trans-1,2-Dichloroethene	0.2	---	
156-59-2	cis-1,2-Dichloroethene	0.2	---	
67-66-3	Chloroform	0.2	---	
107-06-2	1,2-Dichloroethane	0.2	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.2	---	
56-23-5	Carbon Tetrachloride	0.2	---	
108-05-4	Vinyl Acetate	1.0	---	
75-27-4	Bromodichloromethane	0.2	---	
78-87-5	1,2-Dichloropropane	0.2	---	
10061-01-5	cis-1,3-Dichloropropene	0.2	---	
79-01-6	Trichloroethene	0.2	---	
124-48-1	Dibromochloromethane	0.2	---	
79-00-5	1,1,2-Trichloroethane	0.2	---	
71-43-2	Benzene	0.2	---	
10061-02-6	trans-1,3-Dichloropropene	0.2	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.2	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.2	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.2	---	
108-88-3	Toluene	0.2	---	
108-90-7	Chlorobenzene	0.2	---	
100-41-4	Ethylbenzene	0.2	---	
100-42-5	Styrene	0.2	---	
75-69-4	Trichlorofluoromethane	0.2	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	---	
179601-23-1	m,p-Xylene	0.4	---	
95-47-6	o-Xylene	0.2	---	
95-50-1	1,2-Dichlorobenzene	0.2	---	
541-73-1	1,3-Dichlorobenzene	0.2	---	
106-46-7	1,4-Dichlorobenzene	0.2	---	
107-02-8	Acrolein	5.0	---	

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 MATRIX SPIKE

Lab Sample ID: TZ97B QC Report No: TZ97-ERM-West
LIMS ID: 11-27939 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/12/11 14:17

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	---	
74-96-4	Bromoethane	0.2	---	
107-13-1	Acrylonitrile	1.0	---	
563-58-6	1,1-Dichloropropene	0.2	---	
74-95-3	Dibromomethane	0.2	---	
630-20-6	1,1,1,2-Tetrachloroethane	0.2	---	
96-12-8	1,2-Dibromo-3-chloropropane	0.5	---	
96-18-4	1,2,3-Trichloropropane	0.5	---	
110-57-6	trans-1,4-Dichloro-2-butene	1.0	---	
108-67-8	1,3,5-Trimethylbenzene	0.2	---	
95-63-6	1,2,4-Trimethylbenzene	0.2	---	
87-68-3	Hexachlorobutadiene	0.5	---	
106-93-4	Ethylene Dibromide	0.2	---	
74-97-5	Bromochloromethane	0.2	---	
594-20-7	2,2-Dichloropropane	0.2	---	
142-28-9	1,3-Dichloropropane	0.2	---	
98-82-8	Isopropylbenzene	0.2	---	
103-65-1	n-Propylbenzene	0.2	---	
108-86-1	Bromobenzene	0.2	---	
95-49-8	2-Chlorotoluene	0.2	---	
106-43-4	4-Chlorotoluene	0.2	---	
98-06-6	tert-Butylbenzene	0.2	---	
135-98-8	sec-Butylbenzene	0.2	---	
99-87-6	4-Isopropyltoluene	0.2	---	
104-51-8	n-Butylbenzene	0.2	---	
120-82-1	1,2,4-Trichlorobenzene	0.5	---	
91-20-3	Naphthalene	0.5	---	
87-61-6	1,2,3-Trichlorobenzene	0.5	---	
1634-04-4	Methyl tert-Butyl Ether	0.5	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.8%
d8-Toluene	102%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 MATRIX SPIKE DUP

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/12/11 14:44

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	---	
74-83-9	Bromomethane	1.0	---	
75-01-4	Vinyl Chloride	0.2	---	
75-00-3	Chloroethane	0.2	---	
75-09-2	Methylene Chloride	0.5	---	
67-64-1	Acetone	5.0	---	
75-15-0	Carbon Disulfide	0.2	---	
75-35-4	1,1-Dichloroethene	0.2	---	
75-34-3	1,1-Dichloroethane	0.2	---	
156-60-5	trans-1,2-Dichloroethene	0.2	---	
156-59-2	cis-1,2-Dichloroethene	0.2	---	
67-66-3	Chloroform	0.2	---	
107-06-2	1,2-Dichloroethane	0.2	---	
78-93-3	2-Butanone	5.0	---	
71-55-6	1,1,1-Trichloroethane	0.2	---	
56-23-5	Carbon Tetrachloride	0.2	---	
108-05-4	Vinyl Acetate	1.0	---	
75-27-4	Bromodichloromethane	0.2	---	
78-87-5	1,2-Dichloropropane	0.2	---	
10061-01-5	cis-1,3-Dichloropropene	0.2	---	
79-01-6	Trichloroethene	0.2	---	
124-48-1	Dibromochloromethane	0.2	---	
79-00-5	1,1,2-Trichloroethane	0.2	---	
71-43-2	Benzene	0.2	---	
10061-02-6	trans-1,3-Dichloropropene	0.2	---	
110-75-8	2-Chloroethylvinylether	1.0	---	
75-25-2	Bromoform	0.2	---	
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	---	
591-78-6	2-Hexanone	5.0	---	
127-18-4	Tetrachloroethene	0.2	---	
79-34-5	1,1,2,2-Tetrachloroethane	0.2	---	
108-88-3	Toluene	0.2	---	
108-90-7	Chlorobenzene	0.2	---	
100-41-4	Ethylbenzene	0.2	---	
100-42-5	Styrene	0.2	---	
75-69-4	Trichlorofluoromethane	0.2	---	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	---	
179601-23-1	m,p-Xylene	0.4	---	
95-47-6	o-Xylene	0.2	---	
95-50-1	1,2-Dichlorobenzene	0.2	---	
541-73-1	1,3-Dichlorobenzene	0.2	---	
106-46-7	1,4-Dichlorobenzene	0.2	---	
107-02-8	Acrolein	5.0	---	

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-31S-120511**
 MATRIX SPIKE DUP

Lab Sample ID: TZ97B QC Report No: TZ97-ERM-West
LIMS ID: 11-27939 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/12/11 14:44

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	---	
74-96-4	Bromoethane	0.2	---	
107-13-1	Acrylonitrile	1.0	---	
563-58-6	1,1-Dichloropropene	0.2	---	
74-95-3	Dibromomethane	0.2	---	
630-20-6	1,1,1,2-Tetrachloroethane	0.2	---	
96-12-8	1,2-Dibromo-3-chloropropane	0.5	---	
96-18-4	1,2,3-Trichloropropane	0.5	---	
110-57-6	trans-1,4-Dichloro-2-butene	1.0	---	
108-67-8	1,3,5-Trimethylbenzene	0.2	---	
95-63-6	1,2,4-Trimethylbenzene	0.2	---	
87-68-3	Hexachlorobutadiene	0.5	---	
106-93-4	Ethylene Dibromide	0.2	---	
74-97-5	Bromochloromethane	0.2	---	
594-20-7	2,2-Dichloropropane	0.2	---	
142-28-9	1,3-Dichloropropane	0.2	---	
98-82-8	Isopropylbenzene	0.2	---	
103-65-1	n-Propylbenzene	0.2	---	
108-86-1	Bromobenzene	0.2	---	
95-49-8	2-Chlorotoluene	0.2	---	
106-43-4	4-Chlorotoluene	0.2	---	
98-06-6	tert-Butylbenzene	0.2	---	
135-98-8	sec-Butylbenzene	0.2	---	
99-87-6	4-Isopropyltoluene	0.2	---	
104-51-8	n-Butylbenzene	0.2	---	
120-82-1	1,2,4-Trichlorobenzene	0.5	---	
91-20-3	Naphthalene	0.5	---	
87-61-6	1,2,3-Trichlorobenzene	0.5	---	
1634-04-4	Methyl tert-Butyl Ether	0.5	---	

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	94.4%
d8-Toluene	103%
Bromofluorobenzene	99.2%
d4-1,2-Dichlorobenzene	97.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-121211**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-121211
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT2/PKC
LCSD: NT2/PKC
Date Analyzed LCS: 12/12/11 09:43
LCSD: 12/12/11 10:10

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS		Spike Added-LCS	LCS Recovery	LCSD		Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.8		10.0	98.0%	10.1		10.0	101%	3.0%
Bromomethane	11.5	Q	10.0	115%	11.6	Q	10.0	116%	0.9%
Vinyl Chloride	9.8		10.0	98.0%	10.3		10.0	103%	5.0%
Chloroethane	10.5		10.0	105%	10.4		10.0	104%	1.0%
Methylene Chloride	10.1		10.0	101%	10.5		10.0	105%	3.9%
Acetone	46.1		50.0	92.2%	49.0		50.0	98.0%	6.1%
Carbon Disulfide	9.9		10.0	99.0%	10.3		10.0	103%	4.0%
1,1-Dichloroethene	9.8		10.0	98.0%	10.1		10.0	101%	3.0%
1,1-Dichloroethane	9.7		10.0	97.0%	10.1		10.0	101%	4.0%
trans-1,2-Dichloroethene	10.1		10.0	101%	10.4		10.0	104%	2.9%
cis-1,2-Dichloroethene	9.7		10.0	97.0%	10.1		10.0	101%	4.0%
Chloroform	10.0		10.0	100%	10.3		10.0	103%	3.0%
1,2-Dichloroethane	9.4		10.0	94.0%	11.8		10.0	118%	22.6%
2-Butanone	44.8		50.0	89.6%	48.0		50.0	96.0%	6.9%
1,1,1-Trichloroethane	10.6		10.0	106%	10.8		10.0	108%	1.9%
Carbon Tetrachloride	10.7		10.0	107%	10.8		10.0	108%	0.9%
Vinyl Acetate	8.5		10.0	85.0%	8.7		10.0	87.0%	2.3%
Bromodichloromethane	10.1		10.0	101%	10.3		10.0	103%	2.0%
1,2-Dichloropropane	9.8		10.0	98.0%	9.8		10.0	98.0%	0.0%
cis-1,3-Dichloropropene	10.2		10.0	102%	10.4		10.0	104%	1.9%
Trichloroethene	10.2		10.0	102%	10.1		10.0	101%	1.0%
Dibromochloromethane	9.9		10.0	99.0%	10.1		10.0	101%	2.0%
1,1,2-Trichloroethane	10.0		10.0	100%	10.3		10.0	103%	3.0%
Benzene	9.8		10.0	98.0%	9.9		10.0	99.0%	1.0%
trans-1,3-Dichloropropene	10.5		10.0	105%	11.0		10.0	110%	4.7%
2-Chloroethylvinylether	9.4		10.0	94.0%	9.8		10.0	98.0%	4.2%
Bromoform	9.8		10.0	98.0%	10.0		10.0	100%	2.0%
4-Methyl-2-Pentanone (MIBK)	48.5		50.0	97.0%	50.1		50.0	100%	3.2%
2-Hexanone	45.0		50.0	90.0%	46.1		50.0	92.2%	2.4%
Tetrachloroethene	10.4		10.0	104%	10.5		10.0	105%	1.0%
1,1,2,2-Tetrachloroethane	8.7		10.0	87.0%	9.0		10.0	90.0%	3.4%
Toluene	10.2		10.0	102%	10.2		10.0	102%	0.0%
Chlorobenzene	9.8		10.0	98.0%	9.8		10.0	98.0%	0.0%
Ethylbenzene	10.0		10.0	100%	10.0		10.0	100%	0.0%
Styrene	10.4		10.0	104%	10.2		10.0	102%	1.9%
Trichlorofluoromethane	11.9	Q	10.0	119%	11.4	Q	10.0	114%	4.3%
1,1,2-Trichloro-1,2,2-trifluoroetha	10.3		10.0	103%	10.9		10.0	109%	5.7%
m,p-Xylene	20.4		20.0	102%	20.5		20.0	102%	0.5%
o-Xylene	10.3		10.0	103%	10.2		10.0	102%	1.0%
1,2-Dichlorobenzene	9.5		10.0	95.0%	9.5		10.0	95.0%	0.0%
1,3-Dichlorobenzene	9.9		10.0	99.0%	9.8		10.0	98.0%	1.0%
1,4-Dichlorobenzene	9.7		10.0	97.0%	9.7		10.0	97.0%	0.0%
Acrolein	32.1	Q	50.0	64.2%	34.9	Q	50.0	69.8%	8.4%
Methyl Iodide	10.6		10.0	106%	11.0		10.0	110%	3.7%
Bromoethane	10.1		10.0	101%	10.5		10.0	105%	3.9%

Lab Sample ID: LCS-121211 QC Report No: TZ97-ERM-West
LIMS ID: 11-27938 Project: RG
Matrix: Water 128296.07

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Acrylonitrile	8.7	10.0	87.0%	9.5	10.0	95.0%	8.8%
1,1-Dichloropropene	9.8	10.0	98.0%	9.7	10.0	97.0%	1.0%
Dibromomethane	9.6	10.0	96.0%	9.8	10.0	98.0%	2.1%
1,1,1,2-Tetrachloroethane	10.4	10.0	104%	10.5	10.0	105%	1.0%
1,2-Dibromo-3-chloropropane	8.2 Q	10.0	82.0%	8.3 Q	10.0	83.0%	1.2%
1,2,3-Trichloropropane	8.7	10.0	87.0%	9.0	10.0	90.0%	3.4%
trans-1,4-Dichloro-2-butene	8.0 Q	10.0	80.0%	8.0 Q	10.0	80.0%	0.0%
1,3,5-Trimethylbenzene	10.1	10.0	101%	10.2	10.0	102%	1.0%
1,2,4-Trimethylbenzene	10.1	10.0	101%	10.1	10.0	101%	0.0%
Hexachlorobutadiene	11.3	10.0	113%	11.5	10.0	115%	1.8%
Ethylene Dibromide	10.1	10.0	101%	10.4	10.0	104%	2.9%
Bromochloromethane	10.0	10.0	100%	10.4	10.0	104%	3.9%
2,2-Dichloropropane	11.3	10.0	113%	11.4	10.0	114%	0.9%
1,3-Dichloropropane	9.2	10.0	92.0%	9.3	10.0	93.0%	1.1%
Isopropylbenzene	9.8	10.0	98.0%	10.0	10.0	100%	2.0%
n-Propylbenzene	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
Bromobenzene	9.7	10.0	97.0%	9.7	10.0	97.0%	0.0%
2-Chlorotoluene	9.6	10.0	96.0%	9.5	10.0	95.0%	1.0%
4-Chlorotoluene	9.6	10.0	96.0%	9.6	10.0	96.0%	0.0%
tert-Butylbenzene	10.2	10.0	102%	10.3	10.0	103%	1.0%
sec-Butylbenzene	10.1	10.0	101%	10.1	10.0	101%	0.0%
4-Isopropyltoluene	10.3	10.0	103%	10.3	10.0	103%	0.0%
n-Butylbenzene	10.3	10.0	103%	10.2	10.0	102%	1.0%
1,2,4-Trichlorobenzene	9.9	10.0	99.0%	10.0	10.0	100%	1.0%
Naphthalene	8.1	10.0	81.0%	8.5	10.0	85.0%	4.8%
1,2,3-Trichlorobenzene	9.1	10.0	91.0%	9.6	10.0	96.0%	5.3%
Methyl tert-Butyl Ether	9.5	10.0	95.0%	9.9	10.0	99.0%	4.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	91.5%	95.8%
d8-Toluene	101%	102%
Bromofluorobenzene	102%	102%
d4-1,2-Dichlorobenzene	101%	101%

4A

VOLATILE METHOD BLANK SUMMARY

Method Blank ID.

MB1212

Lab Name: ANALYTICAL RESOURCES INC

Client: ERM-WEST

ARI Job No: TZ97

Project: TG

Lab File ID: MB1212

Lab Sample ID: MB1212

Date Analyzed: 12/12/11

Time Analyzed: 1037

Instrument ID: NT2

Heated Purge: (Y/N) N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS1212	LCS1212	LCS1212	0943
02	LCS1212	LCS1212	LCS1212A	1010
03	MW-30S-12051	TZ97A	TZ97A	1323
04	MW-31S-12051	TZ97B	TZ97B	1350
05	MW-31S-12051	TZ97BMS	TZ97BMS	1417
06	MW-31S-12051	TZ97BMSD	TZ97BMSD	1444
07	FB-120511-1	TZ97D	TZ97D	1511
08	TB-120511-1	TZ97G	TZ97G	1537
09	MW-16-120611	UA33A	UA33A	1604
10	TB-120611-1	UA33B	UA33B	1631
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-121211**
 METHOD BLANK

Lab Sample ID: MB-121211
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/15/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/12/11 10:37

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-121211**
 METHOD BLANK

Lab Sample ID: MB-121211 QC Report No: TZ97-ERM-West
LIMS ID: 11-27938 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/12/11 10:37

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	93.7%
d8-Toluene	100%
Bromofluorobenzene	99.0%
d4-1,2-Dichlorobenzene	101%

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: ERM-WEST

Lab Code: ARI Case No.: RG SDG No.: TZ84

Lab File ID: BFB1130B BFB Injection Date: 11/30/11

Instrument ID: NT2 BFB Injection Time: 0951

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.5
75	30.0 - 66.0% of mass 95	46.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.1 (0.1)1
174	50.0 - 101.0% of mass 95	78.8
175	4.0 - 9.0% of mass 174	5.8 (7.4)1
176	93.0 - 101.0% of mass 174	74.4 (94.4)1
177	5.0 - 9.0% of mass 176	4.9 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC0.2	IC0.2	0021130	11/30/11	1208
02	IC0.5	IC0.5	0051130	11/30/11	1235
03	IC01	IC01	0101130	11/30/11	1302
04	IC02	IC02	0201130	11/30/11	1328
05	IC10	IC10	1001130	11/30/11	1355
06	IC20	IC20	2001130	11/30/11	1422
07	IC40	IC40	4001130	11/30/11	1449
08	IC60	IC60	6001130	11/30/11	1515
09	ICV10	ICV10	ICV1130	11/30/11	1609
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: ERM-WEST

Lab Code: ARI Case No.: RG SDG No.: TZ84

Lab File ID: BFB1207 BFB Injection Date: 12/07/11

Instrument ID: NT2 BFB Injection Time: 0903

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.5
75	30.0 - 66.0% of mass 95	46.7
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.7
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 101.0% of mass 95	80.8
175	4.0 - 9.0% of mass 174	4.2 (5.3)1
176	93.0 - 101.0% of mass 174	77.0 (95.3)1
177	5.0 - 9.0% of mass 176	5.4 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1207	CC1207	CC1207	12/07/11	0937
02	LCS1207	LCS1207	LCS1207	12/07/11	1004
03	LCS1207	LCS1207	LCS1207A	12/07/11	1031
04	MB1207	MB1207	MB1207	12/07/11	1057
05	MW-28S-120211	TZ84A	TZ84A	12/07/11	1704
06	MW-29S-120211	TZ84B	TZ84B	12/07/11	1731
07	DUP-120211-2	TZ84D	TZ84D	12/07/11	1758
08	TB-120211-1	TZ84E	TZ84E	12/07/11	1825
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: ERM-WEST

Lab Code: ARI Case No.: TG SDG No.: TZ97

Lab File ID: BFB1212 BFB Injection Date: 12/12/11

Instrument ID: NT2 BFB Injection Time: 0841

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.1
75	30.0 - 66.0% of mass 95	47.8
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	8.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 101.0% of mass 95	84.0
175	4.0 - 9.0% of mass 174	6.4 (7.6)1
176	93.0 - 101.0% of mass 174	81.8 (97.4)1
177	5.0 - 9.0% of mass 176	6.0 (7.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1212	CC1212	CC1212	12/12/11	0916
02	LCS1212	LCS1212	LCS1212	12/12/11	0943
03	LCS1212	LCS1212	LCS1212A	12/12/11	1010
04	MB1212	MB1212	MB1212	12/12/11	1037
05	MW-30S-120511	TZ97A	TZ97A	12/12/11	1323
06	MW-31S-120511	TZ97B	TZ97B	12/12/11	1350
07	MW-31S-120511 MS	TZ97BMS	TZ97BMS	12/12/11	1417
08	MW-31S-120511 MS	TZ97BMSD	TZ97BMSD	12/12/11	1444
09	FB-120511-1	TZ97D	TZ97D	12/12/11	1511
10	TB-120511-1	TZ97G	TZ97G	12/12/11	1537
11	MW-16-120611	UA33A	UA33A	12/12/11	1604
12	TB-120611-1	UA33B	UA33B	12/12/11	1631
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF0.2: 0021130 RF0.5: 0051130 RF1: 0101130
RF2: 0201130 RF10: 1001130

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
Chloromethane		1.127	1.145	1.088	1.139
Vinyl Chloride	0.952	0.955	0.993	0.945	0.994
Bromomethane		0.368	0.368	0.298	0.362
Chloroethane	0.485	0.446	0.420	0.344	0.434
Trichlorofluoromethane	0.611	0.623	0.651	0.596	0.682
Acrolein		0.077	0.082	0.075	0.084
112Trichloro122Trifluoroetha	0.595	0.565	0.568	0.564	0.590
Acetone			0.152	0.140	0.147
1,1-Dichloroethene	0.628	0.634	0.615	0.575	0.616
Bromoethane	0.458	0.469	0.488	0.447	0.481
Iodomethane			0.987	0.921	0.983
Methylene Chloride		0.718	0.706	0.658	0.687
Acrylonitrile		0.195	0.206	0.193	0.201
Carbon Disulfide	2.080	1.977	2.050	1.872	2.156
Trans-1,2-Dichloroethene	0.699	0.687	0.701	0.652	0.690
Vinyl Acetate		0.942	0.982	0.899	1.081
1,1-Dichloroethane	1.271	1.245	1.291	1.207	1.290
2-Butanone		0.209	0.208	0.178	0.215
2,2-Dichloropropane	0.683	0.660	0.686	0.678	0.698
Cis-1,2-Dichloroethene	0.746	0.716	0.686	0.665	0.698
Chloroform	0.997	1.020	1.050	1.016	1.087
Bromochloromethane	0.266	0.284	0.298	0.288	0.307
1,1,1-Trichloroethane	0.901	0.859	0.878	0.832	0.916
1,1-Dichloropropene	0.563	0.571	0.597	0.558	0.585
Carbon Tetrachloride	0.451	0.483	0.476	0.475	0.500
1,2-Dichloroethane	0.451	0.436	0.447	0.424	0.443
Benzene	1.607	1.582	1.645	1.546	1.614
Trichloroethene	0.377	0.415	0.404	0.375	0.400
1,2-Dichloropropane	0.367	0.367	0.386	0.366	0.378
Bromodichloromethane	0.360	0.388	0.376	0.364	0.415
Dibromomethane	0.168	0.172	0.170	0.161	0.170
2-Chloroethyl Vinyl Ether		0.126	0.111	0.101	0.123
4-Methyl-2-Pentanone		0.093	0.096	0.094	0.112
Cis 1,3-dichloropropene	0.407	0.420	0.424	0.384	0.463
Toluene	0.868	0.857	0.862	0.782	0.852
Trans 1,3-Dichloropropene	0.333	0.316	0.330	0.291	0.368
2-Hexanone		0.178	0.180	0.169	0.194

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF0.2: 0021130 RF0.5: 0051130 RF1: 0101130
RF2: 0201130 RF10: 1001130

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
1,1,2-Trichloroethane	0.212	0.214	0.214	0.195	0.215
1,3-Dichloropropane	0.432	0.464	0.448	0.424	0.442
Tetrachloroethene	0.389	0.414	0.404	0.394	0.406
Chlorodibromomethane	0.255	0.239	0.254	0.245	0.285
1,2-Dibromoethane	0.198	0.190	0.191	0.180	0.205
Chlorobenzene	1.038	1.000	1.026	0.970	1.012
Ethyl Benzene	0.555	0.535	0.547	0.552	0.575
1,1,1,2-Tetrachloroethane	0.334	0.359	0.369	0.365	0.405
m,p-xylene	0.644	0.655	0.682	0.682	0.714
o-Xylene	0.655	0.672	0.714	0.707	0.764
Styrene	0.827	0.922	0.934	0.930	1.067
Bromoform	0.211	0.210	0.222	0.218	0.287
1,1,2,2-Tetrachloroethane	0.547	0.526	0.543	0.511	0.583
1,2,3-Trichloropropane		0.172	0.170	0.158	0.168
Trans-1,4-Dichloro 2-Butene		0.160	0.147	0.139	0.162
N-Propyl Benzene	3.194	3.281	3.295	3.149	3.552
Bromobenzene	0.729	0.635	0.701	0.636	0.693
Isopropyl Benzene	2.549	2.737	2.858	2.796	3.285
2-Chloro Toluene	2.329	2.292	2.348	2.262	2.524
4-Chloro Toluene	2.054	2.029	2.129	2.019	2.185
T-Butyl Benzene	1.850	1.944	2.017	1.954	2.415
1,3,5-Trimethyl Benzene	2.241	2.200	2.432	2.369	2.772
1,2,4-Trimethylbenzene	2.292	2.263	2.460	2.381	2.783
S-Butyl Benzene	2.932	2.994	3.236	3.057	3.560
4-Isopropyl Toluene	2.392	2.474	2.609	2.501	2.941
1,3-Dichlorobenzene	1.415	1.465	1.518	1.385	1.476
1,4-Dichlorobenzene	1.607	1.507	1.520	1.407	1.493
N-Butyl Benzene	2.476	2.333	2.449	2.352	2.661
1,2-Dichlorobenzene	1.527	1.423	1.455	1.386	1.458
1,2-Dibromo 3-Chloropropane		0.097	0.087	0.086	0.098
1,2,4-Trichlorobenzene	1.075	0.996	1.019	0.970	1.083
Hexachloro 1,3-Butadiene		0.497	0.486	0.469	0.486
Naphthalene		1.930	1.988	1.857	2.169
1,2,3-Trichlorobenzene		0.856	0.876	0.829	0.917
Dichlorodifluoromethane	0.612	0.638	0.617	0.658	0.682
Methyl tert butyl ether	1.774	1.721	1.772	1.666	1.779

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF0.2: 0021130 RF0.5: 0051130 RF1: 0101130
RF2: 0201130 RF10: 1001130

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
d4-1,2-Dichloroethane	0.523	0.539	0.540	0.532	0.529
d8-Toluene	1.129	1.136	1.116	1.106	1.126
4-Bromofluorobenzene	0.519	0.527	0.526	0.538	0.515
d4-1,2-Dichlorobenzene	0.924	0.906	0.924	0.930	0.941
Dibromofluoromethane	0.499	0.501	0.500	0.508	0.521

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF20: 2001130 RF40: 4001130 RF60: 6001130

COMPOUND	RF20	RF40	RF60
Chloromethane	1.095	1.103	1.042
Vinyl Chloride	0.964	0.977	0.919
Bromomethane	0.327	0.336	0.327
Chloroethane	0.416	0.398	
Trichlorofluoromethane	0.665	0.684	0.653
Acrolein	0.082	0.085	0.082
112Trichloro122Trifluoroetha	0.564	0.568	0.532
Acetone	0.143	0.144	0.138
1,1-Dichloroethene	0.564	0.606	0.563
Bromoethane	0.466	0.471	0.445
Iodomethane	0.954	0.948	0.889
Methylene Chloride	0.663	0.668	0.634
Acrylonitrile	0.202	0.205	0.198
Carbon Disulfide	2.048	2.125	1.983
Trans-1,2-Dichloroethene	0.671	0.679	0.639
Vinyl Acetate	1.073	1.205	1.195
1,1-Dichloroethane	1.267	1.284	1.219
2-Butanone	0.210	0.229	
2,2-Dichloropropane	0.700	0.648	0.593
Cis-1,2-Dichloroethene	0.691	0.692	0.662
Chloroform	1.060	1.082	1.024
Bromochloromethane	0.299	0.299	0.288
1,1,1-Trichloroethane	0.901	0.874	0.838
1,1-Dichloropropene	0.571	0.556	0.532
Carbon Tetrachloride	0.488	0.466	0.453
1,2-Dichloroethane	0.422	0.428	0.415
Benzene	1.560	1.546	1.466
Trichloroethene	0.390	0.390	0.373
1,2-Dichloropropane	0.376	0.390	0.384
Bromodichloromethane	0.414	0.436	0.426
Dibromomethane	0.163	0.168	0.164
2-Chloroethyl Vinyl Ether	0.116	0.145	0.153
4-Methyl-2-Pentanone	0.111	0.112	0.108
Cis 1,3-dichloropropene	0.459	0.512	0.524
Toluene	0.832	0.863	0.846
Trans 1,3-Dichloropropene	0.342	0.393	0.401
2-Hexanone	0.182	0.196	0.196

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF20: 2001130 RF40: 4001130 RF60: 6001130

COMPOUND	RF20	RF40	RF60
1,1,2-Trichloroethane	0.203	0.220	0.222
1,3-Dichloropropane	0.430	0.465	0.467
Tetrachloroethene	0.404	0.394	0.377
Chlorodibromomethane	0.297	0.314	0.311
1,2-Dibromoethane	0.189	0.211	0.216
Chlorobenzene	1.006	1.019	0.982
Ethyl Benzene	0.579	0.568	0.548
1,1,1,2-Tetrachloroethane	0.415	0.397	0.374
m,p-xylene	0.714	0.687	0.648
o-Xylene	0.768	0.739	0.697
Styrene	1.105	1.136	1.106
Bromoform	0.293	0.323	0.324
1,1,2,2-Tetrachloroethane	0.584	0.602	0.596
1,2,3-Trichloropropane	0.166	0.170	
Trans-1,4-Dichloro 2-Butene	0.164	0.177	0.181
N-Propyl Benzene	3.573	3.583	3.409
Bromobenzene	0.682	0.723	0.708
Isopropyl Benzene	3.352	3.331	3.122
2-Chloro Toluene	2.522	2.558	2.468
4-Chloro Toluene	2.152	2.255	2.203
T-Butyl Benzene	2.530	2.500	2.369
1,3,5-Trimethyl Benzene	2.798	2.779	2.625
1,2,4-Trimethylbenzene	2.790	2.780	2.656
S-Butyl Benzene	3.625	3.561	3.348
4-Isopropyl Toluene	2.965	2.946	2.783
1,3-Dichlorobenzene	1.448	1.474	1.439
1,4-Dichlorobenzene	1.472	1.489	1.455
N-Butyl Benzene	2.655	2.576	2.458
1,2-Dichlorobenzene	1.444	1.424	1.375
1,2-Dibromo 3-Chloropropane	0.104	0.100	0.101
1,2,4-Trichlorobenzene	1.053	0.976	0.945
Hexachloro 1,3-Butadiene	0.472	0.440	0.420
Naphthalene	2.107	1.944	1.871
1,2,3-Trichlorobenzene	0.871	0.793	0.756
Dichlorodifluoromethane	0.658	0.677	0.643
Methyl tert butyl ether	1.744	1.772	1.683

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF20: 2001130 RF40: 4001130 RF60: 6001130

COMPOUND	RF20	RF40	RF60
d4-1,2-Dichloroethane	0.523	0.525	0.527
d8-Toluene	1.126	1.156	1.172
4-Bromofluorobenzene	0.500	0.505	0.513
d4-1,2-Dichlorobenzene	0.935	0.907	0.885
Dibromofluoromethane	0.519	0.512	0.498

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
Chloromethane	AVRG	1.106	3.2
Vinyl Chloride	AVRG	0.962	2.6
Bromomethane	AVRG	0.341	7.8
Chloroethane	AVRG	0.420	10.4
Trichlorofluoromethane	AVRG	0.646	5.0
Acrolein	AVRG	0.081	4.7
112Trichloro122Trifluoroetha	AVRG	0.568	3.3
Acetone	AVRG	0.144	3.4
1,1-Dichloroethene	AVRG	0.600	4.8
Bromoethane	AVRG	0.466	3.2
Iodomethane	AVRG	0.947	4.0
Methylene Chloride	AVRG	0.676	4.3
Acrylonitrile	AVRG	0.200	2.5
Carbon Disulfide	AVRG	2.036	4.5
Trans-1,2-Dichloroethene	AVRG	0.677	3.3
Vinyl Acetate	AVRG	1.054	11.3
1,1-Dichloroethane	AVRG	1.259	2.6
2-Butanone	AVRG	0.208	8.0
2,2-Dichloropropane	AVRG	0.668	5.3
Cis-1,2-Dichloroethene	AVRG	0.694	3.9
Chloroform	AVRG	1.042	3.1
Bromochloromethane	AVRG	0.291	4.3
1,1,1-Trichloroethane	AVRG	0.875	3.5
1,1-Dichloropropene	AVRG	0.567	3.5
Carbon Tetrachloride	AVRG	0.474	3.5
1,2-Dichloroethane	AVRG	0.434	3.0
Benzene	AVRG	1.571	3.5
Trichloroethene	AVRG	0.390	3.9
1,2-Dichloropropane	AVRG	0.377	2.5
Bromodichloromethane	AVRG	0.397	7.4
Dibromomethane	AVRG	0.167	2.3
2-Chloroethyl Vinyl Ether	AVRG	0.125	14.7
4-Methyl-2-Pentanone	AVRG	0.104	8.4
Cis 1,3-dichloropropene	AVRG	0.449	11.1
Toluene	AVRG	0.845	3.3
Trans 1,3-Dichloropropene	AVRG	0.347	11.0
2-Hexanone	AVRG	0.185	5.7

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
1,1,2-Trichloroethane	AVRG	0.212	4.1
1,3-Dichloropropane	AVRG	0.446	3.9
Tetrachloroethene	AVRG	0.398	2.9
Chlorodibromomethane	AVRG	0.275	11.0
1,2-Dibromoethane	AVRG	0.197	6.3
Chlorobenzene	AVRG	1.007	2.2
Ethyl Benzene	AVRG	0.557	2.8
1,1,1,2-Tetrachloroethane	AVRG	0.377	7.1
m,p-xylene	AVRG	0.678	4.0
o-Xylene	AVRG	0.714	5.7
Styrene	AVRG	1.003	11.3
Bromoform	AVRG	0.261	19.4
1,1,2,2-Tetrachloroethane	AVRG	0.562	6.1
1,2,3-Trichloropropane	AVRG	0.167	3.0
Trans-1,4-Dichloro 2-Butene	AVRG	0.161	9.2
N-Propyl Benzene	AVRG	3.380	5.2
Bromobenzene	AVRG	0.688	5.2
Isopropyl Benzene	AVRG	3.004	10.2
2-Chloro Toluene	AVRG	2.413	4.9
4-Chloro Toluene	AVRG	2.128	4.1
T-Butyl Benzene	AVRG	2.197	12.8
1,3,5-Trimethyl Benzene	AVRG	2.527	9.8
1,2,4-Trimethylbenzene	AVRG	2.551	8.9
S-Butyl Benzene	AVRG	3.289	8.4
4-Isopropyl Toluene	AVRG	2.701	8.7
1,3-Dichlorobenzene	AVRG	1.452	2.8
1,4-Dichlorobenzene	AVRG	1.494	3.9
N-Butyl Benzene	AVRG	2.495	5.0
1,2-Dichlorobenzene	AVRG	1.436	3.3
1,2-Dibromo 3-Chloropropane	AVRG	0.096	7.0
1,2,4-Trichlorobenzene	AVRG	1.014	5.1
Hexachloro 1,3-Butadiene	AVRG	0.467	5.9
Naphthalene	AVRG	1.981	5.9
1,2,3-Trichlorobenzene	AVRG	0.843	6.4
Dichlorodifluoromethane	AVRG	0.648	3.9
Methyl tert butyl ether	AVRG	1.739	2.6

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Calibration Date: 11/30/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
d4-1,2-Dichloroethane	AVRG	0.530	1.2
d8-Toluene	AVRG	1.133	1.9
4-Bromofluorobenzene	AVRG	0.518	2.4
d4-1,2-Dichlorobenzene	AVRG	0.919	2.0
Dibromofluoromethane	AVRG	0.507	1.8

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Cont. Calib. Date: 12/07/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0937

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Chloromethane	1.106	1.1667	0.100	AVRG	5.5	
Vinyl Chloride	0.962	1.0251	0.010	AVRG	6.6	
Bromomethane	0.341	0.4204	0.010	AVRG	23.3	<-
Chloroethane	0.420	0.5448	0.010	AVRG	29.7	<-
Trichlorofluoromethane	0.646	0.7833	0.010	AVRG	21.2	<-
Acrolein	0.081	0.0764	0.010	AVRG	-5.7	
112Trichloro122Trifluoroetha	0.568	0.6045	0.010	AVRG	6.4	
Acetone	0.144	0.1350	0.010	AVRG	-6.2	
1,1-Dichloroethene	0.600	0.5791	0.010	AVRG	-3.5	
Bromoethane	0.466	0.4797	0.010	AVRG	2.9	
Iodomethane	0.947	0.9883	0.010	AVRG	4.4	
Methylene Chloride	0.676	0.6786	0.010	AVRG	0.4	
Acrylonitrile	0.200	0.1870	0.010	AVRG	-6.5	
Carbon Disulfide	2.036	2.1339	0.010	AVRG	4.8	
Trans-1,2-Dichloroethene	0.677	0.6962	0.010	AVRG	2.8	
Vinyl Acetate	1.054	0.9008	0.010	AVRG	-14.5	
1,1-Dichloroethane	1.259	1.2787	0.100	AVRG	1.6	
2-Butanone	0.208	0.1775	0.010	AVRG	-14.7	
2,2-Dichloropropane	0.668	0.7900	0.010	AVRG	18.3	
Cis-1,2-Dichloroethene	0.694	0.7001	0.010	AVRG	0.9	
Chloroform	1.042	1.0457	0.010	AVRG	0.4	
Bromochloromethane	0.291	0.2842	0.010	AVRG	-2.3	
1,1,1-Trichloroethane	0.875	0.9047	0.010	AVRG	3.4	
1,1-Dichloropropene	0.567	0.5929	0.010	AVRG	4.6	
Carbon Tetrachloride	0.474	0.5310	0.010	AVRG	12.0	
1,2-Dichloroethane	0.433	0.4077	0.010	AVRG	-5.8	
Benzene	1.571	1.6095	0.010	AVRG	2.4	
Trichloroethene	0.390	0.3889	0.010	AVRG	-0.3	
1,2-Dichloropropane	0.377	0.3730	0.010	AVRG	-1.1	
Bromodichloromethane	0.397	0.4067	0.010	AVRG	2.4	
Dibromomethane	0.167	0.1594	0.010	AVRG	-4.6	
2-Chloroethyl Vinyl Ether	0.125	0.1114	0.010	AVRG	-10.9	
4-Methyl-2-Pentanone	0.104	0.1047	0.010	AVRG	0.7	
Cis 1,3-dichloropropene	0.449	0.4450	0.010	AVRG	-0.9	
Toluene	0.845	0.8502	0.010	AVRG	0.6	
Trans 1,3-Dichloropropene	0.347	0.3511	0.010	AVRG	1.2	
2-Hexanone	0.185	0.1675	0.010	AVRG	-9.4	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Cont. Calib. Date: 12/07/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0937

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,1,2-Trichloroethane	0.212	0.2001	0.010	AVRG	-5.6
1,3-Dichloropropane	0.446	0.3997	0.010	AVRG	-10.4
Tetrachloroethene	0.398	0.4040	0.010	AVRG	1.5
Chlorodibromomethane	0.275	0.2651	0.010	AVRG	-3.6
1,2-Dibromoethane	0.198	0.1901	0.010	AVRG	-4.0
Chlorobenzene	1.007	0.9763	0.300	AVRG	-3.0
Ethyl Benzene	0.557	0.5663	0.010	AVRG	1.7
1,1,1,2-Tetrachloroethane	0.377	0.4048	0.010	AVRG	7.4
m,p-xylene	0.678	0.7058	0.010	AVRG	4.1
o-Xylene	0.714	0.7657	0.010	AVRG	7.2
Styrene	1.003	1.0485	0.010	AVRG	4.5
Bromoform	0.261	0.2593	0.100	AVRG	-0.6
1,1,2,2-Tetrachloroethane	0.562	0.5272	0.300	AVRG	-6.2
1,2,3-Trichloropropane	0.167	0.1502	0.010	AVRG	-10.0
Trans-1,4-Dichloro 2-Butene	0.161	0.1497	0.010	AVRG	-7.0
N-Propyl Benzene	3.380	3.4542	0.010	AVRG	2.2
Bromobenzene	0.688	0.6504	0.010	AVRG	-5.5
Isopropyl Benzene	3.004	3.1623	0.010	AVRG	5.3
2-Chloro Toluene	2.413	2.4330	0.010	AVRG	0.8
4-Chloro Toluene	2.128	2.0829	0.010	AVRG	-2.1
T-Butyl Benzene	2.197	2.3478	0.010	AVRG	6.9
1,3,5-Trimethyl Benzene	2.527	2.7112	0.010	AVRG	7.3
1,2,4-Trimethylbenzene	2.551	2.7326	0.010	AVRG	7.1
S-Butyl Benzene	3.289	3.5209	0.010	AVRG	7.0
4-Isopropyl Toluene	2.701	2.9553	0.010	AVRG	9.4
1,3-Dichlorobenzene	1.452	1.4362	0.010	AVRG	-1.1
1,4-Dichlorobenzene	1.494	1.4568	0.010	AVRG	-2.5
N-Butyl Benzene	2.495	2.7210	0.010	AVRG	9.0
1,2-Dichlorobenzene	1.436	1.4138	0.010	AVRG	-1.5
1,2-Dibromo 3-Chloropropane	0.096	0.1020	0.010	AVRG	6.2
1,2,4-Trichlorobenzene	1.015	1.1132	0.010	AVRG	9.7
Hexachloro 1,3-Butadiene	0.467	0.5326	0.010	AVRG	14.0
Naphthalene	1.981	2.0783	0.010	AVRG	4.9
1,2,3-Trichlorobenzene	0.842	0.9194	0.010	AVRG	9.2
Dichlorodifluoromethane	0.648	0.6913	0.010	AVRG	6.7
Methyl tert butyl ether	1.739	1.7283	0.010	AVRG	-0.6

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT2 Cont. Calib. Date: 12/07/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0937

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
d4-1,2-Dichloroethane	0.530	0.4967	0.010	AVRG	-6.3
d8-Toluene	1.133	1.1736	0.010	AVRG	3.6
4-Bromofluorobenzene	0.518	0.5242	0.010	AVRG	1.2
d4-1,2-Dichlorobenzene	0.919	0.9316	0.010	AVRG	1.4
Dibromofluoromethane	0.507	0.5165	0.010	AVRG	1.9

<- Exceeds QC limit of 20% D
* RF less than minimum RF

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: TG

Instrument ID: NT2 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0916

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Chloromethane	1.106	1.1330	0.100	AVRG	2.4	
Vinyl Chloride	0.962	0.9905	0.010	AVRG	3.0	
Bromomethane	0.341	0.4139	0.010	AVRG	21.4	<-
Chloroethane	0.420	0.4857	0.010	AVRG	15.6	
Trichlorofluoromethane	0.646	0.8150	0.010	AVRG	26.2	<-
Acrolein	0.081	0.0618	0.010	AVRG	-23.7	<-
112Trichloro122Trifluoroetha	0.568	0.6301	0.010	AVRG	10.9	
Acetone	0.144	0.1329	0.010	AVRG	-7.7	
1,1-Dichloroethene	0.600	0.5896	0.010	AVRG	-1.7	
Bromoethane	0.466	0.4927	0.010	AVRG	5.7	
Iodomethane	0.947	1.0438	0.010	AVRG	10.2	
Methylene Chloride	0.676	0.6939	0.010	AVRG	2.6	
Acrylonitrile	0.200	0.1771	0.010	AVRG	-11.4	
Carbon Disulfide	2.036	2.1372	0.010	AVRG	5.0	
Trans-1,2-Dichloroethene	0.677	0.6941	0.010	AVRG	2.5	
Vinyl Acetate	1.054	0.8623	0.010	AVRG	-18.2	
1,1-Dichloroethane	1.259	1.2348	0.100	AVRG	-1.9	
2-Butanone	0.208	0.1803	0.010	AVRG	-13.3	
2,2-Dichloropropane	0.668	0.7845	0.010	AVRG	17.4	
Cis-1,2-Dichloroethene	0.694	0.6900	0.010	AVRG	-0.6	
Chloroform	1.042	1.0610	0.010	AVRG	1.8	
Bromochloromethane	0.291	0.2972	0.010	AVRG	2.1	
1,1,1-Trichloroethane	0.875	0.9349	0.010	AVRG	6.8	
1,1-Dichloropropene	0.567	0.5649	0.010	AVRG	-0.4	
Carbon Tetrachloride	0.474	0.5311	0.010	AVRG	12.0	
1,2-Dichloroethane	0.433	0.3912	0.010	AVRG	-9.6	
Benzene	1.571	1.5884	0.010	AVRG	1.1	
Trichloroethene	0.390	0.4027	0.010	AVRG	3.2	
1,2-Dichloropropane	0.377	0.3638	0.010	AVRG	-3.5	
Bromodichloromethane	0.397	0.4087	0.010	AVRG	2.9	
Dibromomethane	0.167	0.1593	0.010	AVRG	-4.6	
2-Chloroethyl Vinyl Ether	0.125	0.1127	0.010	AVRG	-9.8	
4-Methyl-2-Pentanone	0.104	0.0987	0.010	AVRG	-5.1	
Cis 1,3-dichloropropene	0.449	0.4495	0.010	AVRG	0.1	
Toluene	0.845	0.8584	0.010	AVRG	1.6	
Trans 1,3-Dichloropropene	0.347	0.3538	0.010	AVRG	2.0	
2-Hexanone	0.185	0.1578	0.010	AVRG	-14.7	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: TG

Instrument ID: NT2 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0916

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
1,1,2-Trichloroethane	0.212	0.2045	0.010	AVRG	-3.5	
1,3-Dichloropropane	0.446	0.3917	0.010	AVRG	-12.2	
Tetrachloroethene	0.398	0.4257	0.010	AVRG	7.0	
Chlorodibromomethane	0.275	0.2587	0.010	AVRG	-5.9	
1,2-Dibromoethane	0.198	0.1887	0.010	AVRG	-4.7	
Chlorobenzene	1.007	0.9819	0.300	AVRG	-2.5	
Ethyl Benzene	0.557	0.5737	0.010	AVRG	3.0	
1,1,1,2-Tetrachloroethane	0.377	0.4074	0.010	AVRG	8.1	
m,p-xylene	0.678	0.7034	0.010	AVRG	3.7	
o-Xylene	0.714	0.7507	0.010	AVRG	5.1	
Styrene	1.003	1.0479	0.010	AVRG	4.5	
Bromoform	0.261	0.2434	0.100	AVRG	-6.7	
1,1,2,2-Tetrachloroethane	0.562	0.4897	0.300	AVRG	-12.9	
1,2,3-Trichloropropane	0.167	0.1485	0.010	AVRG	-11.1	
Trans-1,4-Dichloro 2-Butene	0.161	0.1251	0.010	AVRG	-22.3	<-
N-Propyl Benzene	3.380	3.3048	0.010	AVRG	-2.2	
Bromobenzene	0.688	0.6451	0.010	AVRG	-6.2	
Isopropyl Benzene	3.004	3.0237	0.010	AVRG	0.6	
2-Chloro Toluene	2.413	2.3228	0.010	AVRG	-3.7	
4-Chloro Toluene	2.128	2.0215	0.010	AVRG	-5.0	
T-Butyl Benzene	2.197	2.2436	0.010	AVRG	2.1	
1,3,5-Trimethyl Benzene	2.527	2.5861	0.010	AVRG	2.3	
1,2,4-Trimethylbenzene	2.551	2.5863	0.010	AVRG	1.4	
S-Butyl Benzene	3.289	3.3577	0.010	AVRG	2.1	
4-Isopropyl Toluene	2.701	2.8332	0.010	AVRG	4.9	
1,3-Dichlorobenzene	1.452	1.4340	0.010	AVRG	-1.2	
1,4-Dichlorobenzene	1.494	1.4362	0.010	AVRG	-3.9	
N-Butyl Benzene	2.495	2.5832	0.010	AVRG	3.5	
1,2-Dichlorobenzene	1.436	1.3885	0.010	AVRG	-3.3	
1,2-Dibromo 3-Chloropropane	0.096	0.0764	0.010	AVRG	-20.4	<-
1,2,4-Trichlorobenzene	1.015	1.0185	0.010	AVRG	0.3	
Hexachloro 1,3-Butadiene	0.467	0.5454	0.010	AVRG	16.8	
Naphthalene	1.981	1.6207	0.010	AVRG	-18.2	
1,2,3-Trichlorobenzene	0.842	0.7747	0.010	AVRG	-8.0	
Dichlorodifluoromethane	0.648	0.6936	0.010	AVRG	7.0	
Methyl tert butyl ether	1.739	1.6856	0.010	AVRG	-3.1	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: TG

Instrument ID: NT2 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0916

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
d4-1,2-Dichloroethane	0.530	0.4850	0.010	AVRG	-8.5
d8-Toluene	1.133	1.1525	0.010	AVRG	1.7
4-Bromofluorobenzene	0.518	0.5241	0.010	AVRG	1.2
d4-1,2-Dichlorobenzene	0.919	0.9227	0.010	AVRG	0.4
Dibromofluoromethane	0.507	0.5131	0.010	AVRG	1.2

<- Exceeds QC limit of 20% D
* RF less than minimum RF

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 11/30/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	191537	5.45	299924	5.85	260183	7.93
	UPPER LIMIT	383074	5.95	599848	6.35	520366	8.43
	LOWER LIMIT	95768	4.95	149962	5.35	130092	7.43
	Sample ID						
01	ICV10	190629	5.45	298605	5.85	249704	7.92
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 11/30/11

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	164199	9.62				
	UPPER LIMIT	328398	10.12				
	LOWER LIMIT	82100	9.12				
	Sample ID						
01	ICV10	160253	9.62				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 12/07/11

		IS1(PFB) AREA	#	RT	#	IS2(DFB) AREA	#	RT	#	IS3(CLB) AREA	#	RT	#
	ICAL MIDPT	191537		5.45		299924		5.85		260183		7.93	
	UPPER LIMIT	383074		5.95		599848		6.35		520366		8.43	
	LOWER LIMIT	95768		4.95		149962		5.35		130092		7.43	
	Sample ID												
01	LCS1207	179581		5.45		272304		5.85		241972		7.92	
02	LCS1207	176162		5.45		261730		5.85		223977		7.93	
03	MB1207	180566		5.45		270520		5.85		242033		7.92	
04	MW-28S-12021	164099		5.45		236526		5.84		204951		7.92	
05	MW-29S-12021	167668		5.45		256232		5.85		226813		7.92	
06	DUP-120211-2	169312		5.45		258270		5.85		225742		7.92	
07	TB-120211-1	175300		5.45		265151		5.85		233458		7.92	
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 12/07/11

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	164199	9.62				
	UPPER LIMIT	328398	10.12				
	LOWER LIMIT	82100	9.12				
	Sample ID						
01	LCS1207	158886	9.62				
02	LCS1207	153941	9.62				
03	MB1207	167133	9.62				
04	MW-28S-12021	148756	9.62				
05	MW-29S-12021	154351	9.62				
06	DUP-120211-2	155328	9.62				
07	TB-120211-1	156467	9.62				
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: TG

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 12/12/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	191537	5.45	299924	5.85	260183	7.93
	UPPER LIMIT	383074	5.95	599848	6.35	520366	8.43
	LOWER LIMIT	95768	4.95	149962	5.35	130092	7.43
	Sample ID						
01	LCS1212	146341	5.45	225497	5.85	205976	7.92
02	LCS1212	140812	5.45	222890	5.85	206101	7.92
03	MB1212	146022	5.45	222749	5.85	208486	7.92
04	MW-30S-12051	133307	5.45	204769	5.85	183479	7.92
05	MW-31S-12051	131712	5.45	199882	5.85	178014	7.93
06	MW-31S-12051	135780	5.45	212142	5.85	195473	7.92
07	MW-31S-12051	147678	5.45	233945	5.85	220880	7.93
08	FB-120511-1	139101	5.45	218095	5.85	202016	7.93
09	TB-120511-1	148065	5.45	233725	5.85	216788	7.93
10	MW-16-120611	145721	5.45	228915	5.85	213124	7.93
11	TB-120611-1	133866	5.45	205438	5.85	188360	7.92
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: TG

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 12/12/11

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	164199	9.62				
	UPPER LIMIT	328398	10.12				
	LOWER LIMIT	82100	9.12				
	Sample ID						
01	LCS1212	139017	9.62				
02	LCS1212	138354	9.62				
03	MB1212	140301	9.62				
04	MW-30S-12051	129470	9.62				
05	MW-31S-12051	128045	9.62				
06	MW-31S-12051	132605	9.62				
07	MW-31S-12051	141274	9.62				
08	FB-120511-1	134341	9.62				
09	TB-120511-1	141921	9.62				
10	MW-16-120611	140221	9.62				
11	TB-120611-1	131321	9.62				
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

Semivolatile Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-28S-120211
SAMPLE

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 16:27
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-28S-120211
SAMPLE

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Date Analyzed: 12/14/11 16:27

QC Report No: TZ84-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	50.8%	2-Fluorobiphenyl	49.2%
d14-p-Terphenyl	90.4%	d4-1,2-Dichlorobenzene	43.6%
d5-Phenol	49.1%	2-Fluorophenol	48.8%
2,4,6-Tribromophenol	86.1%	d4-2-Chlorophenol	53.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-29S-120211
SAMPLE

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 17:00
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-29S-120211
SAMPLE

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Date Analyzed: 12/14/11 17:00

QC Report No: TZ84-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	58.4%	2-Fluorobiphenyl	59.2%
d14-p-Terphenyl	85.6%	d4-1,2-Dichlorobenzene	56.4%
d5-Phenol	59.2%	2-Fluorophenol	56.5%
2,4,6-Tribromophenol	92.3%	d4-2-Chlorophenol	60.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: DUP-120211-3
SAMPLE

Lab Sample ID: TZ84C
LIMS ID: 11-27873
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 17:33
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: DUP-120211-3
SAMPLE

Lab Sample ID: TZ84C
LIMS ID: 11-27873
Matrix: Water
Date Analyzed: 12/14/11 17:33

QC Report No: TZ84-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	60.4%	2-Fluorobiphenyl	63.6%
d14-p-Terphenyl	96.8%	d4-1,2-Dichlorobenzene	54.8%
d5-Phenol	64.3%	2-Fluorophenol	59.5%
2,4,6-Tribromophenol	102%	d4-2-Chlorophenol	62.7%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ84-ERM-West
Project: RG
128296.07

Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT OUT
MB-120811	83.2%	73.2%	98.8%	68.8%	82.9%	77.9%	86.9%	84.5%	0
LCS-120811	75.2%	76.4%	106%	64.0%	79.2%	73.1%	109%	78.9%	0
MW-28S-120211	50.8%	49.2%	90.4%	43.6%	49.1%	48.8%	86.1%	53.1%	0
MW-29S-120211	58.4%	59.2%	85.6%	56.4%	59.2%	56.5%	92.3%	60.0%	0
DUP-120211-3	60.4%	63.6%	96.8%	54.8%	64.3%	59.5%	102%	62.7%	0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(46-100)	(39-100)
(FBP) = 2-Fluorobiphenyl	(49-100)	(42-100)
(TPH) = d14-p-Terphenyl	(53-119)	(26-114)
(DCB) = d4-1,2-Dichlorobenzene	(38-100)	(32-100)
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27871 to 11-27873

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-30S-120511
SAMPLE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 18:06
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**1.0**	**2.1**
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-30S-120511
SAMPLE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Date Analyzed: 12/14/11 18:06

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	**Phenanthrene**	**1.0**	**0.7 J**
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	72.0%	2-Fluorobiphenyl	68.4%
d14-p-Terphenyl	92.8%	d4-1,2-Dichlorobenzene	68.4%
d5-Phenol	77.3%	2-Fluorophenol	69.3%
2,4,6-Tribromophenol	109%	d4-2-Chlorophenol	75.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 2

Sample ID: MW-31S-120511
SAMPLE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized: B
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 19:45
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**1.0**	**1.1**
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-31S-120511
SAMPLE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Date Analyzed: 12/14/11 19:45

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	43.6%	2-Fluorobiphenyl	45.6%
d14-p-Terphenyl	90.8%	d4-1,2-Dichlorobenzene	40.8%
d5-Phenol	44.3%	2-Fluorophenol	42.1%
2,4,6-Tribromophenol	86.7%	d4-2-Chlorophenol	45.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-33S-120511
SAMPLE

Lab Sample ID: TZ97C
LIMS ID: 11-27940
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 20:18
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**1.0**	**2.3**
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-33S-120511**
 SAMPLE

Lab Sample ID: TZ97C QC Report No: TZ97-ERM-West
LIMS ID: 11-27940 Project: RG
Matrix: Water 128296.07
Date Analyzed: 12/14/11 20:18

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**1.0**	**2.4 B**
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	55.6%	2-Fluorobiphenyl	58.4%
d14-p-Terphenyl	78.8%	d4-1,2-Dichlorobenzene	55.6%
d5-Phenol	58.9%	2-Fluorophenol	55.2%
2,4,6-Tribromophenol	97.6%	d4-2-Chlorophenol	59.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: DUP-120511-3
SAMPLE

Lab Sample ID: TZ97H
LIMS ID: 11-27945
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 20:51
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**1.0**	**2.0**
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: DUP-120511-3
SAMPLE

Lab Sample ID: TZ97H
LIMS ID: 11-27945
Matrix: Water
Date Analyzed: 12/14/11 20:51

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**1.0**	**1.4 B**
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	45.2%	2-Fluorobiphenyl	44.4%
d14-p-Terphenyl	65.6%	d4-1,2-Dichlorobenzene	44.0%
d5-Phenol	46.1%	2-Fluorophenol	44.3%
2,4,6-Tribromophenol	86.9%	d4-2-Chlorophenol	48.0%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ97-ERM-West
Project: RG
128296.07

Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT OUT
MB-120811	83.2%	73.2%	98.8%	68.8%	82.9%	77.9%	86.9%	84.5%	0
LCS-120811	75.2%	76.4%	106%	64.0%	79.2%	73.1%	109%	78.9%	0
MW-30S-120511	72.0%	68.4%	92.8%	68.4%	77.3%	69.3%	109%	75.2%	0
MW-30S-120511 MS	49.2%	65.2%	105%	40.8%	54.1%	45.3%	112%	50.4%	0
MW-30S-120511 MSD	52.0%	68.0%	103%	47.6%	54.9%	50.9%	112%	56.8%	0
MW-31S-120511	43.6%	45.6%	90.8%	40.8%	44.3%	42.1%	86.7%	45.6%	0
MW-33S-120511	55.6%	58.4%	78.8%	55.6%	58.9%	55.2%	97.6%	59.2%	0
DUP-120511-3	45.2%	44.4%	65.6%	44.0%	46.1%	44.3%	86.9%	48.0%	0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(46-100)	(39-100)
(FBP) = 2-Fluorobiphenyl	(49-100)	(42-100)
(TPH) = d14-p-Terphenyl	(53-119)	(26-114)
(DCB) = d4-1,2-Dichlorobenzene	(38-100)	(32-100)
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27938 to 11-27945

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-30S-120511
MS/MSD

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted MS/MSD: 12/08/11

Date Analyzed MS: 12/14/11 18:39
MSD: 12/14/11 19:12
Instrument/Analyst MS: NT6/JZ
MSD: NT6/JZ
GPC Cleanup: NO

Sample Amount MS: 500 mL
MSD: 500 mL
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS		Spike Added-MS	MS Recovery	MSD		Spike Added-MSD	MSD Recovery	RPD
Phenol	2.1	18.3		25.0	64.8%	18.5		25.0	65.6%	1.1%
Bis-(2-Chloroethyl) Ether	< 1.0 U	14.4		25.0	57.6%	16.0		25.0	64.0%	10.5%
2-Chlorophenol	< 1.0 U	14.5		25.0	58.0%	16.1		25.0	64.4%	10.5%
1,3-Dichlorobenzene	< 1.0 U	10.2		25.0	40.8%	11.8		25.0	47.2%	14.5%
1,4-Dichlorobenzene	< 1.0 U	10.7		25.0	42.8%	12.3		25.0	49.2%	13.9%
Benzyl Alcohol	< 5.0 U	19.9		25.0	79.6%	20.1		25.0	80.4%	1.0%
1,2-Dichlorobenzene	< 1.0 U	11.2		25.0	44.8%	12.7		25.0	50.8%	12.6%
2-Methylphenol	< 1.0 U	16.6		25.0	66.4%	17.0		25.0	68.0%	2.4%
2,2'-Oxybis(1-Chloropropane)	< 1.0 U	14.1		25.0	56.4%	15.5		25.0	62.0%	9.5%
4-Methylphenol	< 1.0 U	37.7		50.0	75.4%	37.8		50.0	75.6%	0.3%
N-Nitroso-Di-N-Propylamine	< 1.0 U	18.6		25.0	74.4%	19.0		25.0	76.0%	2.1%
Hexachloroethane	< 1.0 U	9.0		25.0	36.0%	10.2		25.0	40.8%	12.5%
Nitrobenzene	< 1.0 U	18.1		25.0	72.4%	18.6		25.0	74.4%	2.7%
Isophorone	< 1.0 U	22.8		25.0	91.2%	22.8		25.0	91.2%	0.0%
2-Nitrophenol	< 5.0 U	16.4		25.0	65.6%	16.8		25.0	67.2%	2.4%
2,4-Dimethylphenol	< 1.0 U	48.8		75.0	65.1%	50.2		75.0	66.9%	2.8%
Benzoic Acid	< 10.0 U	146		138	106%	147		138	107%	0.7%
bis(2-Chloroethoxy) Methane	< 1.0 U	16.5		25.0	66.0%	16.1		25.0	64.4%	2.5%
2,4-Dichlorophenol	< 5.0 U	51.2		75.0	68.3%	51.6		75.0	68.8%	0.8%
1,2,4-Trichlorobenzene	< 1.0 U	10.8		25.0	43.2%	11.9		25.0	47.6%	9.7%
Naphthalene	< 1.0 U	14.4		25.0	57.6%	15.2		25.0	60.8%	5.4%
4-Chloroaniline	< 5.0 U	43.7		75.0	58.3%	41.1		75.0	54.8%	6.1%
Hexachlorobutadiene	< 1.0 U	9.8		25.0	39.2%	10.3		25.0	41.2%	5.0%
4-Chloro-3-methylphenol	< 5.0 U	72.5		75.0	96.7%	71.3		75.0	95.1%	1.7%
2-Methylnaphthalene	< 1.0 U	17.3		25.0	69.2%	17.4		25.0	69.6%	0.6%
Hexachlorocyclopentadiene	< 5.0 U	23.9		75.0	31.9%	27.2		75.0	36.3%	12.9%
2,4,6-Trichlorophenol	< 5.0 U	69.6		75.0	92.8%	70.8		75.0	94.4%	1.7%
2,4,5-Trichlorophenol	< 5.0 U	72.3		75.0	96.4%	73.9		75.0	98.5%	2.2%
2-Chloronaphthalene	< 1.0 U	19.2		25.0	76.8%	19.6		25.0	78.4%	2.1%
2-Nitroaniline	< 5.0 U	62.4		75.0	83.2%	67.6		75.0	90.1%	8.0%
Dimethylphthalate	< 1.0 U	27.1		25.0	108%	27.2		25.0	109%	0.4%
Acenaphthylene	< 1.0 U	23.0		25.0	92.0%	23.7		25.0	94.8%	3.0%
3-Nitroaniline	< 5.0 U	69.8		75.0	93.1%	71.7		75.0	95.6%	2.7%
Acenaphthene	< 1.0 U	23.2		25.0	92.8%	23.7		25.0	94.8%	2.1%
2,4-Dinitrophenol	< 10.0 U	127		138	92.0%	131		138	94.9%	3.1%
4-Nitrophenol	< 5.0 U	99.4	Q	75.0	133%	95.9	Q	75.0	128%	3.6%
Dibenzofuran	< 1.0 U	25.2		25.0	101%	25.4		25.0	102%	0.8%
2,6-Dinitrotoluene	< 5.0 U	74.2		75.0	98.9%	75.8		75.0	101%	2.1%
2,4-Dinitrotoluene	< 5.0 U	77.7		75.0	104%	77.7		75.0	104%	0.0%
Diethylphthalate	< 1.0 U	27.4		25.0	110%	27.1		25.0	108%	1.1%
4-Chlorophenyl-phenylether	< 1.0 U	24.5		25.0	98.0%	24.8		25.0	99.2%	1.2%
Fluorene	< 1.0 U	25.7		25.0	103%	25.7		25.0	103%	0.0%
4-Nitroaniline	< 5.0 U	58.0		75.0	77.3%	63.5		75.0	84.7%	9.1%
4,6-Dinitro-2-Methylphenol	< 10.0 U	138		138	100%	141		138	102%	2.2%
N-Nitrosodiphenylamine	< 1.0 U	22.2		25.0	88.8%	22.0		25.0	88.0%	0.9%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample ID: MW-30S-120511
MS/MSD

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Date Analyzed: 12/14/11 18:39

QC Report No: TZ97-ERM-West
Project: RG
128296.07

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
4-Bromophenyl-phenylether	< 1.0 U	23.6	25.0	94.4%	23.6	25.0	94.4%	0.0%
Hexachlorobenzene	< 1.0 U	24.1	25.0	96.4%	24.0	25.0	96.0%	0.4%
Pentachlorophenol	< 5.0 U	85.1	75.0	113%	86.2	75.0	115%	1.3%
Phenanthrene	0.7 J	25.7	25.0	100%	25.7	25.0	100%	0.0%
Carbazole	< 1.0 U	24.6	25.0	98.4%	24.7	25.0	98.8%	0.4%
Anthracene	< 1.0 U	23.2	25.0	92.8%	23.7	25.0	94.8%	2.1%
Di-n-Butylphthalate	< 1.0 U	26.5	25.0	106%	26.4	25.0	106%	0.4%
Fluoranthene	< 1.0 U	26.5	25.0	106%	26.5	25.0	106%	0.0%
Pyrene	< 1.0 U	31.1	25.0	124%	30.0	25.0	120%	3.6%
Butylbenzylphthalate	< 1.0 U	29.9 Q	25.0	120%	29.6 Q	25.0	118%	1.0%
3,3'-Dichlorobenzidine	< 5.0 U	7.5	75.0	10.0%	13.3	75.0	17.7%	55.8%
Benzo(a)anthracene	< 1.0 U	27.3	25.0	109%	27.6	25.0	110%	1.1%
bis(2-Ethylhexyl)phthalate	< 1.0 U	28.2 B	25.0	113%	27.5 B	25.0	110%	2.5%
Chrysene	< 1.0 U	25.3	25.0	101%	25.8	25.0	103%	2.0%
Di-n-Octyl phthalate	< 1.0 U	22.9	25.0	91.6%	23.2	25.0	92.8%	1.3%
Benzo(a)pyrene	< 1.0 U	23.8	25.0	95.2%	24.7	25.0	98.8%	3.7%
Indeno(1,2,3-cd)pyrene	< 1.0 U	25.3	25.0	101%	27.0	25.0	108%	6.5%
Dibenz(a,h)anthracene	< 1.0 U	25.9	25.0	104%	26.8	25.0	107%	3.4%
Benzo(g,h,i)perylene	< 1.0 U	29.2	25.0	117%	27.1	25.0	108%	7.5%
2,3,4,6-Tetrachlorophenol	< 1.0 U	32.3	25.0	129%	32.6	25.0	130%	0.9%
1-Methylnaphthalene	< 1.0 U	18.7	25.0	74.8%	18.8	25.0	75.2%	0.5%
Total Benzofluoranthenes	< 1.0	55.3	50.0	111%	54.2	50.0	108%	2.0%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-30S-120511
MATRIX SPIKE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 18:39
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	---
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	---
95-57-8	2-Chlorophenol	1.0	---
541-73-1	1,3-Dichlorobenzene	1.0	---
106-46-7	1,4-Dichlorobenzene	1.0	---
100-51-6	Benzyl Alcohol	5.0	---
95-50-1	1,2-Dichlorobenzene	1.0	---
95-48-7	2-Methylphenol	1.0	---
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	---
106-44-5	4-Methylphenol	1.0	---
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	---
67-72-1	Hexachloroethane	1.0	---
98-95-3	Nitrobenzene	1.0	---
78-59-1	Isophorone	1.0	---
88-75-5	2-Nitrophenol	5.0	---
105-67-9	2,4-Dimethylphenol	1.0	---
65-85-0	Benzoic Acid	10	---
111-91-1	bis(2-Chloroethoxy) Methane	1.0	---
120-83-2	2,4-Dichlorophenol	5.0	---
120-82-1	1,2,4-Trichlorobenzene	1.0	---
91-20-3	Naphthalene	1.0	---
106-47-8	4-Chloroaniline	5.0	---
87-68-3	Hexachlorobutadiene	1.0	---
59-50-7	4-Chloro-3-methylphenol	5.0	---
91-57-6	2-Methylnaphthalene	1.0	---
77-47-4	Hexachlorocyclopentadiene	5.0	---
88-06-2	2,4,6-Trichlorophenol	5.0	---
95-95-4	2,4,5-Trichlorophenol	5.0	---
91-58-7	2-Chloronaphthalene	1.0	---
88-74-4	2-Nitroaniline	5.0	---
131-11-3	Dimethylphthalate	1.0	---
208-96-8	Acenaphthylene	1.0	---
99-09-2	3-Nitroaniline	5.0	---
83-32-9	Acenaphthene	1.0	---
51-28-5	2,4-Dinitrophenol	10	---
100-02-7	4-Nitrophenol	5.0	---
132-64-9	Dibenzofuran	1.0	---
606-20-2	2,6-Dinitrotoluene	5.0	---
121-14-2	2,4-Dinitrotoluene	5.0	---
84-66-2	Diethylphthalate	1.0	---

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-30S-120511
MATRIX SPIKE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Date Analyzed: 12/14/11 18:39

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	---
86-73-7	Fluorene	1.0	---
100-01-6	4-Nitroaniline	5.0	---
534-52-1	4,6-Dinitro-2-Methylphenol	10	---
86-30-6	N-Nitrosodiphenylamine	1.0	---
101-55-3	4-Bromophenyl-phenylether	1.0	---
118-74-1	Hexachlorobenzene	1.0	---
87-86-5	Pentachlorophenol	5.0	---
85-01-8	Phenanthrene	1.0	---
86-74-8	Carbazole	1.0	---
120-12-7	Anthracene	1.0	---
84-74-2	Di-n-Butylphthalate	1.0	---
206-44-0	Fluoranthene	1.0	---
129-00-0	Pyrene	1.0	---
85-68-7	Butylbenzylphthalate	1.0	---
91-94-1	3,3'-Dichlorobenzidine	5.0	---
56-55-3	Benzo(a)anthracene	1.0	---
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	---
218-01-9	Chrysene	1.0	---
117-84-0	Di-n-Octyl phthalate	1.0	---
50-32-8	Benzo(a)pyrene	1.0	---
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	---
53-70-3	Dibenz(a,h)anthracene	1.0	---
191-24-2	Benzo(g,h,i)perylene	1.0	---
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	---
90-12-0	1-Methylnaphthalene	1.0	---
TOTBFA	Total Benzofluoranthenes	1.0	---

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	49.2%	2-Fluorobiphenyl	65.2%
d14-p-Terphenyl	105%	d4-1,2-Dichlorobenzene	40.8%
d5-Phenol	54.1%	2-Fluorophenol	45.3%
2,4,6-Tribromophenol	112%	d4-2-Chlorophenol	50.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-30S-120511
MATRIX SPIKE DUP

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 19:12
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	---
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	---
95-57-8	2-Chlorophenol	1.0	---
541-73-1	1,3-Dichlorobenzene	1.0	---
106-46-7	1,4-Dichlorobenzene	1.0	---
100-51-6	Benzyl Alcohol	5.0	---
95-50-1	1,2-Dichlorobenzene	1.0	---
95-48-7	2-Methylphenol	1.0	---
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	---
106-44-5	4-Methylphenol	1.0	---
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	---
67-72-1	Hexachloroethane	1.0	---
98-95-3	Nitrobenzene	1.0	---
78-59-1	Isophorone	1.0	---
88-75-5	2-Nitrophenol	5.0	---
105-67-9	2,4-Dimethylphenol	1.0	---
65-85-0	Benzoic Acid	10	---
111-91-1	bis(2-Chloroethoxy) Methane	1.0	---
120-83-2	2,4-Dichlorophenol	5.0	---
120-82-1	1,2,4-Trichlorobenzene	1.0	---
91-20-3	Naphthalene	1.0	---
106-47-8	4-Chloroaniline	5.0	---
87-68-3	Hexachlorobutadiene	1.0	---
59-50-7	4-Chloro-3-methylphenol	5.0	---
91-57-6	2-Methylnaphthalene	1.0	---
77-47-4	Hexachlorocyclopentadiene	5.0	---
88-06-2	2,4,6-Trichlorophenol	5.0	---
95-95-4	2,4,5-Trichlorophenol	5.0	---
91-58-7	2-Chloronaphthalene	1.0	---
88-74-4	2-Nitroaniline	5.0	---
131-11-3	Dimethylphthalate	1.0	---
208-96-8	Acenaphthylene	1.0	---
99-09-2	3-Nitroaniline	5.0	---
83-32-9	Acenaphthene	1.0	---
51-28-5	2,4-Dinitrophenol	10	---
100-02-7	4-Nitrophenol	5.0	---
132-64-9	Dibenzofuran	1.0	---
606-20-2	2,6-Dinitrotoluene	5.0	---
121-14-2	2,4-Dinitrotoluene	5.0	---
84-66-2	Diethylphthalate	1.0	---

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-30S-120511
MATRIX SPIKE DUP

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Date Analyzed: 12/14/11 19:12

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	---
86-73-7	Fluorene	1.0	---
100-01-6	4-Nitroaniline	5.0	---
534-52-1	4,6-Dinitro-2-Methylphenol	10	---
86-30-6	N-Nitrosodiphenylamine	1.0	---
101-55-3	4-Bromophenyl-phenylether	1.0	---
118-74-1	Hexachlorobenzene	1.0	---
87-86-5	Pentachlorophenol	5.0	---
85-01-8	Phenanthrene	1.0	---
86-74-8	Carbazole	1.0	---
120-12-7	Anthracene	1.0	---
84-74-2	Di-n-Butylphthalate	1.0	---
206-44-0	Fluoranthene	1.0	---
129-00-0	Pyrene	1.0	---
85-68-7	Butylbenzylphthalate	1.0	---
91-94-1	3,3'-Dichlorobenzidine	5.0	---
56-55-3	Benzo(a)anthracene	1.0	---
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	---
218-01-9	Chrysene	1.0	---
117-84-0	Di-n-Octyl phthalate	1.0	---
50-32-8	Benzo(a)pyrene	1.0	---
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	---
53-70-3	Dibenz(a,h)anthracene	1.0	---
191-24-2	Benzo(g,h,i)perylene	1.0	---
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	---
90-12-0	1-Methylnaphthalene	1.0	---
TOTBFA	Total Benzofluoranthenes	1.0	---

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	52.0%	2-Fluorobiphenyl	68.0%
d14-p-Terphenyl	103%	d4-1,2-Dichlorobenzene	47.6%
d5-Phenol	54.9%	2-Fluorophenol	50.9%
2,4,6-Tribromophenol	112%	d4-2-Chlorophenol	56.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: LCS-120811
LAB CONTROL

Lab Sample ID: LCS-120811
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 15:54
Instrument/Analyst: NT6/JZ
GPC Cleanup: NO

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

Analyte	Lab Control	Spike Added	Recovery
Phenol	23.1	25.0	92.4%
Bis-(2-Chloroethyl) Ether	22.0	25.0	88.0%
2-Chlorophenol	22.2	25.0	88.8%
1,3-Dichlorobenzene	14.6	25.0	58.4%
1,4-Dichlorobenzene	15.1	25.0	60.4%
Benzyl Alcohol	24.0	25.0	96.0%
1,2-Dichlorobenzene	15.5	25.0	62.0%
2-Methylphenol	22.1	25.0	88.4%
2,2'-Oxybis(1-Chloropropane)	21.8	25.0	87.2%
4-Methylphenol	45.0	50.0	90.0%
N-Nitroso-Di-N-Propylamine	22.3	25.0	89.2%
Hexachloroethane	12.8	25.0	51.2%
Nitrobenzene	22.2	25.0	88.8%
Isophorone	24.7	25.0	98.8%
2-Nitrophenol	22.6	25.0	90.4%
2,4-Dimethylphenol	47.7	75.0	63.6%
Benzoic Acid	123	138	89.1%
bis(2-Chloroethoxy) Methane	20.9	25.0	83.6%
2,4-Dichlorophenol	58.6	75.0	78.1%
1,2,4-Trichlorobenzene	15.4	25.0	61.6%
Naphthalene	19.6	25.0	78.4%
4-Chloroaniline	58.2	75.0	77.6%
Hexachlorobutadiene	13.9	25.0	55.6%
4-Chloro-3-methylphenol	68.1	75.0	90.8%
2-Methylnaphthalene	20.0	25.0	80.0%
Hexachlorocyclopentadiene	27.8	75.0	37.1%
2,4,6-Trichlorophenol	69.2	75.0	92.3%
2,4,5-Trichlorophenol	70.7	75.0	94.3%
2-Chloronaphthalene	21.3	25.0	85.2%
2-Nitroaniline	74.6	75.0	99.5%
Dimethylphthalate	26.6	25.0	106%
Acenaphthylene	23.6	25.0	94.4%
3-Nitroaniline	76.0	75.0	101%
Acenaphthene	23.3	25.0	93.2%
2,4-Dinitrophenol	120	138	87.0%
4-Nitrophenol	91.6 Q	75.0	122%
Dibenzofuran	24.9	25.0	99.6%
2,6-Dinitrotoluene	73.3	75.0	97.7%
2,4-Dinitrotoluene	74.1	75.0	98.8%
Diethylphthalate	26.4	25.0	106%
4-Chlorophenyl-phenylether	24.2	25.0	96.8%
Fluorene	24.7	25.0	98.8%
4-Nitroaniline	74.1	75.0	98.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: LCS-120811
LAB CONTROL

Lab Sample ID: LCS-120811
LIMS ID: 11-27938
Matrix: Water
Date Analyzed: 12/14/11 15:54

QC Report No: TZ97-ERM-West
Project: RG
128296.07

Analyte	Lab Control	Spike Added	Recovery
4,6-Dinitro-2-Methylphenol	135	138	97.8%
N-Nitrosodiphenylamine	20.0	25.0	80.0%
4-Bromophenyl-phenylether	23.7	25.0	94.8%
Hexachlorobenzene	23.8	25.0	95.2%
Pentachlorophenol	78.7	75.0	105%
Phenanthrene	24.7	25.0	98.8%
Carbazole	23.8	25.0	95.2%
Anthracene	23.5	25.0	94.0%
Di-n-Butylphthalate	26.0	25.0	104%
Fluoranthene	25.5	25.0	102%
Pyrene	29.6	25.0	118%
Butylbenzylphthalate	29.4 Q	25.0	118%
3,3'-Dichlorobenzidine	57.5	75.0	76.7%
Benzo(a)anthracene	27.1	25.0	108%
bis(2-Ethylhexyl)phthalate	27.1 B	25.0	108%
Chrysene	26.0	25.0	104%
Di-n-Octyl phthalate	22.6	25.0	90.4%
Benzo(a)pyrene	23.3	25.0	93.2%
Indeno(1,2,3-cd)pyrene	25.9	25.0	104%
Dibenz(a,h)anthracene	26.3	25.0	105%
Benzo(g,h,i)perylene	26.3	25.0	105%
2,3,4,6-Tetrachlorophenol	30.5	25.0	122%
1-Methylnaphthalene	20.8	25.0	83.2%
Total Benzofluoranthenes	52.3	50.0	105%

Semivolatile Surrogate Recovery

d5-Nitrobenzene	75.2%
2-Fluorobiphenyl	76.4%
d14-p-Terphenyl	106%
d4-1,2-Dichlorobenzene	64.0%
d5-Phenol	79.2%
2-Fluorophenol	73.1%
2,4,6-Tribromophenol	109%
d4-2-Chlorophenol	78.9%

Results reported in µg/L

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ84MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Lab File ID: 12141106 Date Extracted: 12/08/11

Instrument ID: NT6 Date Analyzed: 12/14/11

Matrix: LIQUID Time Analyzed: 1521

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ84LCSW1	TZ84LCSW1	12141107	12/14/11
02	MW-28S-120211	TZ84A	12141108	12/14/11
03	MW-29S-120211	TZ84B	12141109	12/14/11
04	DUP-120211-3	TZ84C	12141110	12/14/11
05	MW-30S-120511	TZ97A	12141111	12/14/11
06	MW-30S-120511 MS	TZ97AMS	12141112	12/14/11
07	MW-30S-120511 MS	TZ97AMSD	12141113	12/14/11
08	MW-31S-120511	TZ97B	12141114	12/14/11
09	MW-33S-120511	TZ97C	12141115	12/14/11
10	DUP-120511-3	TZ97H	12141116	12/14/11
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-120811
METHOD BLANK

Lab Sample ID: MB-120811
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/16/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Date Extracted: 12/08/11
Date Analyzed: 12/14/11 15:21
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-120811
METHOD BLANK

Lab Sample ID: MB-120811
LIMS ID: 11-27938
Matrix: Water
Date Analyzed: 12/14/11 15:21

QC Report No: TZ97-ERM-West
Project: RG
128296.07

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**1.0**	**0.9 J**
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	83.2%	2-Fluorobiphenyl	73.2%
d14-p-Terphenyl	98.8%	d4-1,2-Dichlorobenzene	68.8%
d5-Phenol	82.9%	2-Fluorophenol	77.9%
2,4,6-Tribromophenol	86.9%	d4-2-Chlorophenol	84.5%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 11/21/11 DFTPP Injection Time: 1033

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.9
68	Less than 2.0% of mass 69	0.3 (0.6)1
69	Mass 69 relative abundance	41.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	51.6
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	22.7
365	Greater than 1.0% of mass 198	2.28
441	0.0 - 24.0% of mass 442	11.1 (14.4)2
442	50.0 - 200.0% of mass 198	76.8
443	15.0 - 24.0% of mass 442	15.1 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC11121	IC11121	11211102	11/21/11	1124
02	IC51121	IC51121	11211103	11/21/11	1157
03	IC101121	IC101121	11211104	11/21/11	1230
04	IC401121	IC401121	11211105	11/21/11	1320
05	IC601121	IC601121	11211106	11/21/11	1353
06	IC801121	IC801121	11211107	11/21/11	1426
07	IC251121	IC250121	11211109	11/21/11	1737
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

TZ84:00127

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 12/14/11 DFTPP Injection Time: 1238

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	24.9
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	42.9
70	Less than 2.0% of mass 69	0.3 (0.6)1
127	10.0 - 80.0% of mass 198	50.9
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	23.0
365	Greater than 1.0% of mass 198	2.43
441	0.0 - 24.0% of mass 442	12.5 (14.6)2
442	50.0 - 200.0% of mass 198	86.0
443	15.0 - 24.0% of mass 442	16.9 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1214	CC1214	12141101	12/14/11	1238
02	TZ84MBW1	TZ84MBW1	12141106	12/14/11	1521
03	TZ84LCSW1	TZ84LCSW1	12141107	12/14/11	1554
04	MW-28S-120211	TZ84A	12141108	12/14/11	1627
05	MW-29S-120211	TZ84B	12141109	12/14/11	1700
06	DUP-120211-3	TZ84C	12141110	12/14/11	1733
07	MW-30S-120511	TZ97A	12141111	12/14/11	1806
08	MW-30S-120511 MS	TZ97AMS	12141112	12/14/11	1839
09	MW-30S-120511 MS	TZ97AMSD	12141113	12/14/11	1912
10	MW-31S-120511	TZ97B	12141114	12/14/11	1945
11	MW-33S-120511	TZ97C	12141115	12/14/11	2018
12	DUP-120511-3	TZ97H	12141116	12/14/11	2051
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	RRF	%RSD /R^2
Phenol	2.046	1.795	1.782	1.677	1.628	1.542	1.504	1.710	10.8
Bis(2-Chloroethyl)ether	1.582	1.343	1.489	1.368	1.347	1.304	1.290	1.389	7.7
2-Chlorophenol	1.675	1.408	1.453	1.395	1.346	1.287	1.255	1.403	9.9
1,3-Dichlorobenzene	1.828	1.568	1.759	1.631	1.573	1.502	1.461	1.617	8.3
1,4-Dichlorobenzene	1.834	1.581	1.743	1.617	1.530	1.497	1.436	1.605	8.7
1,2-Dichlorobenzene	1.761	1.496	1.614	1.516	1.428	1.378	1.364	1.508	9.3
Benzyl alcohol	0.890	0.850	0.928	0.863	0.829	0.822	0.831	0.859	4.5
2,2'-oxybis(1-Chloropropane)	1.340	1.123	1.212	1.115	1.072	1.030	0.993	1.126	10.4
2-Methylphenol	1.488	1.327	1.302	1.250	1.219	1.168	1.100	1.265	9.9
Hexachloroethane	0.682	0.585	0.657	0.625	0.606	0.596	0.584	0.619	6.1
N-Nitroso-di-n-propylamine	1.090	0.950	1.005	0.927	0.882	0.878	0.837	0.938	9.2
4-Methylphenol	1.567	1.356	1.352	1.252	1.212	1.181	1.095	1.288	12.0
Nitrobenzene	0.441	0.378	0.428	0.396	0.379	0.363	0.354	0.391	8.3
Isophorone	0.652	0.568	0.635	0.584	0.563	0.567	0.545	0.588	6.8
2-Nitrophenol	0.190	0.181	0.192	0.198	0.192	0.190	0.187	0.190	2.7
2,4-Dimethylphenol	0.399	0.352	0.357	0.347	0.330	0.322	0.310	0.345	8.4
Bis(2-Chloroethoxy)methane	0.471	0.421	0.468	0.435	0.412	0.408	0.400	0.431	6.7
2,4-Dichlorophenol	0.318	0.293	0.300	0.296	0.280	0.273	0.261	0.289	6.6
1,2,4-Trichlorobenzene	0.368	0.310	0.347	0.325	0.307	0.303	0.296	0.322	8.2
Naphthalene	1.178	1.014	1.090	0.992	0.920	0.870	0.814	0.982	12.9
Benzoic acid		0.120	0.164	0.214	0.212	0.239	0.230	0.196	0.992
4-Chloroaniline	0.454	0.417	0.435	0.399	0.366	0.358	0.320	0.393	12.1
Hexachlorobutadiene	0.193	0.165	0.186	0.180	0.165	0.166	0.165	0.174	6.8
4-Chloro-3-methylphenol	0.307	0.288	0.282	0.275	0.262	0.271	0.248	0.276	6.8
2-Methylnaphthalene	0.621	0.531	0.563	0.518	0.478	0.481	0.446	0.520	11.4
Hexachlorocyclopentadiene	0.239	0.256	0.338	0.361	0.358	0.345	0.375	0.324	16.7
2,4,6-Trichlorophenol	0.320	0.312	0.346	0.351	0.343	0.341	0.340	0.336	4.3
2,4,5-Trichlorophenol	0.330	0.320	0.362	0.373	0.360	0.361	0.363	0.353	5.6
2-Chloronaphthalene	1.301	1.086	1.198	1.110	1.029	0.949	0.943	1.088	12.0
2-Nitroaniline	0.247	0.266	0.295	0.281	0.269	0.280	0.266	0.272	5.6
Acenaphthylene	1.786	1.610	1.787	1.664	1.561	1.492	1.445	1.621	8.3
Dimethylphthalate	1.323	1.124	1.212	1.122	1.057	1.097	1.064	1.143	8.3
2,6-Dinitrotoluene	0.234	0.248	0.279	0.271	0.255	0.272	0.262	0.260	6.0
Acenaphthene	1.213	1.012	1.098	1.035	0.964	0.951	0.924	1.028	9.8
3-Nitroaniline	0.293	0.280	0.292	0.270	0.248	0.227		0.268	9.8
2,4-Dinitrophenol		0.060	0.099	0.143	0.140	0.163	0.158	0.127	0.995
Dibenzofuran	1.704	1.471	1.541	1.419	1.315	1.298	1.204	1.422	11.9

<- Outside QC limits: %RSD <20% or R^2 > 0.990

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	RRF	%RSD /R^2
4-Nitrophenol	0.066	0.109	0.112	0.127	0.117	0.129	0.117	0.111	19.2
2,4-Dinitrotoluene	0.310	0.315	0.353	0.349	0.328	0.368	0.345	0.338	6.3
Fluorene	1.346	1.162	1.250	1.170	1.074	1.083	1.029	1.159	9.5
4-Chlorophenyl-phenylether	0.668	0.548	0.600	0.565	0.530	0.536	0.516	0.566	9.3
Diethylphthalate	1.263	1.088	1.145	1.067	0.990	1.031	0.971	1.079	9.3
4-Nitroaniline	0.240	0.268	0.269	0.271	0.242	0.279	0.246	0.259	6.2
4,6-Dinitro-2-methylphenol		0.104	0.123	0.142	0.140	0.142	0.145	0.133	12.0
N-Nitrosodiphenylamine (1)	0.697	0.598	0.658	0.597	0.589	0.554	0.568	0.609	8.4
4-Bromophenyl-phenylether	0.252	0.203	0.238	0.215	0.214	0.202	0.210	0.219	8.6
Hexachlorobenzene	0.264	0.220	0.248	0.228	0.223	0.210	0.217	0.230	8.3
Pentachlorophenol		0.079	0.110	0.117	0.122	0.129	0.130	0.114	16.5
Phenanthrene	1.306	1.096	1.165	1.076	1.017	0.962	0.947	1.081	11.6
Anthracene	1.262	1.117	1.215	1.126	1.059	0.993	0.984	1.108	9.5
Carbazole	1.122	1.038	1.095	1.047	0.963	0.951	0.916	1.019	7.6
Di-n-butylphthalate	1.220	1.155	1.248	1.218	1.118	1.088	1.056	1.158	6.4
Fluoranthene	1.098	1.046	1.090	1.062	0.972	0.968	0.951	1.027	6.0
Pyrene	1.517	1.207	1.344	1.210	1.183	1.116	1.090	1.238	11.9
Butylbenzylphthalate	0.485	0.496	0.567	0.559	0.549	0.542	0.534	0.533	5.8
Benzo(a)anthracene	1.044	0.938	1.042	0.994	0.966	0.922	0.913	0.974	5.6
3,3'-Dichlorobenzidine	0.322	0.334	0.357	0.341	0.320	0.286	0.277	0.320	9.1
Chrysene	1.162	0.950	1.057	1.012	0.969	0.934	0.929	1.002	8.4
bis(2-Ethylhexyl)phthalate	0.615	0.538	0.612	0.607	0.594	0.585	0.586	0.591	4.4
Di-n-octylphthalate	1.192	0.962	1.061	1.038	0.988	0.978	0.962	1.026	8.1
Benzo(b)fluoranthene	1.041	0.998	1.057	1.058	1.053	1.000	1.007	1.030	2.7
Benzo(k)fluoranthene	1.261	1.058	1.255	1.092	1.011	0.946	0.903	1.075	13.0
Benzo(a)pyrene	0.926	0.882	0.993	0.956	0.934	0.893	0.893	0.925	4.3
Indeno(1,2,3-cd)pyrene	1.249	1.102	1.325	1.269	1.241	1.177	1.231	1.228	5.8
Dibenzo(a,h)anthracene	1.016	0.916	1.088	1.064	1.018	0.965	0.998	1.009	5.7
Benzo(g,h,i)perylene	1.094	0.968	1.157	1.103	1.103	1.058	1.108	1.084	5.4
N-Nitrosodimethylamine	0.953	0.886	1.001	0.951	0.959	0.934	0.950	0.948	3.6
Aniline	2.291	2.084	2.213	2.022	1.955	1.884	1.752	2.029	9.2
Benzidine		0.092	0.176	0.217	0.248	0.239	0.252	0.204	0.992
Pyridine	1.564	1.631	1.863	1.811	1.771	1.760	1.742	1.734	6.0
1-methylnaphthalene	0.599	0.531	0.555	0.519	0.473	0.485	0.448	0.516	10.0
Azobenzene (1,2-DP-Hydrazine	1.372	1.231	1.322	1.242	1.151	1.159	1.096	1.225	8.0
2,3,4,6-Tetrachlorophenol	0.201	0.214	0.229	0.246	0.238	0.253	0.243	0.232	8.1
1,2,4,5-Tetrachlorobenzene	0.530	0.463	0.526	0.500	0.477	0.452	0.476	0.489	6.2

(1) Cannot be seperated from Diphenylamine

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-2

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
Total Benzofluoranthenes	1.094	0.982	1.099	1.022	0.985	0.921	0.898	1.000	7.8
2-Fluorophenol	1.558	1.439	1.559	1.465	1.394	1.361		1.463	5.6
Phenol-d5	2.012	1.839	1.911	1.729	1.669	1.638		1.800	8.1
2-Chlorophenol-d4	1.543	1.393	1.498	1.381	1.333	1.302		1.408	6.7
1,2-Dichlorobenzene-d4	1.124	0.997	1.030	0.944	0.890	0.858		0.974	10.0
Nitrobenzene-d5	0.414	0.396	0.436	0.417	0.408	0.402		0.412	3.3
2-Fluorobiphenyl	1.483	1.302	1.425	1.318	1.258	1.191		1.330	8.1
2,4,6-Tribromophenol	0.133	0.128	0.146	0.144	0.135	0.149		0.139	6.0
Terphenyl-d14	1.089	0.778	0.826	0.736	0.731	0.708		0.811	17.5

<- Outside QC limits: %RSD <20% or R^2 > 0.990

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/14/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1238

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.825	0.800	AVRG	6.7
Bis(2-Chloroethyl)ether	1.389	1.427	0.700	AVRG	2.7
2-Chlorophenol	1.403	1.456	0.800	AVRG	3.8
1,3-Dichlorobenzene	1.617	1.618	0.010	AVRG	0.1
1,4-Dichlorobenzene	1.605	1.602	0.010	AVRG	-0.2
1,2-Dichlorobenzene	1.508	1.490	0.010	AVRG	-1.2
Benzyl alcohol	0.859	0.921	0.010	AVRG	7.2
2,2'-oxybis(1-Chloropropane)	1.126	1.176	0.010	AVRG	4.4
2-Methylphenol	1.265	1.364	0.700	AVRG	7.8
Hexachloroethane	0.619	0.601	0.300	AVRG	-2.9
N-Nitroso-di-n-propylamine	0.938	1.068	0.500	AVRG	13.8
4-Methylphenol	1.288	1.407	0.600	AVRG	9.2
Nitrobenzene	0.391	0.403	0.200	AVRG	3.1
Isophorone	0.588	0.618	0.400	AVRG	5.1
2-Nitrophenol	0.190	0.201	0.100	AVRG	5.8
2,4-Dimethylphenol	0.345	0.355	0.200	AVRG	2.9
Bis(2-Chloroethoxy)methane	0.431	0.440	0.300	AVRG	2.1
2,4-Dichlorophenol	0.289	0.298	0.200	AVRG	3.1
1,2,4-Trichlorobenzene	0.322	0.320	0.010	AVRG	-0.6
Naphthalene	0.982	0.990	0.700	AVRG	0.8
Benzoic acid	50.00	42.10	0.010	LINR	-15.8
4-Chloroaniline	0.393	0.389	0.010	AVRG	-1.0
Hexachlorobutadiene	0.174	0.169	0.010	AVRG	-2.9
4-Chloro-3-methylphenol	0.276	0.303	0.200	AVRG	9.8
2-Methylnaphthalene	0.520	0.530	0.400	AVRG	1.9
Hexachlorocyclopentadiene	0.324	0.324	0.050	AVRG	0.0
2,4,6-Trichlorophenol	0.336	0.354	0.200	AVRG	5.4
2,4,5-Trichlorophenol	0.353	0.382	0.200	AVRG	8.2
2-Chloronaphthalene	1.088	1.072	0.800	AVRG	-1.5
2-Nitroaniline	0.272	0.297	0.010	AVRG	9.2
Acenaphthylene	1.621	1.712	0.900	AVRG	5.6
Dimethylphthalate	1.143	1.214	0.010	AVRG	6.2
2,6-Dinitrotoluene	0.260	0.296	0.200	AVRG	13.8
Acenaphthene	1.028	1.046	0.900	AVRG	1.8
3-Nitroaniline	0.268	0.279	0.010	AVRG	4.1
2,4-Dinitrophenol	50.00	40.17	0.010	2ORDR	-19.7
Dibenzofuran	1.422	1.478	0.800	AVRG	3.9

<- Exceeds QC limit of 20% D
* RF less than minimum RF

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/14/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1238

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.141	0.010	AVRG	27.0	<-
2,4-Dinitrotoluene	0.338	0.394	0.200	AVRG	16.6	
Fluorene	1.159	1.193	0.900	AVRG	2.9	
4-Chlorophenyl-phenylether	0.566	0.594	0.400	AVRG	4.9	
Diethylphthalate	1.079	1.157	0.010	AVRG	7.2	
4-Nitroaniline	0.259	0.280	0.010	AVRG	8.1	
4,6-Dinitro-2-methylphenol	0.133	0.125	0.010	AVRG	-6.0	
N-Nitrosodiphenylamine(1)	0.609	0.596	0.010	AVRG	-2.1	
4-Bromophenyl-phenylether	0.219	0.214	0.100	AVRG	-2.3	
Hexachlorobenzene	0.230	0.227	0.100	AVRG	-1.3	
Pentachlorophenol	0.114	0.105	0.050	AVRG	-7.9	
Phenanthrene	1.081	1.053	0.700	AVRG	-2.6	
Anthracene	1.108	1.099	0.700	AVRG	-0.8	
Carbazole	1.019	0.997	0.010	AVRG	-2.2	
Di-n-butylphthalate	1.158	1.224	0.010	AVRG	5.7	
Fluoranthene	1.027	1.048	0.600	AVRG	2.0	
Pyrene	1.238	1.387	0.600	AVRG	12.0	
Butylbenzylphthalate	0.533	0.642	0.010	AVRG	20.4	<-
Benzo(a)anthracene	0.974	1.051	0.800	AVRG	7.9	
3,3'-Dichlorobenzidine	0.320	0.348	0.010	AVRG	8.8	
Chrysene	1.002	1.012	0.700	AVRG	1.0	
bis(2-Ethylhexyl)phthalate	0.591	0.650	0.010	AVRG	10.0	
Di-n-octylphthalate	1.026	1.005	0.010	AVRG	-2.0	
Benzo(b)fluoranthene	1.030	1.171	0.700	AVRG	13.7	
Benzo(k)fluoranthene	1.075	1.061	0.700	AVRG	-1.3	
Benzo(a)pyrene	0.925	0.974	0.700	AVRG	5.3	
Indeno(1,2,3-cd)pyrene	1.228	1.270	0.500	AVRG	3.4	
Dibenzo(a,h)anthracene	1.009	1.064	0.400	AVRG	5.4	
Benzo(g,h,i)perylene	1.084	1.110	0.500	AVRG	2.4	
N-Nitrosodimethylamine	0.948	0.945	0.010	AVRG	-0.3	
Aniline	2.029	1.919	0.010	AVRG	-5.4	
Benzidine	25.00	19.28	0.010	LINR	-22.9	<- NTC
Pyridine	1.734	1.644	0.010	AVRG	-5.2	
1-methylnaphthalene	0.516	0.534	0.010	AVRG	3.5	
Azobenzene (1,2-DP-Hydrazine	1.225	1.308	0.010	AVRG	6.8	
2,3,4,6-Tetrachlorophenol	0.232	0.269	0.010	AVRG	15.9	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

12/14/11

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/14/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1238

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489		0.010	AVRG	
Total Benzofluoranthenes	1.000	1.052	0.010	AVRG	5.2
2-Fluorophenol	1.463	1.458	0.010	AVRG	-0.3
Phenol-d5	1.800	1.853	0.010	AVRG	2.9
2-Chlorophenol-d4	1.408	1.433	0.010	AVRG	1.8
1,2-Dichlorobenzene-d4	0.974	0.948	0.010	AVRG	-2.7
Nitrobenzene-d5	0.412	0.404	0.010	AVRG	-1.9
2-Fluorobiphenyl	1.330	1.282	0.010	AVRG	-3.6
2,4,6-Tribromophenol	0.139	0.163	0.010	AVRG	17.3
Terphenyl-d14	0.811	0.872	0.010	AVRG	7.5

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/14/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	378072	7.70	1503539	9.76	870773	12.62
	UPPER LIMIT		8.20		10.26		13.12
	LOWER LIMIT		7.20		9.26		12.12
01	TZ84MBW1	390768	7.70	1510984	9.75	887356	12.61
02	TZ84LCSW1	393433	7.70	1569222	9.76	853705	12.62
03	MW-28S-12021	412318	7.70	1597070	9.75	942250	12.61
04	MW-29S-12021	407601	7.70	1591042	9.75	921008	12.61
05	DUP-120211-3	394122	7.70	1541721	9.75	887087	12.61
06	MW-30S-12051	423864	7.70	1683434	9.75	1009975	12.61
07	MW-30S-12051	447380	7.70	1772438	9.76	1004737	12.62
08	MW-30S-12051	402835	7.70	1597471	9.75	892340	12.62
09	MW-31S-12051	413689	7.70	1589646	9.75	922079	12.61
10	MW-33S-12051	405686	7.70	1592475	9.75	926269	12.61
11	DUP-120511-3	399147	7.70	1573601	9.75	927147	12.61
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/14/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1343967	14.99	1033459	19.29	872881	21.44
	UPPER LIMIT		15.49		19.79		21.94
	LOWER LIMIT		14.49		18.79		20.94
01	TZ84MBW1	1288797	14.98	1013041	19.29	816356	21.44
02	TZ84LCSW1	1280213	14.99	921901	19.29	818143	21.44
03	MW-28S-12021	1342922	14.98	1027269	19.29	831107	21.44
04	MW-29S-12021	1331716	14.98	993001	19.29	804684	21.44
05	DUP-120211-3	1278752	14.98	971628	19.28	764906	21.44
06	MW-30S-12051	1531601	14.98	1351391	19.29	975803	21.44
07	MW-30S-12051	1568626	14.99	1095287	19.29	827405	21.44
08	MW-30S-12051	1359123	14.99	1003276	19.29	852712	21.44
09	MW-31S-12051	1327636	14.98	1008691	19.29	848148	21.44
10	MW-33S-12051	1326870	14.98	996858	19.29	819807	21.44
11	DUP-120511-3	1382374	14.98	1126023	19.29	916225	21.44
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/14/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1421303	20.47				
	UPPER LIMIT		20.97				
	LOWER LIMIT		19.97				
01	TZ84MBW1	1454114	20.47				
02	TZ84LCSW1	1306411	20.48				
03	MW-28S-12021	1492484	20.47				
04	MW-29S-12021	1466586	20.48				
05	DUP-120211-3	1443819	20.47				
06	MW-30S-12051	2012991	20.47				
07	MW-30S-12051	1525356	20.48				
08	MW-30S-12051	1421158	20.48				
09	MW-31S-12051	1450522	20.47				
10	MW-33S-12051	1453062	20.47				
11	DUP-120511-3	1652139	20.47				
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

SIM PAH Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: MW-28S-120211
SAMPLE

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized: MW
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 19:00
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.7%
d14-Dibenzo(a,h)anthracene	79.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MW-29S-120211
SAMPLE

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 19:28
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.0%
d14-Dibenzo(a,h)anthracene	60.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: DUP-120211-3**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ84C
LIMS ID: 11-27873
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 19:56
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	61.3%
d14-Dibenzo(a,h)anthracene	60.7%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ84-ERM-West
Project: RG
128296.07

Client ID	MNP	DBA	TOT OUT
MB-120811	59.3%	69.3%	0
LCS-120811	59.7%	57.3%	0
MW-28S-120211	62.7%	79.0%	0
MW-29S-120211	61.0%	60.7%	0
DUP-120211-3	61.3%	60.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-110)	(33-107)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-140)	(10-142)

Prep Method: SW3520C
Log Number Range: 11-27871 to 11-27873

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: MW-30S-120511**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized: YW
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 20:23
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	**1-Methylnaphthalene**	**0.10**	**0.06 J**
208-96-8	**Acenaphthylene**	**0.10**	**0.09 J**
83-32-9	**Acenaphthene**	**0.10**	**0.22**
86-73-7	**Fluorene**	**0.10**	**0.17**
85-01-8	**Phenanthrene**	**0.10**	**0.44**
120-12-7	**Anthracene**	**0.10**	**0.08 J**
206-44-0	**Fluoranthene**	**0.10**	**0.24**
129-00-0	**Pyrene**	**0.10**	**0.31**
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	67.3%
d14-Dibenzo(a,h)anthracene	74.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MW-31S-120511
SAMPLE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized: MW
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 21:46
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	**Fluoranthene**	**0.10**	**0.06 J**
129-00-0	**Pyrene**	**0.10**	**0.08 J**
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	62.7%
d14-Dibenzo(a,h)anthracene	66.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: MW-33S-120511
SAMPLE

Lab Sample ID: TZ97C
LIMS ID: 11-27940
Matrix: Water
Data Release Authorized: MW
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 22:14
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.10**	**0.08 J**
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	**Acenaphthene**	**0.10**	**0.05 J**
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	63.0%
d14-Dibenzo(a,h)anthracene	49.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: DUP-120511-3**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ97H
LIMS ID: 11-27945
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 22:41
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	**Naphthalene**	**0.10**	**0.07 J**
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	**Acenaphthene**	**0.10**	**0.06 J**
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	74.3%
d14-Dibenzo(a,h)anthracene	61.0%

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ97-ERM-West
Project: RG
128296.07

Client ID	MNP	DBA	TOT OUT
MB-120811	59.3%	69.3%	0
MW-30S-120511	67.3%	74.0%	0
MW-30S-120511 MS	66.3%	82.0%	0
MW-30S-120511 MSD	69.3%	89.7%	0
MW-31S-120511	62.7%	66.3%	0
MW-33S-120511	63.0%	49.7%	0
DUP-120511-3	74.3%	61.0%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-110)	(33-107)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-140)	(10-142)

Prep Method: SW3520C
Log Number Range: 11-27938 to 11-27945

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: MW-30S-120511
MATRIX SPIKE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted MS/MSD: 12/08/11

Date Analyzed MS: 12/12/11 20:51
MSD: 12/12/11 21:19
Instrument/Analyst MS: NT4/JZ
MSD: NT4/JZ

Sample Amount MS: 500 mL
MSD: 500 mL
Final Extract Volume MS: 0.50 mL
MSD: 0.50 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Naphthalene	< 0.10 U	1.84	3.00	61.3%	1.92	3.00	64.0%	4.3%
2-Methylnaphthalene	< 0.10 U	1.82	3.00	60.7%	1.92	3.00	64.0%	5.3%
1-Methylnaphthalene	0.06 J	1.98	3.00	64.0%	2.05	3.00	66.3%	3.5%
Acenaphthylene	0.09 J	1.90	3.00	60.3%	2.03	3.00	64.7%	6.6%
Acenaphthene	0.22	2.13	3.00	63.7%	2.18	3.00	65.3%	2.3%
Fluorene	0.17	2.26	3.00	69.7%	2.32	3.00	71.7%	2.6%
Phenanthrene	0.44	2.65	3.00	73.7%	2.87	3.00	81.0%	8.0%
Anthracene	0.08 J	1.94	3.00	62.0%	2.26	3.00	72.7%	15.2%
Fluoranthene	0.24	2.64	3.00	80.0%	2.71	3.00	82.3%	2.6%
Pyrene	0.31	2.81	3.00	83.3%	2.88	3.00	85.7%	2.5%
Benzo(a)anthracene	< 0.10 U	2.26	3.00	75.3%	2.39	3.00	79.7%	5.6%
Chrysene	< 0.10 U	2.48	3.00	82.7%	2.54	3.00	84.7%	2.4%
Benzo(a)pyrene	< 0.10 U	2.19	3.00	73.0%	2.36	3.00	78.7%	7.5%
Indeno(1,2,3-cd)pyrene	< 0.10 U	2.41	3.00	80.3%	2.64	3.00	88.0%	9.1%
Dibenz(a,h)anthracene	< 0.10 U	2.41	3.00	80.3%	2.63	3.00	87.7%	8.7%
Benzo(g,h,i)perylene	< 0.10 U	2.56	3.00	85.3%	2.70	3.00	90.0%	5.3%
Dibenzofuran	< 0.10 U	2.13	3.00	71.0%	2.20	3.00	73.3%	3.2%
Total Benzofluoranthenes	< 0.10 U	5.93	6.00	98.8%	5.90	6.00	98.3%	0.5%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: MW-30S-120511**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 20:51
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	---
91-57-6	2-Methylnaphthalene	0.10	---
90-12-0	1-Methylnaphthalene	0.10	---
208-96-8	Acenaphthylene	0.10	---
83-32-9	Acenaphthene	0.10	---
86-73-7	Fluorene	0.10	---
85-01-8	Phenanthrene	0.10	---
120-12-7	Anthracene	0.10	---
206-44-0	Fluoranthene	0.10	---
129-00-0	Pyrene	0.10	---
56-55-3	Benzo(a)anthracene	0.10	---
218-01-9	Chrysene	0.10	---
50-32-8	Benzo(a)pyrene	0.10	---
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	---
53-70-3	Dibenz(a,h)anthracene	0.10	---
191-24-2	Benzo(g,h,i)perylene	0.10	---
132-64-9	Dibenzofuran	0.10	---
TOTBFA	Total Benzofluoranthenes	0.10	---

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	66.3%
d14-Dibenzo(a,h)anthracene	82.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: MW-30S-120511
MATRIX SPIKE DUPLICATE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/12/11 21:19
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	---
91-57-6	2-Methylnaphthalene	0.10	---
90-12-0	1-Methylnaphthalene	0.10	---
208-96-8	Acenaphthylene	0.10	---
83-32-9	Acenaphthene	0.10	---
86-73-7	Fluorene	0.10	---
85-01-8	Phenanthrene	0.10	---
120-12-7	Anthracene	0.10	---
206-44-0	Fluoranthene	0.10	---
129-00-0	Pyrene	0.10	---
56-55-3	Benzo(a)anthracene	0.10	---
218-01-9	Chrysene	0.10	---
50-32-8	Benzo(a)pyrene	0.10	---
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	---
53-70-3	Dibenz(a,h)anthracene	0.10	---
191-24-2	Benzo(g,h,i)perylene	0.10	---
132-64-9	Dibenzofuran	0.10	---
TOTBFA	Total Benzofluoranthenes	0.10	---

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	69.3%
d14-Dibenzo(a,h)anthracene	89.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS
Page 1 of 1

Sample ID: LCS-120811
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120811
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized: MW
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 12/08/11
Date Analyzed LCS: 12/12/11 18:33
Instrument/Analyst LCS: NT4/JZ

Sample Amount LCS: 500 mL
Final Extract Volume LCS: 0.50 mL
Dilution Factor LCS: 1.00

Analyte	LCS	Spike Added	Recovery
Naphthalene	1.59	3.00	53.0%
2-Methylnaphthalene	1.60	3.00	53.3%
1-Methylnaphthalene	1.69	3.00	56.3%
Acenaphthylene	1.59	3.00	53.0%
Acenaphthene	1.79	3.00	59.7%
Fluorene	1.95	3.00	65.0%
Phenanthrene	2.20	3.00	73.3%
Anthracene	2.11	3.00	70.3%
Fluoranthene	2.34	3.00	78.0%
Pyrene	2.26	3.00	75.3%
Benzo(a)anthracene	2.13	3.00	71.0%
Chrysene	2.30	3.00	76.7%
Benzo(a)pyrene	1.97	3.00	65.7%
Indeno(1,2,3-cd)pyrene	2.10	3.00	70.0%
Dibenz(a,h)anthracene	1.82	3.00	60.7%
Benzo(g,h,i)perylene	2.13	3.00	71.0%
Dibenzofuran	1.93	3.00	64.3%
Total Benzofluoranthenes	5.14	6.00	85.7%

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.7%
d14-Dibenzo(a,h)anthracene	57.3%

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ84MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Lab File ID: 12121103 Date Extracted: 12/08/11

Instrument ID: NT4 Date Analyzed: 12/12/11

Matrix: LIQUID Time Analyzed: 1805

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ84LCSW1	TZ84LCSW1	12121104	12/12/11
02	MW-28S-120211	TZ84A	12121105	12/12/11
03	MW-29S-120211	TZ84B	12121106	12/12/11
04	DUP-120211-3	TZ84C	12121107	12/12/11
05	MW-30S-120511	TZ97A	12121108	12/12/11
06	MW-30S-120511 MS	TZ97AMS	12121109	12/12/11
07	MW-30S-120511 MS	TZ97AMSD	12121110	12/12/11
08	MW-31S-120511	TZ97B	12121111	12/12/11
09	MW-33S-120511	TZ97C	12121112	12/12/11
10	DUP-120511-3	TZ97H	12121113	12/12/11
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS **Sample ID: MB-120811**
 METHOD BLANK

Lab Sample ID: MB-120811 QC Report No: TZ84-ERM-West
LIMS ID: 11-27871 Project: RG
Matrix: Water Event: 128296.07
Data Release Authorized: Date Sampled: NA
Reported: 12/14/11 Date Received: NA

Date Extracted: 12/08/11 Sample Amount: 500 mL
Date Analyzed: 12/12/11 18:05 Final Extract Volume: 0.5 mL
Instrument/Analyst: NT4/JZ Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	59.3%
d14-Dibenzo(a,h)anthracene	69.3%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT4 Project: RG

DFTPP Injection Date: 11/21/11 DFTPP Injection Time: 0937

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	29.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	33.8
70	Less than 2.0% of mass 69	0.1 (0.4)1
127	10.0 - 80.0% of mass 198	47.1
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	30.3
365	Greater than 1.0% of mass 198	4.03
441	0.0 - 24.0% of mass 442	22.6 (15.5)2
442	50.0 - 200.0% of mass 198	145.7
443	15.0 - 24.0% of mass 442	29.5 (20.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC251121	IC251121	11211102	11/21/11	1109
02	IC011121	IC011121	11211103	11/21/11	1138
03	IC051121	IC051121	11211104	11/21/11	1206
04	IC11121	IC11121	11211105	11/21/11	1233
05	IC51121	IC51121	11211106	11/21/11	1301
06	IC101121	IC101121	11211107	11/21/11	1329
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

TZ84 : 00154

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT4 Project: RG

DFTPP Injection Date: 12/12/11 DFTPP Injection Time: 1707

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	26.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	29.6
70	Less than 2.0% of mass 69	0.2 (0.8)1
127	10.0 - 80.0% of mass 198	42.9
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.6
275	10.0 - 60.0% of mass 198	32.2
365	Greater than 1.0% of mass 198	4.30
441	0.0 - 24.0% of mass 442	25.0 (14.1)2
442	50.0 - 200.0% of mass 198	177.8
443	15.0 - 24.0% of mass 442	34.5 (19.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1212	CC1212	12121102	12/12/11	1736
02	TZ84MBW1	TZ84MBW1	12121103	12/12/11	1805
03	TZ84LCSW1	TZ84LCSW1	12121104	12/12/11	1833
04	MW-28S-120211	TZ84A	12121105	12/12/11	1900
05	MW-29S-120211	TZ84B	12121106	12/12/11	1928
06	DUP-120211-3	TZ84C	12121107	12/12/11	1956
07	MW-30S-120511	TZ97A	12121108	12/12/11	2023
08	MW-30S-120511 MS	TZ97AMS	12121109	12/12/11	2051
09	MW-30S-120511 MS	TZ97AMSD	12121110	12/12/11	2119
10	MW-31S-120511	TZ97B	12121111	12/12/11	2146
11	MW-33S-120511	TZ97C	12121112	12/12/11	2214
12	DUP-120511-3	TZ97H	12121113	12/12/11	2241
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ84:00155

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT4 Calibration Date: 11/21/11

LAB FILE ID: RRF0.1=11211103 RRF0.5=11211104 RRF1 =11211105
RRF2.5=11211102 RRF5 =11211106 RRF10 =11211107

COMPOUND	RRF 0.1	RRF 0.5	RRF 1	RRF 2.5	RRF 5	RRF 10	___ RRF	%RSD /R^2
Naphthalene	1.153	0.967	0.977	0.932	0.878	0.888	0.966	10.4
2-Methylnaphthalene	0.679	0.543	0.555	0.543	0.523	0.518	0.560	10.6
Acenaphthylene	1.836	1.390	1.450	1.504	1.467	1.554	1.534	10.3
Acenaphthene	1.334	1.033	1.037	0.992	0.967	1.018	1.064	12.7
Dibenzofuran	1.825	1.445	1.525	1.442	1.412	1.468	1.520	10.2
Fluorene	1.534	1.146	1.140	1.112	1.104	1.170	1.201	13.7
Phenanthrene	1.325	1.042	1.022	0.972	0.978	0.987	1.054	12.8
Anthracene	1.218	0.930	0.919	0.944	0.927	0.998	0.989	11.7
Fluoranthene	1.565	1.109	1.078	1.047	1.038	1.075	1.152	17.7
Pyrene	1.331	0.968	0.958	0.949	0.923	0.976	1.018	15.2
Benzo(a)anthracene	1.283	0.858	0.883	0.864	0.857	0.913	0.943	17.8
Chrysene	1.381	0.920	0.933	0.875	0.874	0.920	0.984	19.9
Benzo(b)fluoranthene	1.416	0.927	0.958	0.915	0.909	1.016	1.024	19.2
Benzo(k)fluoranthene	1.180	0.947	1.027	0.978	0.923	0.998	1.009	9.1
Benzo(j)fluoranthene	0.908	0.916	0.897	0.808	0.863	0.938	0.888	5.2
Benzo(a)pyrene	0.738	0.792	0.885	0.888	0.907	1.019	0.872	11.2
Indeno(1,2,3-cd)pyrene	1.298	0.986	1.024	1.120	1.192	1.336	1.159	12.3
Dibenzo(a,h)anthracene	0.847	0.718	0.842	0.888	0.958	1.116	0.895	14.9
Benzo(g,h,i)perylene	1.255	0.944	1.071	1.041	1.073	1.179	1.094	9.9
1-methylnaphthalene	0.711	0.540	0.539	0.508	0.499	0.494	0.548	14.9
Perylene	1.167	0.908	0.940	0.895	0.907	1.011	0.971	10.8
2-Methylnaphthalene-d10	0.735	0.614	0.601	0.570	0.558	0.557	0.606	11.2
Dibenzo(a,h)anthracene-d14	0.593	0.558	0.640	0.717	0.782	0.926	0.703	19.4

<- Outside QC limits: %RSD <20% or R^2 > 0.990

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Instrument ID: NT4 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1736

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Naphthalene	0.966	0.916	0.700	AVRG	-5.2
2-Methylnaphthalene	0.560	0.544	0.400	AVRG	-2.8
Acenaphthylene	1.534	1.516	0.900	AVRG	-1.2
Acenaphthene	1.064	0.992	0.900	AVRG	-6.8
Dibenzofuran	1.520	1.444	0.800	AVRG	-5.0
Fluorene	1.201	1.138	0.900	AVRG	-5.2
Phenanthrene	1.054	0.953	0.700	AVRG	-9.6
Anthracene	0.989	0.914	0.700	AVRG	-7.6
Fluoranthene	1.152	1.045	0.600	AVRG	-9.3
Pyrene	1.018	0.915	0.600	AVRG	-10.1
Benzo(a)anthracene	0.943	0.873	0.800	AVRG	-7.4
Chrysene	0.984	0.887	0.700	AVRG	-9.8
Benzo(b)fluoranthene	1.024	0.968	0.700	AVRG	-5.5
Benzo(k)fluoranthene	1.009	0.925	0.700	AVRG	-8.3
Benzo(j)fluoranthene	0.888	0.837	0.010	AVRG	-5.7
Benzo(a)pyrene	0.872	0.934	0.700	AVRG	7.1
Indeno(1,2,3-cd)pyrene	1.159	1.086	0.500	AVRG	-6.3
Dibenzo(a,h)anthracene	0.895	0.858	0.400	AVRG	-4.1
Benzo(g,h,i)perylene	1.094	0.982	0.500	AVRG	-10.2
1-methylnaphthalene	0.548	0.509	0.010	AVRG	-7.1
Perylene	0.971	0.896	0.010	AVRG	-7.7
2-Methylnaphthalene-d10	0.606	0.565	0.010	AVRG	-6.8
Dibenzo(a,h)anthracene-d14	0.703	0.733	0.010	AVRG	4.3

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 11211102 Ical Date: 11/21/11

Instrument ID: NT4 Cont. Cal Date: 12/12/11

		IS1(NPT) AREA #	RT #	IS2(ANT) AREA #	RT #	IS3(PHN) AREA #	RT #
	ICAL MIDPT	343604	5.50	195804	7.79	321226	9.76
	UPPER LIMIT	687208		391608		642452	
	LOWER LIMIT	171802		97902		160613	
	CCAL	339254	4.72	198812	6.97	342970	8.90
	UPPER LIMIT		5.22		7.47		9.40
	LOWER LIMIT		4.22		6.47		8.40
01	TZ84MBW1	288811	4.71	168749	6.96	287864	8.90
02	TZ84LCSW1	299122	4.71	175014	6.96	297297	8.89
03	MW-28S-12021	299582	4.71	173787	6.96	305030	8.90
04	MW-29S-12021	311323	4.71	185912	6.96	317106	8.90
05	DUP-120211-3	293329	4.71	174119	6.96	300787	8.90
06	MW-30S-12051	281651	4.71	165826	6.96	282266	8.90
07	MW-30S-12051	289300	4.71	169155	6.96	297924	8.89
08	MW-30S-12051	298896	4.71	176531	6.96	310031	8.90
09	MW-31S-12051	293555	4.71	172497	6.96	296934	8.90
10	MW-33S-12051	292372	4.71	176364	6.96	301983	8.90
11	DUP-120511-3	272319	4.71	163844	6.96	283135	8.90
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = Naphthalene-d8
IS2 = Acenaphthene-d10
IS3 = Phenanthrene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ84 Project: RG

Ical Midpoint ID: 11211102 Ical Date: 11/21/11

Instrument ID: NT4 Cont. Cal Date: 12/12/11

		IS4(CRY) AREA #	RT #	IS5(PRY) AREA #	RT #	AREA #	RT #
	ICAL MIDPT	375207	15.01	400310	18.86		
	UPPER LIMIT	750414		800620			
	LOWER LIMIT	187604		200155			
	CCAL	408009	13.51	409437	17.13		
	UPPER LIMIT		14.01		17.63		
	LOWER LIMIT		13.01		16.63		
01	TZ84MBW1	318703	13.50	257622	17.12		
02	TZ84LCSW1	344034	13.50	293016	17.12		
03	MW-28S-12021	322487	13.49	264249	17.12		
04	MW-29S-12021	345709	13.49	284012	17.12		
05	DUP-120211-3	316129	13.50	258974	17.12		
06	MW-30S-12051	310392	13.50	255530	17.12		
07	MW-30S-12051	329272	13.50	280605	17.12		
08	MW-30S-12051	342675	13.50	294033	17.12		
09	MW-31S-12051	313001	13.50	257786	17.13		
10	MW-33S-12051	307336	13.50	261040	17.12		
11	DUP-120511-3	292669	13.50	246968	17.12		
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Chrysene-d12
IS5 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

Butyl Tin Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MW-28S-120211**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized: MW
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 15:14
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	< 0.005	U

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	80.0%
Tripentyl Tin Chloride	88.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MW-29S-120211**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 15:28
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	< 0.005	U

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	72.8%
Tripentyl Tin Chloride	91.3%

ANALYTICAL RESOURCES INCORPORATED

TBT SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07

Client ID	TPRT	TPNT	TOT OUT
MW-28S-120211	80.0%	88.1%	0
MB-120811	84.7%	80.0%	0
LCS-120811	71.8%	100%	0
MW-29S-120211	72.8%	91.3%	0
MW-29S-120211 MS	69.8%	98.0%	0
MW-29S-120211 MSD	72.5%	83.5%	0

	LCS/MB LIMITS	QC LIMITS
(TPRT) = Tripropyl Tin Chloride	(30-160)	(30-160)
(TPNT) = Tripentyl Tin Chloride	(30-160)	(30-160)

Prep Method: SW3510C
Analytical Method: Low TBT (Hexyl) Krone 1988
Log Number Range: 11-27871 to 11-27872

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MW-30S-120511**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 16:10
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	< 0.005	U

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	65.3%
Tripentyl Tin Chloride	89.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MW-31S-120511**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 16:24
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	< 0.005	U

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	75.2%
Tripentyl Tin Chloride	79.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: DUP-120511-1**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ97E
LIMS ID: 11-27942
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 16:37
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	< 0.005	U

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	79.3%
Tripentyl Tin Chloride	93.7%

ANALYTICAL RESOURCES INCORPORATED

TBT SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07

Client ID	TPRT	TPNT	TOT OUT
MB-120811	84.7%	80.0%	0
LCS-120811	71.8%	100%	0
MW-30S-120511	65.3%	89.5%	0
MW-31S-120511	75.2%	79.3%	0
DUP-120511-1	79.3%	93.7%	0

	LCS/MB LIMITS	QC LIMITS
(TPRT) = Tripropyl Tin Chloride	(30-160)	(30-160)
(TPNT) = Tripentyl Tin Chloride	(30-160)	(30-160)

Prep Method: SW3510C
Analytical Method: Low TBT (Hexyl) Krone 1988
Log Number Range: 11-27938 to 11-27942

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MW-29S-120211**
 MATRIX SPIKE

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized: MW
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted MS: 12/08/11

Date Analyzed MS: 12/13/11 15:42
MSD: 12/13/11 15:56
Instrument/Analyst MS: NT12/VTS
MSD: NT12/VTS

Sample Amount MS: 150 mL
MSD: 150 mL
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00
Alumina Cleanup: Yes

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Tributyltin Ion	< 0.005 U	0.063	0.074	84.9%	0.072	0.074	96.9%	13.3%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MW-29S-120211**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 15:42
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	---	

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	69.8%
Tripentyl Tin Chloride	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MW-29S-120211**
Page 1 of 1 **MATRIX SPIKE DUP**

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized: MW
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 15:56
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	---	

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	72.5%
Tripentyl Tin Chloride	83.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: LCS-120811**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-120811
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Date Extracted LCS: 12/08/11
Date Analyzed LCS: 12/13/11 15:01
Instrument/Analyst LCS: NT12/VTS

Sample Amount LCS: 150 mL
Final Extract Volume LCS: 0.50 mL
Dilution Factor LCS: 1.00
Alumina Cleanup: Yes

Analyte	LCS	Spike Added	Recovery
Tributyltin Ion	0.065	0.074	87.8%

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	71.8%
Tripentyl Tin Chloride	100%

FORM III

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ84MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: RG

Lab File ID: TZ84MB Date Extracted: 12/08/11

Instrument ID: NT12 Date Analyzed: 12/13/11

Matrix: LIQUID Time Analyzed: 1447

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ84LCSW1	TZ84LCSW1	TZ84SB	12/13/11
02	MW-28S-120211	TZ84A	TZ84A	12/13/11
03	MW-29S-120211	TZ84B	TZ84B	12/13/11
04	MW-29S-120211 MS	TZ84BMS	TZ84BMS	12/13/11
05	MW-29S-120211 MS	TZ84BMSD	TZ84BMSD	12/13/11
06	MW-30S-120511	TZ97A	TZ97A	12/13/11
07	MW-31S-120511	TZ97B	TZ97B	12/13/11
08	DUP-120511-1	TZ97E	TZ97E	12/13/11
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tributyl Tins by Krone 1988 SIM GC/MS **Sample ID: MB-120811**
Page 1 of 1 **METHOD BLANK**

Lab Sample ID: MB-120811
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Date Extracted: 12/08/11
Date Analyzed: 12/13/11 14:47
Instrument/Analyst: NT12/VTS

Sample Amount: 150 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Alumina Cleanup: Yes

CAS Number	Analyte	RL	Result	Q
36643-28-4	Tributyltin Ion	0.005	< 0.005	U

Reported in µg/L (ppb)

TBT Surrogate Recovery

Tripropyl Tin Chloride	84.7%
Tripentyl Tin Chloride	80.0%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT12 Project: RG

DFTPP Injection Date: 12/13/11 DFTPP Injection Time: 1255

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	27.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	84.5
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	10.0 - 80.0% of mass 198	61.6
197	Less than 2.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.1
275	10.0 - 60.0% of mass 198	29.9
365	Greater than 1.0% of mass 198	5.38
441	0.0 - 24.0% of mass 442	13.9 (15.3)2
442	50.0 - 200.0% of mass 198	90.7
443	15.0 - 24.0% of mass 442	17.7 (19.5)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		PW25	CC1213A	12/13/11	1308
02		PW100	IC1213B	12/13/11	1324
03		PW2	IC1213C	12/13/11	1338
04		PW50	IC1213D	12/13/11	1351
05		PW5	IC1213E	12/13/11	1405
06		PW10	IC1213F	12/13/11	1419
07	TZ84MBW1	TZ84MBW1	TZ84MB	12/13/11	1447
08	TZ84LCSW1	TZ84LCSW1	TZ84SB	12/13/11	1501
09	MW-28S-120211	TZ84A	TZ84A	12/13/11	1514
10	MW-29S-120211	TZ84B	TZ84B	12/13/11	1528
11	MW-29S-120211 MS	TZ84BMS	TZ84BMS	12/13/11	1542
12	MW-29S-120211 MS	TZ84BMSD	TZ84BMSD	12/13/11	1556
13	MW-30S-120511	TZ97A	TZ97A	12/13/11	1610
14	MW-31S-120511	TZ97B	TZ97B	12/13/11	1624
15	DUP-120511-1	TZ97E	TZ97E	12/13/11	1637
16					
17					
18					
19					
20					
21					
22					

TZ84:00174

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: RG

Instrument ID: NT12 Calibration Date: 12/13/11

LAB FILE ID: RRF2 =IC1213C RRF5 =IC1213E RRF10 =IC1213F
RRF25 =CC1213A RRF50 =IC1213D RRF100=IC1213B

COMPOUND	RRF 2	RRF 5	RRF 10	RRF 25	RRF 50	RRF 100	$\overline{RRF}$	%RSD /R^2
Tributyl Tin (Hexyl)	0.560	0.516	0.605	0.470	0.506	0.667	0.554	13.1
Dibutyl Tin (Hexyl)	0.044	0.031	0.031	0.036	0.042	0.036	0.037	14.5
Butyl Tin (Hexyl)	0.056	0.046	0.050	0.059	0.055	0.057	0.054	9.1
Tetrabutyl Tin	0.836	0.687	0.790	0.672	0.633	0.920	0.756	14.6
Tripropyl Tin (Hexyl)	0.775	0.802	0.820	0.580	0.652	0.899	0.755	15.6
Tripentyl Tin (Hexyl)	0.050	0.048	0.039	0.050	0.050	0.052	0.048	9.8

<- Outside QC limits: %RSD <20% or R^2 > 0.990

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: RG

Instrument ID: NT12 Cont. Calib. Date: 12/13/11

Init. Calib. Date: 12/13/11 Cont. Calib. Time: 1308

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Tributyl Tin (Hexyl)	0.554	0.470	0.010	AVRG	-15.2	
Dibutyl Tin (Hexyl)	0.037	0.036	0.010	AVRG	-2.7	
Butyl Tin (Hexyl)	0.054	0.059	0.010	AVRG	9.2	
Tetrabutyl Tin	0.756	0.672	0.010	AVRG	-11.1	
Tripropyl Tin (Hexyl)	0.755	0.580	0.010	AVRG	-23.2	<-
Tripentyl Tin (Hexyl)	0.048	0.050	0.010	AVRG	4.2	

<- Exceeds QC limit of 20% D
* RF less than minimum RF

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ97 Project: RG

Ical Midpoint ID: CC1213A Ical Date: 12/13/11

Instrument ID: NT12 Cont. Cal Date: 12/13/11

		IS1 AREA #	RT #	IS2 AREA #	RT #	AREA #	RT #
	ICAL MIDPT	215882	6.84	244742	7.71		
	UPPER LIMIT	431764		489484			
	LOWER LIMIT	107941		122371			
	CCAL	215882	6.84	244742	7.71		
	UPPER LIMIT		7.34		8.21		
	LOWER LIMIT		6.34		7.21		
01	TZ84MBW1	186067	6.82	216672	7.71		
02	TZ84LCSW1	187339	6.82	184462	7.71		
03	MW-28S-12021	219292	6.82	228020	7.71		
04	MW-29S-12021	186551	6.82	201423	7.71		
05	MW-29S-12021	207151	6.82	189222	7.71		
06	MW-29S-12021	187347	6.82	208832	7.71		
07	MW-30S-12051	223230	6.82	192738	7.71		
08	MW-31S-12051	201691	6.82	218174	7.71		
09	DUP-120511-1	185829	6.82	200474	7.71		
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = Tetrapentyl Tin
IS2 = p-Terphenyl-d14

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

TPHD Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Water

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Received: 12/02/11

Data Release Authorized:
Reported: 12/13/11

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-120711	Method Blank	12/07/11	12/08/11	1.00	Diesel Range	0.10	< 0.10 U
11-27871	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		94.3%
TZ84A	MW-28S-120211	12/07/11	12/08/11	1.00	Diesel Range	0.10	< 0.10 U
11-27871	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		90.4%
TZ84B	MW-29S-120211	12/07/11	12/08/11	1.00	**Diesel Range**	**0.10**	**0.11**
11-27872	HC ID: **DRO/RRO**		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		88.4%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

MH
12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a025.d ARI ID: TZ84MBW1
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m Client ID: TZ84MBW1
Instrument: fid4a.i Injection: 08-DEC-2011 19:18
Operator: MH
Report Date: 12/13/2011 Dilution Factor: 1
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.407	0.006	5151	6307	GAS (Tol-C12)	764745	32.37
C8	1.728	0.004	3690	13713	DIESEL (C12-C24)	57446	4.26
C10	3.411	0.007	942	1911	M.OIL (C24-C38)	59476	5.31
C12	4.407	0.008	480	694	AK-102 (C10-C25)	98282	6.13
C14	5.176	0.009	324	438	AK-103 (C25-C36)	54293	7.87
C16	5.831	-0.002	143	110			
C18	6.452	-0.004	227	346			
C20	7.062	0.011	566	1081			
C22	7.624	0.008	199	345			
C24	8.153	0.010	46	65			
C25	8.400	0.005	42	14			
C26	8.645	0.007	35	17			
C28	9.165	0.034	4455	5261	IT.DIES (C10-C24)	97660	6.12
C32	10.147	-0.010	1165	2182			
C34	10.658	-0.011	140	191	BUNKERC (C10-C38)	157137	21.31
Filter Peak	12.993	-0.003	1020	3272			
C36	11.165	-0.007	109	69			
C38	11.657	-0.009	154	238			
C40	12.145	-0.003	1063	1982			
o-terph	6.605	-0.003	904994	764718	JET-A (C10-C18)	77243	5.20
Triacon Surr	9.646	-0.008	571202	664651			

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	764718	42.4	94.3
Triacontane	664651	40.5	90.0

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111208.b/1208a025.d

Date : 08-DEC-2011 19:18

Client ID: TZ84MBW1

Sample Info: TZ84MBW1

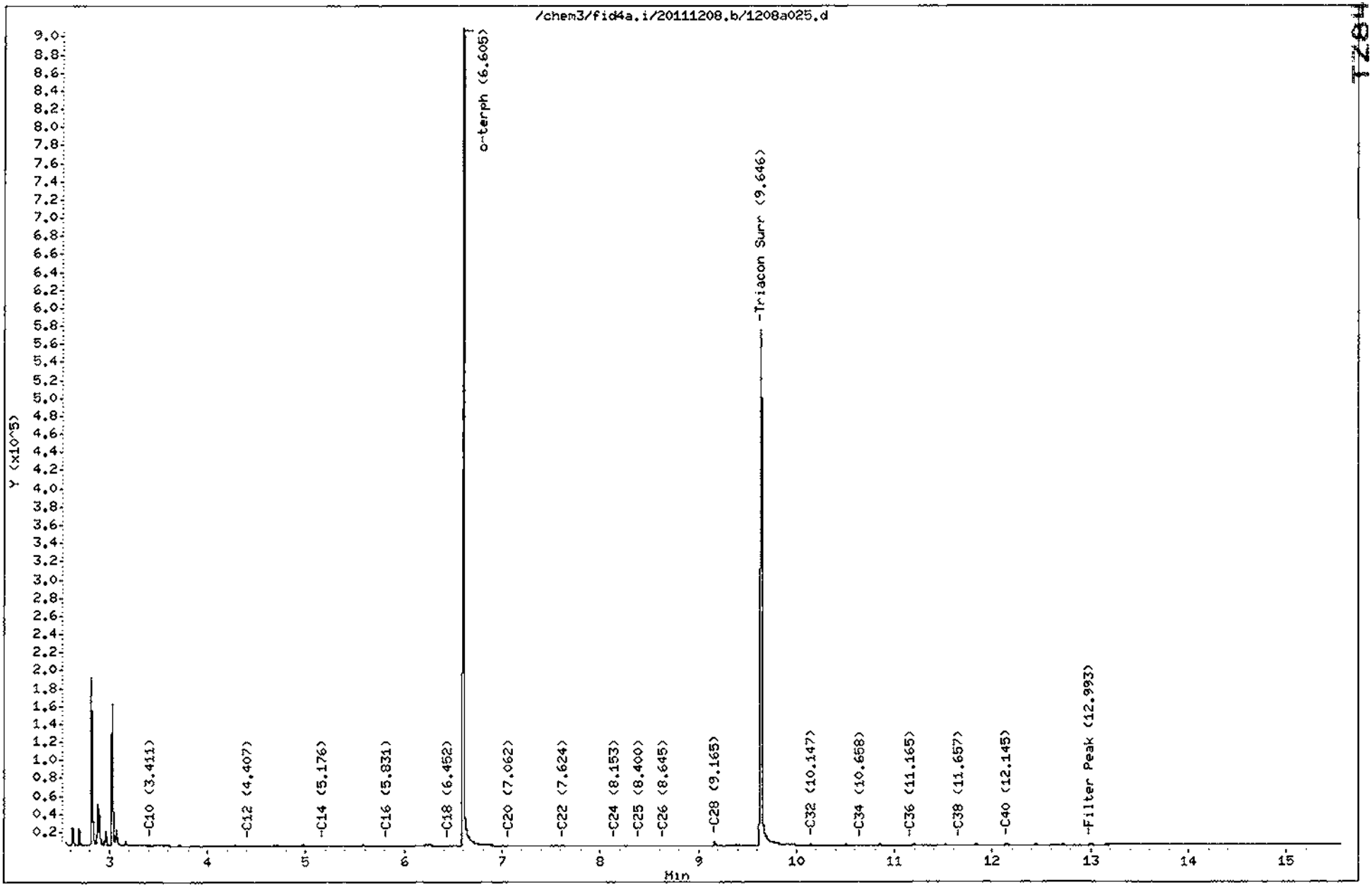
Column phase: RTX-1

Instrument: fid4a.i

Operator: MH

Column diameter: 0.25

TZ84 : 00181



MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a028.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ84A
Client ID: MW-28S-120211
Injection: 08-DEC-2011 20:28
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.410	0.008	2468	2633	GAS (Tol-C12)	444334	18.81
C8	1.697	-0.027	2068	4897	DIESEL (C12-C24)	623664	46.28
C10	3.407	0.003	314	562	M.OIL (C24-C38)	254365	22.70
C12	4.412	0.013	496	1387	AK-102 (C10-C25)	679252	42.36
C14	5.172	0.005	1813	4594	AK-103 (C25-C36)	217401	31.50
C16	5.837	0.004	1614	1238			
C18	6.436	-0.020	2264	1624			
C20	7.055	0.004	3869	5461			
C22	7.611	-0.005	4691	9155			
C24	8.135	-0.009	3629	7901			
C25	8.388	-0.007	3227	2253			
C26	8.644	0.006	2629	2053			
C28	9.129	-0.003	1752	1030	IT.DIES (C10-C24)	648542	40.66
C32	10.146	-0.011	1902	3151			
C34	10.678	0.008	396	596	BUNKERC (C10-C38)	902907	122.42
Filter Peak	12.993	-0.002	982	2743			
C36	11.153	-0.020	235	327			
C38	11.653	-0.013	193	83			
C40	12.144	-0.004	1130	1947			
o-terph	6.605	-0.004	827512	733244	JET-A (C10-C18)	185778	12.52
Triacon Surr	9.648	-0.006	597778	678216			

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	733244	40.7	90.4
Triacontane	678216	41.3	91.9

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111208.b/1208a028.d

Date : 08-DEC-2011 20:28

Client ID: MW-28S-120211

Sample Info: TZ84A

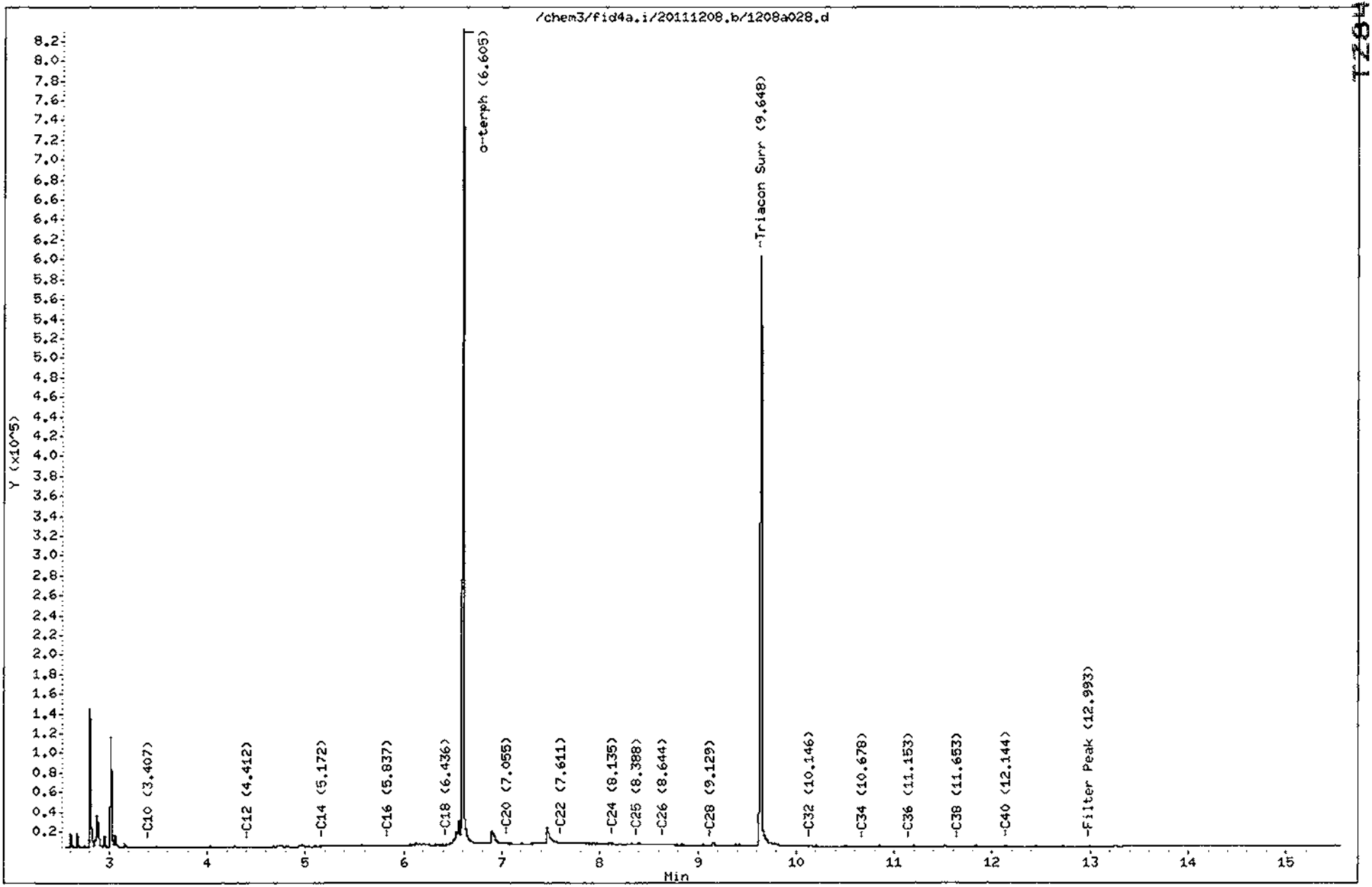
Column phase: RTX-1

Instrument: fid4a.i

Operator: MH

Column diameter: 0.25

TZ84 : 00183



MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a029.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ84B
Client ID: MW-29S-120211
Injection: 08-DEC-2011 20:52
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.411	0.009	2263	2439	GAS (Tol-C12)	494413	20.93
C8	1.696	-0.028	2140	4517	DIESEL (C12-C24)	765938	56.84
C10	3.406	0.002	470	977	M.OIL (C24-C38)	470847	42.03
C12	4.410	0.011	931	690	AK-102 (C10-C25)	891123	55.58
C14	5.171	0.004	1529	3838	AK-103 (C25-C36)	391734	56.76
C16	5.838	0.005	1820	1580			
C18	6.446	-0.010	3327	6000			
C20	7.055	0.004	4892	2316			
C22	7.622	0.006	5956	4227			
C24	8.138	-0.005	6462	4698			
C25	8.399	0.003	7265	12500			
C26	8.639	0.001	5420	4932			
C28	9.144	0.012	7873	23276	IT.DIES (C10-C24)	819681	51.39
C32	10.147	-0.010	2188	4710			
C34	10.677	0.008	596	756	BUNKERC (C10-C38)	1290528	174.98
Filter Peak	12.994	-0.002	970	2889			
C36	11.165	-0.007	311	78			
C38	11.668	0.002	231	102			
C40	12.144	-0.004	1109	1997			
o-terph	6.604	-0.004	836787	716569	JET-A (C10-C18)	240064	16.17
Triacon Surr	9.647	-0.006	593173	682901			

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	716569	39.8	88.4
Triacontane	682901	41.6	92.5

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a029.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ84B
Client ID: MW-29S-120211
Injection: 08-DEC-2011 20:52
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.411	0.009	2263	2439	GAS (Tol-C12)	494413	20.93	
C8	1.696	-0.028	2140	4517	DIESEL (C12-C24)	833428	61.85	
C10	3.406	0.002	470	977	M.OIL (C24-C38)	470847	42.03	
C12	4.410	0.011	931	690	AK-102 (C10-C25)	958613	59.79	M
C14	5.171	0.004	1529	3838	AK-103 (C25-C36)	391734	56.76	
C16	5.838	0.005	1820	1580				
C18	6.446	-0.010	3327	6000				
C20	7.055	0.004	4892	2316				
C22	7.622	0.006	5956	4227				
C24	8.138	-0.005	6462	4698				
C25	8.399	0.003	7265	12500				
C26	8.639	0.001	5420	4932				
C28	9.144	0.012	7873	23276	IT.DIES (C10-C24)	887171	55.62	M
C32	10.147	-0.010	2188	4710				
C34	10.677	0.008	596	756	BUNKERC (C10-C38)	1358018	184.13	M
Filter Peak	12.994	-0.002	970	2889				
C36	11.165	-0.007	311	78				
C38	11.668	0.002	231	102				
C40	12.144	-0.004	1109	1997				
o-terph	6.604	-0.004	826742	649307	JET-A (C10-C18)	240064	16.17	
Triacon Surr	9.647	-0.006	593173	682901				

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	649307	36.0	80.1
Triacontane	682901	41.6	92.5

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ84-ERM-West
Project: RG
128296.07

Client ID	OTER	TOT OUT
MB-120711	94.3%	0
LCS-120711	90.1%	0
LCSD-120711	93.0%	0
MW-28S-120211	90.4%	0
MW-29S-120211	88.4%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 11-27871 to 11-27872

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Water

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Received: 12/05/11

Data Release Authorized:
Reported: 12/13/11

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-120711	Method Blank	12/07/11	12/08/11	1.00	Diesel Range	0.10	< 0.10 U
11-27938	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		94.3%
TZ97A	MW-30S-120511	12/07/11	12/08/11	1.00	**Diesel Range**	**0.10**	**0.23**
11-27938	HC ID: **DRO/RRO**		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		80.2%
TZ97B	MW-31S-120511	12/07/11	12/08/11	1.00	**Diesel Range**	**0.10**	**0.27**
11-27939	HC ID: **DRO/RRO**		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		81.8%
TZ97E	DUP-120511-1	12/07/11	12/08/11	1.00	**Diesel Range**	**0.10**	**0.23**
11-27942	HC ID: **DRO/RRO**		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		78.4%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a030.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ97A
Client ID: MW-30S-120511
Injection: 08-DEC-2011 21:15
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.410	0.008	2186	2593	GAS (Tol-C12)	378300	16.01	
C8	1.689	-0.034	4239	7669	DIESEL (C12-C24)	1539741	114.27	
C10	3.405	0.002	679	1678	M.OIL (C24-C38)	390334	34.84	
C12	4.418	0.019	489	358	AK-102 (C10-C25)	1623922	101.28	M
C14	----				AK-103 (C25-C36)	326757	47.34	
C16	5.837	0.005	4730	10688				
C18	6.446	-0.010	7448	8292				
C20	7.053	0.003	8120	9494				
C22	7.611	-0.004	8008	9013				
C24	8.133	-0.010	6674	7914				
C25	8.402	0.006	6215	12009				
C26	8.637	-0.001	4596	5606				
C28	9.137	0.005	3042	1433	IT.DIES (C10-C24)	1569270	98.38	M
C32	10.146	-0.010	1882	3947				
C34	10.650	-0.020	598	729	BUNKERC (C10-C38)	1959604	265.70	M
Filter Peak	12.995	-0.001	1103	3511				
C36	11.169	-0.003	348	161				
C38	11.654	-0.012	292	449				
C40	12.145	-0.003	1125	2511				
o-terph	6.604	-0.004	825661	650139	JET-A (C10-C18)	675908	45.54	
Triacon Surr	9.647	-0.006	645844	706087				

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	650139	36.1	80.2
Triacontane	706087	43.0	95.6

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111208.b/1208a030.d

Date : 08-DEC-2011 21:15

Client ID: MW-30S-120511

Sample Info: TZ97A

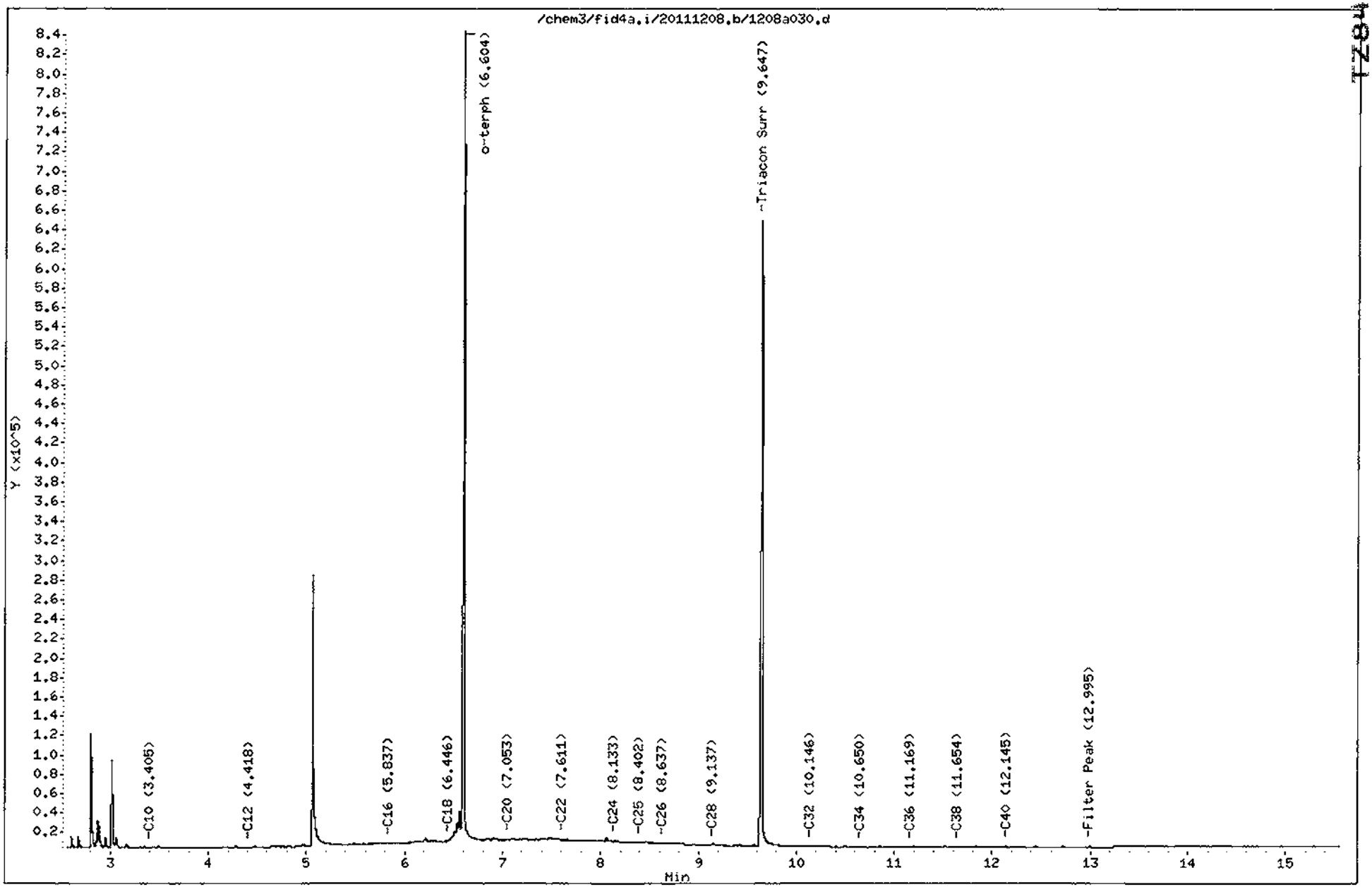
Column phase: RTX-1

Instrument: fid4a.i

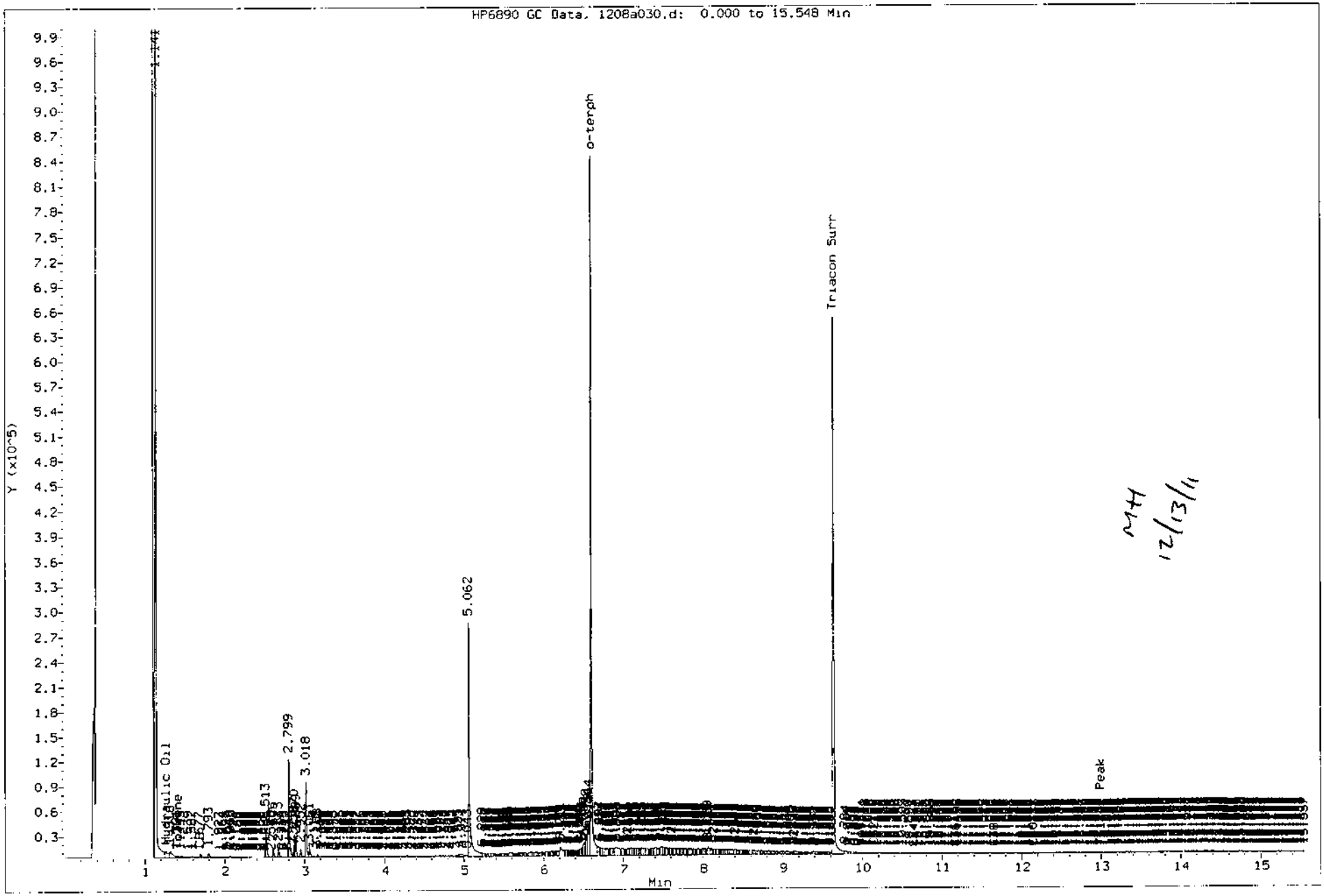
Operator: MH

Column diameter: 0.25

TZ84 : 00185



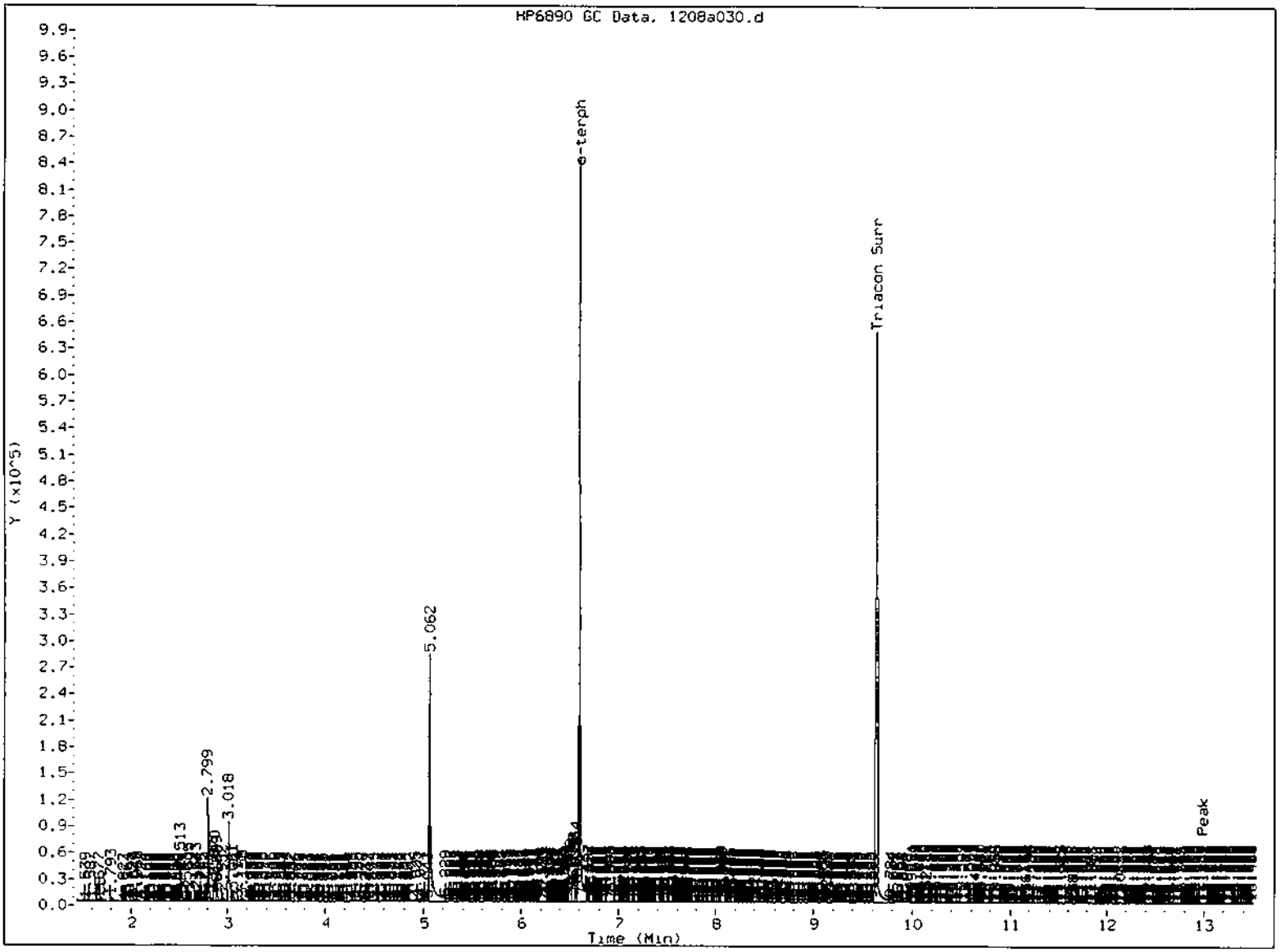
Data File: /chem3/fid4a.i/20111208.b/1208a030.d
Injection Date: 08-DEC-2011 21:15
Instrument: fid4a.i
Client Sample ID: MW-30S-120511



MH 12/13/11

T284 : 001990

FID:4A-2C/RTX-1 TZ97A FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/13/11

MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a031.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ97B
Client ID: MW-31S-120511
Injection: 08-DEC-2011 21:38
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.417	0.015	5903	7383	GAS (Tol-C12)	635102	26.88	
C8	1.715	-0.009	3244	5614	DIESEL (C12-C24)	1849143	137.23	
C10	3.410	0.007	1173	2497	M.OIL (C24-C38)	343432	30.65	
C12	4.380	-0.019	349	858	AK-102 (C10-C25)	1928640	120.29	M
C14	----				AK-103 (C25-C36)	295014	42.74	
C16	5.840	0.007	1703	970				
C18	6.423	-0.033	2396	1175				
C20	7.044	-0.007	4365	5801				
C22	7.615	-0.001	5404	3421				
C24	8.149	0.005	5379	7708				
C25	8.399	0.004	5515	10902				
C26	8.631	-0.007	4229	4570				
C28	9.134	0.002	2935	1422	IT.DIES (C10-C24)	1882633	118.03	M
C32	10.147	-0.010	2557	4516				
C34	10.661	-0.008	407	970	BUNKERC (C10-C38)	2226064	301.82	M
Filter Peak	12.994	-0.001	955	2616				
C36	11.158	-0.015	91	26				
C38	11.662	-0.004	37	26				
C40	12.143	-0.005	972	1509				
o-terph	6.605	-0.003	823764	662800	JET-A (C10-C18)	1281789	86.36	
Triacon Surr	9.646	-0.007	634570	687978				

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	662800	36.8	81.8
Triacontane	687978	41.9	93.2

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111208.b/1208a031.d

Date : 08-DEC-2011 21:38

Client ID: MW-31S-120511

Sample Info: TZ97B

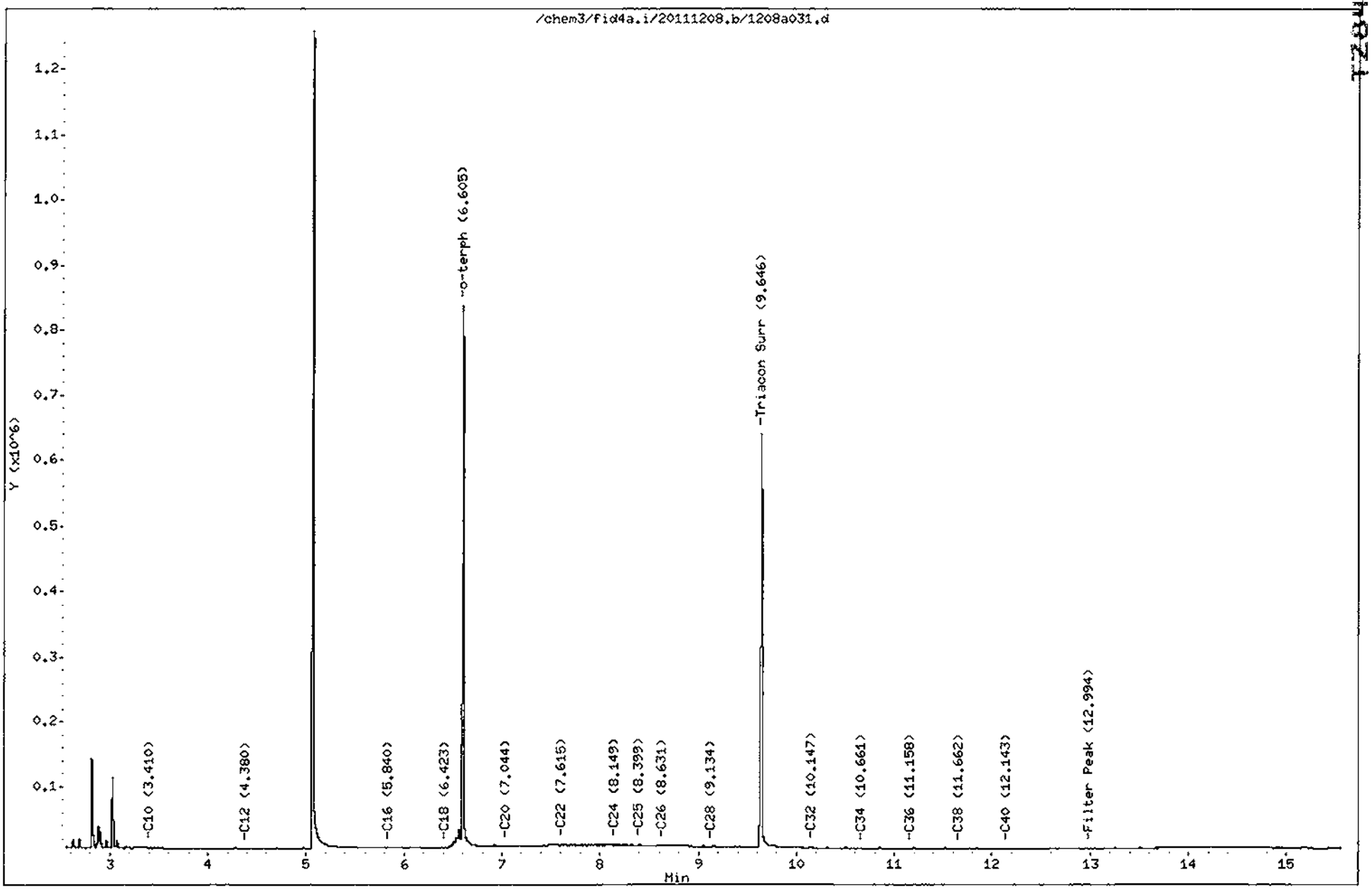
Column phase: RTX-1

Instrument: fid4a.i

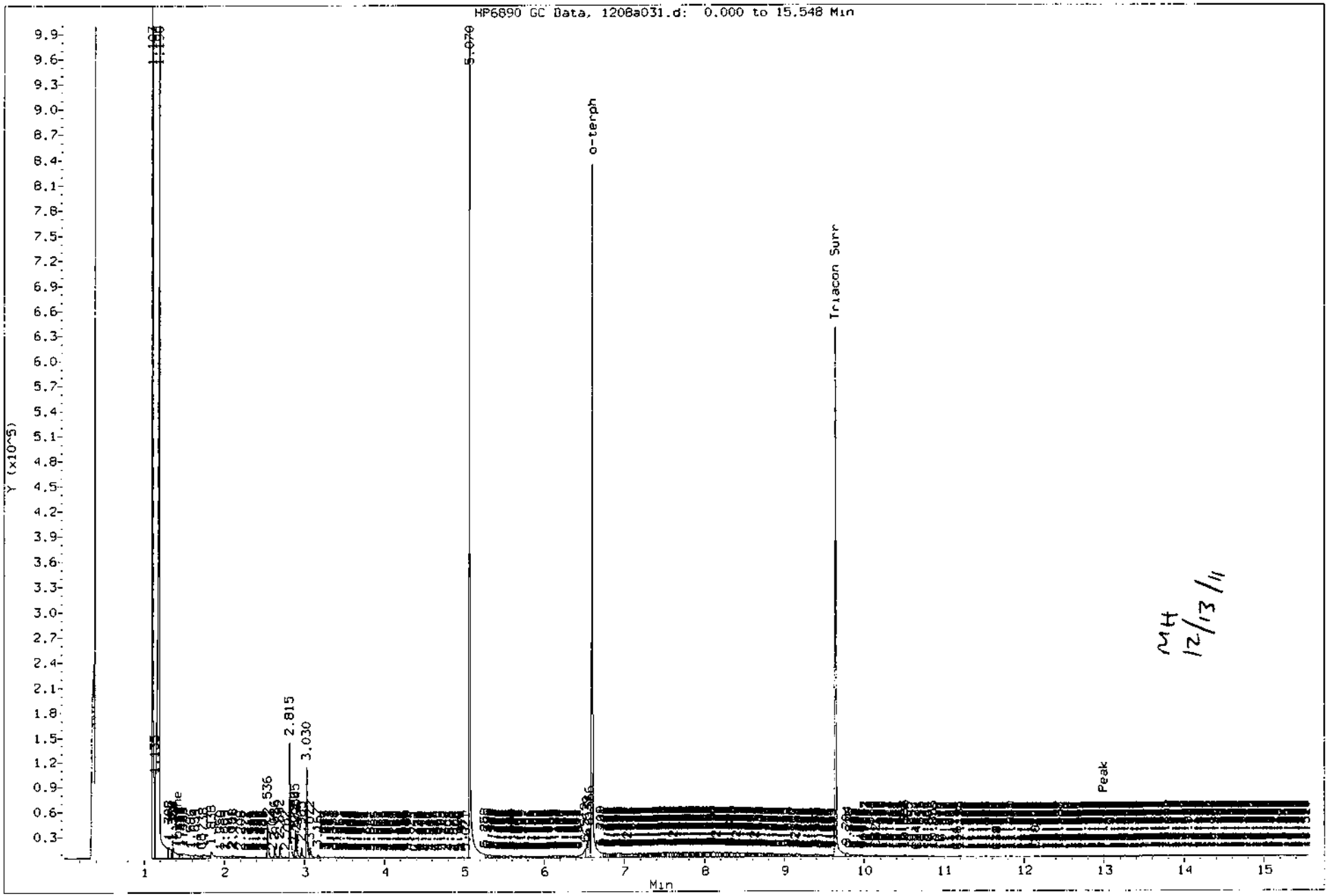
Operator: MH

Column diameter: 0.25

TZ84 00193



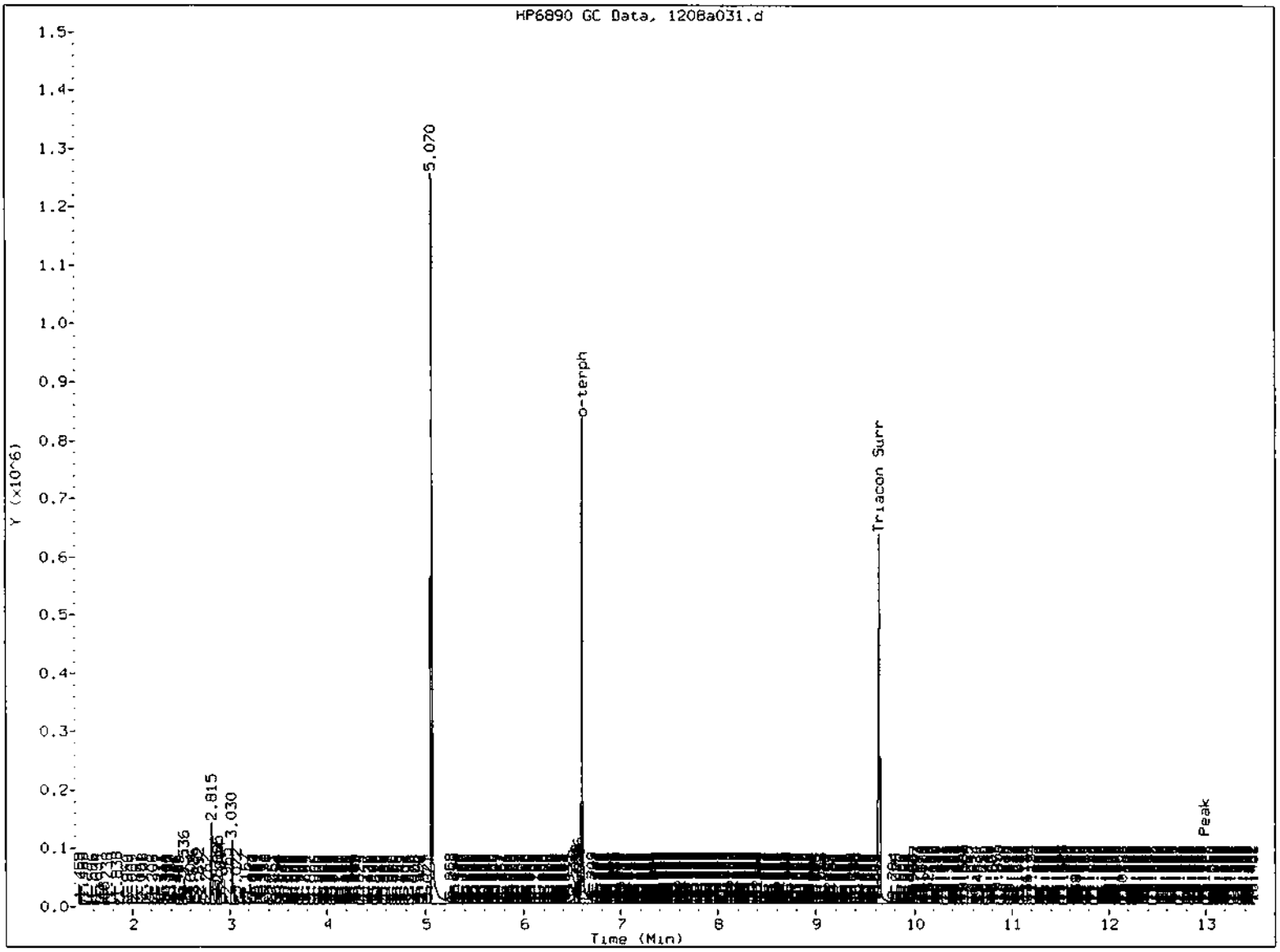
Data File: /chem3/fid4a.i/20111208.b/1208a031.d
Injection Date: 08-DEC-2011 21:38
Instrument: fid4a.i
Client Sample ID: MW-31S-120511



MH 12/13/11

TZ84:001914

FID:4A-2C/RTX-1 TZ97B FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/13/11

MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a032.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ97E
Client ID: DUP-120511-1
Injection: 08-DEC-2011 22:02
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.422	0.020	7494	8568	GAS (Tol-C12)	501848	21.24	
C8	1.723	-0.001	5928	23344	DIESEL (C12-C24)	1558567	115.66	
C10	3.407	0.003	958	1869	M.OIL (C24-C38)	376820	33.63	
C12	4.377	-0.023	677	1550	AK-102 (C10-C25)	1647976	102.78	M
C14	5.208	0.041	4232	8635	AK-103 (C25-C36)	323485	46.87	
C16	5.837	0.004	4540	4346				
C18	6.419	-0.037	6730	3833				
C20	7.048	-0.003	8274	9674				
C22	7.621	0.005	8217	14733				
C24	8.135	-0.009	6755	5909				
C25	8.401	0.006	7462	13541				
C26	8.635	-0.003	4450	7054				
C28	9.129	-0.003	2890	2743	IT.DIES (C10-C24)	1597333	100.14	M
C32	10.148	-0.009	1922	3980				
C34	10.669	0.000	384	307	BUNKERC (C10-C38)	1974154	267.67	M
Filter Peak	12.995	-0.001	791	1977				
C36	11.164	-0.008	121	64				
C38	11.661	-0.005	50	44				
C40	12.146	-0.003	962	1264				
o-terph	6.605	-0.004	803764	635994	JET-A (C10-C18)	627442	42.27	
Triacon Surr	9.647	-0.006	648295	709352				

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	635994	35.3	78.4
Triacontane	709352	43.2	96.1

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111208.b/1208a032.d

Date : 08-DEC-2011 22:02

Client ID: DUP-120511-1

Sample Info: TZ97E

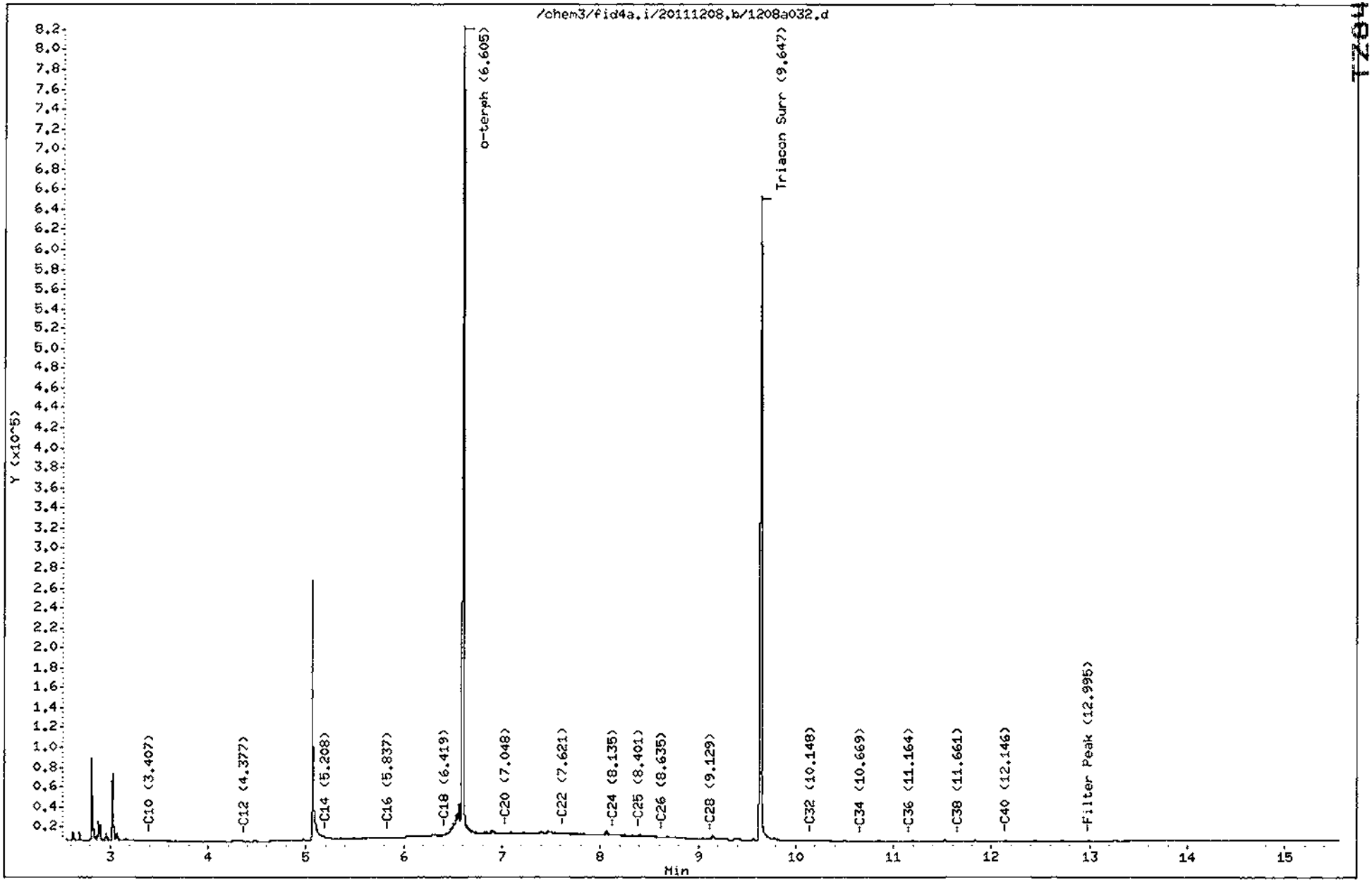
Column phase: RTX-1

Instrument: fid4a.i

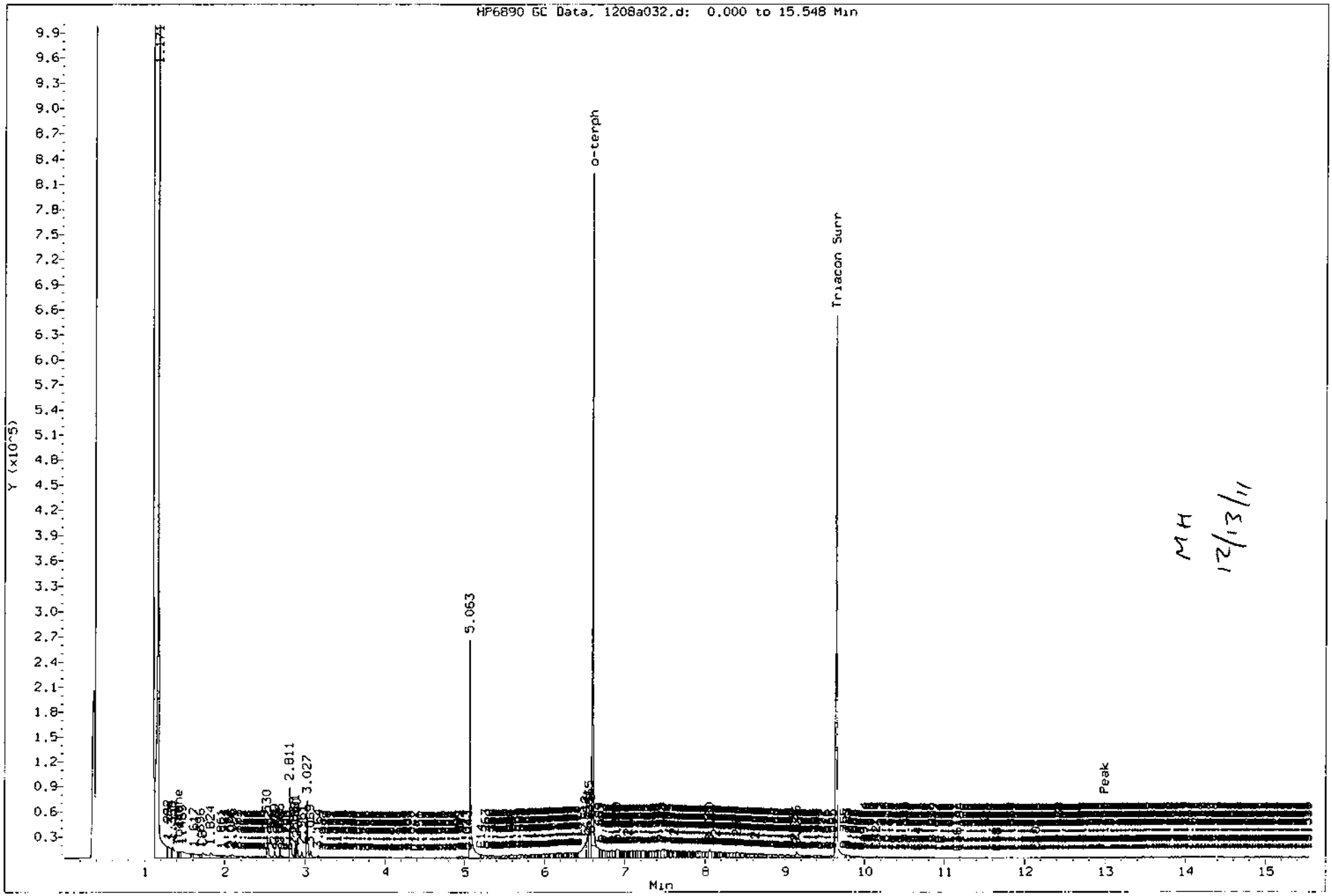
Operator: MH

Column diameter: 0.25

TZ84 : 001537



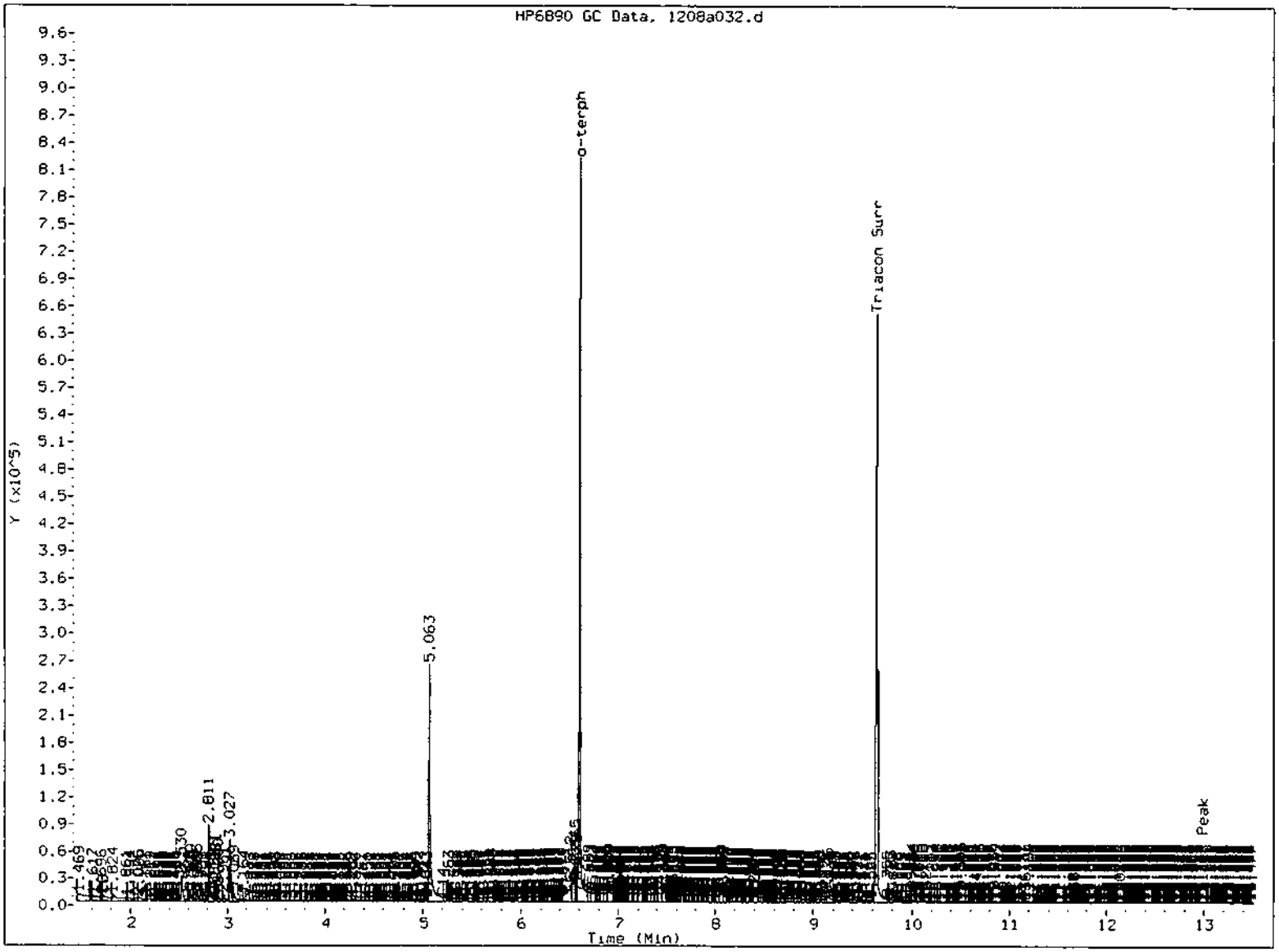
Data File: /chem3/fid4a.i/20111208.b/1208a032.d
Injection Date: 08-DEC-2011 22:02
Instrument: fid4a.i
Client Sample ID: DUP-120511-1



MH
12/13/11

T7844 : 001198

FID:4A-2C/RTX-1 TZ97E FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/13/14

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ97-ERM-West
Project: RG
128296.07

Client ID	OTER	TOT OUT
MB-120711	94.3%	0
LCS-120711	90.1%	0
LCSD-120711	93.0%	0
MW-30S-120511	80.2%	0
MW-31S-120511	81.8%	0
DUP-120511-1	78.4%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 11-27938 to 11-27942

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID **Sample ID: LCS-120711**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-120711 QC Report No: TZ84-ERM-West
LIMS ID: 11-27871 Project: RG
Matrix: Water 128296.07
Data Release Authorized: Date Sampled: NA
Reported: 12/13/11 Date Received: NA

Date Extracted LCS/LCSD: 12/07/11 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 12/08/11 19:42 Final Extract Volume LCS: 1.0 mL
LCSD: 12/08/11 20:05 LCSD: 1.0 mL
Instrument/Analyst LCS: FID4A/MH Dilution Factor LCS: 1.00
LCSD: FID4A/MH LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.80	3.00	93.3%	2.86	3.00	95.3%	2.1%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	90.1%	93.0%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a026.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ84LCSW1
Client ID: TZ84LCSW1
Injection: 08-DEC-2011 19:42
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.408	0.006	2591	2529	GAS (Tol-C12)	4010142	169.74	
C8	1.734	0.010	3254	4692	DIESEL (C12-C24)	18874955	1400.74	
C10	3.408	0.005	75942	72548	M.OIL (C24-C38)	255712	22.82	
C12	4.401	0.002	170848	174642	AK-102 (C10-C25)	21535434	1343.15	M
C14	5.170	0.003	308401	401644	AK-103 (C25-C36)	178216	25.82	
C16	5.837	0.004	502806	464714				
C18	6.461	0.005	401260	442733				
C20	7.051	0.000	294296	319194				
C22	7.613	-0.003	154223	155005				
C24	8.140	-0.003	33957	56546				
C25	8.397	0.001	11551	28011				
C26	8.653	0.015	3944	8596				
C28	9.144	0.012	1165	1218	IT.DIES (C10-C24)	21460821	1345.42	M
C32	10.148	-0.009	3572	4618				
C34	10.668	-0.001	66	35	BUNKERC (C10-C38)	21716534	2944.46	M
Filter Peak	12.994	-0.002	993	2370				
C36	11.159	-0.013	24	14				
C38	11.681	0.014	67	19				
C40	12.143	-0.005	1174	2056				
o-terph	6.610	0.001	886470	730458	JET-A (C10-C18)	15908816	1071.88	
Triacon Surr	9.646	-0.007	582340	674724				

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	730458	40.5	90.1
Triacontane	674724	41.1	91.4

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111208.b/1208a026.d

Date : 08-DEC-2011 19:42

Client ID: TZ84LCSW1

Sample Info: TZ84LCSW1

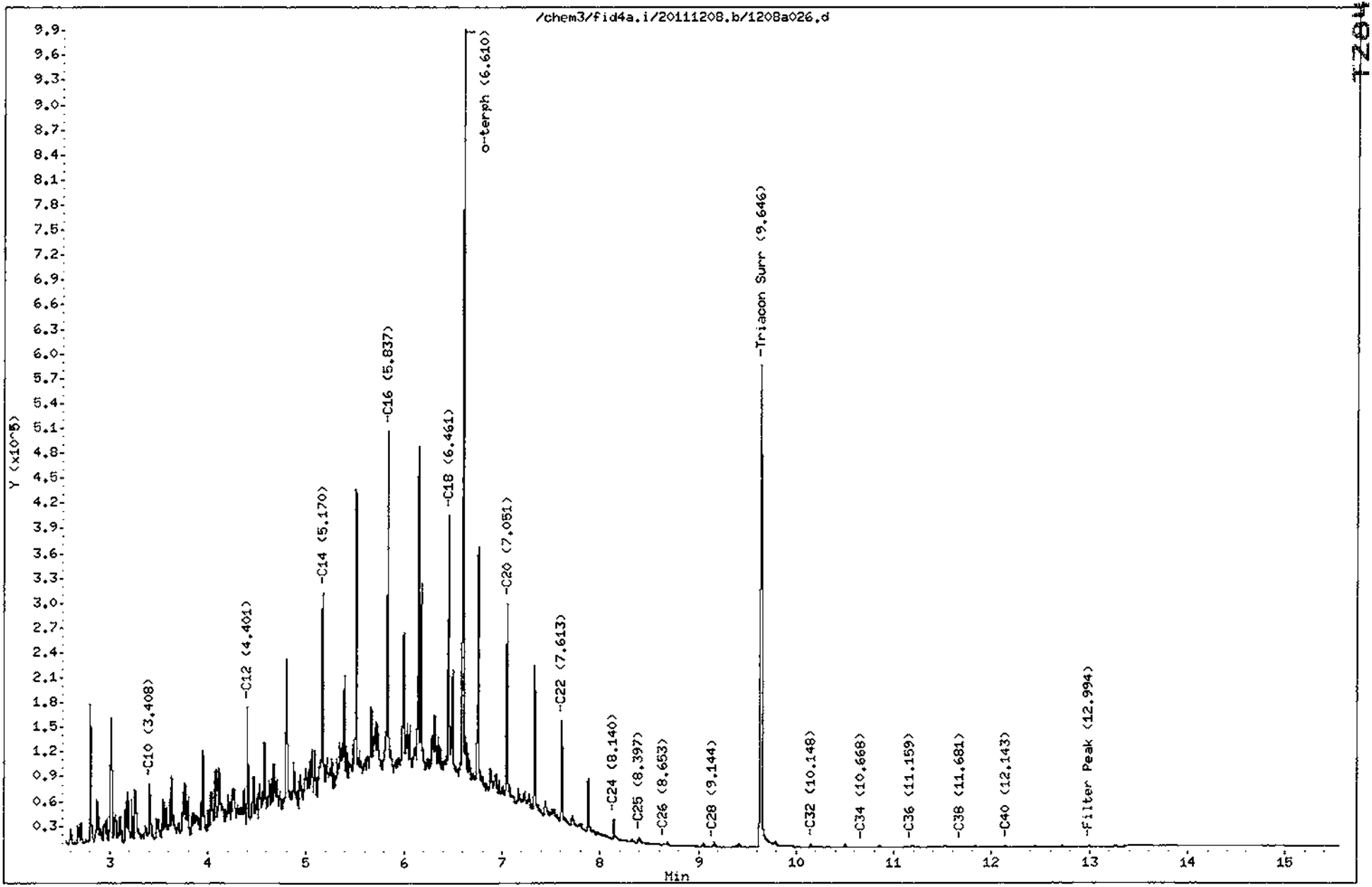
Column phase: RTX-1

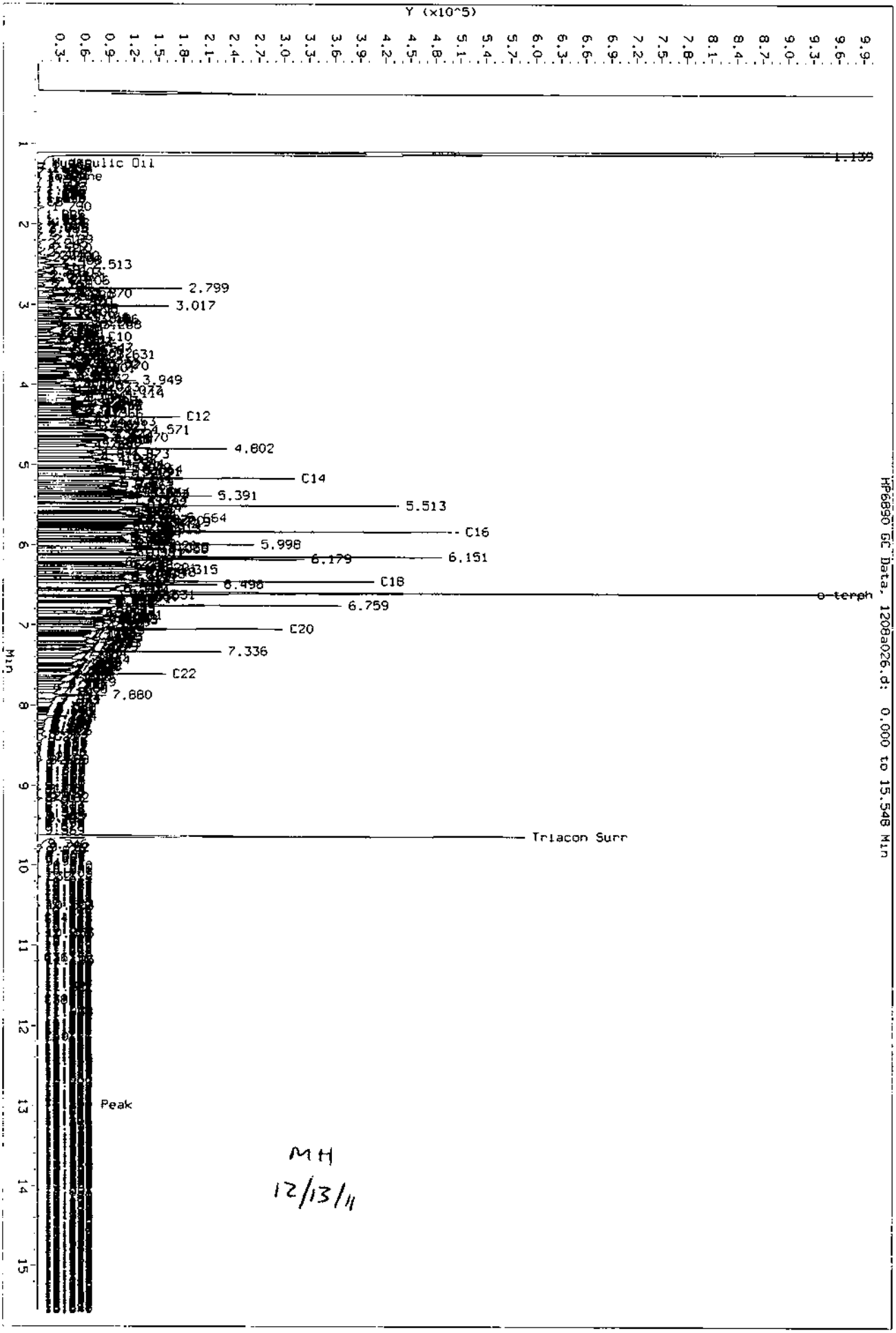
Instrument: fid4a.i

Operator: MH

Column diameter: 0.25

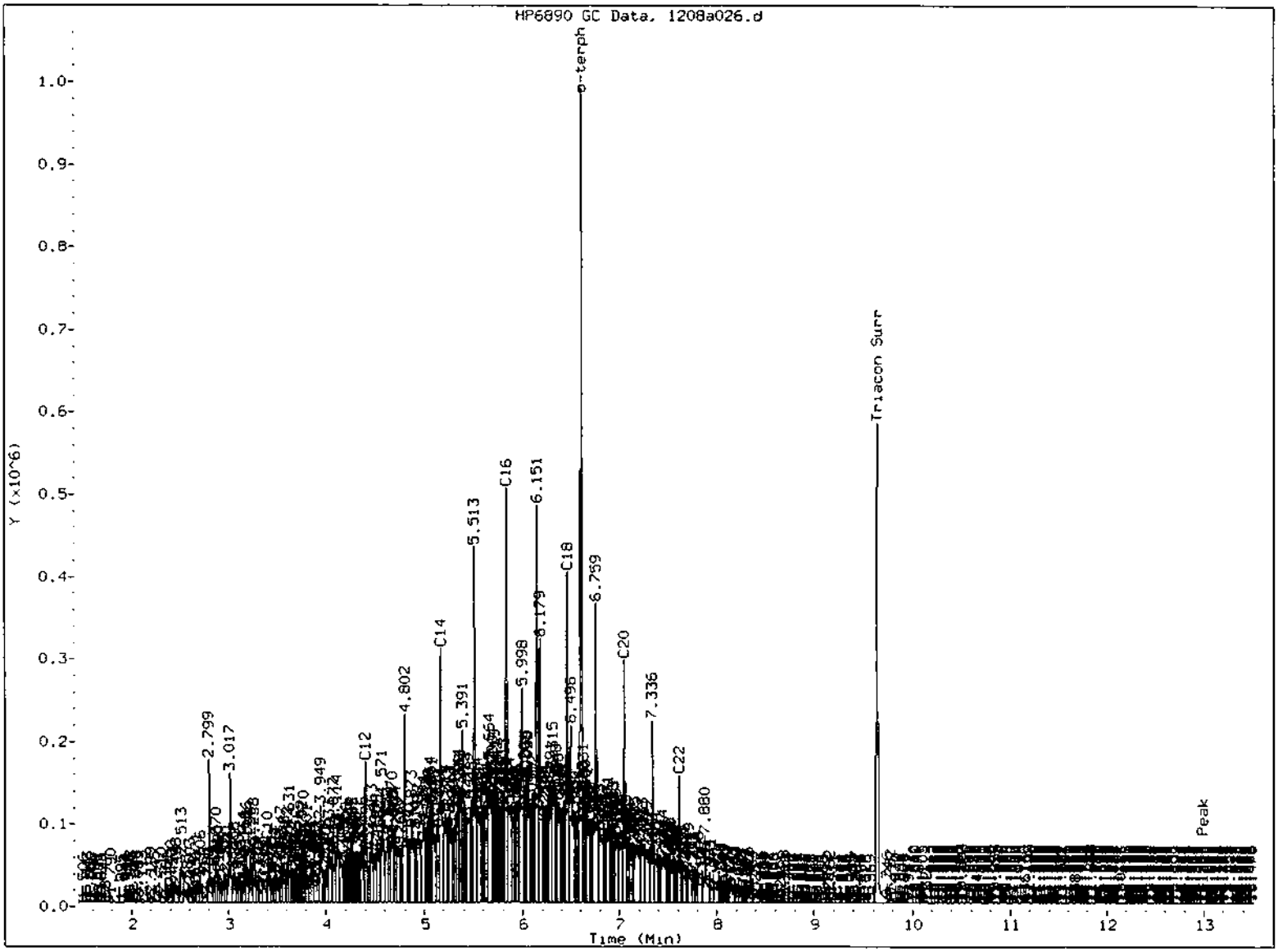
TZ84 00203




Data File: /chem3/fid4a.i/20111208.b/1208a026.d
Injection Date: 08-DEC-2011 19:42
Instrument: fid4a.i
Client Sample ID: TZ84LCSW1
Y (x10^5)
Min
Hydraulic Oil
1.139
2.513
2.799
3.017
C10
3.949
C12
4.571
4.802
C14
5.391
5.513
C16
5.998
6.151
6.179
C18
6.498
o-terph
6.759
C20
7.336
C22
7.680
Triacon Surr
Peak
HP6890 GC Data, 1208a026.d: 0.000 to 15.548 Min

MH
12/13/11

FID:4A-2C/RTX-1 TZ84LCSW1 FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/13/11

MH 12/13/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111208.b/1208a027.d
Method: /chem3/fid4a.i/20111208.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/13/2011
Macro: 07-DEC-2011
Calibration Dates: Gas:07-DEC-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ84LCSDW1
Client ID: TZ84LCSDW1
Injection: 08-DEC-2011 20:05
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.409	0.007	2450	2290	GAS (Tol-C12)	3676213	155.61	
C8	1.735	0.011	3127	4420	DIESEL (C12-C24)	19258828	1429.22	
C10	3.409	0.005	67465	65907	M.OIL (C24-C38)	280986	25.08	
C12	4.401	0.001	162766	169832	AK-102 (C10-C25)	21710280	1354.05	M
C14	5.170	0.003	311740	390152	AK-103 (C25-C36)	207510	30.06	
C16	5.837	0.004	519774	478585				
C18	6.459	0.003	418924	483284				
C20	7.051	0.000	307195	444802				
C22	7.612	-0.004	158927	192813				
C24	8.141	-0.003	35358	72155				
C25	8.397	0.002	11839	28796				
C26	8.651	0.012	3805	8819				
C28	9.130	-0.002	597	354	IT.DIES (C10-C24)	21640046	1356.66	M
C32	10.148	-0.009	3889	4816				
C34	10.654	-0.016	90	142	BUNKERC (C10-C38)	21921032	2972.19	M
Filter Peak	12.996	0.000	1029	3289				
C36	11.156	-0.016	28	23				
C38	11.656	-0.010	90	141				
C40	12.146	-0.002	1284	2218				
o-terph	6.609	0.001	871006	753861	JET-A (C10-C18)	15792134	1064.02	
Triacon Surr	9.646	-0.007	646206	659098				

M Indicates manual integration within range.
Range Times: NW Diesel(4.399 - 8.144) AK102(3.40 - 8.40) Jet A(3.40 - 6.46)
NW M.Oil(8.14 - 11.67) AK103(8.40 - 11.17) OR Diesel(3.40 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	753861	41.8	93.0
Triacontane	659098	40.2	89.3

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	23624.7	07-DEC-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111208.b/1208a027.d

Date : 08-DEC-2011 20:05

Client ID: TZ84LCSDW1

Sample Info: TZ84LCSDW1

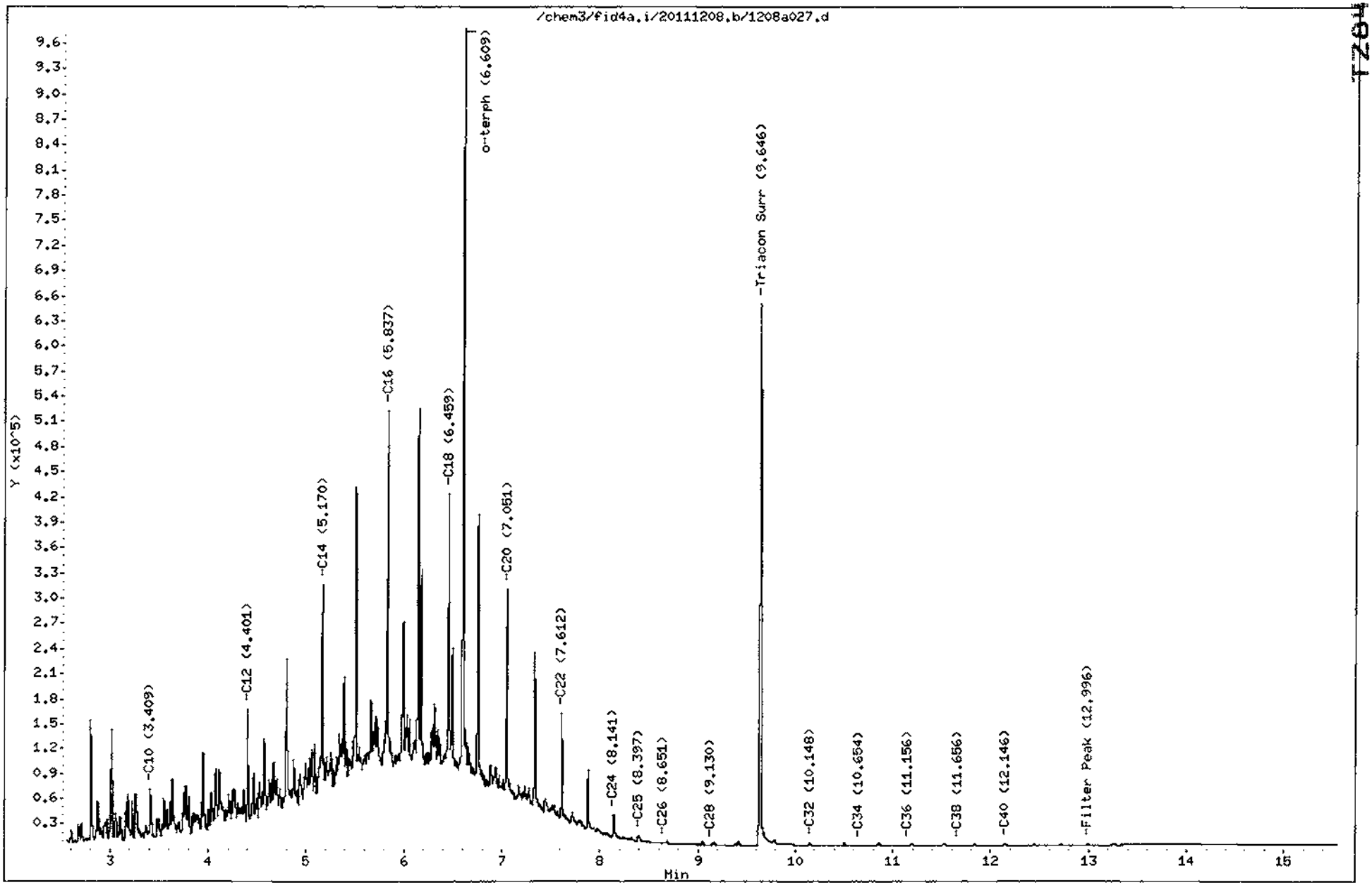
Column phase: RTX-1

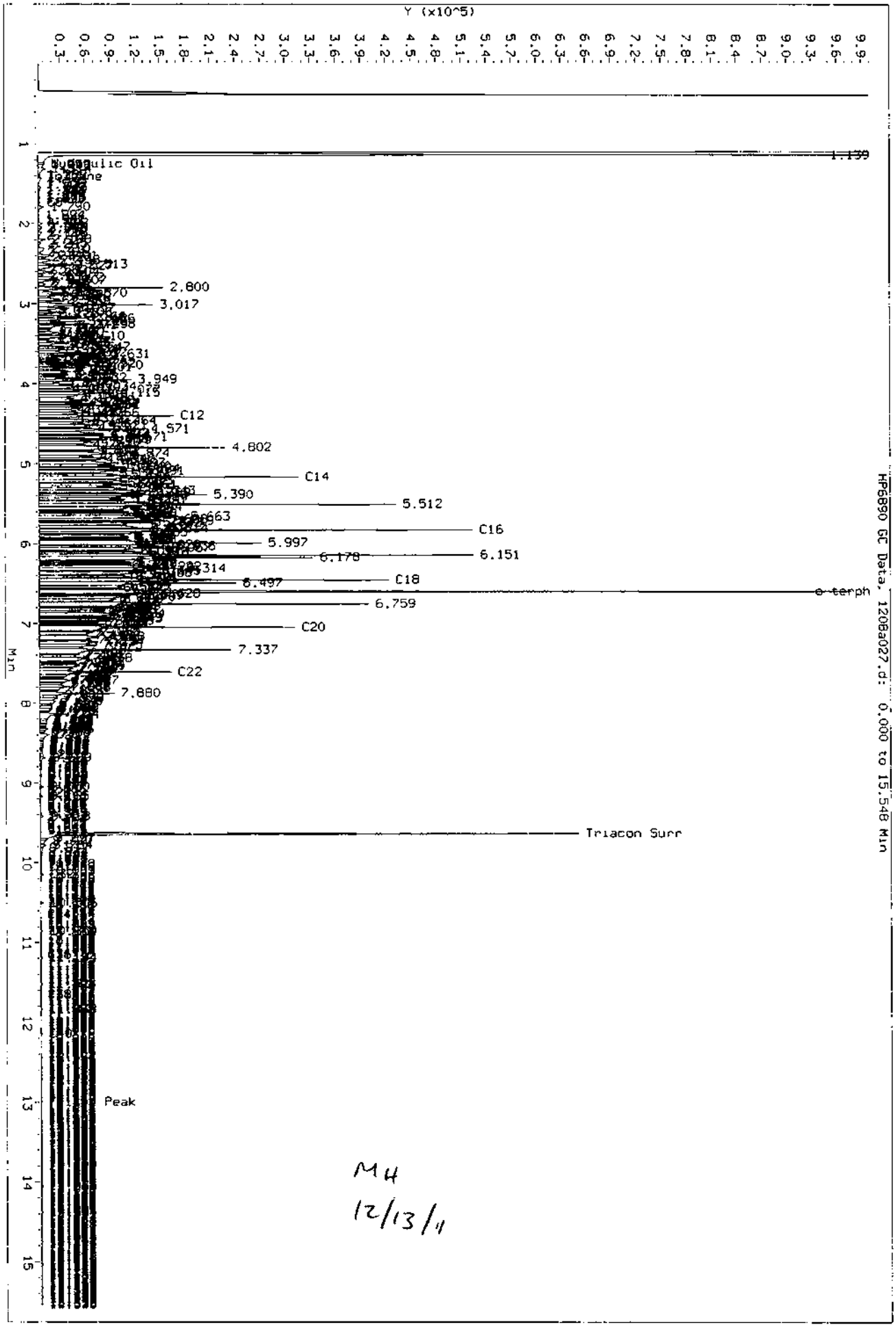
Instrument: fid4a.i

Operator: MH

Column diameter: 0.25

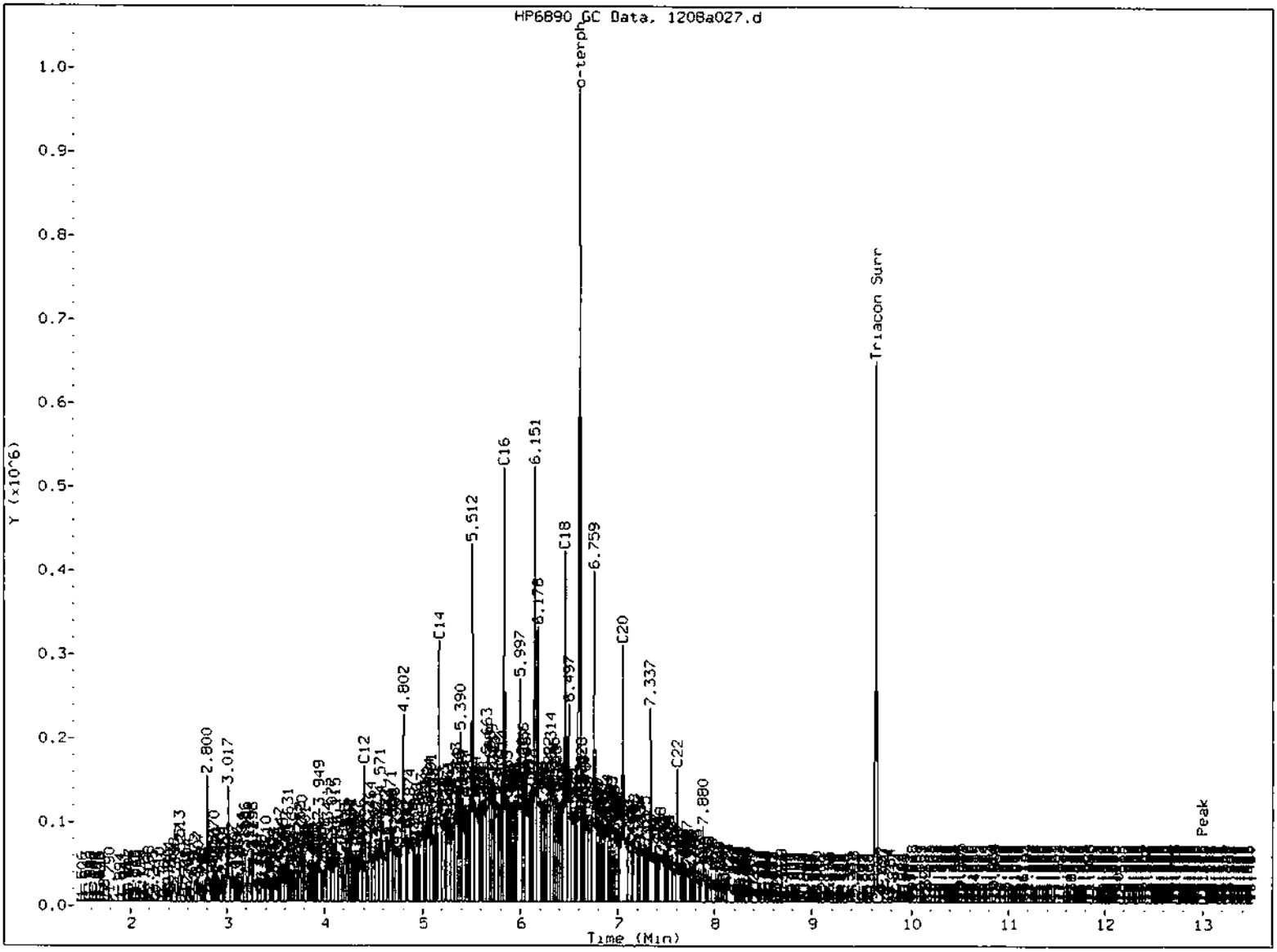
TZ84 : 002207




Data File: /chem3/fid4a.i/20111208.b/1208a027.d
Injection Date: 08-DEC-2011 20:05
Instrument: fid4a.i
Client Sample ID: TZ84LCSDW1
Y (x10^5)
Mineral Oil
Tetradecane
2,800
3,017
3,949
C12
4.802
C14
5.390
5.512
C16
5.997
6.178
6.151
C18
6.497
o-terph
6.759
C20
7.337
C22
7.880
Triacon Surr
Peak
Min
HP6890 GC Data, 1208a027.d: 0.000 to 15.548 Min

MH
12/13/11

FID:4A-2C/RTX-1 TZ84LCSDW1 FID:4A SIGNAL



MANUAL INTEGRATION

X Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/13/4

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: TZ84
Matrix: Water Project: RG
Date Received: 12/02/11 128296.07

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
11-27871-120711MB1	Method Blank	500 mL	1.00 mL	12/07/11
11-27871-120711LCS1	Lab Control	500 mL	1.00 mL	12/07/11
11-27871-120711LCSD1	Lab Control Dup	500 mL	1.00 mL	12/07/11
11-27871-TZ84A	MW-28S-120211	500 mL	1.00 mL	12/07/11
11-27872-TZ84B	MW-29S-120211	500 mL	1.00 mL	12/07/11

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: TZ97
Matrix: Water Project: RG
Date Received: 12/05/11 128296.07

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
11-27938-120711MB1	Method Blank	500 mL	1.00 mL	12/07/11
11-27938-120711LCS1	Lab Control	500 mL	1.00 mL	12/07/11
11-27938-120711LCSD1	Lab Control Dup	500 mL	1.00 mL	12/07/11
11-27938-TZ97A	MW-30S-120511	500 mL	1.00 mL	12/07/11
11-27939-TZ97B	MW-31S-120511	500 mL	1.00 mL	12/07/11
11-27942-TZ97E	DUP-120511-1	500 mL	1.00 mL	12/07/11

TPH METHOD BLANK SUMMARY

BLANK NO.: TZ84MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84-TZ97 Project No.: RG

Date Extracted: 12/07/11 Matrix: LIQUID

Date Analyzed : 12/08/11 Instrument ID : FID4A

Time Analyzed : 1918

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	TZ84LCSW1	TZ84LCSW1	12/08/11
02	TZ84LCSDW1	TZ84LCSDW1	12/08/11
03	MW-28S-12021	TZ84A	12/08/11
04	MW-29S-12021	TZ84B	12/08/11
05	MW-30S-12051	TZ97A	12/08/11
06	MW-31S-12051	TZ97B	12/08/11
07	DUP-120511-1	TZ97E	12/08/11
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

FORM IV TPH

6a
DIESEL INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

Instrument: FID4A.I Project: RG

Calibration Date: 09-SEP-2011 SDG No.: TZ84-TZ97

Diesel Range	RF1 50	RF2 100	RF3 250	RF4 500	RF5 1000	RF6 2500	Ave RF	%RSD
WA Diesel	14703	12956	13392	13411	13293	13096	13475	4.7
AK Diesel	17729	15603	15918	15893	15671	15387	16034	5.3
OR Diesel	17959	16022	16018	15997	15760	15452	16201	5.5
Cal Diesel	17660	15477	15870	15850	15624	15344	15971	5.3
o-Terph	19567	17603	18304	18243	17526	16851	18016	5.2

<- Indicates %RSD outside limits
Surrogate areas are not included in Diesel RF calculation.

Quant Ranges : WA Diesel C12-C24 (4.438-8.193)
AK Diesel C10-C25 (3.447-8.447)
OR Diesel C10-C28 (3.447-9.189)
Cal Diesel C10-C24 (3.447-8.193)

Calibration Files	Analysis Time
0909a011.d	09-SEP-2011 18:11
0909a012.d	09-SEP-2011 18:34
0909a013.d	09-SEP-2011 18:57
0909a014.d	09-SEP-2011 19:20
0909a015.d	09-SEP-2011 19:43
0909a016.d	09-SEP-2011 20:06

6a

NW MOTOR OIL RANGE INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

Instrument: FID4A.I Project: RG

Calibration Date: 05-AUG-2011 SDG No.: TZ84-TZ97

Product Range	RF1 100	RF2 250	RF3 500	RF4 1000	RF5 2500	RF6 5000	Ave RF	%RSD
WA M.Oil C24-C38	12204	11236	11461	11349	11170	9799	11203	7.0
Triac Surr	16464	15921	16623	16093	16929	----*	16406	2.4

<- Indicates %RSD outside limits
Surrogate areas are not included in Motor Oil RF calculation.

*The n-Triacontane high point (450ppm) is dropped because it shifts out of RT control limits of +/-.05min.

Calibration Files	Analysis Time
0805a011.d	05-AUG-2011 16:42
0805a012.d	05-AUG-2011 17:05
0805a013.d	05-AUG-2011 17:28
0805a014.d	05-AUG-2011 17:51
0805a015.d	05-AUG-2011 18:14
0805a016.d	05-AUG-2011 18:38

7a

DIESEL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC.
Client: ERM-WEST

ICal Date: 09-SEP-2011
Project: RG

CCal Date: 08-DEC-2011
SDG No.: TZ84-TZ97

Analysis Time: 18:32
Lab ID: DIESEL#3

Instrument: FID4A.I
Lab File Name: 1208a023.d

Diesel Range	Area*	CalcAmnt	NomAmnt	% D
WADies(C12-C24)	3359835	249.3	250	-0.3
AK102 (C10-C25)	3999870	249.5	250	-0.2
Terphenyl	791262	43.9	45	-2.4

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA Diesel C12-C24
AK Diesel C10-C25

7a

MOTOR OIL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 05-AUG-2011 Project: RG

CCal Date: 08-DEC-2011 SDG No.: TZ84-TZ97

Analysis Time: 18:55 Lab ID: MOIL #3

Instrument: FID4A.I Lab File Name: 1208a024.d

M.oil Range	Area*	CalcAmnt	NomAmnt	% D	
WAMoil(C24-C38)	5024038	448.4	500	-10.3	
AK103 (C25-C36)	4464238	646.8	500	29.4	<-
CRUDE(Tol-C40)	5998047	794.2	500	58.8	
n-Triacontane	718074	43.8	45	-2.7	

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA M.Oil C24-C38
AK M.Oil C25-C36

7a

DIESEL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-SEP-2011 Project: RG

CCal Date: 08-DEC-2011 SDG No.: TZ84-TZ97

Analysis Time: 22:25 Lab ID: DIESEL#4

Instrument: FID4A.I Lab File Name: 1208a033.d

Diesel Range	Area*	CalcAmnt	NomAmnt	% D
WADies(C12-C24)	3391865	251.7	250	0.7
AK102 (C10-C25)	4015546	250.4	250	0.2
Terphenyl	813433	45.2	45	0.3

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA Diesel C12-C24
AK Diesel C10-C25

7a

MOTOR OIL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 05-AUG-2011 Project: RG

CCal Date: 08-DEC-2011 SDG No.: TZ84-TZ97

Analysis Time: 22:49 Lab ID: MOIL #4

Instrument: FID4A.I Lab File Name: 1208a034.d

M.oil Range	Area*	CalcAmnt	NomAmnt	% D	
WAMoil(C24-C38)	5290582	472.2	500	-5.6	
AK103 (C25-C36)	4697239	680.6	500	36.1	<-
CRUDE(Tol-C40)	6095270	807.0	500	61.4	
n-Triacontane	732487	44.6	45	-0.8	

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA M.Oil C24-C38
AK M.Oil C25-C36

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84-TZ97 Project: RG

Instrument ID: FID4A GC Column: RTX-1

Run Date: 08/05/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 6.68 TRIAC: 9.77

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	RT	RT	08/05/11	1312	6.68	9.77
02	IB	IB	08/05/11	1335	6.68	9.76
03	DIESEL 50	DIESEL 50	08/05/11	1359	6.67	9.77
04	DIESEL 100	DIESEL 100	08/05/11	1422	6.67	9.77
05	DIESEL 250	DIESEL 250	08/05/11	1446	6.68	9.77
06	DIESEL 500	DIESEL 500	08/05/11	1509	6.69	9.77
07	DIESEL 1000	DIESEL 1000	08/05/11	1532	6.70	9.76
08	DIESEL 2500	DIESEL 2500	08/05/11	1555	6.72	9.77
09	MOIL 100	MOIL 100	08/05/11	1642	6.67	9.74
10	MOIL 250	MOIL 250	08/05/11	1705	6.73	9.75
11	MOIL 500	MOIL 500	08/05/11	1728	6.73	9.77
12	MOIL 1000	MOIL 1000	08/05/11	1751	6.73	9.78
13	MOIL 2500	MOIL 2500	08/05/11	1814	6.73	9.81
14	MOIL 5000	MOIL 5000	08/05/11	1838	6.73	9.84*

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

*The n-Triacontane high point (450ppm) is dropped because it shifts out of RT control limits of +/-.05min.

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84-TZ97 Project: RG

Instrument ID: FID4A GC Column: RTX-1

Run Date: 09/09/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 6.65 TRIAC: 9.72

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01		RT	09/09/11	1639	6.65	9.72
02		DIESEL 50	09/09/11	1811	6.65	9.71
03		DIESEL 100	09/09/11	1834	6.65	9.73
04		DIESEL 250	09/09/11	1857	6.66	9.73
05		DIESEL 500	09/09/11	1920	6.66	9.73
06		DIESEL 1000	09/09/11	1943	6.67	9.73
07		DIESEL 2500	09/09/11	2006	6.70	9.73
08		DIESEL ICV	09/09/11	2029	6.65	9.73

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

FORM VIII TPH

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84-TZ97 Project: RG

Instrument ID: FID4A GC Column: RTX-1

Run Date: 12/08/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 6.61 TRIAC: 9.65

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	ZZZZZ	ZZZZZ	12/08/11	0022	6.61	9.64
02	ZZZZZ	ZZZZZ	12/08/11	0045	6.61	9.65
03	ZZZZZ	ZZZZZ	12/08/11	0619	6.61	9.65
04	ZZZZZ	ZZZZZ	12/08/11	0729	6.61	9.65
05	ZZZZZ	ZZZZZ	12/08/11	0752	6.61	9.65
06	ZZZZZ	ZZZZZ	12/08/11	0815	6.61	9.65
07	ZZZZZ	ZZZZZ	12/08/11	0839	6.63	9.65
08	RT	RT	12/08/11	1040	6.61	9.65
09	IB	IB	12/08/11	1103	6.61	9.65
10	ZZZZZ	ZZZZZ	12/08/11	1127	6.61	9.66
11	ZZZZZ	ZZZZZ	12/08/11	1150	6.61	9.65
12	ZZZZZ	ZZZZZ	12/08/11	1327	6.61	9.65
13	ZZZZZ	ZZZZZ	12/08/11	1350	6.61	9.65
14	ZZZZZ	ZZZZZ	12/08/11	1413	6.61	9.65
15	ZZZZZ	ZZZZZ	12/08/11	1437	6.61	9.65
16	ZZZZZ	ZZZZZ	12/08/11	1500	6.61	9.65
17	ZZZZZ	ZZZZZ	12/08/11	1524	6.61	9.66
18	ZZZZZ	ZZZZZ	12/08/11	1547	6.61	9.65
19	ZZZZZ	ZZZZZ	12/08/11	1611	6.60	9.64
20	ZZZZZ	ZZZZZ	12/08/11	1634	6.61	9.65
21	ZZZZZ	ZZZZZ	12/08/11	1658	6.61	9.65
22	ZZZZZ	ZZZZZ	12/08/11	1721	6.61	9.65
23	ZZZZZ	ZZZZZ	12/08/11	1745	6.60	9.64
24	ZZZZZ	ZZZZZ	12/08/11	1808	6.61	9.65
25	RG	DIESEL#3	12/08/11	1832	6.61	9.64
26	RG	MOIL #3	12/08/11	1855	6.61	9.65
27	TZ84MBW1	TZ84MBW1	12/08/11	1918	6.61	9.65
28	TZ84LCSW1	TZ84LCSW1	12/08/11	1942	6.61	9.65
29	TZ84LCSDW1	TZ84LCSDW1	12/08/11	2005	6.61	9.65
30	MW-28S-12021	TZ84A	12/08/11	2028	6.60	9.65
31	MW-29S-12021	TZ84B	12/08/11	2052	6.60	9.65
32	MW-30S-12051	TZ97A	12/08/11	2115	6.60	9.65

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84-TZ97 Project: RG

Instrument ID: FID4A GC Column: RTX-1

Run Date: 12/08/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 6.61 TRIAC: 9.65

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	MW-31S-12051	TZ97B	12/08/11	2138	6.60	9.65
02	DUP-120511-1	TZ97E	12/08/11	2202	6.60	9.65
03	RG	DIESEL#4	12/08/11	2225	6.61	9.64
04	RG	MOIL #4	12/08/11	2249	6.61	9.65

	QC LIMITS
TERPH = o-terph	(+/- 0.05 MINUTES)
TRIAC = Triacon Surr	(+/- 0.05 MINUTES)

* Values outside of QC limits.

FORM VIII TPH

TPHG Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-121011	Method Blank	12/10/11	1.0	Gasoline	< 0.03 U
11-27871		PID2		HC ID	---
				Trifluorotoluene	83.3%
				Bromobenzene	84.3%
TZ84A	MW-28S-120211	12/10/11	1.0	Gasoline	< 0.03 U
11-27871		PID2		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	98.8%
TZ84B	MW-29S-120211	12/10/11	1.0	Gasoline	< 0.03 U
11-27872		PID2		HC ID	---
				Trifluorotoluene	99.3%
				Bromobenzene	96.2%
TZ84E	TB-120211-1	12/10/11	1.0	Gasoline	< 0.03 U
11-27875		PID2		HC ID	---
				Trifluorotoluene	97.1%
				Bromobenzene	95.4%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a006.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a006.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: MB1210
Client ID:
Injection Date: 10-DEC-2011 11:19
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.148	0.005	6432	84769	83.3	TFT(Surr)
15.178	0.003	3108	37673	84.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	51884	0.023
8015B 2MP-TMB	(4.58 to 16.10)	4503375	80708	0.018
AK101 nC6-nC10	(5.07 to 14.70)	3606280	69637	0.019
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	58079	0.025

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.162	0.005	30073	82.9	TFT(Surr)
15.192	0.003	51772	84.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
10.057	-0.001	135	0.02	Toluene
ND	---	---	---	Ethylbenzene
12.802	-0.001	228	0.04	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

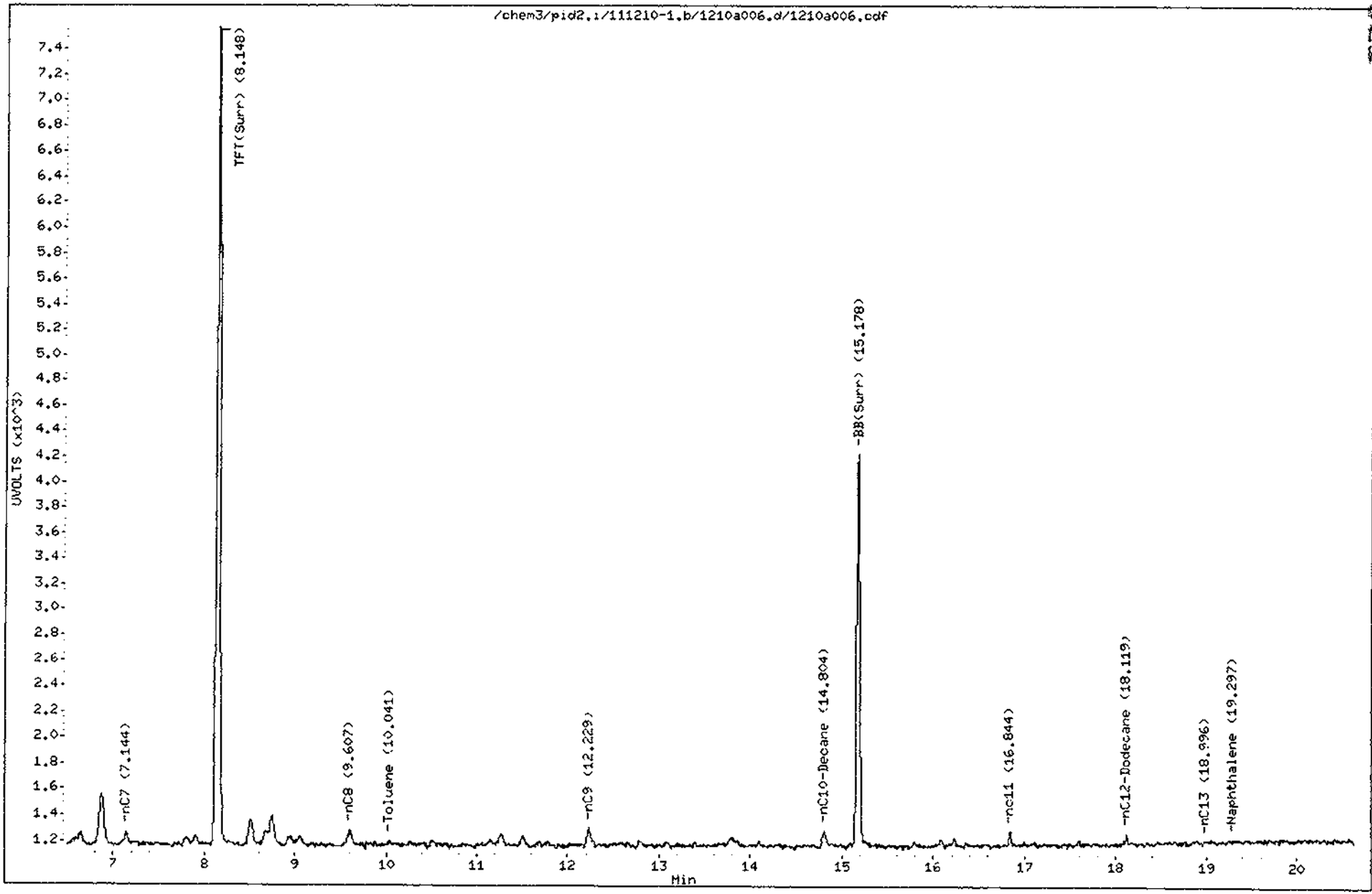
Data File: /chem3/pid2.i/111210-1.b/1210a006.d
Date : 10-DEC-2011 11:19
Client ID:
Sample Info: MB1210

Instrument: pid2.i

Operator: JW
Column diameter: 0.18

Column phase: RTX 502-2 FID

T284 : 002226



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a010.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a010.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ84A
Client ID: MW-28S-120211
Injection Date: 10-DEC-2011 13:29
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	0.004	7768	102970	100.6	TFT(Surr)
15.179	0.003	3641	42292	98.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	36916	0.017
8015B 2MP-TMB	(4.58 to 16.10)	4503375	68167	0.015
AK101 nC6-nC10	(5.07 to 14.70)	3606280	58042	0.016
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	40453	0.017

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.161	0.004	36442	100.4	TFT(Surr)
15.193	0.003	60674	99.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
10.058	0.000	272	0.05	Toluene
12.659	0.001	173	0.03	Ethylbenzene
12.804	0.001	287	0.05	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW
12/14/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a010.d

Date : 10-DEC-2011 13:29

Client ID: MW-28S-120211

Sample Info: TZ84A

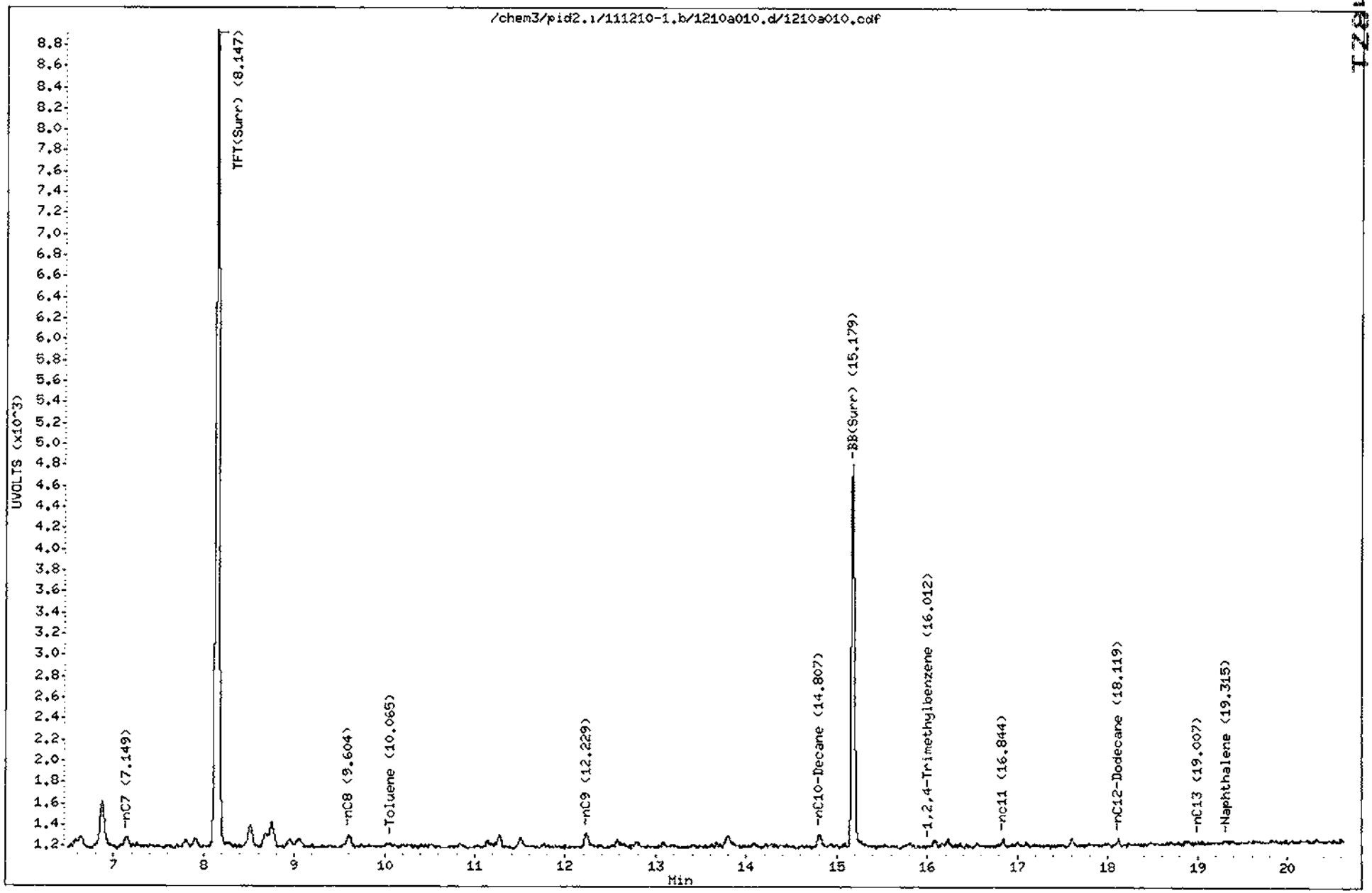
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

TZ84 : 00228



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a014.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a014.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ84B
Client ID: MW-29S-120211
Injection Date: 10-DEC-2011 15:14
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.148	0.005	7663	101859	99.3	TFT(Surr)
15.179	0.003	3544	42443	96.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	41435	0.019
8015B 2MP-TMB	(4.58 to 16.10)	4503375	46100	0.010
AK101 nC6-nC10	(5.07 to 14.70)	3606280	40516	0.011
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	47742	0.021

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.162	0.005	36162	99.7	TFT(Surr)
15.193	0.003	59493	97.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
10.060	0.002	172	0.03	Toluene
ND	---	---	---	Ethylbenzene
12.803	0.001	211	0.04	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/14/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

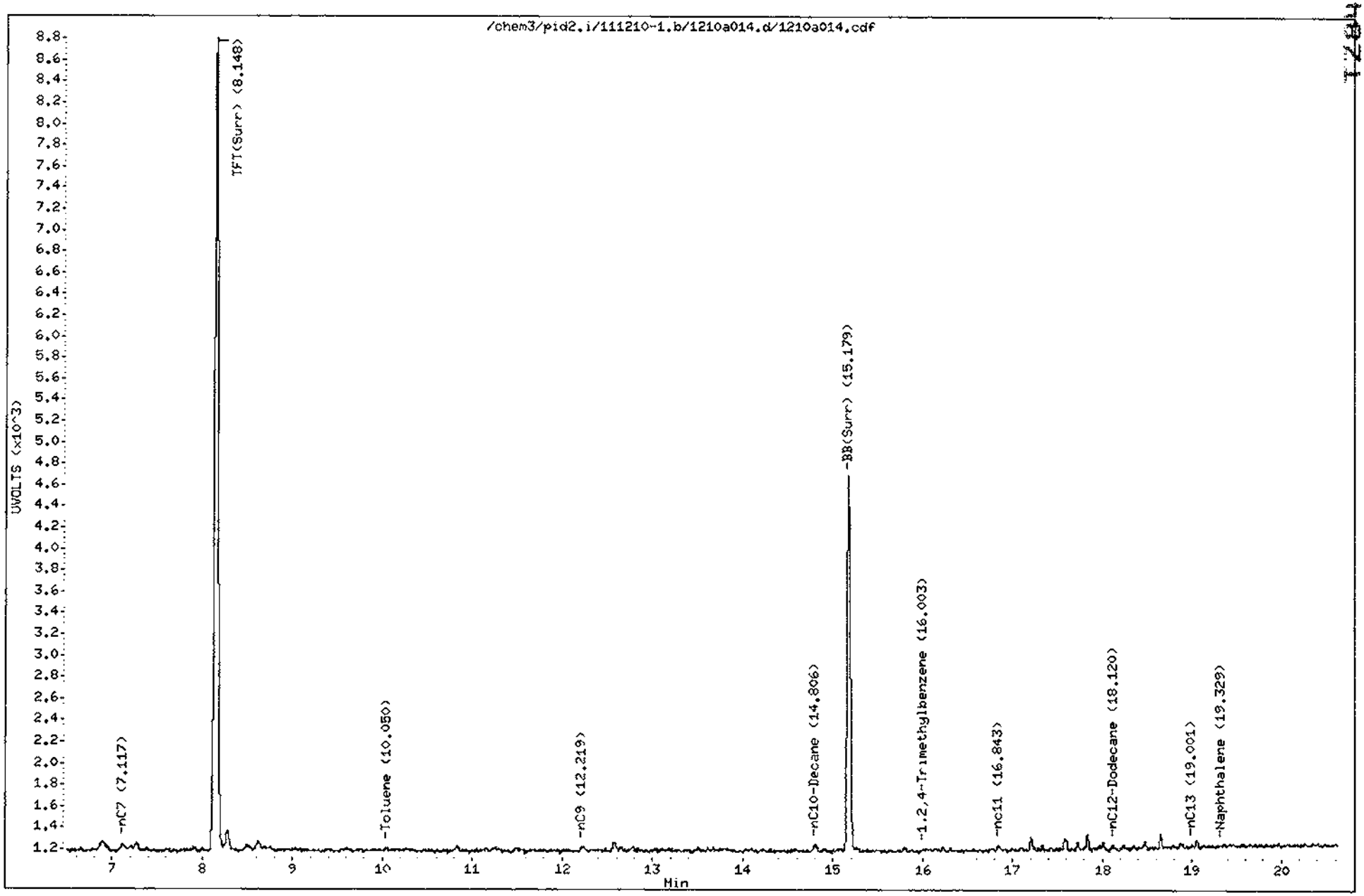
Data File: /chem3/pid2.i/111210-1.b/1210a014.d
Date : 10-DEC-2011 15:14
Client ID: MW-29S-120211
Sample Info: TZ848

Instrument: pid2.i

Operator: JW
Column diameter: 0.18

Column phase: RTX 502-2 FID

TZ84 : 00230



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a012.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a012.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ84E
Client ID: TB-120211-1
Injection Date: 10-DEC-2011 14:21
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	0.004	7495	98477	97.1	TFT(Surr)
15.180	0.004	3518	40905	95.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	35779	0.016
8015B 2MP-TMB	(4.58 to 16.10)	4503375	64700	0.014
AK101 nC6-nC10	(5.07 to 14.70)	3606280	54335	0.015
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	40127	0.017

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.161	0.004	34988	96.4	TFT(Surr)
15.193	0.004	57865	94.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
12.803	0.001	210	0.04	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/14/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a012.d

Date : 10-DEC-2011 14:21

Client ID: TB-120211-1

Sample Info: TZ84E

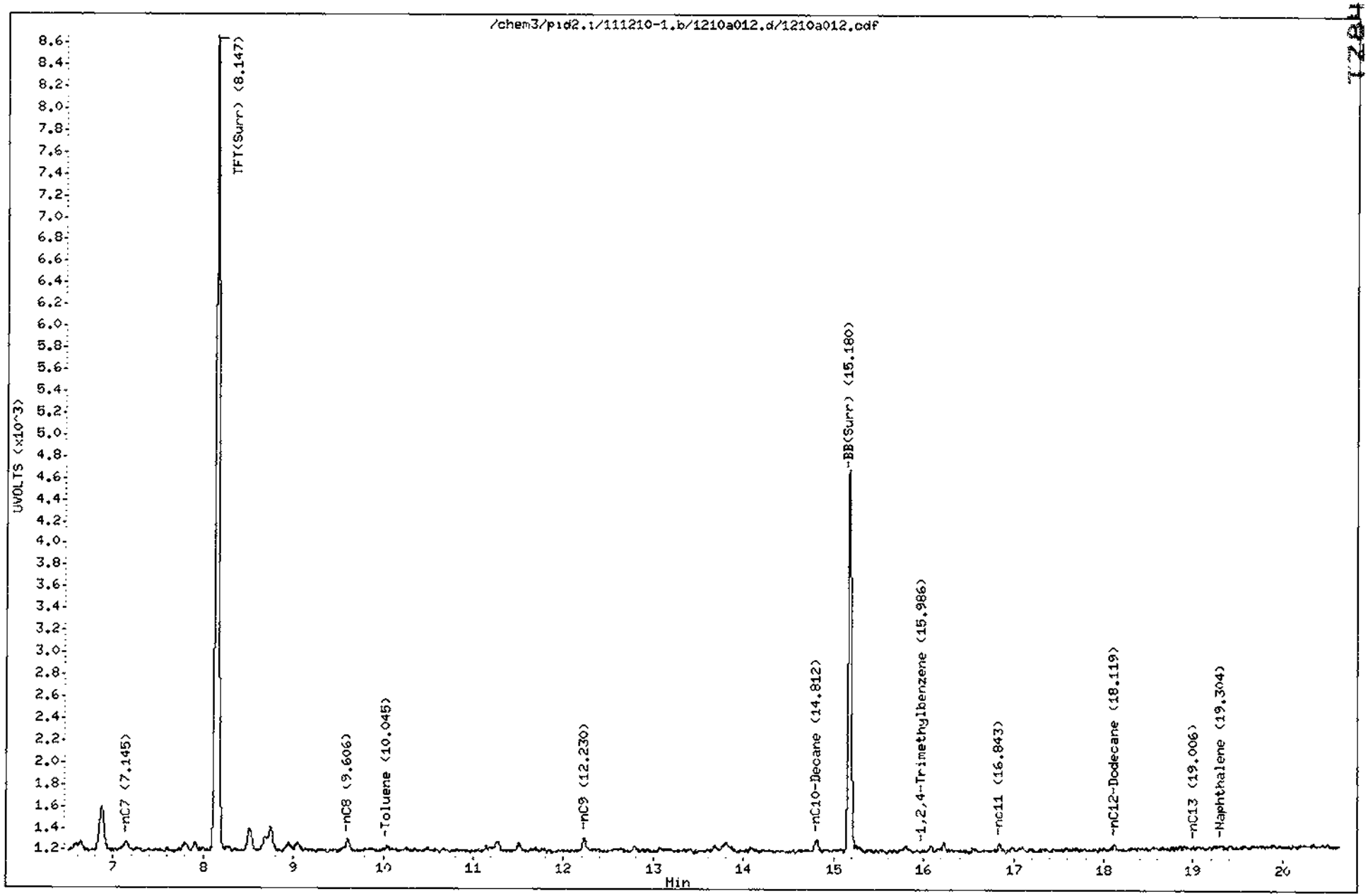
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

TZ84 : 002232



ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: TZ84
Matrix: Water

QC Report No: TZ84-ERM-West
Project: RG
Event: 128296.07

Client ID	TFT	BBZ	TOT OUT
MB-121011	83.3%	84.3%	0
LCS-121011	103%	96.5%	0
LCSD-121011	102%	101%	0
MW-28S-120211	101%	98.8%	0
MW-29S-120211	99.3%	96.2%	0
TB-120211-1	97.1%	95.4%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 11-27871 to 11-27875

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized: VTB
Reported: 12/17/11

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-121011	Method Blank	12/10/11	1.0	Gasoline	< 0.03 U
11-27938		PID2		HC ID	---
				Trifluorotoluene	83.3%
				Bromobenzene	84.3%
TZ97A	MW-30S-120511	12/10/11	1.0	Gasoline	< 0.03 U
11-27938		PID2		HC ID	---
				Trifluorotoluene	101%
				Bromobenzene	98.9%
TZ97B	MW-31S-120511	12/10/11	1.0	Gasoline	< 0.03 U
11-27939		PID2		HC ID	---
				Trifluorotoluene	98.7%
				Bromobenzene	97.3%
TZ97D	FB-120511-1	12/10/11	1.0	Gasoline	< 0.03 U
11-27941		PID2		HC ID	---
				Trifluorotoluene	102%
				Bromobenzene	102%
TZ97F	DUP-120511-2	12/10/11	1.0	Gasoline	< 0.03 U
11-27943		PID2		HC ID	---
				Trifluorotoluene	100%
				Bromobenzene	98.6%
TZ97G	TB-120511-1	12/10/11	1.0	Gasoline	< 0.03 U
11-27944		PID2		HC ID	---
				Trifluorotoluene	98.1%
				Bromobenzene	97.2%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a015.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a015.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ97A
Client ID: MW-30S-120511
Injection Date: 10-DEC-2011 15:40
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	-0.005	7790	101983	100.9	TFT(Surr)
15.179	-0.003	3645	42774	98.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.95 to 18.22)	2221806	28243	0.013
8015B 2MP-TMB	(4.59 to 16.18)	4503375	30163	0.007
AK101 nC6-nC10	(5.08 to 14.71)	3606280	25872	0.007
NWTPHG Tol-Nap	(9.95 to 19.40)	2317394	37418	0.016

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.162	0.005	36653	101.0	TFT(Surr)
15.194	0.005	60292	98.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
10.062	0.003	211	0.04	Toluene
ND	---	---	---	Ethylbenzene
12.803	0.000	358	0.06	M/P-Xylene
13.627	0.005	228	0.05	O-Xylene
ND	---	---	---	MTBE

JW 12/16/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a015.d

Date : 10-DEC-2011 15:40

Client ID: MW-30S-120511

Sample Info: TZ97A

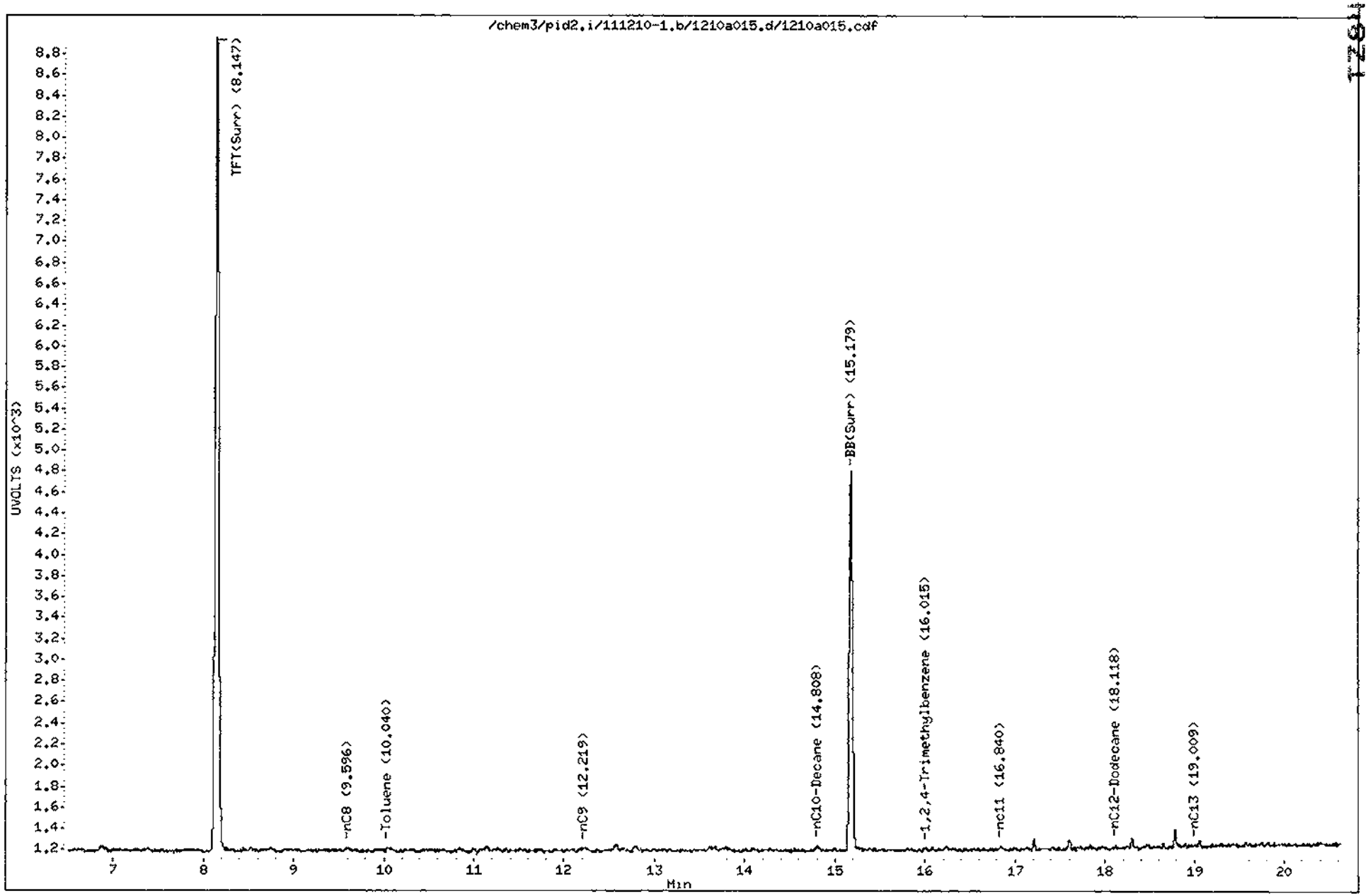
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

TZ97A 00236



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a016.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a016.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ97B
Client ID: MW-31S-120511
Injection Date: 10-DEC-2011 16:06
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.149	-0.004	7622	101932	98.7	TFT(Surr)
15.178	-0.004	3587	42739	97.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.95 to 18.22)	2221806	21265	0.010
8015B 2MP-TMB	(4.59 to 16.18)	4503375	24846	0.006
AK101 nC6-nC10	(5.08 to 14.71)	3606280	20276	0.006
NWTPHG Tol-Nap	(9.95 to 19.40)	2317394	24402	0.011

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.162	0.005	35844	98.8	TFT(Surr)
15.191	0.002	59917	97.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
12.801	-0.001	225	0.04	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/16/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a016.d

Date : 10-DEC-2011 16:06

Client ID: MW-31S-120511

Sample Info: TZ97B

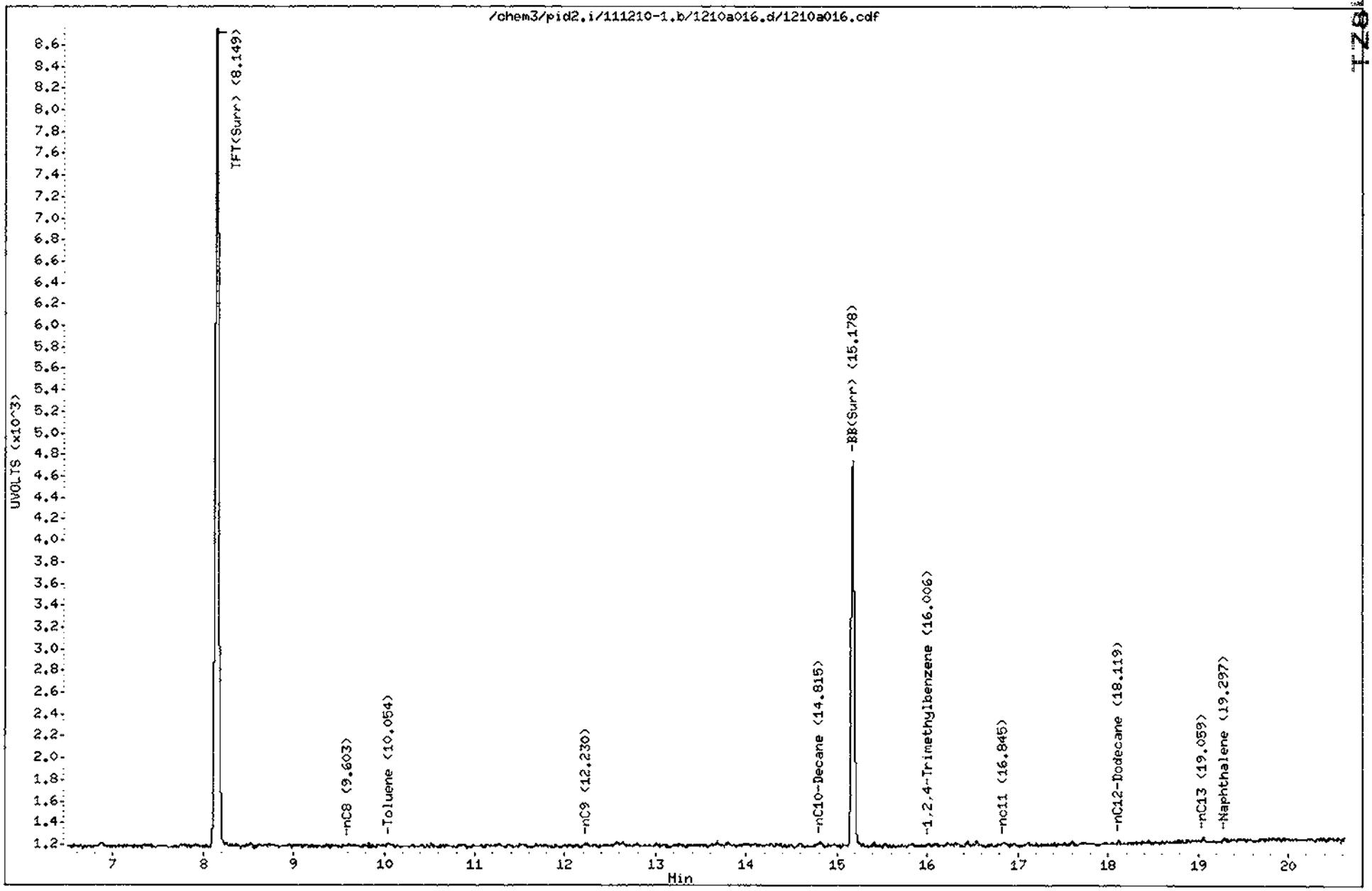
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

TZ94 : 002338



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a017.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a017.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ97D
Client ID: FB-120511-1
Injection Date: 10-DEC-2011 16:32
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.149	-0.004	7881	103923	102.1	TFT(Surr)
15.179	-0.003	3768	43617	102.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.95 to 18.22)	2221806	28507	0.013
8015B 2MP-TMB	(4.59 to 16.18)	4503375	27747	0.006
AK101 nC6-nC10	(5.08 to 14.71)	3606280	20413	0.006
NWTPHG Tol-Nap	(9.95 to 19.40)	2317394	31527	0.014

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.163	0.005	36929	101.8	TFT(Surr)
15.193	0.004	62115	101.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
10.062	0.003	1164	0.20	Toluene
ND	---	---	---	Ethylbenzene
12.804	0.001	311	0.05	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/16/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a017.d

Date : 10-DEC-2011 16:32

Client ID: FB-120511-1

Sample Info: TZ97D

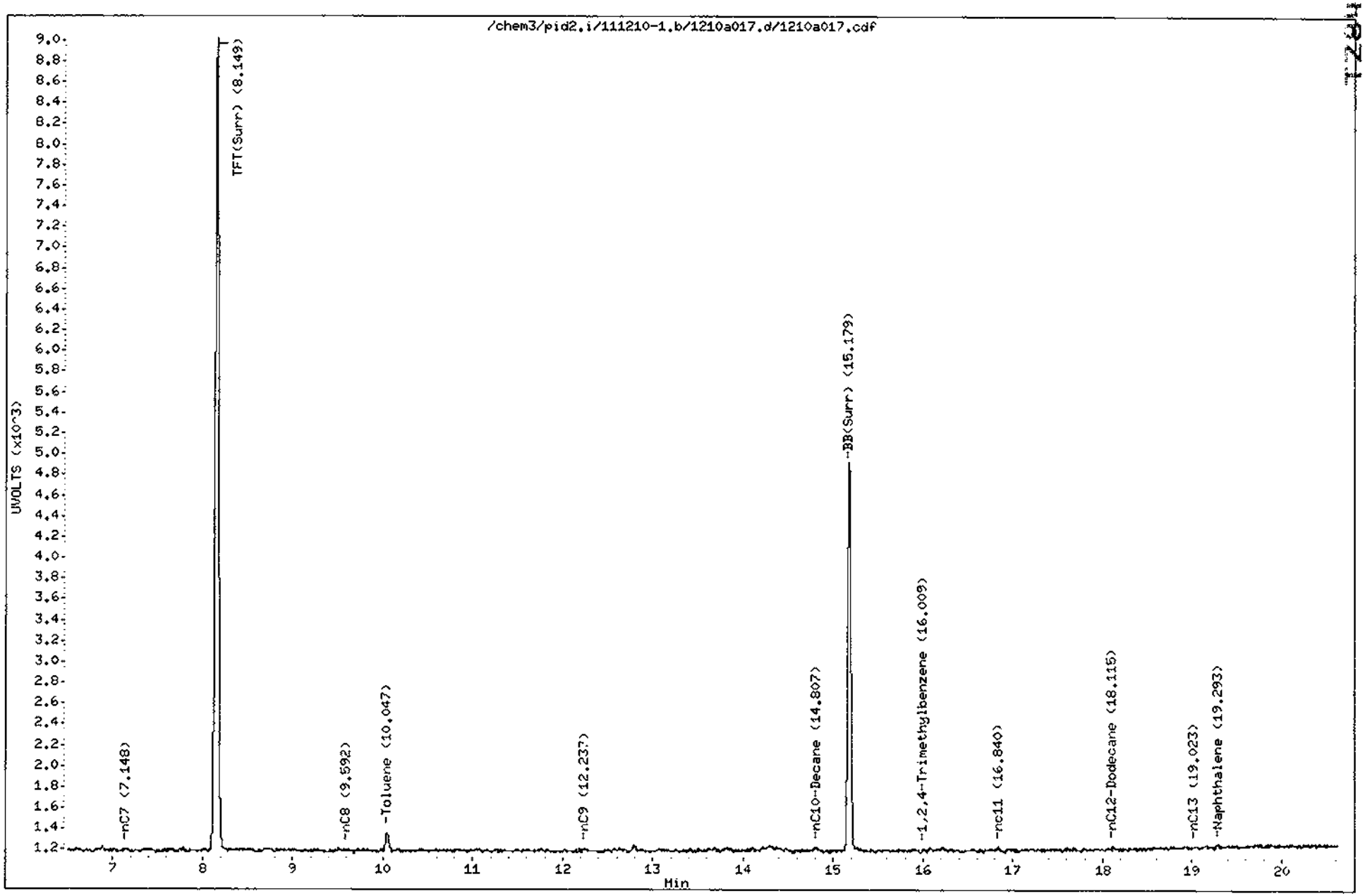
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

T-2811 : 002440



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a018.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a018.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ97F
Client ID: DUP-120511-2
Injection Date: 10-DEC-2011 16:58
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	-0.005	7746	101562	100.3	TFT(Surr)
15.180	-0.002	3634	41924	98.6	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.95 to 18.22)	2221806	27334	0.012
8015B 2MP-TMB	(4.59 to 16.18)	4503375	32311	0.007
AK101 nC6-nC10	(5.08 to 14.71)	3606280	27342	0.008
NWTPHG Tol-Nap	(9.95 to 19.40)	2317394	31822	0.014

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.161	0.004	36207	99.8	TFT(Surr)
15.193	0.004	60142	98.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
12.803	0.000	200	0.04	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/16/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a018.d

Date : 10-DEC-2011 16:58

Client ID: DUP-120511-2

Sample Info: TZ97F

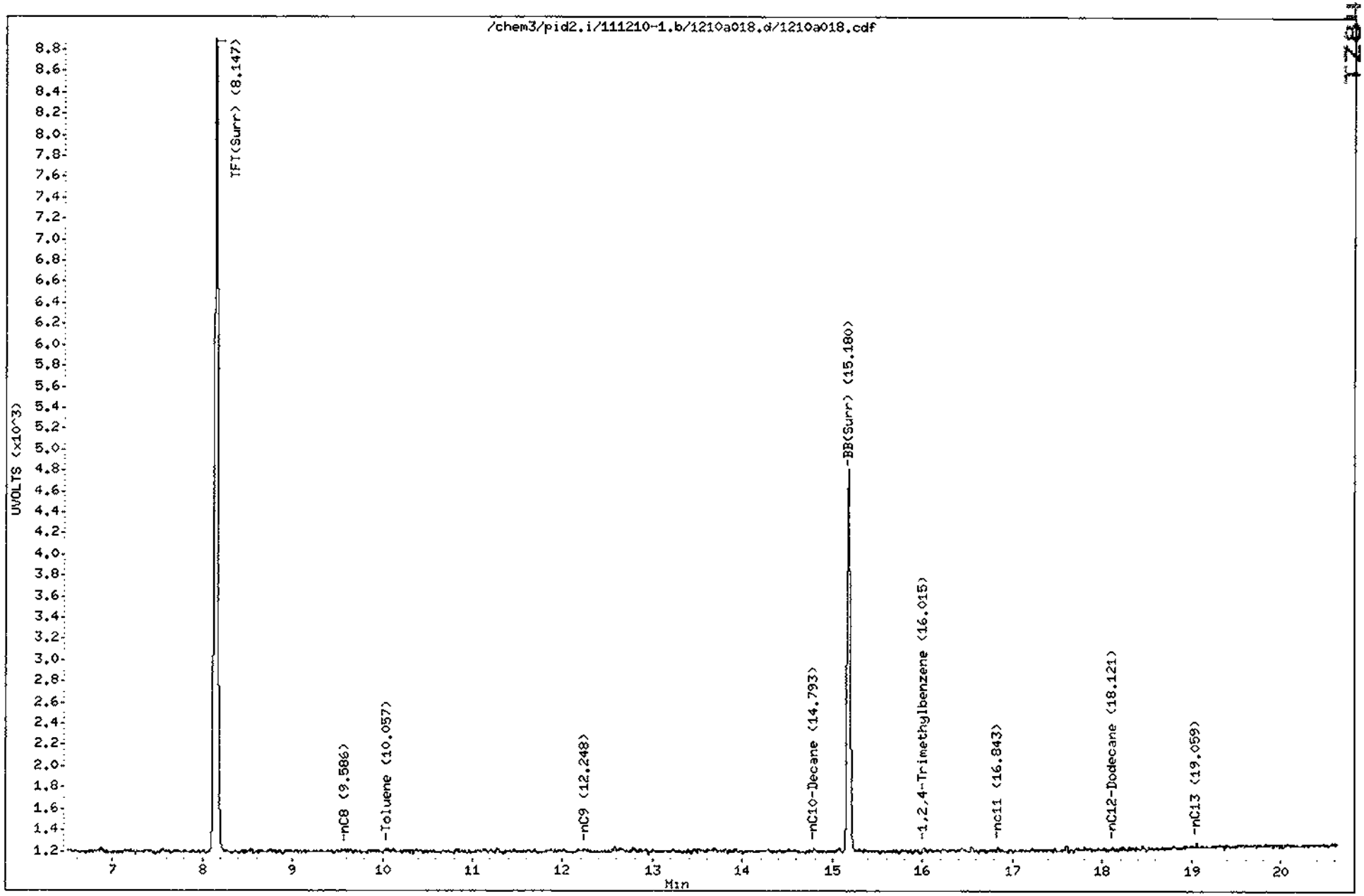
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

TZ97 : 002442



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a013.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a013.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ97G
Client ID: TB-120511-1
Injection Date: 10-DEC-2011 14:48
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.146	-0.006	7575	99495	98.1	TFT(Surr)
15.178	-0.004	3582	42619	97.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.95 to 18.22)	2221806	28300	0.013
8015B 2MP-TMB	(4.59 to 16.18)	4503375	46999	0.010
AK101 nC6-nC10	(5.08 to 14.71)	3606280	36913	0.010
NWTPHG Tol-Nap	(9.95 to 19.40)	2317394	38424	0.017

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.160	0.003	35604	98.1	TFT(Surr)
15.192	0.003	59197	96.7	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/16/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a013.d

Date : 10-DEC-2011 14:48

Client ID: TB-120511-1

Sample Info: TZ97G

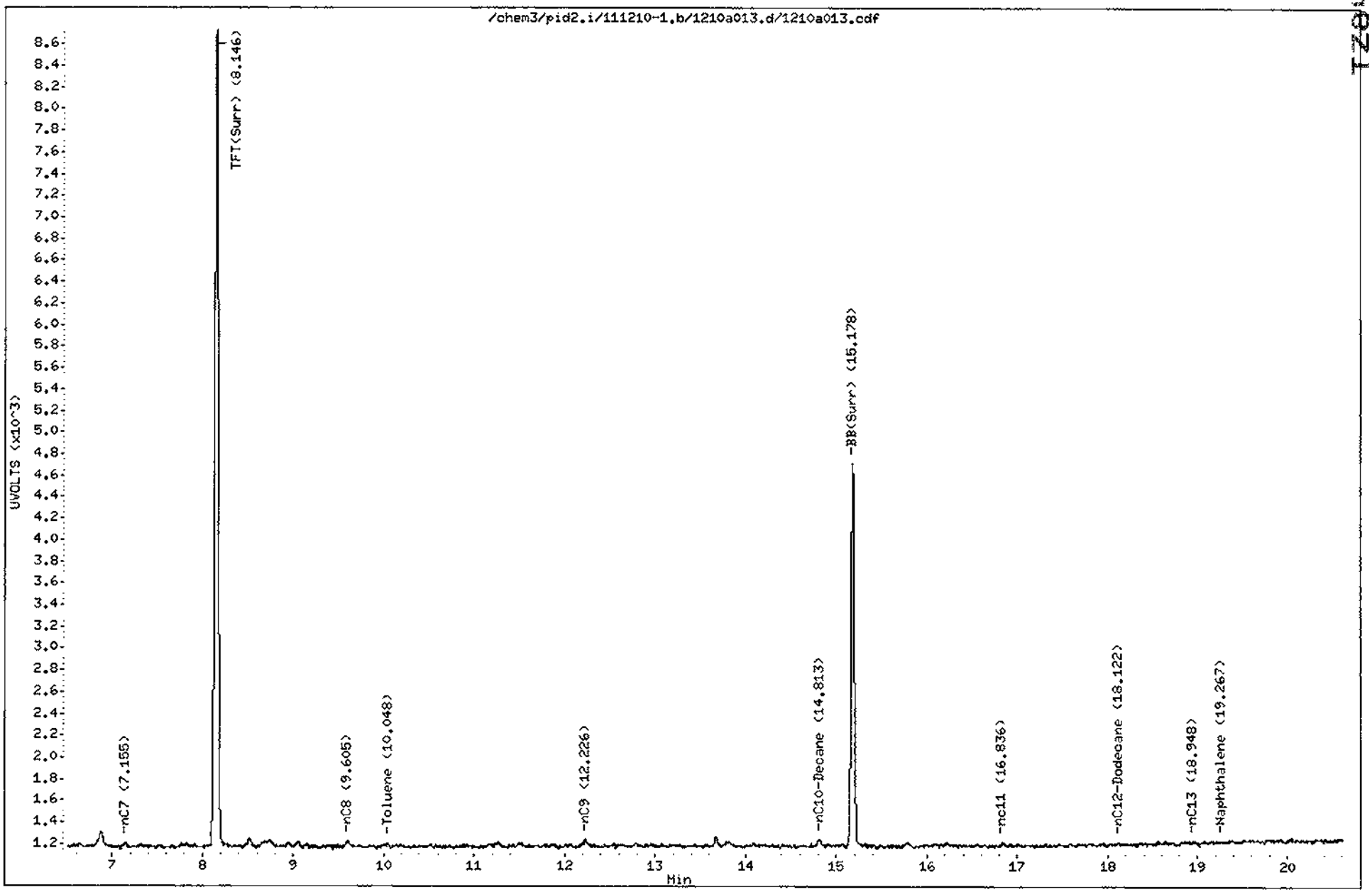
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

TZ97 - 002444



ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: TZ97
Matrix: Water

QC Report No: TZ97-ERM-West
Project: RG
Event: 128296.07

Client ID	TFT	BBZ	TOT OUT
MB-121011	83.3%	84.3%	0
LCS-121011	103%	96.5%	0
LCSD-121011	102%	101%	0
MW-30S-120511	101%	98.9%	0
MW-31S-120511	98.7%	97.3%	0
FB-120511-1	102%	102%	0
DUP-120511-2	100%	98.6%	0
TB-120511-1	98.1%	97.2%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 11-27938 to 11-27944

FORM II TPHG

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG **Sample ID: LCS-121011**
Page 1 of 1 **LAB CONTROL SAMPLE**

Lab Sample ID: LCS-121011 QC Report No: TZ84-ERM-West
LIMS ID: 11-27871 Project: RG
Matrix: Water Event: 128296.07
Data Release Authorized: Date Sampled: NA
Reported: 12/14/11 Date Received: NA

Date Analyzed LCS: 12/10/11 11:52 Purge Volume: 15. mL
LCSD: 12/10/11 10:53
Instrument/Analyst LCS: PID2/JLW Dilution Factor LCS: 1.0
LCSD: PID2/JLW LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	0.99	1.00	99.0%	0.90	1.00	90.0%	9.5%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	103%	102%
Bromobenzene	96.5%	101%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a007.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a007.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: LCS21210
Client ID:
Injection Date: 10-DEC-2011 11:52
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	0.004	7918	145208	102.6	TFT(Surr)
15.180	0.005	3557	43010	96.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	2194890	0.988 M
8015B 2MP-TMB	(4.58 to 16.10)	4503375	4792341	1.064 M
AK101 nC6-nC10	(5.07 to 14.70)	3606280	3862994	1.071 M
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	2293316	0.990 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.160	0.003	37193	102.5	TFT(Surr)
15.195	0.005	60652	99.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.409	0.004	19408	3.62	Benzene
10.063	0.004	221269	38.92	Toluene
12.663	0.005	59318	11.15	Ethylbenzene
12.808	0.005	234581	41.48	M/P-Xylene
13.627	0.005	92228	18.85	O-Xylene
4.943	0.001	4491	3.48	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
V Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a007.d
Date : 10-DEC-2011 11:52
Client ID:
Sample Info: LCS21210

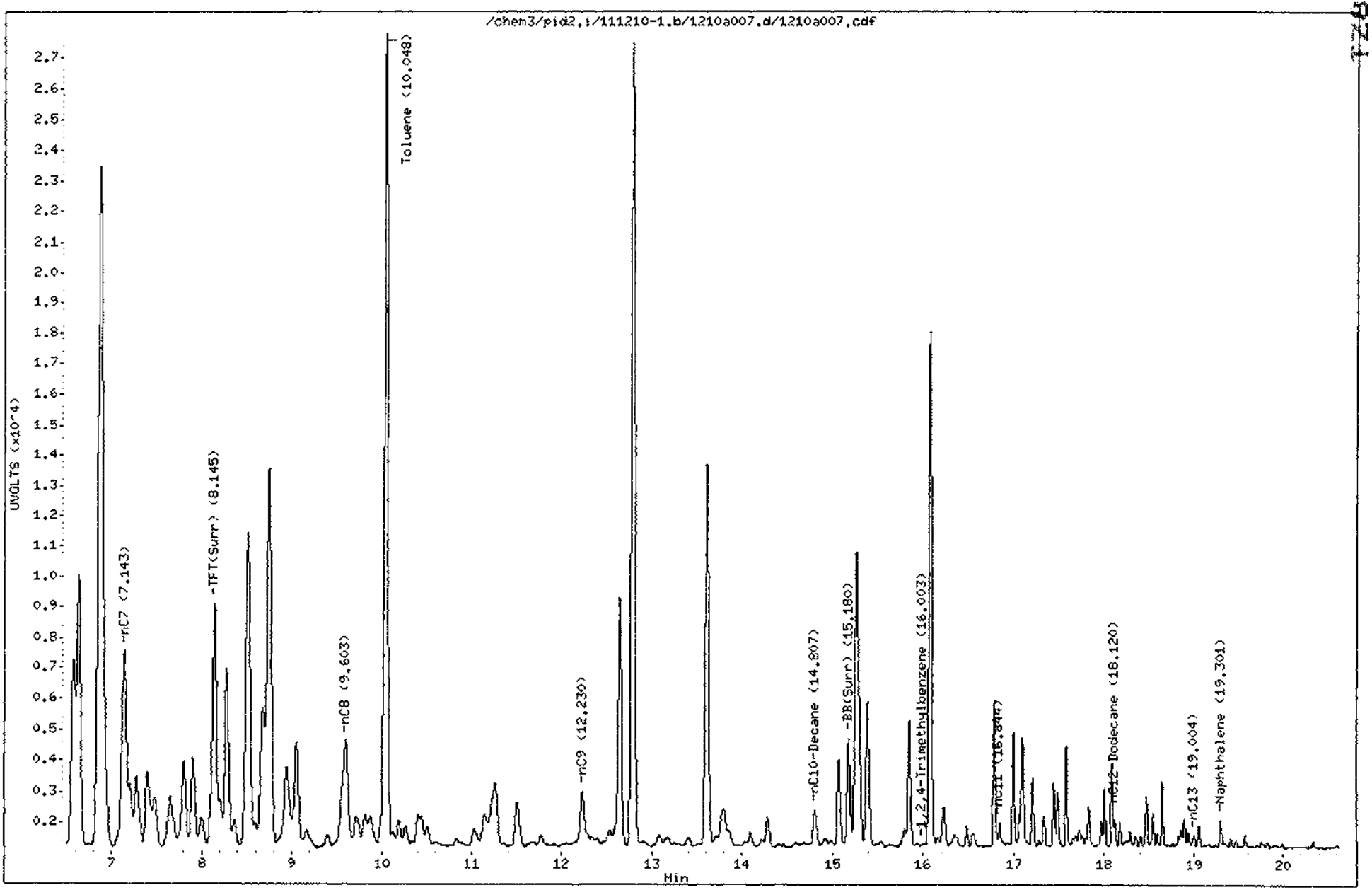
Instrument: pid2.i

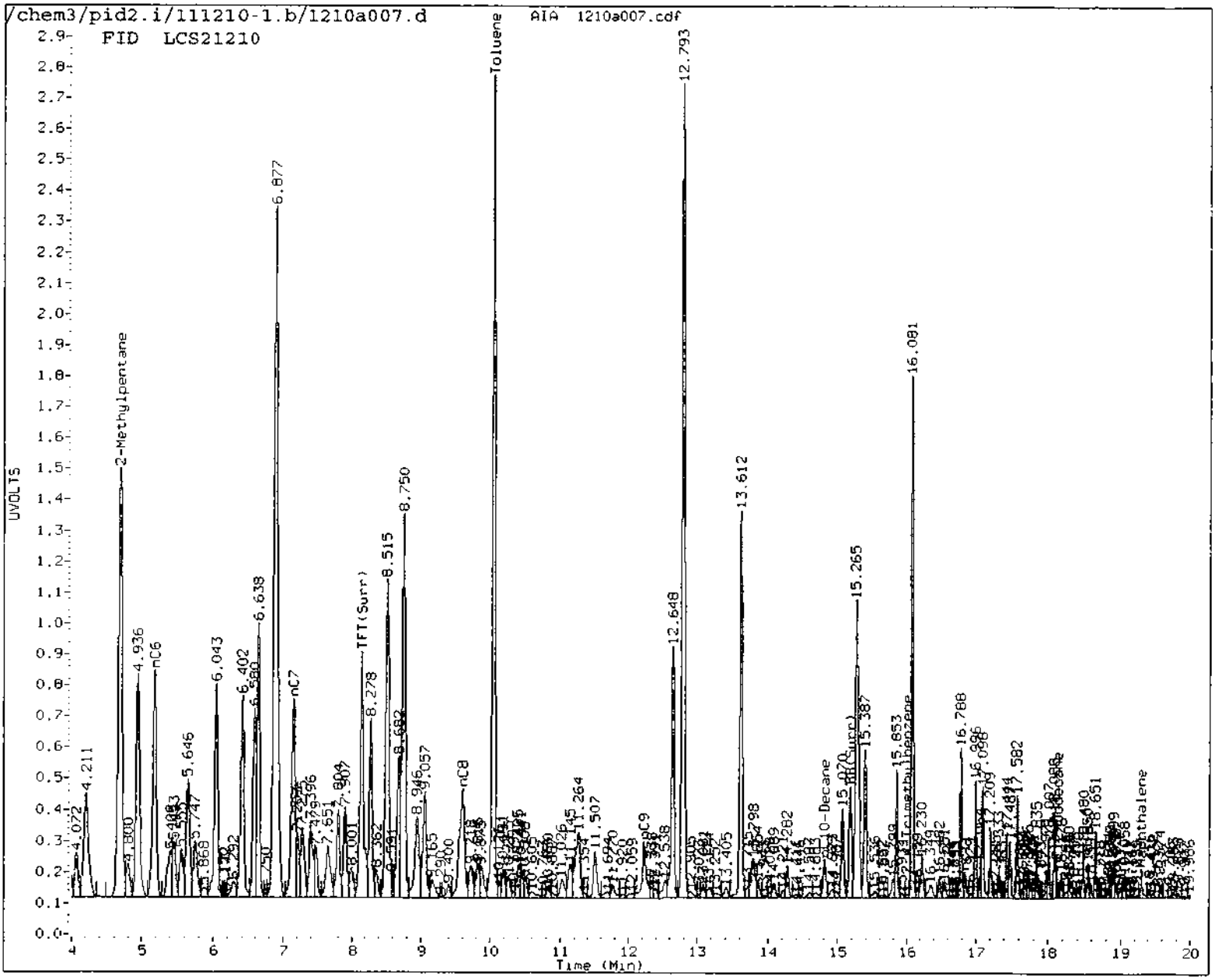
Operator: JW

Column phase: RTX 502-2 FID

Column diameter: 0.18

T2614 - 00246



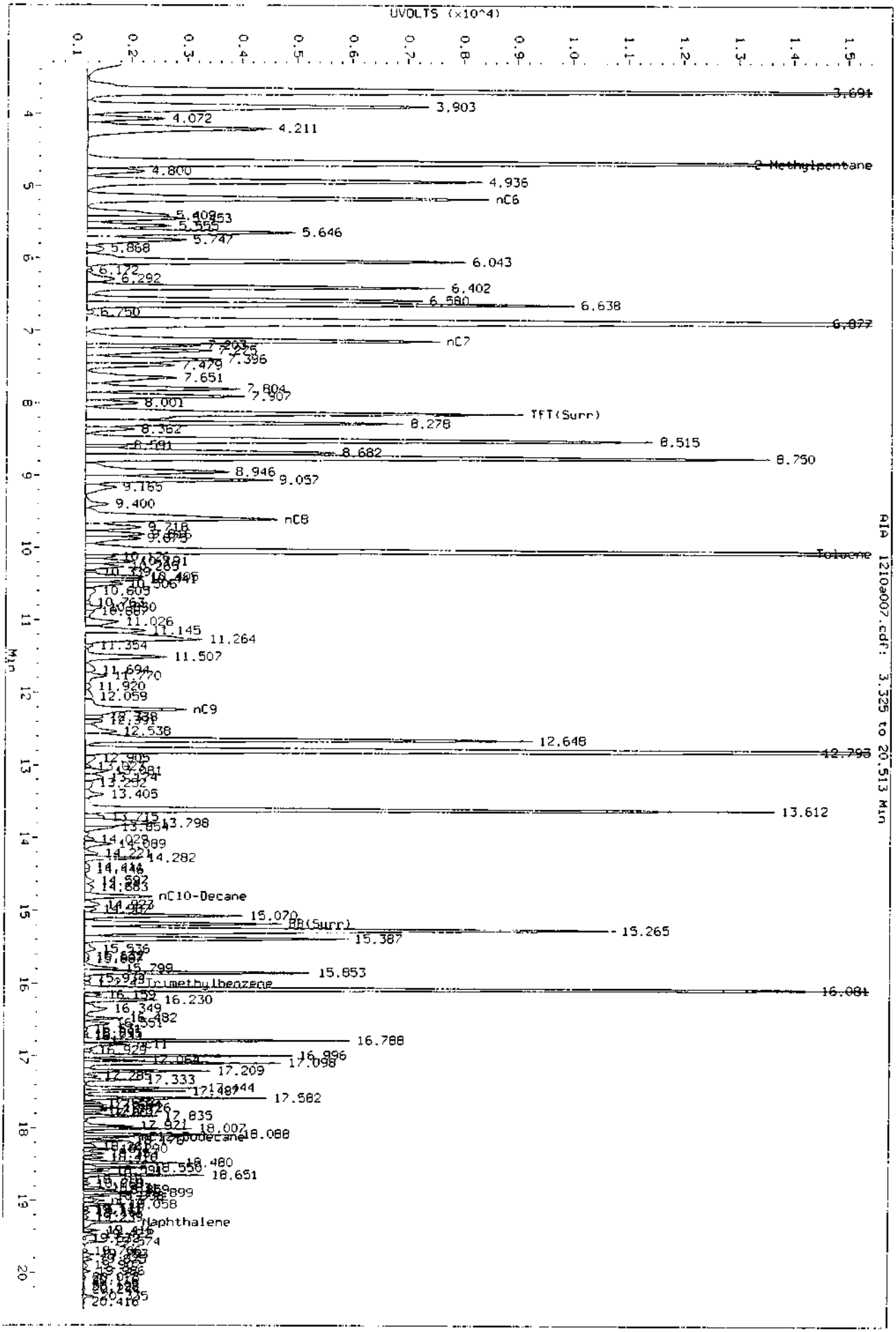


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 12/12/11



Before 2/21/12 JV

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a005.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a005.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: LCSD1210
Client ID:
Injection Date: 10-DEC-2011 10:53
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.150	0.007	7894	142123	102.3	TFT(Surr)
15.180	0.005	3718	44196	100.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	1998775	0.900 M
8015B 2MP-TMB	(4.58 to 16.10)	4503375	4316691	0.959 M
AK101 nC6-nC10	(5.07 to 14.70)	3606280	3480039	0.965 M
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	2090191	0.902 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.163	0.006	37375	103.0	TFT(Surr)
15.194	0.005	63128	103.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.412	0.007	17479	3.26	Benzene
10.064	0.005	200195	35.22	Toluene
12.663	0.005	53990	10.15	Ethylbenzene
12.807	0.005	211721	37.44	M/P-Xylene
13.626	0.005	83186	17.01	O-Xylene
4.948	0.006	4110	3.18	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

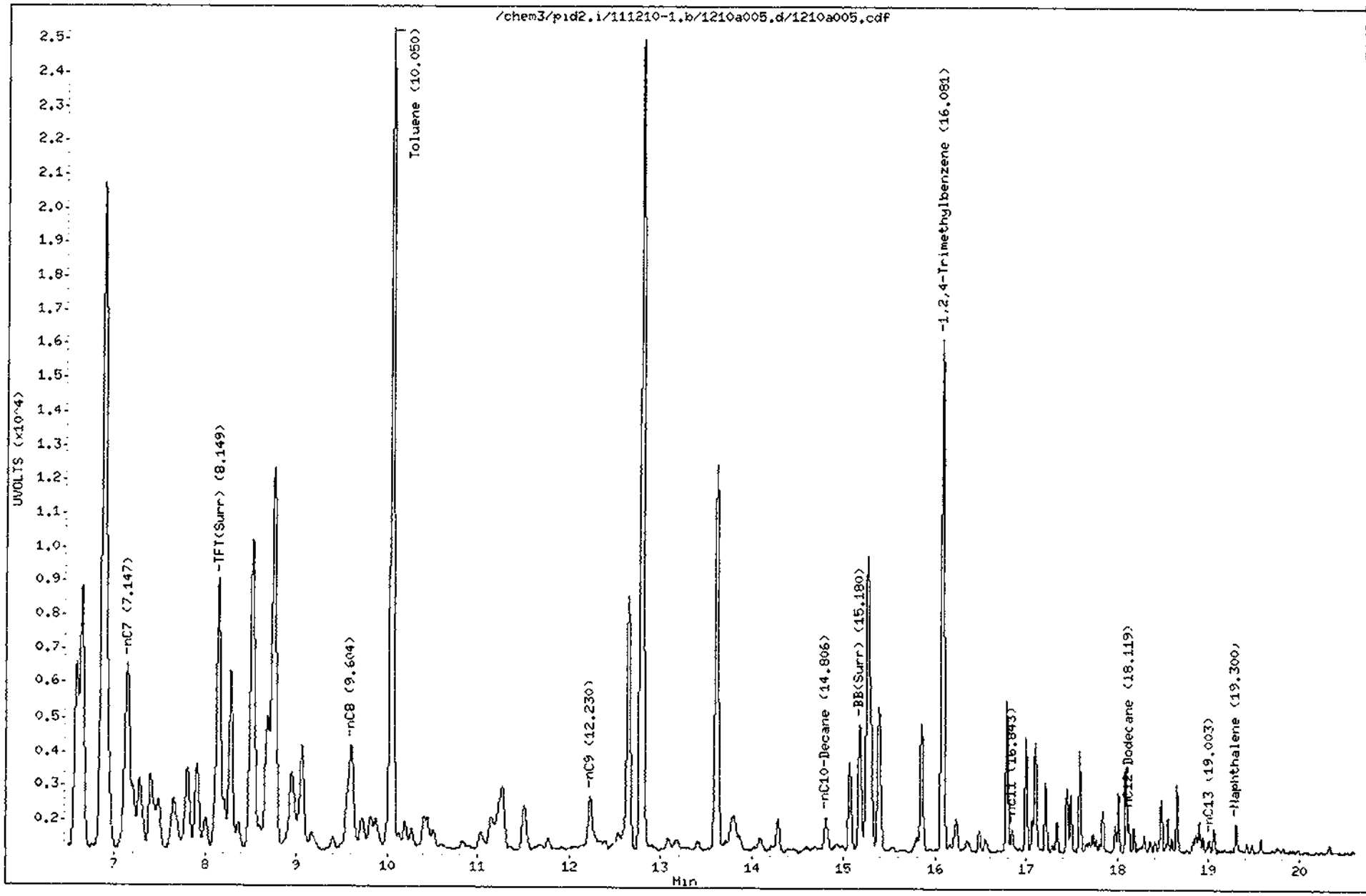
Data File: /chem3/pid2.i/111210-1.b/1210a005.d
Date : 10-DEC-2011 10:53
Client ID:
Sample Info: LCSD1210

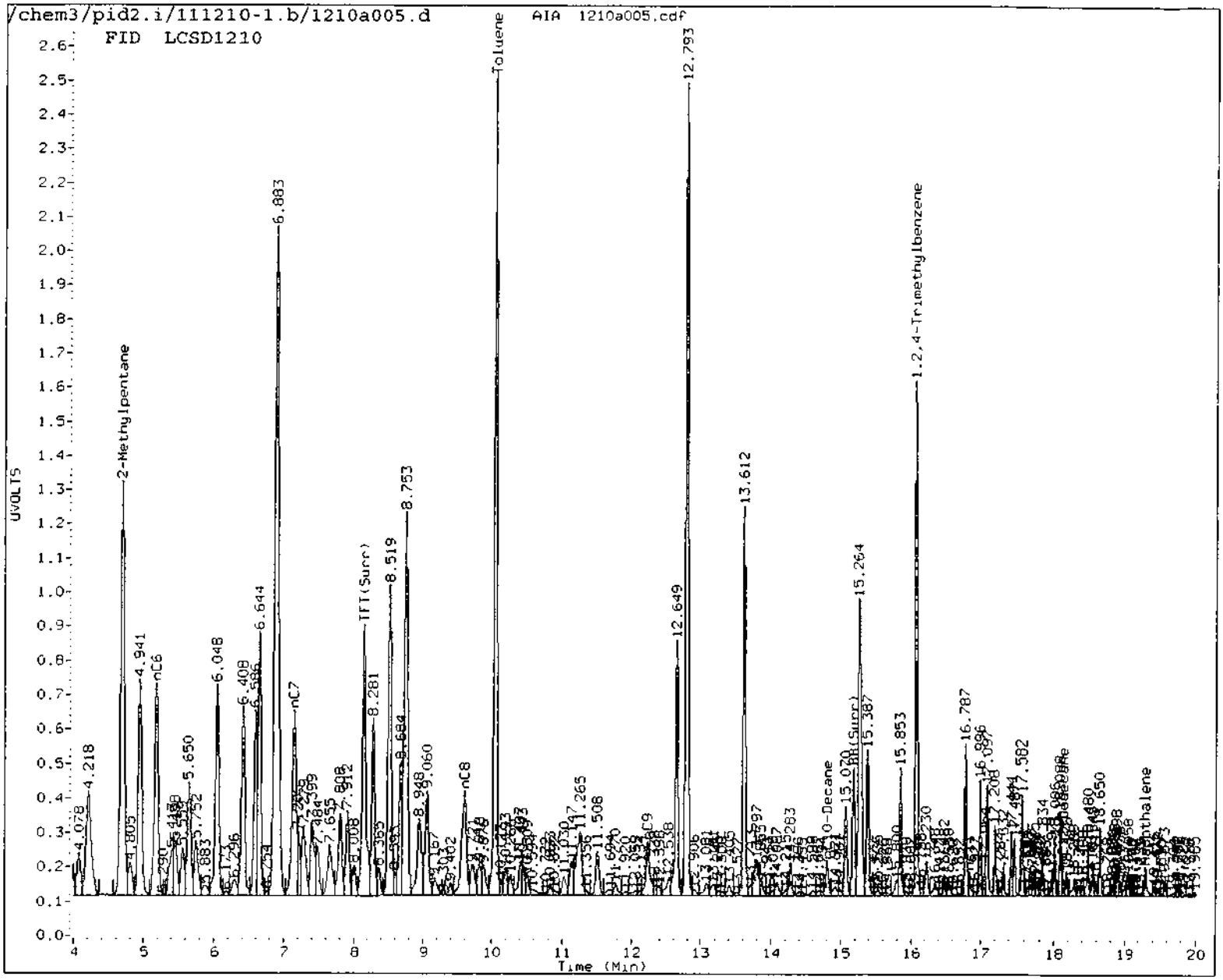
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW
Column diameter: 0.18

T284 : 0002552



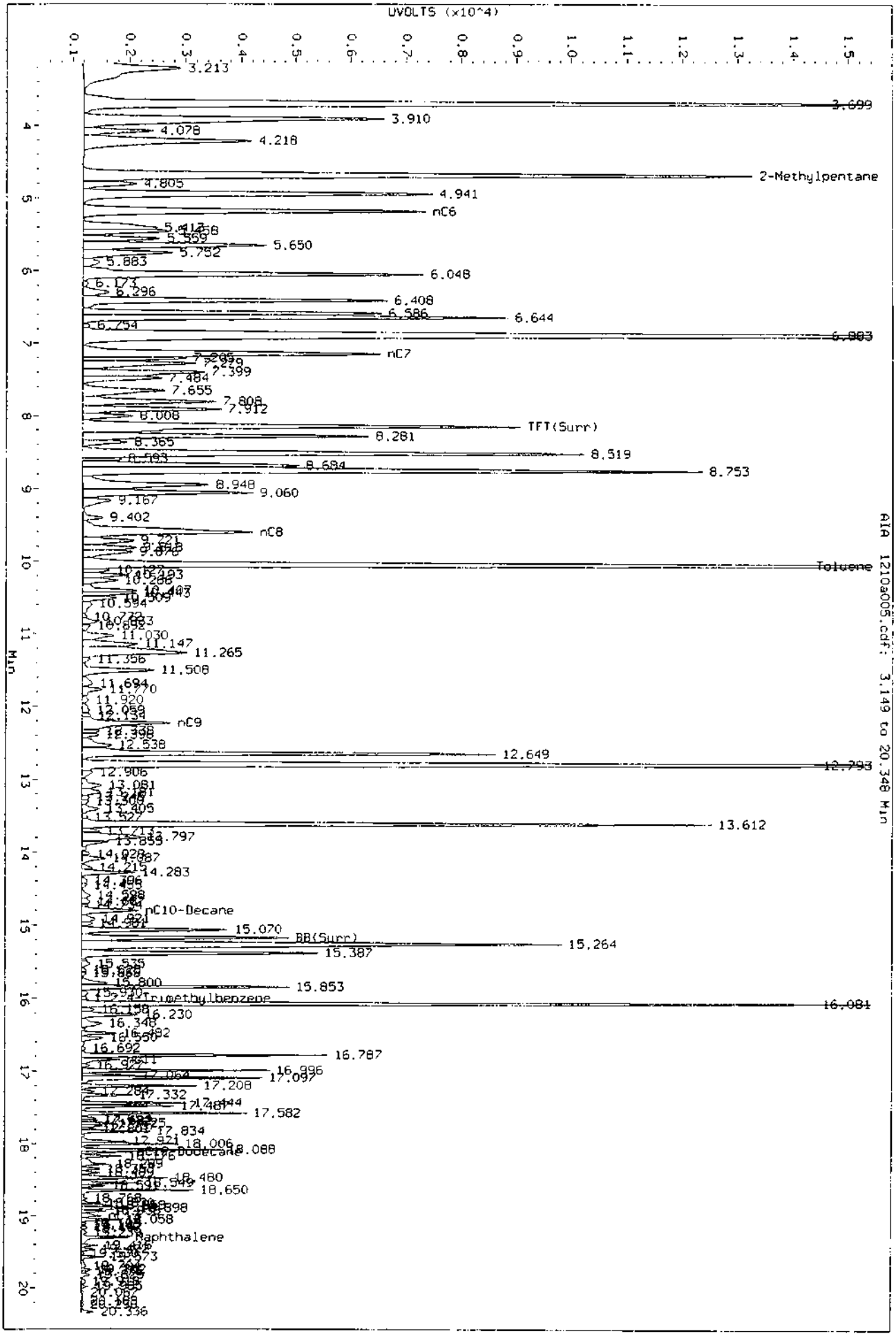


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JCO Date: 12/12/11



Bikers 12/12/11 RW

4

BETX/GAS METHOD BLANK SUMMARY

BLANK NO.

MB1210

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84 Project No.: RG

Date Analyzed : 12/10/11 Matrix: WATER

Time Analyzed : 1119 Instrument ID : PID2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	LCSD1210	LCSD1210	12/10/11
02	LCS21210	LCS21210	12/10/11
03	MW-28S-12021	TZ84A	12/10/11
04	TB-120211-1	TZ84E	12/10/11
05	MW-29S-12021	TZ84B	12/10/11
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

BETX/GAS METHOD BLANK SUMMARY

BLANK NO.

MB1210

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ97 Project No.: RG

Date Analyzed : 12/10/11 Matrix: WATER

Time Analyzed : 1119 Instrument ID : PID2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	RT+BCAL1	RT+BCAL1	12/10/11
02	LCSD1210	LCSD1210	12/10/11
03	LCS21210	LCS21210	12/10/11
04	TB-120511-1	TZ97G	12/10/11
05	MW-30S-12051	TZ97A	12/10/11
06	MW-31S-12051	TZ97B	12/10/11
07	FB-120511-1	TZ97D	12/10/11
08	DUP-120511-2	TZ97F	12/10/11
09	MW-35S-12061	UA20B	12/10/11
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

6a

GAS INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-West

Instrument/Det: PID2.I/RTX 502-2 FID Project: RG

Calibration Date: 09-DEC-2011 SDG No.: TZ32,TZ84,TZ97,UA20,UA33

Gas Range	RF1 .03	RF2 0.10	RF3 0.25	RF4 1.0	RF5 2.5	RF6 5.0	Ave RF	%RSD
WA Gas	2948167	2304585	2102370	1896113	2023904	2055697	2221806	17.1
AK Gas	4420450	3837380	3569696	3279322	3262011	3268819	3606280	12.7
NW Gas	3078500	2418895	2195392	1982354	2111757	2117465	2317394	17.2
Cal Gas	5608317	4732460	4355392	3998758	4061928	4062875	4469955	13.9
8015Gas	5542283	4776840	4435376	4079243	4095006	4091500	4503375	12.9
Surrogates Rel. Rec.	RF1 22	RF2 44	RF3 67	RF4 100	RF5 133	RF6 178	Ave RF	%RSD
$ TFT(Surr)	85.77273	81.61364	77.97015	76.56000	72.03759	73.65730		
	72.76000						77.19592	6.539
$ BB(Surr)	40.77273	39.09091	36.16418	37.01000	34.22556	35.80337		
	34.93500						36.85739	6.320

<- Indicates %RSD outside limits
Surrogate areas are not included in RF calculation.

Quant Ranges : WA Gas Toluene - nC12
AK Gas nC6 - nC10
NW Gas Toluene - Naphthalene
Cal Gas nC6 - nC12
8015 Gas 2-Methylpentane - 1,2,4-Trimethylbenzene

Calibration Files	Analysis Time
1209a014.d	09-DEC-2011 19:18
1209a015.d	09-DEC-2011 19:44
1209a016.d	09-DEC-2011 20:10
1209a017.d	09-DEC-2011 20:36
1209a018.d	09-DEC-2011 21:02
1209a019.d	09-DEC-2011 21:28

Surr. Calibration Files	Analysis Time
1209a005.d	09-DEC-2011 15:23
1209a006.d	09-DEC-2011 15:49
1209a007.d	09-DEC-2011 16:15
1209a008.d	09-DEC-2011 16:41
1209a009.d	09-DEC-2011 17:08
1209a010.d	09-DEC-2011 17:34
1209a011.d	09-DEC-2011 18:00

7a
GAS CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ84

Lab File Name: 1210a003.d Inst/Det: PID2.I/RTX 502-2 FID

Gas Range	Area*	CalcAmnt	NomAmnt	%D
WAGas (Tol-C12)	1987084	0.89	1.00	-10.6
AKGas (C6-C10)	3431314	0.95	1.00	-4.9
NWGas (Tol-Nap)	2078995	0.90	1.00	-10.3
8015B (2MP-TMB)	4269237	0.95	1.00	-5.2

* Surrogate areas are subtracted from Total Area
<- Indicates an RPD outside QC limits

7b
FID SURROGATE CONTINUING CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC.
Client: ERM-WEST

ICal Date: 09-DEC-2011
Project: RG

CCal Date: 10-DEC-2011
SDG No.: TZ84

Lab File Name: 1210a003.d
Inst/Det: PID2.I/RTX 502-2 FID

Surrogate	Area	CalcAmnt	NomAmnt	RPD
Trifluorotol	134039	97.5	100.0	-2.5
Bromoflrbenz	40752	93.4	100.0	-6.6

7a
GAS CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ84

Lab File Name: 1210a011.d Inst/Det: PID2.I/RTX 502-2 FID

Gas Range	Area*	CalcAmnt	NomAmnt	%D
WAGas (Tol-C12)	2139744	0.96	1.00	-3.7
AKGas (C6-C10)	3687229	1.02	1.00	2.2
NWGas (Tol-Nap)	2235814	0.96	1.00	-3.5
8015B (2MP-TMB)	4585818	1.02	1.00	1.8

* Surrogate areas are subtracted from Total Area
<- Indicates an RPD outside QC limits

7b
FID SURROGATE CONTINUING CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ84

Lab File Name: 1210a011.d Inst/Det: PID2.I/RTX 502-2 FID

Surrogate	Area	CalcAmnt	NomAmnt	RPD
Trifluorotol	142303	102.9	100.0	2.9
Bromoflrbenz	43353	97.7	100.0	-2.3

7a
GAS CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ84

Lab File Name: 1210a020.d Inst/Det: PID2.I/RTX 502-2 FID

Gas Range	Area*	CalcAmnt	NomAmnt	%D
WAGas (Tol-C12)	2061544	0.93	1.00	-7.2
AKGas (C6-C10)	3488986	0.97	1.00	-3.3
NWGas (Tol-Nap)	2153548	0.93	1.00	-7.1
8015B (2MP-TMB)	4336941	0.96	1.00	-3.7

* Surrogate areas are subtracted from Total Area
<- Indicates an RPD outside QC limits

7b
FID SURROGATE CONTINUING CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ84

Lab File Name: 1210a020.d Inst/Det: PID2.I/RTX 502-2 FID

Surrogate	Area	CalcAmnt	NomAmnt	RPD
Trifluorotol	137992	100.3	100.0	0.3
Bromoflrbenz	42762	98.5	100.0	-1.5

TZ84:00263

BETX/GAS ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84 Project: RG

Instrument ID: PID2 GC Detector: RTX 502-2 FID

Run Date: 12/10/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

METHOD SURROGATE RT
S1 : 8.15 S2 : 15.18

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01	RT+BCAL1	RT+BCAL1	12/10/11	0935	8.15		15.18	
02	RG	GCAL1	12/10/11	1001	8.15		15.18	
03	LCSD1210	LCSD1210	12/10/11	1053	8.15		15.18	
04	MB1210	MB1210	12/10/11	1119	8.15		15.18	
05	LCS21210	LCS21210	12/10/11	1152	8.15		15.18	
06	MW-28S-12021	TZ84A	12/10/11	1329	8.15		15.18	
07	RG	GCAL2	12/10/11	1355	8.15		15.18	
08	TB-120211-1	TZ84E	12/10/11	1421	8.15		15.18	
09	MW-29S-12021	TZ84B	12/10/11	1514	8.15		15.18	
10	RG	GCAL3	12/10/11	1750	8.14		15.18	

		QC LIMITS
S1	= TFT(Surr)	(+/- 0.07 MINUTES)
S2	= BB(Surr)	(+/- 0.07 MINUTES)

* Values outside of QC limits.

BETX/GAS ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ97 Project: RG

Instrument ID: PID2 GC Detector: RTX 502-2 FID

Run Date: 12/10/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

METHOD SURROGATE RT
S1 : 8.15 S2 : 15.18

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01	RT+BCAL1	RT+BCAL1	12/10/11	0935	8.15		15.18	
02	RG	GCAL1	12/10/11	1001	8.15		15.18	
03	LCSD1210	LCSD1210	12/10/11	1053	8.15		15.18	
04	MB1210	MB1210	12/10/11	1119	8.15		15.18	
05	LCS21210	LCS21210	12/10/11	1152	8.15		15.18	
06	RG	GCAL2	12/10/11	1355	8.15		15.18	
07	TB-120511-1	TZ97G	12/10/11	1448	8.15		15.18	
08	MW-30S-12051	TZ97A	12/10/11	1540	8.15		15.18	
09	MW-31S-12051	TZ97B	12/10/11	1606	8.15		15.18	
10	FB-120511-1	TZ97D	12/10/11	1632	8.15		15.18	
11	DUP-120511-2	TZ97F	12/10/11	1658	8.15		15.18	
12	MW-35S-12061	UA20B	12/10/11	1724	8.15		15.18	
13	RG	GCAL3	12/10/11	1750	8.14		15.18	

QC LIMITS

S1 = TFT(Surr) (+/- 0.07 MINUTES)
S2 = BB(Surr) (+/- 0.07 MINUTES)

* Values outside of QC limits.

BETX/GAS ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ84 Project: RG

Instrument ID: PID2 GC Detector: RTX 502-2 FID

Run Date: 12/09/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

METHOD SURROGATE RT
S1 : 8.15 S2 : 15.18

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		RINSE	12/09/11	0932	8.14		15.19	
02		RT1209+BCAL	12/09/11	0958	8.15		15.18	
03		GCAL 1	12/09/11	1024	8.15		15.18	
04		RINSE	12/09/11	1457	8.15		15.19	
05		BTEX .08	12/09/11	1523	8.15		15.18	
06		BTEX .25	12/09/11	1549	8.15		15.18	
07		BTEX 1	12/09/11	1615	8.15		15.18	
08		BTEX 5	12/09/11	1641	8.15		15.18	
09		BTEX 25	12/09/11	1708	8.15		15.18	
10		BTEX 50	12/09/11	1734	8.15		15.18	
11		BTEX 100	12/09/11	1800	8.15		15.18	
12		BTEX ICV 5	12/09/11	1826	8.14		15.18	
13		RINSE	12/09/11	1852	8.13		15.19	
14		GAS .03	12/09/11	1918	8.15		15.18	
15		GAS .1	12/09/11	1944	8.15		15.18	
16		GAS .25	12/09/11	2010	8.15		15.18	
17		GAS 1	12/09/11	2036	8.15		15.18	
18		GAS 2.5	12/09/11	2102	8.15		15.18	
19		GAS 5	12/09/11	2128	8.14		15.18	
20		GAS ICV 1	12/09/11	2154	8.14		15.18	

QC LIMITS

S1 = TFT(Surr) (+/- 0.07 MINUTES)
S2 = BB(Surr) (+/- 0.07 MINUTES)

* Values outside of QC limits.

Metals Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-28S-120211	TZ84A	11-27871	
MW-28S-120211D	TZ84ADUP	11-27871	
MW-28S-120211S	TZ84ASPK	11-27871	
MW-29S-120211	TZ84B	11-27872	
PBW	TZ84MB1	11-27872	
LCSW	TZ84MB1SPK	11-27872	
DUP-120211-3	TZ84C	11-27873	
MW-28S-120211	TZ84F	11-27876	
MW-28S-120211D	TZ84FDUP	11-27876	
MW-28S-120211S	TZ84FSPK	11-27876	
MW-29S-120211	TZ84G	11-27877	
PBW	TZ84MB2	11-27877	
LCSW	TZ84MB2SPK	11-27877	
DUP-120211-3	TZ84H	11-27878	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/15/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-28S-120211
SAMPLE

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/07/11	6010B	12/09/11	7429-90-5	Aluminum	50	50	U
3010A	12/07/11	6010B	12/09/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**11.2**	
200.8	12/07/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
3010A	12/07/11	6010B	12/09/11	**7440-70-2**	**Calcium**	50	**76,500**	
200.8	12/07/11	6020	12/14/11	7440-47-3	Chromium	1	1	U
3010A	12/07/11	6010B	12/09/11	7440-50-8	Copper	2	2	U
3010A	12/07/11	6010B	12/09/11	**7439-89-6**	**Iron**	50	**6,940**	
200.8	12/07/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
3010A	12/07/11	6010B	12/09/11	**7439-95-4**	**Magnesium**	50	**7,230**	
3010A	12/07/11	6010B	12/09/11	**7439-96-5**	**Manganese**	1	**583**	
7470A	12/07/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**1.8**	
3010A	12/07/11	6010B	12/09/11	**7440-09-7**	**Potassium**	500	**6,640**	
200.8	12/07/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/07/11	6010B	12/09/11	7440-22-4	Silver	3	3	U
3010A	12/07/11	6010B	12/09/11	**7440-23-5**	**Sodium**	500	**21,500**	
200.8	12/07/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/07/11	6010B	12/09/11	7440-66-6	Zinc	10	10	U

Calculated Hardness (mg-CaCO3/L): 220

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: MW-29S-120211
SAMPLE

Lab Sample ID: TZ84B
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/07/11	6010B	12/09/11	7429-90-5	Aluminum	50	50	U
3010A	12/07/11	6010B	12/09/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**2.5**	
200.8	12/07/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
3010A	12/07/11	6010B	12/09/11	**7440-70-2**	**Calcium**	50	**54,300**	
200.8	12/07/11	6020	12/14/11	7440-47-3	Chromium	1	1	U
3010A	12/07/11	6010B	12/09/11	7440-50-8	Copper	2	2	U
3010A	12/07/11	6010B	12/09/11	**7439-89-6**	**Iron**	50	**11,600**	
200.8	12/07/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
3010A	12/07/11	6010B	12/09/11	**7439-95-4**	**Magnesium**	50	**13,400**	
3010A	12/07/11	6010B	12/09/11	**7439-96-5**	**Manganese**	1	**629**	
7470A	12/07/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**0.7**	
3010A	12/07/11	6010B	12/09/11	**7440-09-7**	**Potassium**	500	**9,380**	
200.8	12/07/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/07/11	6010B	12/09/11	7440-22-4	Silver	3	3	U
3010A	12/07/11	6010B	12/09/11	**7440-23-5**	**Sodium**	500	**30,700**	
200.8	12/07/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/07/11	6010B	12/09/11	7440-66-6	Zinc	10	10	U

Calculated Hardness (mg-CaCO3/L): 190

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: DUP-120211-3
SAMPLE

Lab Sample ID: TZ84C
LIMS ID: 11-27873
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**2.6**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: MW-28S-120211
MATRIX SPIKE

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample		Spike	Spike Added	% Recovery	Q
Aluminum	6010B	50.0	U	2,030	2,000	102%	
Antimony	6010B	50.0	U	1,790	2,000	89.5%	
Arsenic	6020	11.2		37.4	25.0	105%	
Beryllium	6020	0.200	U	25.2	25.0	101%	
Cadmium	6020	0.100	U	24.4	25.0	97.6%	
Calcium	6010B	76,500		86,500	10,000	100%	H
Chromium	6020	1.25	U	22.9	25.0	91.6%	
Copper	6010B	2.00	U	519	500	104%	
Iron	6010B	6,940		8,990	2,000	102%	
Lead	6020	0.100	U	24.6	25.0	98.4%	
Magnesium	6010B	7,230		17,500	10,000	103%	
Manganese	6010B	583		1,040	500	91.4%	
Mercury	7470A	0.100	U	1.08	1.00	108%	
Nickel	6020	1.80		27.3	25.0	102%	
Potassium	6010B	6,640		16,600	10,000	99.6%	
Selenium	6020	0.500	U	77.8	80.0	97.2%	
Silver	6010B	3.00	U	509	500	102%	
Sodium	6010B	21,500		31,000	10,000	95.0%	
Thallium	6020	0.200	U	25.4	25.0	102%	
Zinc	6010B	10.0	U	478	500	95.6%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-28S-120211
DUPLICATE

Lab Sample ID: TZ84A
LIMS ID: 11-27871
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	50 U	50 U	0.0%	+/- 50	L
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	11.2	10.8	3.6%	+/- 20%	
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Calcium	6010B	76,500	76,600	0.1%	+/- 20%	
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Iron	6010B	6,940	6,850	1.3%	+/- 20%	
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Magnesium	6010B	7,230	7,140	1.3%	+/- 20%	
Manganese	6010B	583	580	0.5%	+/- 20%	
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	1.8	1.7	5.7%	+/- 0.5	L
Potassium	6010B	6,640	6,530	1.7%	+/- 20%	
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Sodium	6010B	21,500	21,400	0.5%	+/- 20%	
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ84LCS
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	2080	2000	104%	
Antimony	6010B	2030	2000	102%	
Arsenic	6020	26.3	25.0	105%	
Beryllium	6020	23.6	25.0	94.4%	
Cadmium	6020	24.7	25.0	98.8%	
Calcium	6010B	10100	10000	101%	
Chromium	6020	24.5	25.0	98.0%	
Copper	6010B	517	500	103%	
Iron	6010B	2090	2000	104%	
Lead	6020	25.8	25.0	103%	
Magnesium	6010B	10500	10000	105%	
Manganese	6010B	486	500	97.2%	
Mercury	7470A	2.1	2.0	105%	
Nickel	6020	26.3	25.0	105%	
Potassium	6010B	10400	10000	104%	
Selenium	6020	79.6	80.0	99.5%	
Silver	6010B	518	500	104%	
Sodium	6010B	9890	10000	98.9%	
Thallium	6020	26.0	25.0	104%	
Zinc	6010B	490	500	98.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: TZ84MB
LIMS ID: 11-27872
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/07/11	6010B	12/09/11	7429-90-5	Aluminum	50	50	U
3010A	12/07/11	6010B	12/09/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/14/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
3010A	12/07/11	6010B	12/09/11	7440-70-2	Calcium	50	50	U
200.8	12/07/11	6020	12/14/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/07/11	6010B	12/09/11	7440-50-8	Copper	2	2	U
3010A	12/07/11	6010B	12/09/11	7439-89-6	Iron	50	50	U
200.8	12/07/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
3010A	12/07/11	6010B	12/09/11	7439-95-4	Magnesium	50	50	U
3010A	12/07/11	6010B	12/09/11	7439-96-5	Manganese	1	1	U
7470A	12/07/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	7440-02-0	Nickel	0.5	0.5	U
3010A	12/07/11	6010B	12/09/11	7440-09-7	Potassium	500	500	U
200.8	12/07/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/07/11	6010B	12/09/11	7440-22-4	Silver	3	3	U
3010A	12/07/11	6010B	12/09/11	7440-23-5	Sodium	500	500	U
200.8	12/07/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/07/11	6010B	12/09/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-28S-120211
SAMPLE

Lab Sample ID: TZ84F
LIMS ID: 11-27876
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/07/11	6010B	12/09/11	7429-90-5	Aluminum	50	50	U
6010B	12/07/11	6010B	12/09/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**11.9**	
200.8	12/07/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/07/11	6010B	12/09/11	7440-50-8	Copper	2	2	U
6010B	12/07/11	6010B	12/09/11	**7439-89-6**	**Iron**	50	**7,020**	
200.8	12/07/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
6010B	12/07/11	6010B	12/09/11	**7439-96-5**	**Manganese**	1	**587**	
7470A	12/07/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**1.9**	
200.8	12/07/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/07/11	6010B	12/09/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/07/11	6010B	12/09/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-29S-120211
SAMPLE

Lab Sample ID: TZ84G
LIMS ID: 11-27877
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/07/11	6010B	12/09/11	7429-90-5	Aluminum	50	50	U
6010B	12/07/11	6010B	12/09/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**2.4**	
200.8	12/07/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	7440-47-3	Chromium	1	1	U
6010B	12/07/11	6010B	12/09/11	**7440-50-8**	**Copper**	2	**3**	
6010B	12/07/11	6010B	12/09/11	**7439-89-6**	**Iron**	50	**11,600**	
200.8	12/07/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
6010B	12/07/11	6010B	12/09/11	**7439-96-5**	**Manganese**	1	**631**	
7470A	12/07/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**0.7**	
200.8	12/07/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/07/11	6010B	12/09/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/07/11	6010B	12/09/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: DUP-120211-3
SAMPLE

Lab Sample ID: TZ84H
LIMS ID: 11-27878
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**2.5**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-28S-120211
MATRIX SPIKE

Lab Sample ID: TZ84F
LIMS ID: 11-27876
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010B	50.0 U	2,030	2,000	102%	
Antimony	6010B	50.0 U	1,920	2,000	96.0%	
Arsenic	6020	11.9	37.2	25.0	101%	
Beryllium	6020	0.200 U	25.8	25.0	103%	
Cadmium	6020	0.100 U	25.0	25.0	100%	
Chromium	6020	0.500 U	21.4	25.0	85.6%	
Copper	6010B	2.00 U	501	500	100%	
Iron	6010B	7,020	9,160	2,000	107%	
Lead	6020	0.100 U	25.3	25.0	101%	
Manganese	6010B	587	1,060	500	94.6%	
Mercury	7470A	0.100 U	1.04	1.00	104%	
Nickel	6020	1.88	27.5	25.0	102%	
Selenium	6020	0.500 U	76.7	80.0	95.9%	
Silver	6010B	3.00 U	465	500	93.0%	
Thallium	6020	0.200 U	26.4	25.0	106%	
Zinc	6010B	10.0 U	494	500	98.8%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-28S-120211
DUPLICATE

Lab Sample ID: TZ84F
LIMS ID: 11-27876
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	50 U	50 U	0.0%	+/- 50	L
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	11.9	11.4	4.3%	+/- 20%	
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Chromium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Iron	6010B	7,020	6,990	0.4%	+/- 20%	
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Manganese	6010B	587	584	0.5%	+/- 20%	
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	1.9	1.7	11.1%	+/- 0.5	L
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ84LCS
LIMS ID: 11-27877
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	2050	2000	102%	
Antimony	6010B	1990	2000	99.5%	
Arsenic	6020	26.9	25.0	108%	
Beryllium	6020	24.1	25.0	96.4%	
Cadmium	6020	25.9	25.0	104%	
Chromium	6020	25.6	25.0	102%	
Copper	6010B	494	500	98.8%	
Iron	6010B	2050	2000	102%	
Lead	6020	26.9	25.0	108%	
Manganese	6010B	475	500	95.0%	
Mercury	7470A	2.1	2.0	105%	
Nickel	6020	27.3	25.0	109%	
Selenium	6020	81.0	80.0	101%	
Silver	6010B	514	500	103%	
Thallium	6020	27.2	25.0	109%	
Zinc	6010B	500	500	100%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ84MB
LIMS ID: 11-27877
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ84-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/07/11	6010B	12/09/11	7429-90-5	Aluminum	50	50	U
6010B	12/07/11	6010B	12/09/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/14/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/07/11	6010B	12/09/11	7440-50-8	Copper	2	2	U
6010B	12/07/11	6010B	12/09/11	7439-89-6	Iron	50	50	U
200.8	12/07/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
6010B	12/07/11	6010B	12/09/11	7439-96-5	Manganese	1	1	U
7470A	12/07/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/14/11	7440-02-0	Nickel	0.5	0.5	U
200.8	12/07/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/07/11	6010B	12/09/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/07/11	6010B	12/09/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Aluminum	AL	ICP	IP120971	2000.0	2001.89	**100.1**	2000.0	2004.44	**100.2**	1991.06	**99.6**	1973.96	**98.7**	1995.89	**99.8**		
Antimony	SB	ICP	IP120971	2000.0	2049.04	**102.5**	2000.0	2081.67	**104.1**	2032.05	**101.6**	2045.34	**102.3**	2041.35	**102.1**		
Arsenic	AS	PMS	MS121481	50.0	51.15	**102.3**	50.0	50.06	**100.1**	50.34	**100.7**	50.25	**100.5**	49.99	**100.0**	50.12	**100.2**
Beryllium	BE	PMS	MS121481	50.0	50.27	**100.5**	50.0	50.43	**100.9**	50.27	**100.5**	48.56	**97.1**	52.82	**105.6**	53.54	**107.1**
Cadmium	CD	PMS	MS121481	50.0	50.23	**100.5**	50.0	50.71	**101.4**	50.44	**100.9**	51.21	**102.4**	50.83	**101.7**	50.56	**101.1**
Calcium	CA	ICP	IP120971	2000.0	2076.27	**103.8**	2000.0	2068.83	**103.4**	2059.82	**103.0**	2046.08	**102.3**	2058.63	**102.9**		
Chromium	CR	PMS	MS121481	50.0	51.04	**102.1**	50.0	50.27	**100.5**	50.65	**101.3**	49.90	**99.8**	50.73	**101.5**	50.58	**101.2**
Copper	CU	ICP	IP120971	1000.0	1015.09	**101.5**	1000.0	1024.43	**102.4**	1021.39	**102.1**	1008.01	**100.8**	1016.03	**101.6**		
Iron	FE	ICP	IP120971	2000.0	2044.73	**102.2**	2000.0	2041.33	**102.1**	2015.00	**100.8**	1994.98	**99.7**	2018.41	**100.9**		
Lead	PB	PMS	MS121481	50.0	50.81	**101.6**	50.0	50.35	**100.7**	50.35	**100.7**	51.04	**102.1**	50.41	**100.8**	50.87	**101.7**
Magnesium	MG	ICP	IP120971	2000.0	2013.43	**100.7**	2000.0	2006.48	**100.3**	1995.66	**99.8**	1978.87	**98.9**	1994.86	**99.7**		
Manganese	MN	ICP	IP120971	1000.0	1007.68	**100.8**	1000.0	1002.06	**100.2**	986.96	**98.7**	980.10	**98.0**	990.82	**99.1**		
Mercury	HG	CVA	HG120901	8.0	7.76	**97.0**	4.0	4.17	**104.3**	4.30	**107.5**	4.21	**105.3**	4.32	**108.0**	4.37	**109.3**
Nickel	NI	PMS	MS121481	50.0	52.51	**105.0**	50.0	51.08	**102.2**	51.35	**102.7**	50.28	**100.6**	51.18	**102.4**	52.13	**104.3**
Potassium	K	ICP	IP120971	20000.0	20470.73	**102.4**	20000.0	20542.21	**102.7**	20343.88	**101.7**	20284.12	**101.4**	20289.98	**101.4**		
Selenium	SE	PMS	MS121481	80.0	80.70	**100.9**	50.0	50.88	**101.8**	51.05	**102.1**	51.45	**102.9**	49.92	**99.8**	50.06	**100.1**
Silver	AG	ICP	IP120971	1000.0	1029.18	**102.9**	1000.0	1038.15	**103.8**	1021.50	**102.2**	1008.88	**100.9**	1020.27	**102.0**		
Sodium	NA	ICP	IP120971	50000.0	52199.46	**104.4**	50000.0	52037.54	**104.1**	49175.36	**98.4**	48956.58	**97.9**	49462.17	**98.9**		
Thallium	TL	PMS	MS121481	50.0	52.18	**104.4**	50.0	51.43	**102.9**	51.56	**103.1**	52.54	**105.1**	51.74	**103.5**	52.74	**105.5**
Zinc	ZN	ICP	IP120971	1000.0	994.95	**99.5**	1000.0	989.82	**99.0**	983.22	**98.3**	973.97	**97.4**	979.12	**97.9**		

Control Limits: Mercury 80-120; Other Metals 90-110

TZ84 : 98283

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Aluminum	AL	ICP	IP120971	2000.0												
Antimony	SB	ICP	IP120971	2000.0												
Arsenic	AS	PMS	MS121481	50.0	50.15	**100.3**	50.35	**100.7**								
Beryllium	BE	PMS	MS121481	50.0	54.96	**109.9**	51.79	**103.6**								
Cadmium	CD	PMS	MS121481	50.0	50.36	**100.7**	50.90	**101.8**								
Calcium	CA	ICP	IP120971	2000.0												
Chromium	CR	PMS	MS121481	50.0	51.67	**103.3**	51.81	**103.6**								
Copper	CU	ICP	IP120971	1000.0												
Iron	FE	ICP	IP120971	2000.0												
Lead	PB	PMS	MS121481	50.0	50.47	**100.9**	51.50	**103.0**								
Magnesium	MG	ICP	IP120971	2000.0												
Manganese	MN	ICP	IP120971	1000.0												
Mercury	HG	CVA	HG120901	4.0	4.33	**108.3**										
Nickel	NI	PMS	MS121481	50.0	51.80	**103.6**	53.17	**106.3**								
Potassium	K	ICP	IP120971	20000.0												
Selenium	SE	PMS	MS121481	50.0	48.97	**97.9**	50.92	**101.8**								
Silver	AG	ICP	IP120971	1000.0												
Sodium	NA	ICP	IP120971	50000.0												
Thallium	TL	PMS	MS121481	50.0	52.52	**105.0**	53.25	**106.5**								
Zinc	ZN	ICP	IP120971	1000.0												

Control Limits: Mercury 80-120; Other Metals 90-110

TZ84 : 06284

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Aluminum	AL	ICP	IP120971	50.0	46.24	**92.5**	55.61	**111.2**								
Antimony	SB	ICP	IP120971	50.0	50.66	**101.3**	49.72	**99.4**								
Arsenic	AS	PMS	MS121481	0.2	0.19	**95.0**										
Beryllium	BE	PMS	MS121481	0.2	0.21	**105.0**										
Cadmium	CD	PMS	MS121481	0.1	0.11	**110.0**										
Calcium	CA	ICP	IP120971	50.0	50.66	**101.3**	51.79	**103.6**								
Chromium	CR	PMS	MS121481	0.5	0.50	**100.0**										
Copper	CU	ICP	IP120971	2.0	1.83	**91.5**	1.77	**88.5**								
Iron	FE	ICP	IP120971	50.0	56.15	**112.3**	51.62	**103.2**								
Lead	PB	PMS	MS121481	0.1	0.12	**120.0**										
Magnesium	MG	ICP	IP120971	50.0	57.01	**114.0**	54.16	**108.3**								
Manganese	MN	ICP	IP120971	1.0	1.05	**105.0**	0.97	**97.0**								
Mercury	HG	CVA	HG120901	0.1	0.10	**100.0**										
Nickel	NI	PMS	MS121481	0.5	0.55	**110.0**										
Potassium	K	ICP	IP120971	500.0	515.66	**103.1**	500.95	**100.2**								
Selenium	SE	PMS	MS121481	0.5	0.55	**110.0**										
Silver	AG	ICP	IP120971	3.0	3.14	**104.7**	3.16	**105.3**								
Sodium	NA	ICP	IP120971	500.0	474.65	**94.9**	446.99	**89.4**								
Thallium	TL	PMS	MS121481	0.2	0.21	**105.0**										
Zinc	ZN	ICP	IP120971	10.0	10.39	**103.9**	10.88	**108.8**								

TZ84.00265

Control Limits: no control limits have been established by the EPA at this time.

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Aluminum	AL	ICP	IP120971	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Antimony	SB	ICP	IP120971	60.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Arsenic	AS	PMS	MS121481	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Beryllium	BE	PMS	MS121481	5.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	PMS	MS121481	5.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Calcium	CA	ICP	IP120971	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Chromium	CR	PMS	MS121481	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120971	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U		
Iron	FE	ICP	IP120971	100.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Lead	PB	PMS	MS121481	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Magnesium	MG	ICP	IP120971	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U		
Manganese	MN	ICP	IP120971	15.0	1.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U		
Mercury	HG	CVA	HG120901	0.2	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	NI	PMS	MS121481	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Potassium	K	ICP	IP120971	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U		
Selenium	SE	PMS	MS121481	5.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Silver	AG	ICP	IP120971	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U		
Sodium	NA	ICP	IP120971	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U		
Thallium	TL	PMS	MS121481	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Zinc	ZN	ICP	IP120971	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U		

TZ84 : 98289

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

UNITS:ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Aluminum	AL	ICP	IP120971	200.0	50.0												
Antimony	SB	ICP	IP120971	60.0	50.0												
Arsenic	AS	PMS	MS121481	10.0	0.2	0.2	U	0.2	U								
Beryllium	BE	PMS	MS121481	5.0	0.2	0.2	U	0.2	U								
Cadmium	CD	PMS	MS121481	5.0	0.1	0.1	U	0.1	U								
Calcium	CA	ICP	IP120971	5000.0	50.0												
Chromium	CR	PMS	MS121481	10.0	0.5	0.5	U	0.5	U								
Copper	CU	ICP	IP120971	25.0	2.0												
Iron	FE	ICP	IP120971	100.0	50.0												
Lead	PB	PMS	MS121481	3.0	0.1	0.1	U	0.1	U								
Magnesium	MG	ICP	IP120971	5000.0	50.0												
Manganese	MN	ICP	IP120971	15.0	1.0												
Mercury	HG	CVA	HG120901	0.2	0.1	0.1	U										
Nickel	NI	PMS	MS121481	40.0	0.5	0.5	U	0.5	U								
Potassium	K	ICP	IP120971	5000.0	500.0												
Selenium	SE	PMS	MS121481	5.0	0.5	0.5	U	0.5	U								
Silver	AG	ICP	IP120971	10.0	3.0												
Sodium	NA	ICP	IP120971	5000.0	500.0												
Thallium	TL	PMS	MS121481	10.0	0.2	0.2	U	0.2	U								
Zinc	ZN	ICP	IP120971	20.0	10.0												

TZ84: 96287

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

ICS SOURCE: I.V.

RUNID: IP120971

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	199459.5	198688.0	**99.3**	196792.9	195477.8	**97.7**			
Antimony		1000	-1.9	956.8	**95.7**	-6.0	941.0	**94.1**			
Arsenic		1000	-0.8	984.9	**98.5**	-0.7	963.6	**96.4**			
Barium		1000	-0.5	990.8	**99.1**	-0.1	975.8	**97.6**			
Beryllium		1000	-0.1	983.7	**98.4**	-0.1	967.5	**96.8**			
Boron			-11.8	-10.9		-12.4	-10.1				
Cadmium		1000	0.8	1033.4	**103.3**	0.7	1014.0	**101.4**			
Calcium	100000	100000	100196.5	100828.6	**100.8**	99581.2	99948.3	**99.9**			
Chromium		1000	0.8	998.4	**99.8**	0.0	990.8	**99.1**			
Cobalt		1000	1.6	958.3	**95.8**	1.5	946.7	**94.7**			
Copper		1000	-1.7	1055.9	**105.6**	-1.7	1046.9	**104.7**			
Iron	200000	200000	197335.4	197111.1	**98.6**	194079.4	193719.4	**96.9**			
Lead		1000	-4.2	987.9	**98.8**	-2.9	969.7	**97.0**			
Magnesium	100000	100000	101465.4	98396.6	**98.4**	100814.4	97092.8	**97.1**			
Manganese		1000	0.5	986.5	**98.7**	0.3	970.2	**97.0**			
Molybdenum			7.2	7.4		6.2	6.8				
Nickel		1000	-0.9	939.5	**94.0**	-1.2	924.3	**92.4**			
Potassium			34.1	237.0		51.6	229.3				
Selenium		1000	9.8	1011.3	**101.1**	15.8	985.6	**98.6**			
Silicon			-20.7	-20.6		-19.9	-18.4				
Silver		1000	-0.8	1064.6	**106.5**	-0.6	1042.3	**104.2**			
Sodium			-1.3	0.3		-17.5	-19.6				
Strontium			10.1	10.0		9.9	9.9				
Thallium		1000	6.2	964.8	**96.5**	8.5	942.8	**94.3**			
Tin			-12.7	-13.0		-11.7	-13.2				
Titanium			0.4	0.3		0.5	0.2				
Vanadium		1000	6.8	994.8	**99.5**	5.9	984.7	**98.5**			
Zinc		1000	-1.6	925.7	**92.6**	-1.1	919.8	**92.0**			

TZ84:06288

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121481

SDG: TZ84

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	-0.1	19.5	97.5						
Cadmium		20	0.1	19.9	99.5						
Chromium		20	0.8	20.7	103.5						
Cobalt		20	0.0	19.7	98.5						
Copper		20	0.6	20.4	102.0						
Lead			0.1	0.1							
Manganese		20	0.1	19.6	98.0						
Molybdenum	400	400	401.7	397.7	99.4						
Nickel		20	0.7	20.0	100.0						
Selenium			0.0	-0.1							
Silver		20	0.0	19.5	97.5						
Thallium			0.0	0.1							
Vanadium			0.0	-0.4							
Zinc		20	1.2	20.1	100.5						

TZ84 : 060289

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ84

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Aluminum	MW-28S-120211L	TZ84A-L	Water	IP120971	50.00	U	250.00	U		
Antimony	MW-28S-120211L	TZ84A-L	Water	IP120971	50.00	U	250.00	U		
Calcium	MW-28S-120211L	TZ84A-L	Water	IP120971	76517.88		76284.65		0.3	
Copper	MW-28S-120211L	TZ84A-L	Water	IP120971	2.00	U	10.00	U		
Iron	MW-28S-120211L	TZ84A-L	Water	IP120971	6935.07		7219.15		4.1	
Magnesium	MW-28S-120211L	TZ84A-L	Water	IP120971	7233.43		7571.10	B	4.7	
Manganese	MW-28S-120211L	TZ84A-L	Water	IP120971	583.42		580.50		0.5	
Potassium	MW-28S-120211L	TZ84A-L	Water	IP120971	6636.02		6707.40	B	1.1	
Silver	MW-28S-120211L	TZ84A-L	Water	IP120971	3.00	U	15.00	U		
Sodium	MW-28S-120211L	TZ84A-L	Water	IP120971	21473.07		21284.35	B	0.9	
Zinc	MW-28S-120211L	TZ84A-L	Water	IP120971	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ84

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Aluminum	MW-28S-120211L	TZ84F-L	Water	IP120971	50.00	U	250.00	U		
Antimony	MW-28S-120211L	TZ84F-L	Water	IP120971	50.00	U	250.00	U		
Copper	MW-28S-120211L	TZ84F-L	Water	IP120971	2.00	U	10.00	U		
Iron	MW-28S-120211L	TZ84F-L	Water	IP120971	7021.27		7250.70		3.3	
Manganese	MW-28S-120211L	TZ84F-L	Water	IP120971	587.15		584.60		0.4	
Silver	MW-28S-120211L	TZ84F-L	Water	IP120971	3.00	U	15.00	U		
Zinc	MW-28S-120211L	TZ84F-L	Water	IP120971	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ84

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-28S-120211L	TZ84A-L	Water	MS121481	11.23		11.10	B	1.2	
Arsenic	MW-28S-120211L	TZ84A-L	Water	MS121481	11.23		4.45	B	60.4	
Beryllium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.04	U	0.05	B		
Beryllium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.04	U	0.05	B		
Cadmium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.09	U	0.15	B		
Cadmium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.09	U	0.05	B		
Chromium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.03	U	0.00	B		
Chromium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.03	U	0.30	B		
Lead	MW-28S-120211L	TZ84A-L	Water	MS121481	0.04	U	0.00	B		
Lead	MW-28S-120211L	TZ84A-L	Water	MS121481	0.04	U	0.15	B		
Nickel	MW-28S-120211L	TZ84A-L	Water	MS121481	1.80	B	1.45	B	19.4	
Nickel	MW-28S-120211L	TZ84A-L	Water	MS121481	1.80	B	2.12	U	0.0	
Selenium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.27	U	0.25	B		
Selenium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.27	U	-0.20	B		
Thallium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.09	U	0.05	B		
Thallium	MW-28S-120211L	TZ84A-L	Water	MS121481	0.09	U	0.15	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ84

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-28S-120211L	TZ84F-L	Water	MS121481	11.90		10.95	B	8.0	
Beryllium	MW-28S-120211L	TZ84F-L	Water	MS121481	0.04	U	0.05	B		
Cadmium	MW-28S-120211L	TZ84F-L	Water	MS121481	0.06	U	0.05	B		
Chromium	MW-28S-120211L	TZ84F-L	Water	MS121481	0.24	U	0.15	B		
Lead	MW-28S-120211L	TZ84F-L	Water	MS121481	0.02	U	0.05	B		
Nickel	MW-28S-120211L	TZ84F-L	Water	MS121481	1.88	B	1.79	U	0.0	
Selenium	MW-28S-120211L	TZ84F-L	Water	MS121481	0.31	U	0.10	B		
Thallium	MW-28S-120211L	TZ84F-L	Water	MS121481	0.07	U	0.10	B		

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Aluminum	AL	ICP	OPTIMA ICP 2	308.22		200	50.0	4/1/2011	250000.0	8/3/2011
Antimony	SB	ICP	OPTIMA ICP 2	206.84		60	50.0	4/1/2011	30000.0	8/3/2011
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Beryllium	BE	PMS	PE ELAN 6000 MS	0.00		5	0.2	4/1/2011		
Cadmium	CD	PMS	PE ELAN 6000 MS	0.00		5	0.1	4/1/2011		
Calcium	CA	ICP	OPTIMA ICP 2	317.93		5000	50.0	4/1/2011	500000.0	8/3/2011
Chromium	CR	PMS	PE ELAN 6000 MS	0.00		10	0.5	4/1/2011		
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Iron	FE	ICP	OPTIMA ICP 2	259.94		100	50.0	4/1/2011	250000.0	8/3/2011
Lead	PB	PMS	PE ELAN 6000 MS	0.00		3	0.1	4/1/2011		
Magnesium	MG	ICP	OPTIMA ICP 2	279.08		5000	50.0	4/1/2011	500000.0	8/3/2011
Manganese	MN	ICP	OPTIMA ICP 2	257.61		15	1.0	4/1/2011	30000.0	8/3/2011
Mercury	HG	CVA	CETAC MERCURY	253.70		0.2	0.1	4/1/2011		
Nickel	NI	PMS	PE ELAN 6000 MS	0.00		40	0.5	4/1/2011		
Potassium	K	ICP	OPTIMA ICP 2	766.49		5000	500.0	4/1/2011	500000.0	8/3/2011
Selenium	SE	PMS	PE ELAN 6000 MS	0.00		5	0.5	4/1/2011		
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2011	5000.0	8/3/2011
Sodium	NA	ICP	OPTIMA ICP 2	589.00		5000	500.0	4/1/2011	5000000.0	8/3/2011
Thallium	TL	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ84

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3891270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.1208350
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0339516	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0076716	0.0000000	-0.1892080	0.0000000	0.0000000	0.0522067
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0242504	0.0000000	0.0000000	0.0000000	0.0000000	-0.0377814
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0584929
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2018030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0540270
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5652870
Manganese	257.61	0.0071394	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0051324
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0123608	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.2053280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	-0.1233420
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0108199	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1141760
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0387268	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0730907
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0258303	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TZ84 : 96295

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ84

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0405628	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0057432	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0041261	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0107429	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0736777	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

TZ84 : 69256

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

ANALYSIS METHOD: ICP

ARI PREP CODE: TWC

PREPDATE: 12/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-28S-120211	TZ84A	0.000	50.0	50.0
MW-28S-120211D	TZ84ADUP	0.000	50.0	50.0
MW-28S-120211S	TZ84ASPK	0.000	50.0	50.0
MW-29S-120211	TZ84B	0.000	50.0	50.0
PBW	TZ84MB1	0.000	50.0	50.0
LCSW	TZ84MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

ANALYSIS METHOD: ICP

ARI PREP CODE: WMN

PREPDATE: 12/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-28S-120211	TZ84F	0.000	50.0	50.0
MW-28S-120211D	TZ84FDUP	0.000	50.0	50.0
MW-28S-120211S	TZ84FSPK	0.000	50.0	50.0
MW-29S-120211	TZ84G	0.000	50.0	50.0
PBW	TZ84MB2	0.000	50.0	50.0
LCSW	TZ84MB2SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-28S-120211	TZ84A	0.000	50.0	25.0
MW-28S-120211D	TZ84ADUP	0.000	50.0	25.0
MW-28S-120211S	TZ84ASPK	0.000	50.0	25.0
MW-29S-120211	TZ84B	0.000	50.0	25.0
DUP-120211-3	TZ84C	0.000	50.0	25.0
MW-28S-120211	TZ84F	0.000	50.0	25.0
MW-28S-120211D	TZ84FDUP	0.000	50.0	25.0
MW-28S-120211S	TZ84FSPK	0.000	50.0	25.0
MW-29S-120211	TZ84G	0.000	50.0	25.0
DUP-120211-3	TZ84H	0.000	50.0	25.0
PBW	TZ84MB1	0.000	50.0	25.0
LCSW	TZ84MB1SPK	0.000	50.0	25.0
PBW	TZ84MB2	0.000	50.0	25.0
LCSW	TZ84MB2SPK	0.000	50.0	25.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ84

ANALYSIS METHOD: CVA

ARI PREP CODE: TWM

PREPDATE: 12/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-28S-120211	TZ84A	0.000	20.0	20.0
MW-28S-120211D	TZ84ADUP	0.000	20.0	20.0
MW-28S-120211S	TZ84ASPK	0.000	20.0	20.0
MW-29S-120211	TZ84B	0.000	20.0	20.0
MW-28S-120211	TZ84F	0.000	20.0	20.0
MW-28S-120211D	TZ84FDUP	0.000	20.0	20.0
MW-28S-120211S	TZ84FSPK	0.000	20.0	20.0
MW-29S-120211	TZ84G	0.000	20.0	20.0
PBW	TZ84MB1	0.000	20.0	20.0
LCSW	TZ84MB1SPK	0.000	20.0	20.0
PBW	TZ84MB2	0.000	20.0	20.0
LCSW	TZ84MB2SPK	0.000	20.0	20.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/9/2011

SDG: TZ84 | RUNID: IP120971 | METHOD: ICP | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08502		X	X					X				X	X		X	X	X		X			X								X
S2	S2	1.00	08543												X					X													
S3	S3	1.00	08561		X																												X
S4	S4	1.00	08585																						X								
S5	S5	1.00	09010			X					X					X		X	X			X											
ICV	ICV	1.00	09064		X	X					X				X	X		X	X	X		X			X								X
ICB	ICB	1.00	09104		X	X					X				X	X		X	X	X		X			X								X
CRI	CRII	1.00	09150		X	X					X				X	X		X	X	X		X			X								X
ICSA	ICSAI	1.00	09191		X	X					X				X	X		X	X	X		X			X								X
ICSAB	ICSABI	1.00	09233		X	X					X				X	X		X	X	X		X			X								X
CCV	CCV1	1.00	09283		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB1	1.00	09323		X	X					X				X	X		X	X	X		X			X								X
ZZZZZZ	UA18MB1	2.00	09375																														
MW-29S-120211	TZ84G	1.00	09420		X	X									X	X				X					X								X
MW-28S-120211L	TZ84F-L	5.00	09462		X	X									X	X				X					X								X
MW-28S-120211	TZ84F	1.00	09503		X	X									X	X				X					X								X
MW-28S-120211D	TZ84FDUP	1.00	09545		X	X									X	X				X					X								X
MW-28S-120211S	TZ84FSPK	1.00	09590		X	X									X	X				X					X								X
ZZZZZZ	UA18IDUP	2.00	10030																														
ZZZZZZ	UA18I	2.00	10070																														
ZZZZZZ	UA18ISPK	2.00	10110																														
ZZZZZZ	UA18MB1SPK	2.00	10140																														
CCV	CCV2	1.00	10180		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB2	1.00	10220		X	X					X				X	X		X	X	X		X			X								X
PBW	TZ84MB2	1.00	10262		X	X									X	X				X					X								X
PBW	TZ84MB1	1.00	10303		X	X					X				X	X		X	X	X		X			X								X
MW-28S-120211L	TZ84A-L	5.00	10344		X	X					X				X	X		X	X	X		X			X								X
MW-28S-120211	TZ84A	1.00	10385		X	X					X				X	X		X	X	X		X			X								X
MW-28S-120211D	TZ84ADUP	1.00	10431		X	X					X				X	X		X	X	X		X			X								X
MW-28S-120211S	TZ84ASPK	1.00	10472		X	X					X				X	X		X	X	X		X			X								X
MW-29S-120211	TZ84B	1.00	10512		X	X					X				X	X		X	X	X		X			X								X
LCSW	TZ84MB1SPK	1.00	10553		X	X					X				X	X		X	X	X		X			X								X
LCSW	TZ84MB2SPK	1.00	10593		X	X									X	X				X					X								X
CCV	CCV3	1.00	11033		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB3	1.00	11073		X	X					X				X	X		X	X	X		X			X								X

FORM XIV

TZ84 : 9009

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/9/2011

SDG: TZ84 | RUNID: IP120971 | METHOD: ICP | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CRI	CRIF	1.00	11115		X	X					X				X	X		X	X	X		X			X								X
ICSA	ICSAF	1.00	11161		X	X					X				X	X		X	X	X		X			X								X
ICSAB	ICSABF	1.00	11202		X	X					X				X	X		X	X	X		X			X								X
CCV	CCV4	1.00	11252		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB4	1.00	11292		X	X					X				X	X		X	X	X		X			X								X

TZ84 : 00302

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/14/2011

SDG: TZ84 | RUNID: MS121481 METHOD: PMS | END DATE: 12/14/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09020				X			X		X		X									X	X		X				X			
S1	S1	1.00	09080				X			X		X		X									X	X		X				X			
S2	S2	1.00	09140				X			X		X		X									X	X		X				X			
S3	S3	1.00	09200				X			X		X		X									X	X		X				X			
S4	S4	1.00	09260				X			X		X		X									X	X		X				X			
ZZZZZZ	Rinse Samp1	1.00	09330																														
ICV	MICV	1.00	09460				X			X		X		X									X	X		X				X			
ICB	ICB	1.00	09530				X			X		X		X									X	X		X				X			
CCV	MCCV1	1.00	09590				X			X		X		X									X	X		X				X			
CCB	CCB1	1.00	10050				X			X		X		X									X	X		X				X			
CRI	MCRI	1.00	10110				X			X		X		X									X	X		X				X			
ICSA	ICSAI	1.00	10170				X			X		X		X									X	X		X				X			
ZZZZZZ	ZZZZZZ	1.00	10230																														
ICSAB	ICSABI	1.00	10310				X			X		X		X									X	X		X				X			
ZZZZZZ	LR200	1.00	10380																														
ZZZZZZ	ZZZZZZ	1.00	10440																														
ZZZZZZ	LR300	1.00	10540																														
CCV	MCCV2	1.00	11000				X			X		X		X									X	X		X				X			
CCB	CCB2	1.00	11070				X			X		X		X									X	X		X				X			
ZZZZZZ	UA09MB1	2.00	11130																														
ZZZZZZ	UA15MB1	20.00	11190																														
ZZZZZZ	UA75ADUP	100.00	11250																														
ZZZZZZ	UA75A	100.00	11320																														
ZZZZZZ	UA75ASPK	100.00	11380																														
ZZZZZZ	UA77A	100.00	11440																														
ZZZZZZ	UA77B	100.00	11500																														
ZZZZZZ	UA15ADUP	20.00	11570																														
ZZZZZZ	UA15A	20.00	12030																														
ZZZZZZ	UA15ASPK	20.00	12090																														
CCV	MCCV3	1.00	12160				X			X		X		X									X	X		X				X			
CCB	CCB3	1.00	12220				X			X		X		X									X	X		X				X			
PBW	TZ84MB1	2.00	12290				X			X		X		X									X	X		X				X			
PBW	TZ84MB2	2.00	12350				X			X		X		X									X	X		X				X			
ZZZZZZ	UA15MB1SPK	20.00	12400																														
LCSW	TZ84MB1SPK	2.00	12470				X			X		X		X									X	X		X				X			

FORM XIV

TZ84 : 65303

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/14/2011

SDG: TZ84 | RUNID: MS121481 METHOD: PMS | END DATE: 12/14/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
LCSW	TZ84MB2SPK	2.00	12530				X			X		X		X									X	X		X				X			
MW-28S-120211L	TZ84A-L	10.00	12590				X			X		X											X	X		X				X			
MW-28S-120211	TZ84A	2.00	13060				X			X		X											X	X		X				X			
MW-28S-120211D	TZ84ADUP	2.00	13120				X			X		X											X	X		X				X			
MW-28S-120211S	TZ84ASPK	2.00	13180				X			X		X											X	X		X				X			
ZZZZZZ	ZZZZZZ	2.00	13240																														
CCV	MCCV4	1.00	13310				X			X		X		X									X	X		X				X			
CCB	CCB4	1.00	13370				X			X		X		X									X	X		X				X			
S0	S0	1.00	13430				X			X		X		X									X	X		X				X			
CCV	MCCV5	1.00	13500				X			X		X		X									X	X		X				X			
CCB	CCB5	1.00	13570				X			X		X		X									X	X		X				X			
MW-28S-120211L	TZ84F-L	10.00	14020				X			X		X		X									X	X		X				X			
MW-28S-120211	TZ84F	2.00	14090																														
MW-28S-120211D	TZ84FDUP	2.00	14150				X			X		X		X									X	X		X				X			
MW-28S-120211S	TZ84FSPK	2.00	14210				X			X		X		X									X	X		X				X			
MW-28S-120211	TZ84F	2.00	14270				X			X		X		X									X	X		X				X			
MW-29S-120211	TZ84B	2.00	14340				X			X		X											X	X		X				X			
DUP-120211-3	TZ84C	2.00	14400				X																										
MW-29S-120211	TZ84G	2.00	14460				X			X		X											X	X		X				X			
DUP-120211-3	TZ84H	2.00	14530				X																										
ZZZZZZ	TZ96ADUP	2.00	14590																														
CCV	MCCV6	1.00	15050				X			X		X		X									X	X		X				X			
CCB	CCB6	1.00	15120				X			X		X		X									X	X		X				X			
MW-28S-120211L	TZ84A-L	25.00	15230											X																			
MW-28S-120211	TZ84A	5.00	15290											X																			
MW-28S-120211D	TZ84ADUP	5.00	15360											X																			
MW-28S-120211S	TZ84ASPK	5.00	15420											X																			
ZZZZZZ	ZZZZZZ	5.00	15480																														
MW-29S-120211	TZ84B	5.00	15550											X																			
MW-29S-120211	TZ84G	5.00	16010											X																			
ZZZZZZ	UA15ADUP	20.00	16070																														
ZZZZZZ	UA15A	20.00	16130																														
ZZZZZZ	UA15ASPK	20.00	16200																														
CCV	MCCV7	1.00	16260				X			X		X		X									X	X		X				X			
CCB	CCB7	1.00	16330				X			X		X		X									X	X		X				X			

FORM XIV

TZ84-0984

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ84 | RUNID: HG120901 | METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08032														X																
S0.1	S0.1	1.00	08050														X																
S0.5	S0.5	1.00	08063														X																
S1	S1	1.00	08081														X																
S2	S2	1.00	08095														X																
S5	S5	1.00	08113														X																
S10	S10	1.00	08130														X																
ICV	AICV	1.00	08184														X																
ICB	ICB	1.00	08202														X																
CCV	ACCV1	1.00	08220														X																
CCB	CCB1	1.00	08234														X																
CRA	CRA	1.00	08251														X																
ZZZZZZ	TZ50MB1	1.00	08265																														
ZZZZZZ	TZ50MB1SPK	1.00	08283																														
ZZZZZZ	TZ50C	1.00	08300																														
ZZZZZZ	TZ50CDUP	1.00	08314																														
ZZZZZZ	TZ50CSPK	1.00	08331																														
ZZZZZZ	TZ50F	1.00	08345																														
ZZZZZZ	TZ50G	1.00	08363																														
ZZZZZZ	TZ50H	1.00	08381																														
ZZZZZZ	TZ50MB2	1.00	08394																														
CCV	ACCV2	1.00	08412														X																
CCB	CCB2	1.00	08430														X																
ZZZZZZ	TZ50MB2SPK	1.00	08444																														
ZZZZZZ	TZ50L	1.00	08462																														
ZZZZZZ	TZ50LDUP	1.00	08475																														
ZZZZZZ	TZ50LSPK	1.00	08493																														
ZZZZZZ	TZ50O	1.00	08510																														
ZZZZZZ	TZ50P	1.00	08524																														
ZZZZZZ	TZ50Q	1.00	08542																														
ZZZZZZ	TZ73MB1	1.00	08555																														
ZZZZZZ	TZ73MB1SPK	1.00	08573																														
ZZZZZZ	TZ73A	1.00	08591																														
CCV	ACCV3	1.00	09005														X																
CCB	CCB3	1.00	09023														X																

TZ84 09365

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ84 | RUNID: HG120901 | METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ73ADUP	1.00	09041																														
ZZZZZZ	TZ73ASPK	1.00	09055																														
ZZZZZZ	TZ73B	1.00	09072																														
ZZZZZZ	TZ73C	1.00	09090																														
ZZZZZZ	TZ73MB2	1.00	09104																														
ZZZZZZ	TZ73MB2SPK	1.00	09121																														
ZZZZZZ	TZ73I	1.00	09135																														
ZZZZZZ	TZ73IDUP	1.00	09152																														
ZZZZZZ	TZ73ISPK	1.00	09170																														
ZZZZZZ	TZ73J	1.00	09184																														
CCV	ACCV4	1.00	09202														X																
CCB	CCB4	1.00	09220														X																
ZZZZZZ	TZ73K	1.00	09234																														
PBW	TZ84MB1	1.00	09252														X																
LCSW	TZ84MB1SPK	1.00	09265														X																
MW-28S-120211	TZ84A	1.00	09283														X																
MW-28S-120211D	TZ84ADUP	1.00	09301														X																
MW-28S-120211S	TZ84ASPK	1.00	09315														X																
MW-29S-120211	TZ84B	1.00	09332														X																
PBW	TZ84MB2	1.00	09350														X																
LCSW	TZ84MB2SPK	1.00	09364														X																
MW-28S-120211	TZ84F	1.00	09381														X																
CCV	ACCV5	1.00	09395														X																
CCB	CCB5	1.00	09413														X																
MW-28S-120211D	TZ84FDUP	1.00	09431														X																
MW-28S-120211S	TZ84FSPK	1.00	09445														X																
MW-29S-120211	TZ84G	1.00	09463														X																
ZZZZZZ	TZ97MB1	1.00	09481																														
ZZZZZZ	TZ97MB1SPK	1.00	09495																														
ZZZZZZ	TZ97A	1.00	09512																														
ZZZZZZ	TZ97ADUP	1.00	09530																														
ZZZZZZ	TZ97ASPK	1.00	09544																														
ZZZZZZ	TZ97B	1.00	09561																														
ZZZZZZ	TZ97MB2	1.00	09575																														
CCV	ACCV6	1.00	09593														X																

TZ84: 09595

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ84 | RUNID: HG120901 | METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB6	1.00	10011														X																

TZ84 : HG120901

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-30S-120511	TZ97A	11-27938	
MW-30S-120511D	TZ97ADUP	11-27938	
MW-30S-120511S	TZ97ASPK	11-27938	
MW-31S-120511	TZ97B	11-27939	
PBW	TZ97MB1	11-27939	
LCSW	TZ97MB1SPK	11-27939	
MW-33S-120511	TZ97C	11-27940	
DUP-120511-2	TZ97F	11-27943	
MW-30S-120511	TZ97I	11-27946	
MW-30S-120511D	TZ97IDUP	11-27946	
MW-30S-120511S	TZ97ISPK	11-27946	
MW-31S-120511	TZ97J	11-27947	
PBW	TZ97MB2	11-27947	
LCSW	TZ97MB2SPK	11-27947	
MW-33S-120511	TZ97K	11-27948	
DUP-120511-2	TZ97L	11-27949	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/20/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-30S-120511
SAMPLE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/08/11	6010B	12/12/11	7429-90-5	Aluminum	50	50	U
3010A	12/08/11	6010B	12/12/11	7440-36-0	Antimony	50	50	U
200.8	12/08/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**8.5**	
200.8	12/08/11	6020	12/16/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
3010A	12/08/11	6010B	12/12/11	**7440-70-2**	**Calcium**	50	**56,000**	
200.8	12/08/11	6020	12/15/11	7440-47-3	Chromium	1	1	U
3010A	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
3010A	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**8,280**	
200.8	12/08/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
3010A	12/08/11	6010B	12/12/11	**7439-95-4**	**Magnesium**	50	**11,100**	
3010A	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**441**	
7470A	12/08/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**0.9**	
3010A	12/08/11	6010B	12/12/11	**7440-09-7**	**Potassium**	500	**7,930**	
200.8	12/08/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
3010A	12/08/11	6010B	12/12/11	**7440-23-5**	**Sodium**	500	**13,800**	
200.8	12/08/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

Calculated Hardness (mg-CaCO3/L): 190

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-31S-120511
SAMPLE

Lab Sample ID: TZ97B
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/08/11	6010B	12/12/11	**7429-90-5**	**Aluminum**	50	**50**	
3010A	12/08/11	6010B	12/12/11	7440-36-0	Antimony	50	50	U
200.8	12/08/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**2.2**	
200.8	12/08/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
3010A	12/08/11	6010B	12/12/11	**7440-70-2**	**Calcium**	50	**53,800**	
200.8	12/08/11	6020	12/14/11	**7440-47-3**	**Chromium**	0.5	**1.1**	
3010A	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
3010A	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**2,440**	
200.8	12/08/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
3010A	12/08/11	6010B	12/12/11	**7439-95-4**	**Magnesium**	50	**4,020**	
3010A	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**112**	
7470A	12/08/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**1.7**	
3010A	12/08/11	6010B	12/12/11	**7440-09-7**	**Potassium**	500	**4,440**	
200.8	12/08/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
3010A	12/08/11	6010B	12/12/11	**7440-23-5**	**Sodium**	500	**4,360**	
200.8	12/08/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

Calculated Hardness (mg-CaCO3/L): 150

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: MW-33S-120511
SAMPLE

Lab Sample ID: TZ97C
LIMS ID: 11-27940
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/08/11	6010B	12/12/11	**7429-90-5**	**Aluminum**	50	**450**	
200.8	12/08/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**299**	
3010A	12/08/11	6010B	12/12/11	**7440-70-2**	**Calcium**	50	**31,200**	
200.8	12/08/11	6020	12/15/11	**7440-47-3**	**Chromium**	2	**6**	
3010A	12/08/11	6010B	12/12/11	**7440-50-8**	**Copper**	2	**138**	
3010A	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**8,650**	
3010A	12/08/11	6010B	12/12/11	**7439-95-4**	**Magnesium**	50	**3,890**	
3010A	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**278**	
3010A	12/08/11	6010B	12/12/11	**7440-09-7**	**Potassium**	500	**20,200**	
3010A	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
3010A	12/08/11	6010B	12/12/11	**7440-23-5**	**Sodium**	500	**44,800**	
3010A	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

Calculated Hardness (mg-CaCO3/L): 94

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: DUP-120511-2
SAMPLE

Lab Sample ID: TZ97F
LIMS ID: 11-27943
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/08/11	6010B	12/12/11	**7429-90-5**	**Aluminum**	50	**60**	
3010A	12/08/11	6010B	12/12/11	**7440-70-2**	**Calcium**	50	**55,600**	
200.8	12/08/11	6020	12/14/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
3010A	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**2,420**	
3010A	12/08/11	6010B	12/12/11	**7439-95-4**	**Magnesium**	50	**4,180**	
3010A	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**113**	
3010A	12/08/11	6010B	12/12/11	**7440-09-7**	**Potassium**	500	**4,590**	
3010A	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
3010A	12/08/11	6010B	12/12/11	**7440-23-5**	**Sodium**	500	**4,410**	
3010A	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-30S-120511**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010B	50.0 U	2,080	2,000	104%	
Antimony	6010B	50.0 U	1,740	2,000	87.0%	
Arsenic	6020	8.54	34.2	25.0	103%	
Beryllium	6020	0.200 U	24.8	25.0	99.2%	
Cadmium	6020	0.100 U	23.9	25.0	95.6%	
Calcium	6010B	56,000	67,100	10,000	111%	H
Chromium	6020	1.25 U	22.2	25.0	88.8%	
Copper	6010B	2.00 U	530	500	106%	
Iron	6010B	8,280	10,800	2,000	126%	H
Lead	6020	0.100 U	24.7	25.0	98.8%	
Magnesium	6010B	11,100	22,200	10,000	111%	
Manganese	6010B	441	969	500	106%	
Mercury	7470A	0.100 U	1.20	1.00	120%	
Nickel	6020	0.900	25.7	25.0	99.2%	
Potassium	6010B	7,930	18,500	10,000	106%	
Selenium	6020	0.500 U	72.8	80.0	91.0%	
Silver	6010B	3.00 U	518	500	104%	
Sodium	6010B	13,800	24,200	10,000	104%	
Thallium	6020	0.200 U	25.6	25.0	102%	
Zinc	6010B	10.0 U	482	500	96.4%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-30S-120511
DUPLICATE

Lab Sample ID: TZ97A
LIMS ID: 11-27938
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	50 U	50 U	0.0%	+/- 50	L
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	8.5	8.8	3.5%	+/- 20%	
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Calcium	6010B	56,000	53,800	4.0%	+/- 20%	
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	2 U	2	0.0%	+/- 2	L
Iron	6010B	8,280	7,930	4.3%	+/- 20%	
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Magnesium	6010B	11,100	10,600	4.6%	+/- 20%	
Manganese	6010B	441	421	4.6%	+/- 20%	
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	0.9	1.0	10.5%	+/- 0.5	L
Potassium	6010B	7,930	7,550	4.9%	+/- 20%	
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Sodium	6010B	13,800	13,200	4.4%	+/- 20%	
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ97LCS
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	2070	2000	104%	
Antimony	6010B	2090	2000	104%	
Arsenic	6020	25.1	25.0	100%	
Beryllium	6020	25.2	25.0	101%	
Cadmium	6020	24.3	25.0	97.2%	
Calcium	6010B	9980	10000	99.8%	
Chromium	6020	24.6	25.0	98.4%	
Copper	6010B	513	500	103%	
Iron	6010B	2080	2000	104%	
Lead	6020	25.3	25.0	101%	
Magnesium	6010B	10500	10000	105%	
Manganese	6010B	483	500	96.6%	
Mercury	7470A	2.3	2.0	115%	
Nickel	6020	26.0	25.0	104%	
Potassium	6010B	10300	10000	103%	
Selenium	6020	74.0	80.0	92.5%	
Silver	6010B	516	500	103%	
Sodium	6010B	9790	10000	97.9%	
Thallium	6020	25.8	25.0	103%	
Zinc	6010B	490	500	98.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ97MB
LIMS ID: 11-27939
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/08/11	6010B	12/12/11	7429-90-5	Aluminum	50	50	U
3010A	12/08/11	6010B	12/12/11	7440-36-0	Antimony	50	50	U
200.8	12/08/11	6020	12/14/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
3010A	12/08/11	6010B	12/12/11	7440-70-2	Calcium	50	50	U
200.8	12/08/11	6020	12/14/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
3010A	12/08/11	6010B	12/12/11	7439-89-6	Iron	50	50	U
200.8	12/08/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
3010A	12/08/11	6010B	12/12/11	7439-95-4	Magnesium	50	50	U
3010A	12/08/11	6010B	12/12/11	7439-96-5	Manganese	1	1	U
7470A	12/08/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	7440-02-0	Nickel	0.5	0.5	U
3010A	12/08/11	6010B	12/12/11	7440-09-7	Potassium	500	500	U
200.8	12/08/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
3010A	12/08/11	6010B	12/12/11	7440-23-5	Sodium	500	500	U
200.8	12/08/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-30S-120511
SAMPLE

Lab Sample ID: TZ97I
LIMS ID: 11-27946
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/08/11	6010B	12/12/11	7429-90-5	Aluminum	50	50	U
6010B	12/08/11	6010B	12/12/11	7440-36-0	Antimony	50	50	U
200.8	12/08/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**9.2**	
200.8	12/08/11	6020	12/16/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/08/11	6020	12/15/11	7440-47-3	Chromium	1	1	U
6010B	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
6010B	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**8,300**	
200.8	12/08/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
6010B	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**448**	
7470A	12/08/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**1.1**	
200.8	12/08/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
200.8	12/08/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-31S-120511
SAMPLE

Lab Sample ID: TZ97J
LIMS ID: 11-27947
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/08/11	6010B	12/12/11	7429-90-5	Aluminum	50	50	U
6010B	12/08/11	6010B	12/12/11	7440-36-0	Antimony	50	50	U
200.8	12/08/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**2.2**	
200.8	12/08/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
6010B	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**2,500**	
200.8	12/08/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
6010B	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**114**	
7470A	12/08/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	**7440-02-0**	**Nickel**	0.5	**1.0**	
200.8	12/08/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
200.8	12/08/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-33S-120511
SAMPLE

Lab Sample ID: TZ97K
LIMS ID: 11-27948
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/08/11	6010B	12/12/11	**7429-90-5**	**Aluminum**	50	**90**	
200.8	12/08/11	6020	12/14/11	**7440-38-2**	**Arsenic**	0.2	**257**	
200.8	12/08/11	6020	12/15/11	**7440-47-3**	**Chromium**	2	**4**	
6010B	12/08/11	6010B	12/12/11	**7440-50-8**	**Copper**	2	**3**	
6010B	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**7,760**	
6010B	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**269**	
6010B	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
6010B	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: DUP-120511-2
SAMPLE

Lab Sample ID: TZ97L
LIMS ID: 11-27949
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/08/11	6010B	12/12/11	7429-90-5	Aluminum	50	50	U
200.8	12/08/11	6020	12/14/11	**7440-47-3**	**Chromium**	0.5	**0.7**	
6010B	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
6010B	12/08/11	6010B	12/12/11	**7439-89-6**	**Iron**	50	**2,500**	
6010B	12/08/11	6010B	12/12/11	**7439-96-5**	**Manganese**	1	**117**	
6010B	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
6010B	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-30S-120511
MATRIX SPIKE

Lab Sample ID: TZ97I
LIMS ID: 11-27946
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010B	50.0 U	1,970	2,000	98.5%	
Antimony	6010B	50.0 U	1,870	2,000	93.5%	
Arsenic	6020	9.24	34.6	25.0	101%	
Beryllium	6020	0.200 U	25.6	25.0	102%	
Cadmium	6020	0.100 U	24.2	25.0	96.8%	
Chromium	6020	1.25 U	22.3	25.0	89.2%	
Copper	6010B	2.00 U	497	500	99.4%	
Iron	6010B	8,300	10,100	2,000	90.0%	H
Lead	6020	0.100 U	24.7	25.0	98.8%	
Manganese	6010B	448	918	500	94.0%	
Mercury	7470A	0.100 U	1.14	1.00	114%	
Nickel	6020	1.11	26.2	25.0	100%	
Selenium	6020	0.500 U	72.4	80.0	90.5%	
Silver	6010B	3.00 U	460	500	92.0%	
Thallium	6020	0.200 U	25.9	25.0	104%	
Zinc	6010B	10.0 U	470	500	94.0%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-30S-120511
DUPLICATE

Lab Sample ID: TZ97I
LIMS ID: 11-27946
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	50 U	50 U	0.0%	+/- 50	L
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	9.2	9.7	5.3%	+/- 20%	
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Iron	6010B	8,300	8,210	1.1%	+/- 20%	
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Manganese	6010B	448	442	1.3%	+/- 20%	
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	1.1	1.2	8.7%	+/- 0.5	L
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: LAB CONTROL

Lab Sample ID: TZ97LCS
LIMS ID: 11-27947
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	2030	2000	102%	
Antimony	6010B	1920	2000	96.0%	
Arsenic	6020	24.6	25.0	98.4%	
Beryllium	6020	24.4	25.0	97.6%	
Cadmium	6020	24.0	25.0	96.0%	
Chromium	6020	24.1	25.0	96.4%	
Copper	6010B	494	500	98.8%	
Iron	6010B	2030	2000	102%	
Lead	6020	24.7	25.0	98.8%	
Manganese	6010B	475	500	95.0%	
Mercury	7470A	2.2	2.0	110%	
Nickel	6020	24.8	25.0	99.2%	
Selenium	6020	72.9	80.0	91.1%	
Silver	6010B	467	500	93.4%	
Thallium	6020	25.5	25.0	102%	
Zinc	6010B	490	500	98.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: METHOD BLANK

Lab Sample ID: TZ97MB
LIMS ID: 11-27947
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ97-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/08/11	6010B	12/12/11	7429-90-5	Aluminum	50	50	U
6010B	12/08/11	6010B	12/12/11	7440-36-0	Antimony	50	50	U
200.8	12/08/11	6020	12/14/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/08/11	6020	12/14/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/08/11	6010B	12/12/11	7440-50-8	Copper	2	2	U
6010B	12/08/11	6010B	12/12/11	7439-89-6	Iron	50	50	U
200.8	12/08/11	6020	12/14/11	7439-92-1	Lead	0.1	0.1	U
6010B	12/08/11	6010B	12/12/11	7439-96-5	Manganese	1	1	U
7470A	12/08/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/08/11	6020	12/14/11	7440-02-0	Nickel	0.5	0.5	U
200.8	12/08/11	6020	12/14/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/08/11	6010B	12/12/11	7440-22-4	Silver	3	3	U
200.8	12/08/11	6020	12/14/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/08/11	6010B	12/12/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Aluminum	AL	ICP	IP121271	2000.0	2000.87	**100.0**	2000.0	2013.22	**100.7**	1985.14	**99.3**	2000.40	**100.0**	1991.11	**99.6**	1991.08	**99.6**
Antimony	SB	ICP	IP121271	2000.0	2074.09	**103.7**	2000.0	2076.93	**103.8**	2060.63	**103.0**	2080.59	**104.0**	2090.18	**104.5**	2052.85	**102.6**
Arsenic	AS	PMS	MS121481	50.0	51.15	**102.3**	50.0	50.06	**100.1**	50.34	**100.7**	50.25	**100.5**	49.99	**100.0**	50.12	**100.2**
Beryllium	BE	PMS	MS121481	50.0	50.27	**100.5**	50.0	50.43	**100.9**	50.27	**100.5**	48.56	**97.1**	52.82	**105.6**	53.54	**107.1**
Cadmium	CD	PMS	MS121481	50.0	50.23	**100.5**	50.0	50.71	**101.4**	50.44	**100.9**	51.21	**102.4**	50.83	**101.7**	50.56	**101.1**
Calcium	CA	ICP	IP121271	2000.0	2075.55	**103.8**	2000.0	2065.64	**103.3**	2052.19	**102.6**	2073.32	**103.7**	2049.08	**102.5**	2057.80	**102.9**
Chromium	CR	PMS	MS121481	50.0	51.04	**102.1**	50.0	50.27	**100.5**	50.65	**101.3**	49.90	**99.8**	50.73	**101.5**	50.58	**101.2**
Copper	CU	ICP	IP121271	1000.0	1018.51	**101.9**	1000.0	1021.92	**102.2**	1023.42	**102.3**	1022.29	**102.2**	1029.10	**102.9**	1018.86	**101.9**
Iron	FE	ICP	IP121271	2000.0	2046.02	**102.3**	2000.0	2041.65	**102.1**	2016.70	**100.8**	2030.84	**101.5**	2013.90	**100.7**	2032.46	**101.6**
Lead	PB	PMS	MS121481	50.0	50.81	**101.6**	50.0	50.35	**100.7**	50.35	**100.7**	51.04	**102.1**	50.41	**100.8**	50.87	**101.7**
Magnesium	MG	ICP	IP121271	2000.0	2010.24	**100.5**	2000.0	2008.50	**100.4**	1985.16	**99.3**	2004.23	**100.2**	1985.95	**99.3**	1992.83	**99.6**
Manganese	MN	ICP	IP121271	1000.0	1008.14	**100.8**	1000.0	1000.35	**100.0**	993.22	**99.3**	963.27	**96.3**	990.28	**99.0**	996.42	**99.6**
Mercury	HG	CVA	HG120901	8.0	7.76	**97.0**	4.0	4.17	**104.3**	4.30	**107.5**	4.21	**105.3**	4.32	**108.0**	4.37	**109.3**
Nickel	NI	PMS	MS121481	50.0	52.51	**105.0**	50.0	51.08	**102.2**	51.35	**102.7**	50.28	**100.6**	51.18	**102.4**	52.13	**104.3**
Potassium	K	ICP	IP121271	20000.0	20242.59	**101.2**	20000.0	20263.20	**101.3**	20316.59	**101.6**	20410.68	**102.1**	20275.92	**101.4**	20349.74	**101.7**
Selenium	SE	PMS	MS121481	80.0	80.70	**100.9**	50.0	50.88	**101.8**	51.05	**102.1**	51.45	**102.9**	49.92	**99.8**	50.06	**100.1**
Silver	AG	ICP	IP121271	1000.0	1018.54	**101.9**	1000.0	1013.88	**101.4**	1012.86	**101.3**	1014.56	**101.5**	1102.11	**110.2**	1016.10	**101.6**
Sodium	NA	ICP	IP121271	50000.0	49660.17	**99.3**	50000.0	49455.43	**98.9**	49189.43	**98.4**	49467.68	**98.9**	49252.02	**98.5**	49284.68	**98.6**
Thallium	TL	PMS	MS121481	50.0	52.18	**104.4**	50.0	51.43	**102.9**	51.56	**103.1**	52.54	**105.1**	51.74	**103.5**	52.74	**105.5**
Zinc	ZN	ICP	IP121271	1000.0	992.04	**99.2**	1000.0	981.52	**98.2**	975.78	**97.6**	985.82	**98.6**	973.51	**97.4**	976.90	**97.7**

Control Limits: Mercury 80-120; Other Metals 90-110

TZ81:093525

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Aluminum	AL	ICP	IP121271	2000.0												
Antimony	SB	ICP	IP121271	2000.0												
Arsenic	AS	PMS	MS121481	50.0	50.15	**100.3**	50.35	**100.7**	49.94	**99.9**	50.02	**100.0**				
Beryllium	BE	PMS	MS121481	50.0	54.96	**109.9**	51.79	**103.6**	54.99	**110.0**	56.34	**112.7**				
Cadmium	CD	PMS	MS121481	50.0	50.36	**100.7**	50.90	**101.8**	50.60	**101.2**	50.09	**100.2**				
Calcium	CA	ICP	IP121271	2000.0												
Chromium	CR	PMS	MS121481	50.0	51.67	**103.3**	51.81	**103.6**	52.31	**104.6**	52.71	**105.4**				
Copper	CU	ICP	IP121271	1000.0												
Iron	FE	ICP	IP121271	2000.0												
Lead	PB	PMS	MS121481	50.0	50.47	**100.9**	51.50	**103.0**	50.99	**102.0**	49.96	**99.9**				
Magnesium	MG	ICP	IP121271	2000.0												
Manganese	MN	ICP	IP121271	1000.0												
Mercury	HG	CVA	HG120901	4.0	4.33	**108.3**	4.24	**106.0**								
Nickel	NI	PMS	MS121481	50.0	51.80	**103.6**	53.17	**106.3**	51.16	**102.3**	50.24	**100.5**				
Potassium	K	ICP	IP121271	20000.0												
Selenium	SE	PMS	MS121481	50.0	48.97	**97.9**	50.92	**101.8**	48.53	**97.1**	47.33	**94.7**				
Silver	AG	ICP	IP121271	1000.0												
Sodium	NA	ICP	IP121271	50000.0												
Thallium	TL	PMS	MS121481	50.0	52.52	**105.0**	53.25	**106.5**	52.88	**105.8**	51.93	**103.9**				
Zinc	ZN	ICP	IP121271	1000.0												

Control Limits: Mercury 80-120; Other Metals 90-110

TZ84:09329

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Chromium	CR	PMS	MS121581	50.0	51.08	102.2	50.0	51.24	102.5	48.01	96.0	52.19	104.4	51.46	102.9	50.08	100.2

Control Limits: Mercury 80-120; Other Metals 90-110

TZ84 : 00327

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Chromium	CR	PMS	MS121581	50.0	48.56	97.1	49.57	99.1								

Control Limits: Mercury 80-120; Other Metals 90-110

TZ8H:00328

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Beryllium	BE	PMS	MS121681	50.0	52.13	104.3	50.0	50.78	101.6	52.29	104.6	51.61	103.2	53.23	106.5	51.74	103.5

Control Limits: Mercury 80-120; Other Metals 90-110

TZ8h: 060325

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Aluminum	AL	ICP	IP121271	50.0	55.33	**110.7**	62.66	**125.3**								
Antimony	SB	ICP	IP121271	50.0	51.23	**102.5**	50.17	**100.3**								
Arsenic	AS	PMS	MS121481	0.2	0.19	**95.0**										
Beryllium	BE	PMS	MS121481	0.2	0.21	**105.0**										
Cadmium	CD	PMS	MS121481	0.1	0.11	**110.0**										
Calcium	CA	ICP	IP121271	50.0	47.83	**95.7**	48.55	**97.1**								
Chromium	CR	PMS	MS121481	0.5	0.50	**100.0**										
Copper	CU	ICP	IP121271	2.0	2.62	**131.0**	2.37	**118.5**								
Iron	FE	ICP	IP121271	50.0	51.72	**103.4**	51.98	**104.0**								
Lead	PB	PMS	MS121481	0.1	0.12	**120.0**										
Magnesium	MG	ICP	IP121271	50.0	44.60	**89.2**	50.38	**100.8**								
Manganese	MN	ICP	IP121271	1.0	0.99	**99.0**	1.03	**103.0**								
Mercury	HG	CVA	HG120901	0.1	0.10	**100.0**										
Nickel	NI	PMS	MS121481	0.5	0.55	**110.0**										
Potassium	K	ICP	IP121271	500.0	502.27	**100.5**	509.17	**101.8**								
Selenium	SE	PMS	MS121481	0.5	0.55	**110.0**										
Silver	AG	ICP	IP121271	3.0	3.01	**100.3**	3.20	**106.7**								
Sodium	NA	ICP	IP121271	500.0	472.67	**94.5**	463.97	**92.8**								
Thallium	TL	PMS	MS121481	0.2	0.21	**105.0**										
Zinc	ZN	ICP	IP121271	10.0	8.92	**89.2**	8.94	**89.4**								

Control Limits: no control limits have been established by the EPA at this time.

TZ84: 09359

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I	TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Chromium	CR	PMS	MS121581		0.5	0.55	110.0										
Beryllium	BE	PMS	MS121681		0.2	0.24	120.0										

Control Limits: no control limits have been established by the EPA at this time.

TZ8H : 006331

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Aluminum	AL	ICP	IP121271	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Antimony	SB	ICP	IP121271	60.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS121481	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Beryllium	BE	PMS	MS121481	5.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	PMS	MS121481	5.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Calcium	CA	ICP	IP121271	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Chromium	CR	PMS	MS121481	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP121271	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Iron	FE	ICP	IP121271	100.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Lead	PB	PMS	MS121481	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Magnesium	MG	ICP	IP121271	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Manganese	MN	ICP	IP121271	15.0	1.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Mercury	HG	CVA	HG120901	0.2	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	NI	PMS	MS121481	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Potassium	K	ICP	IP121271	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Selenium	SE	PMS	MS121481	5.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Silver	AG	ICP	IP121271	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Sodium	NA	ICP	IP121271	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Thallium	TL	PMS	MS121481	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Zinc	ZN	ICP	IP121271	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ84:060332

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS:ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Aluminum	AL	ICP	IP121271	200.0	50.0												
Antimony	SB	ICP	IP121271	60.0	50.0												
Arsenic	AS	PMS	MS121481	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U				
Beryllium	BE	PMS	MS121481	5.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U				
Cadmium	CD	PMS	MS121481	5.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U				
Calcium	CA	ICP	IP121271	5000.0	50.0												
Chromium	CR	PMS	MS121481	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U				
Copper	CU	ICP	IP121271	25.0	2.0												
Iron	FE	ICP	IP121271	100.0	50.0												
Lead	PB	PMS	MS121481	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U				
Magnesium	MG	ICP	IP121271	5000.0	50.0												
Manganese	MN	ICP	IP121271	15.0	1.0												
Mercury	HG	CVA	HG120901	0.2	0.1	0.1	U	0.1	U								
Nickel	NI	PMS	MS121481	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U				
Potassium	K	ICP	IP121271	5000.0	500.0												
Selenium	SE	PMS	MS121481	5.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U				
Silver	AG	ICP	IP121271	10.0	3.0												
Sodium	NA	ICP	IP121271	5000.0	500.0												
Thallium	TL	PMS	MS121481	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U				
Zinc	ZN	ICP	IP121271	20.0	10.0												

TZ81-0303

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Chromium	CR	PMS	MS121581	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

TZ81 : 06334

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Chromium	CR	PMS	MS121581	10.0	0.5	0.5	U	0.5	U								

TZ8H - 00035

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Beryllium	BE	PMS	MS121681	5.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U

TZ84 00339

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

ICS SOURCE: I.V.

RUNID: IP121271

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	198112.3	196903.3	**98.5**	197781.3	197228.1	**98.6**			
Antimony		1000	-4.8	970.3	**97.0**	-3.1	948.5	**94.9**			
Arsenic		1000	-0.3	990.7	**99.1**	0.8	975.7	**97.6**			
Barium		1000	0.5	988.1	**98.8**	-0.4	976.3	**97.6**			
Beryllium		1000	-0.1	966.1	**96.6**	-0.1	965.8	**96.6**			
Boron			-13.4	-9.2		-13.4	-11.0				
Cadmium		1000	0.9	1029.6	**103.0**	1.0	1008.3	**100.8**			
Calcium	100000	100000	99496.3	100254.4	**100.3**	99725.6	99963.4	**100.0**			
Chromium		1000	-0.6	1006.7	**100.7**	-1.1	989.5	**99.0**			
Cobalt		1000	1.3	961.7	**96.2**	1.1	941.6	**94.2**			
Copper		1000	-1.4	1069.9	**107.0**	-1.2	1048.2	**104.8**			
Iron	200000	200000	195097.2	195153.4	**97.6**	195124.6	195165.0	**97.6**			
Lead		1000	-4.3	988.9	**98.9**	-4.5	973.9	**97.4**			
Magnesium	100000	100000	101311.2	97982.3	**98.0**	100534.8	97724.3	**97.7**			
Manganese		1000	0.3	939.0	**93.9**	0.3	970.2	**97.0**			
Molybdenum			6.7	7.2		6.8	7.0				
Nickel		1000	-0.6	929.3	**92.9**	0.6	917.5	**91.8**			
Potassium			44.8	217.8		30.4	230.9				
Selenium		1000	17.7	1006.5	**100.7**	13.7	991.9	**99.2**			
Silicon			-22.4	-17.5		-18.7	-16.0				
Silver		1000	-0.6	1055.6	**105.6**	-0.8	1038.3	**103.8**			
Sodium			13.1	12.1		13.0	8.8				
Strontium			10.2	10.1		10.1	10.1				
Thallium		1000	6.4	964.7	**96.5**	5.9	947.4	**94.7**			
Tin			-12.8	-13.4		-13.3	-13.4				
Titanium			0.4	0.3		0.2	0.2				
Vanadium		1000	6.2	1000.2	**100.0**	6.1	980.2	**98.0**			
Zinc		1000	-3.0	919.5	**92.0**	-2.2	905.8	**90.6**			

TZ97 : 09371

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

ICS SOURCE: I.V.

RUNID: MS121481

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	-0.1	19.5	97.5						
Cadmium		20	0.1	19.9	99.5						
Chromium		20	0.8	20.7	103.5						
Cobalt		20	0.0	19.7	98.5						
Copper		20	0.6	20.4	102.0						
Lead			0.1	0.1							
Manganese		20	0.1	19.6	98.0						
Molybdenum	400	400	401.7	397.7	99.4						
Nickel		20	0.7	20.0	100.0						
Selenium			0.0	-0.1							
Silver		20	0.0	19.5	97.5						
Thallium			0.0	0.1							
Vanadium			0.0	-0.4							
Zinc		20	1.2	20.1	100.5						

TZ84-000338

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121581

SDG: TZ97

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.8	99.0						
Cadmium		20	0.0	20.0	100.0						
Chromium		20	0.8	20.7	103.5						
Cobalt		20	0.0	19.4	97.0						
Copper		20	0.5	20.1	100.5						
Lead			0.1	0.1							
Manganese		20	0.1	20.1	100.5						
Molybdenum	400	400	402.8	398.9	99.7						
Nickel		20	0.7	19.7	98.5						
Silver		20	0.0	19.9	99.5						
Thallium			0.1	0.1							
Vanadium			0.0	-0.4							
Zinc		20	1.1	20.0	100.0						

TZ97 : 00035

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121681

SDG: TZ97

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Arsenic		20	0.0	19.7	98.5						
Cadmium		20	0.0	20.2	101.0						
Chromium		20	0.8	20.7	103.5						
Cobalt		20	0.0	19.8	99.0						
Copper		20	0.5	19.8	99.0						
Lead			0.1	0.1							
Manganese		20	0.1	19.6	98.0						
Molybdenum	400	400	397.1	393.2	98.3						
Nickel		20	0.6	19.3	96.5						
Selenium			-0.2	-0.1							
Silver		20	0.0	20.0	100.0						
Thallium			0.1	0.1							
Vanadium			0.0	-0.5							
Zinc		20	1.0	19.9	99.5						

TZ97 : 0951h

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ97

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Aluminum	MW-30S-120511L	TZ97A-L	Water	IP121271	50.00	U	250.00	U		
Antimony	MW-30S-120511L	TZ97A-L	Water	IP121271	50.00	U	250.00	U		
Calcium	MW-30S-120511L	TZ97A-L	Water	IP121271	56049.94		56228.75		0.3	
Copper	MW-30S-120511L	TZ97A-L	Water	IP121271	2.00	U	10.00	U		
Iron	MW-30S-120511L	TZ97A-L	Water	IP121271	8283.01		8762.80		5.8	
Magnesium	MW-30S-120511L	TZ97A-L	Water	IP121271	11085.79		11859.30	B	7.0	
Manganese	MW-30S-120511L	TZ97A-L	Water	IP121271	440.52		451.10		2.4	
Potassium	MW-30S-120511L	TZ97A-L	Water	IP121271	7931.70		8173.00	B	3.0	
Silver	MW-30S-120511L	TZ97A-L	Water	IP121271	3.00	U	15.00	U		
Sodium	MW-30S-120511L	TZ97A-L	Water	IP121271	13783.42		13941.05	B	1.1	
Zinc	MW-30S-120511L	TZ97A-L	Water	IP121271	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ97

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Aluminum	MW-30S-120511L	TZ97I-L	Water	IP121271	50.00	U	250.00	U		
Antimony	MW-30S-120511L	TZ97I-L	Water	IP121271	50.00	U	250.00	U		
Copper	MW-30S-120511L	TZ97I-L	Water	IP121271	2.00	U	10.00	U		
Iron	MW-30S-120511L	TZ97I-L	Water	IP121271	8298.39		8404.40		1.3	
Manganese	MW-30S-120511L	TZ97I-L	Water	IP121271	447.76		436.50		2.5	
Silver	MW-30S-120511L	TZ97I-L	Water	IP121271	3.00	U	15.00	U		
Zinc	MW-30S-120511L	TZ97I-L	Water	IP121271	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ97

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-30S-120511L	TZ97A-L	Water	MS121481	8.54	B	9.00	B	5.4	
Cadmium	MW-30S-120511L	TZ97A-L	Water	MS121481	0.01	U	0.00	B		
Lead	MW-30S-120511L	TZ97A-L	Water	MS121481	0.05	U	0.10	B		
Nickel	MW-30S-120511L	TZ97A-L	Water	MS121481	0.90	B	2.00	U	2.8	
Selenium	OW-30S-120511L	TZ97A-L	Water	MS121481	0.22	U	0.20	B		
Thallium	MW-30S-120511L	TZ97A-L	Water	MS121481	0.02	U	0.00	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ97

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFER-ENCE	Q
Arsenic	MW-30S-120511L	TZ97I-L	Water	MS121481	9.24	B	9.15	B	1.0	
Cadmium	MW-30S-120511L	TZ97I-L	Water	MS121481	0.01	U	0.05	B		
Lead	MW-30S-120511L	TZ97I-L	Water	MS121481	0.02	U	0.05	B		
Nickel	MW-30S-120511L	TZ97I-L	Water	MS121481	1.11	B	1.14	U	2.0	
Selenium	MW-30S-120511L	TZ97I-L	Water	MS121481	0.14	U	-0.10	B		
Thallium	MW-30S-120511L	TZ97I-L	Water	MS121481	0.02	U	0.05	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ97

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Chromium	MW-30S-120511L	TZ97A-L	Water	MS121581	0.06	U	-0.15	B		
Chromium	MW-30S-120511L	TZ97I-L	Water	MS121581	0.05	U	-0.30	B		
Beryllium	MW-30S-120511L	TZ97A-L	Water	MS121681	0.02	U	0.00	B		
Beryllium	MW-30S-120511L	TZ97I-L	Water	MS121681	0.03	U	0.05	B		

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Aluminum	AL	ICP	OPTIMA ICP 2	308.22		200	50.0	4/1/2011	250000.0	8/3/2011
Antimony	SB	ICP	OPTIMA ICP 2	206.84		60	50.0	4/1/2011	30000.0	8/3/2011
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Beryllium	BE	PMS	PE ELAN 6000 MS	0.00		5	0.2	4/1/2011		
Cadmium	CD	PMS	PE ELAN 6000 MS	0.00		5	0.1	4/1/2011		
Calcium	CA	ICP	OPTIMA ICP 2	317.93		5000	50.0	4/1/2011	500000.0	8/3/2011
Chromium	CR	PMS	PE ELAN 6000 MS	0.00		10	0.5	4/1/2011		
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Iron	FE	ICP	OPTIMA ICP 2	259.94		100	50.0	4/1/2011	250000.0	8/3/2011
Lead	PB	PMS	PE ELAN 6000 MS	0.00		3	0.1	4/1/2011		
Magnesium	MG	ICP	OPTIMA ICP 2	279.08		5000	50.0	4/1/2011	500000.0	8/3/2011
Manganese	MN	ICP	OPTIMA ICP 2	257.61		15	1.0	4/1/2011	30000.0	8/3/2011
Mercury	HG	CVA	CETAC MERCURY	253.70		0.2	0.1	4/1/2011		
Nickel	NI	PMS	PE ELAN 6000 MS	0.00		40	0.5	4/1/2011		
Potassium	K	ICP	OPTIMA ICP 2	766.49		5000	500.0	4/1/2011	500000.0	8/3/2011
Selenium	SE	PMS	PE ELAN 6000 MS	0.00		5	0.5	4/1/2011		
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2011	5000.0	8/3/2011
Sodium	NA	ICP	OPTIMA ICP 2	589.00		5000	500.0	4/1/2011	5000000.0	8/3/2011
Thallium	TL	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ97

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3891270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.1208350
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0339516	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0076716	0.0000000	-0.1892080	0.0000000	0.0000000	0.0522067
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0242504	0.0000000	0.0000000	0.0000000	0.0000000	-0.0377814
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0584929
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2018030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0540270
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5652870
Manganese	257.61	0.0071394	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0051324
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0123608	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.2053280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	-0.1233420
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0108199	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1141760
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0387268	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0730907
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0258303	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TZ8H : 0034T

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ97

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0405628	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0057432	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0041261	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0107429	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0736777	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

TZ84-0539-3

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

ANALYSIS METHOD: ICP

ARI PREP CODE: TWC

PREPDATE: 12/8/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-30S-120511	TZ97A	0.000	50.0	50.0
MW-30S-120511D	TZ97ADUP	0.000	50.0	50.0
MW-30S-120511S	TZ97ASPK	0.000	50.0	50.0
MW-31S-120511	TZ97B	0.000	50.0	50.0
MW-33S-120511	TZ97C	0.000	50.0	50.0
DUP-120511-2	TZ97F	0.000	50.0	50.0
PBW	TZ97MB1	0.000	50.0	50.0
LCSW	TZ97MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

ANALYSIS METHOD: ICP

ARI PREP CODE: WMN

PREPDATE: 12/8/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-30S-120511	TZ97I	0.000	50.0	50.0
MW-30S-120511D	TZ97IDUP	0.000	50.0	50.0
MW-30S-120511S	TZ97ISPK	0.000	50.0	50.0
MW-31S-120511	TZ97J	0.000	50.0	50.0
MW-33S-120511	TZ97K	0.000	50.0	50.0
DUP-120511-2	TZ97L	0.000	50.0	50.0
PBW	TZ97MB2	0.000	50.0	50.0
LCSW	TZ97MB2SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/8/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-30S-120511	TZ97A	0.000	50.0	25.0
MW-30S-120511D	TZ97ADUP	0.000	50.0	25.0
MW-30S-120511S	TZ97ASPK	0.000	50.0	25.0
MW-31S-120511	TZ97B	0.000	50.0	25.0
MW-33S-120511	TZ97C	0.000	50.0	25.0
DUP-120511-2	TZ97F	0.000	50.0	25.0
MW-30S-120511	TZ97I	0.000	50.0	25.0
MW-30S-120511D	TZ97IDUP	0.000	50.0	25.0
MW-30S-120511S	TZ97ISPK	0.000	50.0	25.0
MW-31S-120511	TZ97J	0.000	50.0	25.0
MW-33S-120511	TZ97K	0.000	50.0	25.0
DUP-120511-2	TZ97L	0.000	50.0	25.0
PBW	TZ97MB1	0.000	50.0	25.0
LCSW	TZ97MB1SPK	0.000	50.0	25.0
PBW	TZ97MB2	0.000	50.0	25.0
LCSW	TZ97MB2SPK	0.000	50.0	25.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ97

ANALYSIS METHOD: CVA

ARI PREP CODE: TWM

PREPDATE: 12/8/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-30S-120511	TZ97A	0.000	20.0	20.0
MW-30S-120511D	TZ97ADUP	0.000	20.0	20.0
MW-30S-120511S	TZ97ASPK	0.000	20.0	20.0
MW-31S-120511	TZ97B	0.000	20.0	20.0
MW-30S-120511	TZ97I	0.000	20.0	20.0
MW-30S-120511D	TZ97IDUP	0.000	20.0	20.0
MW-30S-120511S	TZ97ISPK	0.000	20.0	20.0
MW-31S-120511	TZ97J	0.000	20.0	20.0
PBW	TZ97MB1	0.000	20.0	20.0
LCSW	TZ97MB1SPK	0.000	20.0	20.0
PBW	TZ97MB2	0.000	20.0	20.0
LCSW	TZ97MB2SPK	0.000	20.0	20.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/12/2011

SDG: TZ97 | RUNID: IP121271 | METHOD: ICP | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	10264		X	X					X				X	X		X	X	X		X			X								X
S2	S2	1.00	10310												X					X													
S3	S3	1.00	10324		X																												X
S4	S4	1.00	10351																						X								
S5	S5	1.00	10373			X					X					X		X	X			X											
ICV	ICV	1.00	10434		X	X					X				X	X		X	X	X		X			X								X
ICB	ICB	1.00	10474		X	X					X				X	X		X	X	X		X			X								X
CRI	CRII	1.00	10520		X	X					X				X	X		X	X	X		X			X								X
ICSA	ICSAI	1.00	10561		X	X					X				X	X		X	X	X		X			X								X
ICSAB	ICSABI	1.00	11003		X	X					X				X	X		X	X	X		X			X								X
CCV	CCV1	1.00	11043		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB1	1.00	11083		X	X					X				X	X		X	X	X		X			X								X
ZZZZZZ	DICHECK	1.00	11124																														
ZZZZZZ	UA68MB	2.00	11170																														
PBW	TZ97MB1	1.00	11211		X	X					X				X	X		X	X	X		X			X								X
ZZZZZZ	QC21	1.00	11253																														
ZZZZZZ	QC7M	1.00	11294																														
MW-31S-120511	TZ97B	1.00	11340		X	X					X				X	X		X	X	X		X			X								X
ZZZZZZ	UA68ADUP	2.00	11381																														
ZZZZZZ	UA68A	2.00	11421																														
ZZZZZZ	UA68ASPK	2.00	11461																														
ZZZZZZ	UA68MBSPK	2.00	11501																														
CCV	CCV2	1.00	11541		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB2	1.00	11582		X	X					X				X	X		X	X	X		X			X								X
MW-30S-120511L	TZ97A-L	5.00	12023		X	X					X				X	X		X	X	X		X			X								X
MW-30S-120511	TZ97A	1.00	12065		X	X					X				X	X		X	X	X		X			X								X
MW-30S-120511D	TZ97ADUP	1.00	12110		X	X					X				X	X		X	X	X		X			X								X
MW-30S-120511S	TZ97ASPK	1.00	12151		X	X					X				X	X		X	X	X		X			X								X
ZZZZZZ	ZZZZZZ	1.00	12191																														
MW-30S-120511L	TZ97I-L	5.00	12231		X	X									X	X				X					X								X
MW-30S-120511	TZ97I	1.00	12273		X	X									X	X				X					X								X
MW-30S-120511D	TZ97IDUP	1.00	12314		X	X									X	X				X					X								X
MW-30S-120511S	TZ97ISPK	1.00	12360		X	X									X	X				X					X								X
LCSW	TZ97MB1SPK	1.00	12400		X	X					X				X	X		X	X	X		X			X								X
CCV	CCV3	1.00	12440		X	X					X				X	X		X	X	X		X			X								X

FORM XIV

1284-1397

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/12/2011

SDG: TZ97 | RUNID: IP121271 | METHOD: ICP | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB3	1.00	12480		X	X					X				X	X		X	X	X		X			X								X
PBW	TZ97MB2	1.00	12522		X	X									X	X				X					X								X
MW-31S-120511	TZ97J	1.00	12563		X	X									X	X				X					X								X
MW-33S-120511	TZ97K	1.00	13004		X	X									X	X				X													X
DUP-120511-2	TZ97L	1.00	13050		X	X									X	X				X													X
MW-33S-120511	TZ97C	1.00	13091		X	X					X				X	X		X	X	X		X											X
DUP-120511-2	TZ97F	1.00	13133		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ94ADUP	1.00	13174																														
ZZZZZZ	TZ94A	1.00	13215																														
ZZZZZZ	TZ94ASPK	1.00	13261																														
LCSW	TZ97MB2SPK	1.00	13302		X	X									X	X				X					X								X
CCV	CCV4	1.00	13342		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB4	1.00	13383		X	X					X				X	X		X	X	X		X			X								X
CRI	CRIF	1.00	13422		X	X					X				X	X		X	X	X		X			X								X
ICSA	ICSAF	1.00	13464		X	X					X				X	X		X	X	X		X			X								X
ICSAB	ICSABF	1.00	13505		X	X					X				X	X		X	X	X		X			X								X
CCV	CCV5	1.00	13545		X	X					X				X	X		X	X	X		X			X								X
CCB	CCB5	1.00	13590		X	X					X				X	X		X	X	X		X			X								X

TZ84 : 69354

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/14/2011

SDG: TZ97 | RUNID: MS121481 METHOD: PMS | END DATE: 12/14/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09020				X			X		X		X									X	X		X				X			
S1	S1	1.00	09080				X			X		X		X									X	X		X				X			
S2	S2	1.00	09140				X			X		X		X									X	X		X				X			
S3	S3	1.00	09200				X			X		X		X									X	X		X				X			
S4	S4	1.00	09260				X			X		X		X									X	X		X				X			
ZZZZZZ	Rinse Sampl	1.00	09330																														
ICV	MICV	1.00	09460				X			X		X		X									X	X		X				X			
ICB	ICB	1.00	09530				X			X		X		X									X	X		X				X			
CCV	MCCV1	1.00	09590				X			X		X		X									X	X		X				X			
CCB	CCB1	1.00	10050				X			X		X		X									X	X		X				X			
CRI	MCRI	1.00	10110				X			X		X		X									X	X		X				X			
ICSA	ICSAI	1.00	10170				X			X		X		X									X	X		X				X			
ZZZZZZ	ZZZZZZ	1.00	10230																														
ICSAB	ICSABI	1.00	10310				X			X		X		X									X	X		X				X			
ZZZZZZ	LR200	1.00	10380																														
ZZZZZZ	ZZZZZZ	1.00	10440																														
ZZZZZZ	LR300	1.00	10540																														
CCV	MCCV2	1.00	11000				X			X		X		X									X	X		X				X			
CCB	CCB2	1.00	11070				X			X		X		X									X	X		X				X			
ZZZZZZ	UA09MB1	2.00	11130																														
ZZZZZZ	UA15MB1	20.00	11190																														
ZZZZZZ	UA75ADUP	100.00	11250																														
ZZZZZZ	UA75A	100.00	11320																														
ZZZZZZ	UA75ASPK	100.00	11380																														
ZZZZZZ	UA77A	100.00	11440																														
ZZZZZZ	UA77B	100.00	11500																														
ZZZZZZ	UA15ADUP	20.00	11570																														
ZZZZZZ	UA15A	20.00	12030																														
ZZZZZZ	UA15ASPK	20.00	12090																														
CCV	MCCV3	1.00	12160				X			X		X		X									X	X		X				X			
CCB	CCB3	1.00	12220				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ84MB1	2.00	12290																														
ZZZZZZ	TZ84MB2	2.00	12350																														
ZZZZZZ	UA15MB1SPK	20.00	12400																														
ZZZZZZ	TZ84MB1SPK	2.00	12470																														

FORM XIV

TZ84 9035

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/14/2011

SDG: TZ97 | RUNID: MS121481 METHOD: PMS | END DATE: 12/14/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ84MB2SPK	2.00	12530																														
ZZZZZZ	TZ84A-L	10.00	12590																														
ZZZZZZ	TZ84A	2.00	13060																														
ZZZZZZ	TZ84ADUP	2.00	13120																														
ZZZZZZ	TZ84ASPK	2.00	13180																														
ZZZZZZ	ZZZZZZ	2.00	13240																														
CCV	MCCV4	1.00	13310				X			X		X		X									X	X		X				X			
CCB	CCB4	1.00	13370				X			X		X		X									X	X		X				X			
S0	S0	1.00	13430				X			X		X		X									X	X		X				X			
CCV	MCCV5	1.00	13500				X			X		X		X									X	X		X				X			
CCB	CCB5	1.00	13570				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ84F-L	10.00	14020																														
ZZZZZZ	TZ84F	2.00	14090																														
ZZZZZZ	TZ84FDUP	2.00	14150																														
ZZZZZZ	TZ84FSPK	2.00	14210																														
ZZZZZZ	TZ84F	2.00	14270																														
ZZZZZZ	TZ84B	2.00	14340																														
ZZZZZZ	TZ84C	2.00	14400																														
ZZZZZZ	TZ84G	2.00	14460																														
ZZZZZZ	TZ84H	2.00	14530																														
ZZZZZZ	TZ96ADUP	2.00	14590																														
CCV	MCCV6	1.00	15050				X			X		X		X									X	X		X				X			
CCB	CCB6	1.00	15120				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ84A-L	25.00	15230																														
ZZZZZZ	TZ84A	5.00	15290																														
ZZZZZZ	TZ84ADUP	5.00	15360																														
ZZZZZZ	TZ84ASPK	5.00	15420																														
ZZZZZZ	ZZZZZZ	5.00	15480																														
ZZZZZZ	TZ84B	5.00	15550																														
ZZZZZZ	TZ84G	5.00	16010																														
ZZZZZZ	UA15ADUP	20.00	16070																														
ZZZZZZ	UA15A	20.00	16130																														
ZZZZZZ	UA15ASPK	20.00	16200																														
CCV	MCCV7	1.00	16260				X			X		X		X									X	X		X				X			
CCB	CCB7	1.00	16330				X			X		X		X									X	X		X				X			

FORM XIV

TZ61:0956

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/14/2011

SDG: TZ97 | RUNID: MS121481 METHOD: PMS | END DATE: 12/14/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
PBW	TZ97MB1	2.00	16380				X			X		X		X									X	X		X				X			
PBW	TZ97MB2	2.00	16440				X			X		X		X									X	X		X				X			
LCSW	TZ97MB1SPK	2.00	16500				X			X		X		X									X	X		X				X			
LCSW	TZ97MB2SPK	2.00	16560				X			X		X		X									X	X		X				X			
MW-31S-120511	TZ97B	2.00	17030				X			X		X		X									X	X		X				X			
MW-33S-120511	TZ97C	2.00	17090				X																										
DUP-120511-2	TZ97F	2.00	17150											X																			
MW-31S-120511	TZ97J	2.00	17210				X			X		X		X									X	X		X				X			
MW-33S-120511	TZ97K	2.00	17280				X																										
DUP-120511-2	TZ97L	2.00	17340											X																			
CCV	MCCV8	1.00	17400				X			X		X		X									X	X		X				X			
CCB	CCB8	1.00	17470				X			X		X		X									X	X		X				X			
MW-30S-120511L	TZ97A-L	10.00	17530				X					X											X	X		X				X			
MW-30S-120511	TZ97A	2.00	17590				X					X											X	X		X				X			
MW-30S-120511D	TZ97ADUP	2.00	18050				X					X											X	X		X				X			
MW-30S-120511S	TZ97ASPK	2.00	18110				X					X											X	X		X				X			
ZZZZZZ	ZZZZZZ	2.00	18180																														
MW-30S-120511L	TZ97I-L	10.00	18240				X					X											X	X		X				X			
MW-30S-120511	TZ97I	2.00	18300				X					X											X	X		X				X			
MW-30S-120511D	TZ97IDUP	2.00	18370				X					X											X	X		X				X			
MW-30S-120511S	TZ97ISPK	2.00	18430				X					X											X	X		X				X			
ZZZZZZ	ZZZZZZ	2.00	18490																														
CCV	MCCV9	1.00	18550				X			X		X		X									X	X		X				X			
CCB	CCB9	1.00	19020				X			X		X		X									X	X		X				X			

TZ97 : 06357

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/15/2011

SDG: TZ97 | RUNID: MS121581 METHOD: PMS | END DATE: 12/15/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	10370											X																			
S1	S1	1.00	10430											X																			
S2	S2	1.00	10490											X																			
S3	S3	1.00	10550											X																			
S4	S4	1.00	11010											X																			
ZZZZZZ	Rinse Sampl	1.00	11080																														
ICV	MICV	1.00	11190											X																			
ICB	ICB	1.00	11260											X																			
CCV	MCCV1	1.00	11310											X																			
CCB	CCB1	1.00	11380											X																			
CRI	MCRI	1.00	11440											X																			
ICSA	ICSAI	1.00	11500											X																			
ICSAB	ICSABI	1.00	11560											X																			
ZZZZZZ	LR200	1.00	12020																														
ZZZZZZ	LR300	1.00	12090																														
CCV	MCCV2	1.00	12160											X																			
CCB	CCB2	1.00	12220											X																			
ZZZZZZ	TZ73RMB1	2.00	12290																														
ZZZZZZ	TZ73RMB1SPK	2.00	12350																														
ZZZZZZ	TZ73RA-L	25.00	12410																														
ZZZZZZ	TZ73RA	5.00	12480																														
ZZZZZZ	TZ73RADUP	5.00	12540																														
ZZZZZZ	TZ73RASPK	5.00	13000																														
ZZZZZZ	TZ73RB	5.00	13070																														
ZZZZZZ	TZ73RC	5.00	13130																														
ZZZZZZ	TZ73RH	5.00	13190																														
ZZZZZZ	UA51B	100.00	13250																														
CCV	MCCV3	1.00	13320											X																			
CCB	CCB3	1.00	13380											X																			
S0	S0	1.00	13530											X																			
CCV	MCCV4	1.00	14000											X																			
CCB	CCB4	1.00	14070											X																			
ZZZZZZ	ZZZZZZ	10.00	14120																														
MW-30S-120511	TZ97A	2.00	14180																														
MW-30S-120511D	TZ97ADUP	2.00	14240																														

FORM XIV

TZ64:00358

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/15/2011

SDG: TZ97 | RUNID: MS121581 METHOD: PMS | END DATE: 12/15/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-30S-120511S	TZ97ASPK	2.00	14300																														
ZZZZZZ	ZZZZZZ	10.00	14370																														
MW-30S-120511	TZ97I	2.00	14430																														
MW-30S-120511D	TZ97IDUP	2.00	14490																														
MW-30S-120511S	TZ97ISPK	2.00	14550																														
MW-33S-120511	TZ97C	5.00	15020																														
MW-33S-120511	TZ97K	5.00	15080																														
CCV	MCCV5	1.00	15140											X																			
CCB	CCB5	1.00	15210											X																			
S0	S0	1.00	15270											X																			
CCV	MCCV6	1.00	15460											X																			
CCB	CCB6	1.00	15530											X																			
MW-30S-120511L	TZ97A-L	25.00	15590											X																			
MW-30S-120511	TZ97A	5.00	16050											X																			
MW-30S-120511D	TZ97ADUP	5.00	16110											X																			
MW-30S-120511S	TZ97ASPK	5.00	16170											X																			
MW-30S-120511L	TZ97I-L	25.00	16240											X																			
MW-30S-120511	TZ97I	5.00	16300											X																			
MW-30S-120511D	TZ97IDUP	5.00	16360											X																			
MW-30S-120511S	TZ97ISPK	5.00	16430											X																			
MW-33S-120511	TZ97C	10.00	16490											X																			
MW-33S-120511	TZ97K	10.00	16550											X																			
CCV	MCCV7	1.00	17010											X																			
CCB	CCB7	1.00	17080											X																			

17814: 9959

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/16/2011

SDG: TZ97 | RUNID: MS121681 METHOD: PMS | END DATE: 12/16/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09550							X																							
S1	S1	1.00	10010							X																							
S2	S2	1.00	10070							X																							
S3	S3	1.00	10130							X																							
S4	S4	1.00	10190							X																							
ZZZZZZ	Rinse Sampl	1.00	10260																														
ICV	MICV	1.00	10380							X																							
ICB	ICB	1.00	10450							X																							
CCV	MCCV1	1.00	10500							X																							
CCB	CCB1	1.00	10570							X																							
ZZZZZZ	ZZZZZZ	1.00	11030																														
ZZZZZZ	ZZZZZZ	1.00	11090																														
ZZZZZZ	ZZZZZZ	1.00	11150																														
ZZZZZZ	ZZZZZZ	1.00	11210																														
ZZZZZZ	ZZZZZZ	1.00	11280																														
CCV	MCCV2	1.00	11350							X																							
CCB	CCB2	1.00	11410							X																							
S0	S0	1.00	11470							X																							
CCV	MCCV3	1.00	11550							X																							
CCB	CCB3	1.00	12020							X																							
CRI	MCRI	1.00	12080							X																							
ICSA	ICSAI	1.00	12140							X																							
ICSAB	ICSABI	1.00	12200							X																							
ZZZZZZ	LR200	1.00	12260																														
ZZZZZZ	LR300	1.00	12330																														
CCV	MCCV4	1.00	12390							X																							
CCB	CCB4	1.00	12460							X																							
ZZZZZZ	UA17MB1	2.00	12550																														
MW-30S-120511L	TZ97A-L	10.00	13010							X																							
MW-30S-120511	TZ97A	2.00	13070							X																							
MW-30S-120511D	TZ97ADUP	2.00	13130							X																							
MW-30S-120511S	TZ97ASPK	2.00	13200							X																							
MW-30S-120511L	TZ97I-L	10.00	13260							X																							
MW-30S-120511	TZ97I	2.00	13320							X																							
MW-30S-120511D	TZ97IDUP	2.00	13380							X																							

FORM XIV

TZ9141 00396

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/16/2011

SDG: TZ97 | RUNID: MS121681 METHOD: PMS | END DATE: 12/16/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-30S-120511S	TZ97ISPK	2.00	13450							X																							
CCV	MCCV5	1.00	13510							X																							
CCB	CCB5	1.00	13580							X																							

TZ97h : 60361

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ97 | RUNID: HG120901 METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08032														X																
S0.1	S0.1	1.00	08050														X																
S0.5	S0.5	1.00	08063														X																
S1	S1	1.00	08081														X																
S2	S2	1.00	08095														X																
S5	S5	1.00	08113														X																
S10	S10	1.00	08130														X																
ICV	AICV	1.00	08184														X																
ICB	ICB	1.00	08202														X																
CCV	ACCV1	1.00	08220														X																
CCB	CCB1	1.00	08234														X																
CRA	CRA	1.00	08251														X																
ZZZZZZ	TZ50MB1	1.00	08265																														
ZZZZZZ	TZ50MB1SPK	1.00	08283																														
ZZZZZZ	TZ50C	1.00	08300																														
ZZZZZZ	TZ50CDUP	1.00	08314																														
ZZZZZZ	TZ50CSPK	1.00	08331																														
ZZZZZZ	TZ50F	1.00	08345																														
ZZZZZZ	TZ50G	1.00	08363																														
ZZZZZZ	TZ50H	1.00	08381																														
ZZZZZZ	TZ50MB2	1.00	08394																														
CCV	ACCV2	1.00	08412														X																
CCB	CCB2	1.00	08430														X																
ZZZZZZ	TZ50MB2SPK	1.00	08444																														
ZZZZZZ	TZ50L	1.00	08462																														
ZZZZZZ	TZ50LDUP	1.00	08475																														
ZZZZZZ	TZ50LSPK	1.00	08493																														
ZZZZZZ	TZ50O	1.00	08510																														
ZZZZZZ	TZ50P	1.00	08524																														
ZZZZZZ	TZ50Q	1.00	08542																														
ZZZZZZ	TZ73MB1	1.00	08555																														
ZZZZZZ	TZ73MB1SPK	1.00	08573																														
ZZZZZZ	TZ73A	1.00	08591																														
CCV	ACCV3	1.00	09005														X																
CCB	CCB3	1.00	09023														X																

FORM XIV

TZ81 : 09052

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ97 | RUNID: HG120901 | METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ73ADUP	1.00	09041																														
ZZZZZZ	TZ73ASPK	1.00	09055																														
ZZZZZZ	TZ73B	1.00	09072																														
ZZZZZZ	TZ73C	1.00	09090																														
ZZZZZZ	TZ73MB2	1.00	09104																														
ZZZZZZ	TZ73MB2SPK	1.00	09121																														
ZZZZZZ	TZ73I	1.00	09135																														
ZZZZZZ	TZ73IDUP	1.00	09152																														
ZZZZZZ	TZ73ISPK	1.00	09170																														
ZZZZZZ	TZ73J	1.00	09184																														
CCV	ACCV4	1.00	09202														X																
CCB	CCB4	1.00	09220														X																
ZZZZZZ	TZ73K	1.00	09234																														
ZZZZZZ	TZ84MB1	1.00	09252																														
ZZZZZZ	TZ84MB1SPK	1.00	09265																														
ZZZZZZ	TZ84A	1.00	09283																														
ZZZZZZ	TZ84ADUP	1.00	09301																														
ZZZZZZ	TZ84ASPK	1.00	09315																														
ZZZZZZ	TZ84B	1.00	09332																														
ZZZZZZ	TZ84MB2	1.00	09350																														
ZZZZZZ	TZ84MB2SPK	1.00	09364																														
ZZZZZZ	TZ84F	1.00	09381																														
CCV	ACCV5	1.00	09395														X																
CCB	CCB5	1.00	09413														X																
ZZZZZZ	TZ84FDUP	1.00	09431																														
ZZZZZZ	TZ84FSPK	1.00	09445																														
ZZZZZZ	TZ84G	1.00	09463																														
PBW	TZ97MB1	1.00	09481														X																
LCSW	TZ97MB1SPK	1.00	09495														X																
MW-30S-120511	TZ97A	1.00	09512														X																
MW-30S-120511D	TZ97ADUP	1.00	09530														X																
MW-30S-120511S	TZ97ASPK	1.00	09544														X																
MW-31S-120511	TZ97B	1.00	09561														X																
PBW	TZ97MB2	1.00	09575														X																
CCV	ACCV6	1.00	09593														X																

128h : 09593

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ97 | RUNID: HG120901 METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB6	1.00	10011														X																
LCSW	TZ97MB2SPK	1.00	10025														X																
MW-30S-120511	TZ97I	1.00	10043														X																
MW-30S-120511D	TZ97IDUP	1.00	10060														X																
MW-30S-120511S	TZ97ISPK	1.00	10074														X																
MW-31S-120511	TZ97J	1.00	10092														X																
CCV	ACCV7	1.00	10110														X																
CCB	CCB7	1.00	10124														X																

TZ84:00364

General Chemistry Analysis
Report and Summary QC Forms

ARI Job ID: TZ84, TZ97

SAMPLE RESULTS-CONVENTIONALS
TZ84-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Client ID: MW-28S-120211
ARI ID: 11-27871 TZ84A

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	12/12/11 121211#1	SM 2320	mg/L CaCO3	1.0	253
Carbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	253
Hydroxide	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Total Suspended Solids	12/06/11 120611#1	SM2540D	mg/L	1.1	12.7
Chloride	12/03/11 120311#1	EPA 300.0	mg/L	0.5	10.6
N-Nitrate	12/02/11 120211#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Ammonia	12/08/11 120811#1	EPA 350.1M	mg-N/L	0.010	0.360
Total Phosphorus	12/06/11 120611#1	SM4500-PE	mg-P/L	0.008	0.234
Sulfate	12/10/11 121011#1	EPA 300.0	mg/L	0.5	13.4
Total Organic Carbon	12/05/11 120511#1	EPA 9060M	mg/L	1.50	7.59

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
TZ84-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Client ID: MW-29S-120211
ARI ID: 11-27872 TZ84E

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	12/12/11 121211#1	SM 2320	mg/L CaCO3	1.0	191
Carbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	191
Hydroxide	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Total Suspended Solids	12/06/11 120611#1	SM2540D	mg/L	1.0	22.6
Chloride	12/03/11 120311#1	EPA 300.0	mg/L	2.0	51.1
N-Nitrate	12/02/11 120211#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Ammonia	12/13/11 121311#1	EPA 350.1M	mg-N/L	0.050	1.82
Total Phosphorus	12/05/11 120511#1	SM4500-PE	mg-P/L	0.016	0.768
Sulfate	12/10/11 121011#1	EPA 300.0	mg/L	0.5	11.6
Total Organic Carbon	12/05/11 120511#1	EPA 9060M	mg/L	1.50	6.15

RL Analytical reporting limit
U Undetected at reported detection limit

MS/MSD RESULTS-CONVENTIONALS
TZ84-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: TZ84A Client ID: MW-28S-120211							
Chloride	EPA 300.0	12/03/11	mg/L	10.6	20.4	10.0	98.0%
N-Nitrate	EPA 300.0	12/02/11	mg-N/L	< 0.1	2.2	2.0	110.0%
N-Ammonia	EPA 350.1M	12/08/11	mg-N/L	0.360	0.816	0.500	91.2%
Total Phosphorus	SM4500-PE	12/05/11	mg-P/L	0.234	0.627	0.400	98.2%
Sulfate	EPA 300.0	12/10/11	mg/L	13.4	24.3	10.0	109.0%
Total Organic Carbon	EPA 9060M	12/05/11	mg/L	7.59	27.5	20.0	99.6%

REPLICATE RESULTS-CONVENTIONALS
TZ84-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: TZ84A Client ID: MW-28S-120211						
Alkalinity	SM 2320	12/12/11	mg/L CaCO3	253	254	0.4%
Carbonate	SM 2320	12/12/11	mg/L CaCO3	< 1.0	< 1.0	NA
Bicarbonate	SM 2320	12/12/11	mg/L CaCO3	253	254	0.4%
Hydroxide	SM 2320	12/12/11	mg/L CaCO3	< 1.0	< 1.0	NA
Chloride	EPA 300.0	12/03/11	mg/L	10.6	10.6	0.0%
N-Nitrate	EPA 300.0	12/02/11	mg-N/L	< 0.1	< 0.1	NA
N-Ammonia	EPA 350.1M	12/08/11	mg-N/L	0.360	0.374	3.8%
Total Phosphorus	SM4500-PE	12/05/11	mg-P/L	0.234	0.232	0.9%
Sulfate	EPA 300.0	12/10/11	mg/L	13.4	13.2	1.5%
Total Organic Carbon	EPA 9060M	12/05/11	mg/L	7.59	7.08	7.0%

LAB CONTROL RESULTS-CONVENTIONALS
TZ84-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Suspended Solids SM2540D	ICVL	12/06/11	mg/L	47.9	50.0	95.8%

METHOD BLANK RESULTS-CONVENTIONALS
TZ84-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Total Suspended Solids	SM2540D	12/06/11	mg/L	< 1.0 U	
Chloride	EPA 300.0	12/03/11	mg/L	< 0.1 U	
N-Nitrate	EPA 300.0	12/02/11	mg-N/L	< 0.1 U	
N-Ammonia	EPA 350.1M	12/08/11	mg-N/L	< 0.010 U	FB
Total Phosphorus	SM4500-P E	12/05/11	mg-P/L	< 0.008 U	
Sulfate	EPA 300.0	12/10/11	mg/L	< 0.1 U	
Total Organic Carbon	EPA 9060A	12/05/11	mg/L	< 1.50 U	

FB Filtration Blank

STANDARD REFERENCE RESULTS-CONVENTIONALS
TZ84-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Alkalinity	SM 2320	12/12/11	mg/L CaCO3	49.1	49.2	99.8%
ERA #P114506		12/12/11		51.2	49.2	104.1%
Chloride	EPA 300.0	12/03/11	mg/L	3.0	3.0	100.0%
ERA #411010						
N-Nitrate	EPA 300.0	12/02/11	mg-N/L	3.1	3.0	103.3%
ERA #230511						
N-Ammonia	EPA 350.1M	12/08/11	mg-N/L	0.459	0.500	91.8%
ERA #15123						
Total Phosphorus	SM4500-P	12/05/11	mg-P/L	0.103	0.100	103.0%
ERA #35064						
Sulfate	EPA 300.0	12/10/11	mg/L	2.9	3.0	96.7%
ERA #160111						
Total Organic Carbon	EPA 9060M	12/05/11	mg/L	20.5	20.0	102.5%
ERA 0523-11-05						

SAMPLE RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Client ID: MW-30S-120511
ARI ID: 11-27938 TZ97A

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	12/12/11 121211#1	SM 2320	mg/L CaCO3	1.0	216
Carbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	216
Hydroxide	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Total Suspended Solids	12/06/11 120611#1	SM2540D	mg/L	1.1	8.2
Chloride	12/10/11 121011#1	EPA 300.0	mg/L	0.2	6.7
N-Nitrate	12/06/11 120611#1	EPA 300.0	mg-N/L	0.1	0.2
N-Ammonia	12/08/11 120811#1	EPA 350.1M	mg-N/L	0.050	2.06
Total Phosphorus	12/15/11 121511#1	SM4500-PE	mg-P/L	0.060	1.22
Sulfate	12/10/11 121011#1	EPA 300.0	mg/L	0.1	1.8
Total Organic Carbon	12/06/11 120611#1	EPA 9060M	mg/L	1.50	4.74

RL Analytical reporting limit
U Undetected at reported detection limit

TZ84 : 00373

SAMPLE RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/21/11

Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Client ID: MW-31S-120511
ARI ID: 11-27939 TZ97B

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	12/12/11 121211#1	SM 2320	mg/L CaCO3	1.0	141
Carbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	141
Hydroxide	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Hexavalent Chrome	12/05/11 120511#1	SW7196A	mg/L	0.010	< 0.010 U
Total Suspended Solids	12/06/11 120611#1	SM2540D	mg/L	1.1	1.2
Chloride	12/06/11 120611#1	EPA 300.0	mg/L	0.1	3.5
N-Nitrate	12/06/11 120611#1	EPA 300.0	mg-N/L	0.1	0.2
N-Ammonia	12/08/11 120811#1	EPA 350.1M	mg-N/L	0.010	0.471
Total Phosphorus	12/15/11 121511#1	SM4500-PE	mg-P/L	0.060	0.384
Sulfate	12/10/11 121011#1	EPA 300.0	mg/L	0.5	19.4
Total Organic Carbon	12/06/11 120611#1	EPA 9060M	mg/L	1.50	3.60

RL Analytical reporting limit
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Client ID: MW-33S-120511
ARI ID: 11-27940 TZ97C

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	12/12/11 121211#1	SM 2320	mg/L CaCO3	1.0	218
Carbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	218
Hydroxide	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Total Suspended Solids	12/06/11 120611#1	SM2540D	mg/L	1.0	15.0
Chloride	12/06/11 120611#1	EPA 300.0	mg/L	0.1	3.5
N-Nitrate	12/06/11 120611#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Phosphorus	12/15/11 121511#1	SM4500-PE	mg-P/L	0.120	2.60
Sulfate	12/10/11 121011#1	EPA 300.0	mg/L	0.1	0.4
Total Organic Carbon	12/06/11 120611#1	EPA 9060M	mg/L	1.50	10.4

RL Analytical reporting limit
U Undetected at reported detection limit

MS/MSD RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/21/11

Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: TZ97A Client ID: MW-30S-120511							
Total Phosphorus	SM4500-PE	12/15/11	mg-P/L	1.22	1.48	0.200	130.0%
Total Organic Carbon	EPA 9060M	12/06/11	mg/L	4.74	25.7	20.0	104.8%
ARI ID: TZ97B Client ID: MW-31S-120511							
Hexavalent Chrome	SW7196A	12/05/11	mg/L	< 0.010	0.030	0.063	47.6%
Hexavalent Chrome	SW7196A	12/05/11	mg/L	< 0.010	0.019	0.063	30.2%
Chloride	EPA 300.0	12/06/11	mg/L	3.5	5.5	2.0	100.0%
N-Nitrate	EPA 300.0	12/06/11	mg-N/L	0.2	2.4	2.0	110.0%
Sulfate	EPA 300.0	12/10/11	mg/L	19.4	37.5	20.0	90.5%

REPLICATE RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/21/11

Project: RG
Event: 128296.07
Date Sampled: 12/05/11
Date Received: 12/05/11

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: TZ97A Client ID: MW-30S-120511						
Total Phosphorus	SM4500-PE	12/15/11	mg-P/L	1.22	1.25	2.4%
Total Organic Carbon	EPA 9060M	12/06/11	mg/L	4.74	5.07	6.7%
ARI ID: TZ97B Client ID: MW-31S-120511						
Alkalinity	SM 2320	12/12/11	mg/L CaCO3	141	141	0.0%
Carbonate	SM 2320	12/12/11	mg/L CaCO3	< 1.0	< 1.0	NA
Bicarbonate	SM 2320	12/12/11	mg/L CaCO3	141	141	0.0%
Hydroxide	SM 2320	12/12/11	mg/L CaCO3	< 1.0	< 1.0	NA
Hexavalent Chrome	SW7196A	12/05/11	mg/L	< 0.010	< 0.010 < 0.010	NA
Chloride	EPA 300.0	12/06/11	mg/L	3.5	3.5	0.0%
N-Nitrate	EPA 300.0	12/06/11	mg-N/L	0.2	0.2	0.0%
Sulfate	EPA 300.0	12/10/11	mg/L	19.4	19.3	0.5%

LAB CONTROL RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Suspended Solids SM2540D	ICVL	12/06/11	mg/L	47.9	50.0	95.8%

METHOD BLANK RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/21/11

Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Hexavalent Chrome	SW7196A	12/05/11	mg/L	< 0.010 U	
Total Suspended Solids	SM2540D	12/06/11	mg/L	< 1.0 U	
Chloride	EPA 300.0	12/06/11 12/10/11	mg/L	< 0.1 U < 0.1 U	
N-Nitrate	EPA 300.0	12/06/11	mg-N/L	< 0.1 U	
N-Ammonia	EPA 350.1M	12/08/11	mg-N/L	< 0.010 U	FB
Total Phosphorus	SM4500-PE	12/15/11	mg-P/L	< 0.060 U	
Sulfate	EPA 300.0	12/10/11	mg/L	< 0.1 U	
Total Organic Carbon	EPA 9060M	12/06/11	mg/L	< 1.50 U	

FB Filtration Blank

TZ84 : 00379

STANDARD REFERENCE RESULTS-CONVENTIONALS
TZ97-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/21/11

Project: RG
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Alkalinity	SM 2320	12/12/11	mg/L CaCO3	49.1	49.2	99.8%
ERA #P114506		12/12/11		51.2	49.2	104.1%
Hexavalent Chrome	SW7196A	12/05/11	mg/L	0.607	0.630	96.3%
ERA #41065						
Chloride	EPA 300.0	12/06/11	mg/L	3.0	3.0	100.0%
ERA #411010		12/10/11		2.9	3.0	96.7%
N-Nitrate	EPA 300.0	12/06/11	mg-N/L	3.0	3.0	100.0%
ERA #230511						
N-Ammonia	EPA 350.1M	12/08/11	mg-N/L	0.459	0.500	91.8%
ERA #15125						
Total Phosphorus	SM4500-PE	12/15/11	mg-P/L	0.180	0.160	112.5%
ERA #35064						
Sulfate	EPA 300.0	12/10/11	mg/L	2.9	3.0	96.7%
ERA #160111						
Total Organic Carbon	EPA 9060M	12/06/11	mg/L	21.6	20.0	108.0%
ERA 0523-11-05						

Subcontracted Results
Total Organic Halides Analyzed by Columbia Analytical Services Inc.

ARI Job ID: TZ84, TZ97

Columbia Analytical Services™

www.caslab.com

December 16, 2011 Analytical Report for Service Request No: K1111929

Sue Dunnihoo
Analytical Resources, Incorporated
4611 So 134th Place
Suite 100
Tukwila, WA 98168

RE: TZ84

Dear Sue.

Enclosed are the results of the samples submitted to our laboratory on December 08, 2011. For your reference, these analyses have been assigned our service request number K1111929

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www caslab.com All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/jw

TZ84 : 00382

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

TZ84 : 00383

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
–	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

TZ84 : 00384

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

TZ84 : 00385

Case Narrative

TZ84 00386

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Analytical Resources, Incorporated	**Service Request No.:**	K1111929
Project:	TZ84	**Date Received:**	12/08/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two water samples were received for analysis at Columbia Analytical Services on 12/08/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Approved by _____ Date 12/16/11

TZ84 : 00387

Chain of Custody

TZ84 : 00388

K111929

SUBCONTRACTOR ANALYSIS REQUEST
CUSTODY TRANSFER 12/06/11

ANALYTICAL RESOURCES INCORPORATED

ARI Project: TZ84

Laboratory: Columbia Analytical Services Inc.
Lab Contact: Ed Wallace
Lab Address: 1317 South 13th Street
Kelso, WA 98626
Phone: 360-577-7222
Fax: 360-636-1068

ARI Client: ERM-West
Project ID: RG
ARI PM: Sue Dunnihoo
Phone: 206-695-6207
Fax: 206-695-6201
Email: subdata@arilabs.com

Analytical Protocol: In-house
Special Instructions:

Requested Turn Around: **12/19/11**
Email Results (Y/N): **email**

Limits of Liability. *Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or sucessors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.*

ARI ID	Client ID/ Add'l ID	Sampled	Matrix	Bottles	Analyses
11-27871-TZ84A	MW-28S-120211	12/02/11 11:55	Water	1	Total Organic Halides
Special Instructions: None					Method 9020
11-27872-TZ84B	MW-29S-120211	12/02/11 13:47	Water	1	Total Organic Halides
Special Instructions: None					Method 9020

Carrier UPS	Airbill 1Z332695 03 5132 6490		Date 12/7/11
Relinquished by	Company ARI	Date 12/7/11	Time 1340
Received by	Company CAS	Date 12/8/11	Time 1030

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Lim

Client / Project: Analytical Resources Inc. Service Request K11 11939

Received: 12/8/11 Opened: 12/8/11 By: SMW Unloaded: 12/8/11 By: SMW

1. Samples were received via? *Mail* *Fed Ex* (*UPS*) *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? One, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.2		299		1Z 832 695 03 5132 6496	

7. Packing material used. *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) (*Sleeves*) *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

General Chemistry Parameters

TZ84 : 00391

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Analytical Resources, Incorporated	**Service Request:**	K1111929
Project:	TZ84	**Date Collected:**	12/2/2011
Sample Matrix:	Water	**Date Received:**	12/8/2011

Halides, Total Organic (TOX)

Prep Method:	NONE	Units:	ug/L (ppb)
Analysis Method:	9020B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
11-27871-TZ84A / MW-28S-120211	K1111929-001	10	4	1	NA	12/14/2011	8	J
11-27872-TZ84B MW-29S-120211	K1111929-002	10	4	1	NA	12/14/2011	5	J
Method Blank	K1111929-MB	10	4	1	NA	12/14/2011	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Analytical Resources, Incorporated	**Service Request:**	K1111929
Project:	TZ84	**Date Collected:**	12/2/2011
Sample Matrix:	Water	**Date Received:**	12/8/2011
		Date Extracted:	NA
		Date Analyzed:	12/14/2011

Matrix Spike/Duplicate Matrix Spike Summary
Halides, Total Organic (TOX)

Sample Name:	11-27871-TZ84A / MW-28S-120211	Units:	ug/L (ppb)
Lab Code	K1111929-001MS, K1111929-001DMS	Basis:	NA
Test Notes			

									Percent Recovery				
	Prep	Analysis		Spike Level		Sample	Spike Result				CAS Acceptance	Relative Percent	Result
Analyte	**Method**	**Method**	**MRL**	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Notes**
Halides, Total Organic (TOX)	NONE	9020B	10	100	100	8	104	109	96	101	82-121	5	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Analytical Resources, Incorporated
Project: TZ84
Sample Matrix: Water

Service Request: K1111929
Date Collected: NA
Date Received: NA
Date Analyzed: 12/14/2011

Calibration and Method Blank Summary
Halides, Total Organic (TOX)
EPA Method 9020

	Halide Check Standard (µg)	Instrument Calibration Standard (µg)	Adsorption Standard (µg/L)	Method Blank (µg/L)
True Value	3.64	10.0	100	ND
Run A	3.67	10.7	97	ND
Percent Recovery	101	107	97	
Run B	3.52	10.4		
Percent Recovery	97	104		

273014

Work Request # (Original) (K11929) K11881

Tier: IV II (#22)

Date Analyzed: 12/14/11

Analyst: EM

Analysis: ~~AOX 1650C~~ EM 12/14/11
TOX 9020B K TOX03

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?		yes/no/NA
2.	Holding times met for all analyses and for all samples?		yes/no/NA
3	Are calculations correct?		yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)		yes/no/NA
5.	All quality control criteria met?		yes/no/NA
	a.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
	b.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
	c.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
	d.	Are results for methods blanks all ND?	yes/no/NA
	e.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
	f.	Are all exceptions explained?	yes/no/NA
6.	Are all service requests that apply attached?		yes/no/NA
7.	Are all samples labelled correctly?		yes/no/NA
8.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample)		yes/no/NA
9.	Are detection limits and units reported correctly?		yes/no/NA
10.	Are proper Analysis/Extraction stickers included on report?		yes/no/NA
11.	Is the unused space on the benchsheet crossed out?		yes/no/NA
12.	Was analysis turned in by the due date? (n-2) (If not record SR#)		yes/no/NA

COMMENTS:

K11929 due 12/17
K11881 RUSH 12/16

Final Approved by: [signature] Date: 12/16/11
DQREPORT

AOX/TOX Benchsheet

Service Request #: K1111929, K1111881 Method #: TOX-9020B

Analysis For: Total Organic Halides Instrument: Crackers

Calibration Date: 7/5/2001 IPR Date: 5/9/2000

Instrument:	Volume	Concentration	Result	Reported Value	% Rec.
Halide Check	Run A = 10 µL	3.64	3.6680	3.6680	101
	Run B = 10 µL	3.64	3.5240	3.5240	97
NO_3 Wash Blank	2 mL	1) 0.2200	2) 0.0740	Average =	0.1470
Inst. Cal Std	Run A = 10 µL	10.0	10.8050	10.6580	107
	Run B = 10 µL	10.0	10.5860	10.4390	104

Lab Code	Initial Volume (mls)	Final Volume (mls)	OBS A µg	OBS B µg	Conc. (ppb)	Reported Value (ppb)	% Break-through	% RPD	Head-space	pH	% Recovery
MB	100	100	0.1610	0.0960	-0.4	< 10					
PAR STD	100	100	9.5800	0.4460	97	97	3.1				97
K11929-1	100	100	0.7760	NA	6		<1		y	2	
K11929-2	100	100	0.4500	NA	3		<1		y	2	
K11881-18	1	100	0.2660	NA	119	NR	525.0				
K11881-19	1	100	0.1730	NA	26	NR	121.5				
K11881-20	1	100	0.2180	NA	71	NR	193.4				
K11881-22	10	100	0.2360	NA	9		253.4		y	2	
NO_3 Wash Blank	2 mL		1) 0.1050		2) 0.1160		Average =			0.1105	
ICS	10 µl				10.489	10.3785					104

Comments: NA signifies B column is equal to or less than the nitrate wash blank and should be disregarded as per method.
High break through is disregarded if sample concentration is less than or equal to the MRL.
K11881 elevated MRL due to limited sample volume.

sulfuric acid: EMD 51164 nitric acid: JTB41037

Halide Check = 3.64 µg/L **Inst. Cal Std. =** 10.0 µg/L

TOX-9020B (ppb) = $\frac{[(OBS.A - NO_3\ Blank) + (OBS.B - NO_3\ Blank)] \times (DF)}{Volume\ Analyzed\ (L)}$

AOX-506 (ppb)

AOX-1650C (ppb) = $\frac{((OBS.A + OBS.B) - (MB\ OBS.A + MB\ OBS.B))}{Initial\ Volume\ Analyzed\ (L)}$

% Breakthrough = $\frac{(OBS.B - MB\ OBS.B) \times 100}{(OBS.A - MB\ OBS.A) + (OBS.B - MB\ OBS.B)}$

Matrix Spike = $\frac{10\ µl \times 1\ µg \times 100\ ml}{1\ µl \times 100ml \times 0.1\ L}$ = 100 µg/L

NO_3 Wash ID #: TOX/3-27-J
Electrolyte ID #: TOX/3-60-N
Carbon Lot #: 1106134
0.0103 NaCl ID #: TOX/3-70-M
1000 ppm TCP (PAR) ID #: TOX/3-72-E
1000 ppm TCP (ICS) ID #: TOX/3-72-D

NO3 = < 1.0
ICS = 90%-110%
PAR = 87-113%
MS =82-121%

Analyzed By:	EM	Date:	12/14/11 1041
Reviewed By:		Date:	12/15/11

T284 : 00396

AOX/TOX Benchsheet

Service Request # K1111929, K1111881 Method # TOX-9020B

Analysis For Total Organic Halides Instrument: Crackers

Lab Code	Initial Volume (mls)	Final Volume (mls)	OBS A µg	OBS B µg	Conc. (ppb)	Reported Value (ppb)	% Break-through	% RPD	Head-space	pH	% Recovery
K11929-1D	100	100	0.8150	0.1900	8	<10	10.1	-			1+1d
K11929-1MS	100	100	10.2910	0.3620	104	104	2.4				104
K11929-1MSD	100	100	10.7610	0.3460	109	109	2.2				109
K11929-2D	100	100	0.5100	0.2000	5	<10	18.3	-			2+2d
K11881-22D	20	100	0.2320	0.1210	7	<50i	8.0	-			22+22d
ICS	10 µl				10.632	10.5215					105

Comments K11881 elevated MRL due to limited sample volume

Analyzed By	EM	Date:	12/14/11
Reviewed By		Date:	12/16/11

T284 : 00397

Blank Report

Blank Results

Data ID : AOX212142011.001 12/12/15/11

Reps.	Mode	Counts(µg)	Total Counts	$\bar{X}$	SD	RSD(%)	ABC No.	Date
1-1	AOX-2	0.220					1	12/14/11 10:41
1-2	AOX-2	0.074	0.294	0.294	***.**	***.**	1	12/14/11 10:48

DM 12/14/11

TZ84 : 00398

Sample Report

Sample All Data

Data ID : AOX212142011.001
Blank : 0.294 µg/2Column

12/15/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	ICS	10.00 µl	1.0000	10.805			1
1-2	ICS	10.00 µl	1.0000	10.586	21.391	0.21 %	1
n = 1		$\bar{X}$ = 0.21 %		SD = ****.**		RSD(%) = ***.**	

DM 12/14/11

TZ84 00399

Sample Report

Sample All Data

Data ID : AOX212142011.002
Blank : 0.294 µg/2Column

12/12/15/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	MB	100.00 ml	1.0000	0.161			1
1-2	MB	100.00 ml	1.0000	0.096	0.257	0.00 ppm	1
n = 1	$\bar{X}$ = 0.00 ppm			SD = ****.**		RSD(%) = ***.**	
1-1	PAR	100.00 ml	1.0000	9.580			1
1-2	PAR	100.00 ml	1.0000	0.446	10.026	97.32 ppb	1
n = 1	$\bar{X}$ = 97.32 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11929-1	100.00 ml	1.0000	0.776			1
1-2	K11929-1	100.00 ml	1.0000	0.141 NA	0.917	6.23 ppb	1
n = 1	$\bar{X}$ = 6.23 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11929-2	100.00 ml	1.0000	0.450			1
1-2	K11929-2	100.00 ml	1.0000	0.112 NA	0.562	2.68 ppb	1
n = 1	$\bar{X}$ = 2.68 ppb			SD = ****.**		RSD(%) = ***.**	
NR 1-1	K11881-18	100.00 ml	0.0100	0.266			1
1-2	K11881-18	100.00 ml	0.0100	0.087 NA	0.353	59.00 ppb	1
n = 1	$\bar{X}$ = 59.00 ppb			SD = ****.**		RSD(%) = ***.**	
NR 1-1	K11881-19	100.00 ml	0.0100	0.173			1
1-2	K11881-19	100.00 ml	0.0100	0.090 NA	0.263	0.00 ppm	1
n = 1	$\bar{X}$ = 0.00 ppm			SD = ****.**		RSD(%) = ***.**	
NR 1-1	K11881-20	100.00 ml	0.0100	0.218			1
1-2	K11881-20	100.00 ml	0.0100	0.127 NA	0.345	51.00 ppb	1
n = 1	$\bar{X}$ = 51.00 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11881-22	100.00 ml	0.1000	0.236			1
1-2	K11881-22	100.00 ml	0.1000	0.143 NA	0.379	8.50 ppb	1
n = 1	$\bar{X}$ = 8.50 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	NITRATE WASH BLANK	100.00 ml	1.0000	0.105			1
1-2	NITRATE WASH BLANK	100.00 ml	1.0000	0.116	0.221	0.00 ppm	1
n = 1	$\bar{X}$ = 0.00 ppm			SD = ****.**		RSD(%) = ***.**	
1-1	ICS	10.00 µl	1.0000	10.489	10.489	0.10 %	1
n = 1	$\bar{X}$ = 0.10 %			SD = ****.**		RSD(%) = ***.**	

DM 12/14/11

T284 : 00400

Sample Report

Sample All Data

Data ID : AOX212142011.002
Blank : 0.294 µg/2Column Ja-12/15/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	K11929-1D	100.00 ml	1.0000	0.815			1
1-2	K11929-1D	100.00 ml	1.0000	0.190	1.005	7.11 ppb	1
n = 1	$\bar{X}$ = 7.11 ppb		SD = ****.**		RSD(%) = ***.**		
1-1	K11929-1MS	100.00 ml	1.0000	10.291			1
1-2	K11929-1MS	100.00 ml	1.0000	0.362	10.653	103.59 ppb	1
n = 1	$\bar{X}$ = 103.59 ppb		SD = ****.**		RSD(%) = ***.**		
1-1	K11929-1MSD	100.00 ml	1.0000	10.761			1
1-2	K11929-1MSD	100.00 ml	1.0000	0.346	11.107	108.13 ppb	1
n = 1	$\bar{X}$ = 108.13 ppb		SD = ****.**		RSD(%) = ***.**		
1-1	K11929-2D	100.00 ml	1.0000	0.510			1
1-2	K11929-2D	100.00 ml	1.0000	0.200	0.710	4.16 ppb	1
n = 1	$\bar{X}$ = 4.16 ppb		SD = ****.**		RSD(%) = ***.**		
1-1	K11881-22D	100.00 ml	0.2000	0.232			1
1-2	K11881-22D	100.00 ml	0.2000	0.121	0.353	2.95 ppb	1
n = 1	$\bar{X}$ = 2.95 ppb		SD = ****.**		RSD(%) = ***.**		
2-1	ICS	10.00 µl	1.0000	10.632	10.632	0.10 %	1
n = 1	$\bar{X}$ = 0.10 %		SD = ****.**		RSD(%) = ***.**		

EM 12/14/11

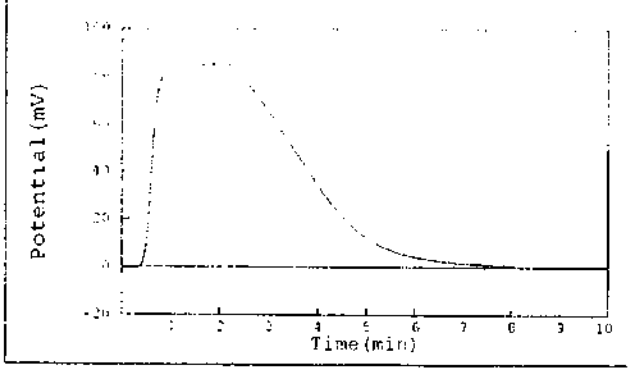
T254.00401

Sample Report

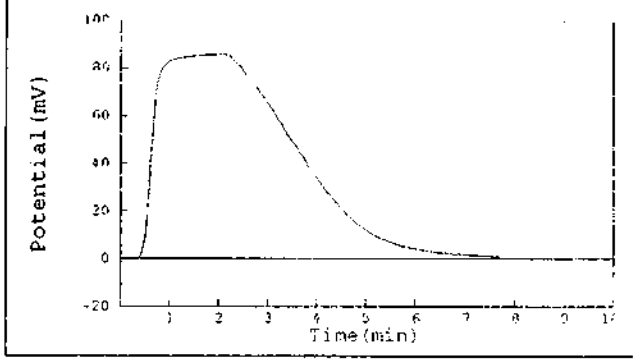
Sample Charts

Data ID : AOX212142011.001 VR 12/15/11

Reps. : 1-1 12/14/11 10:57
Sample ID : ICS
Counts(µg): 10.805



Reps. : 1-2 12/14/11 11:06
Sample ID : ICS
Counts(µg): 10.586

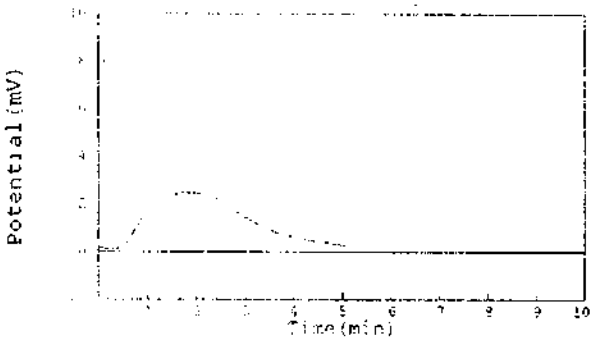


Sample Report

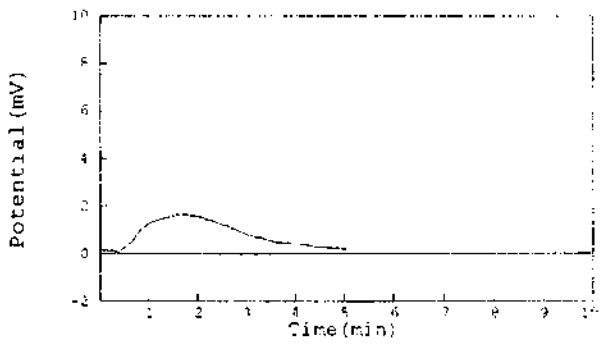
Sample Charts

Data ID : AOX212142011.002 JL 1/12/12

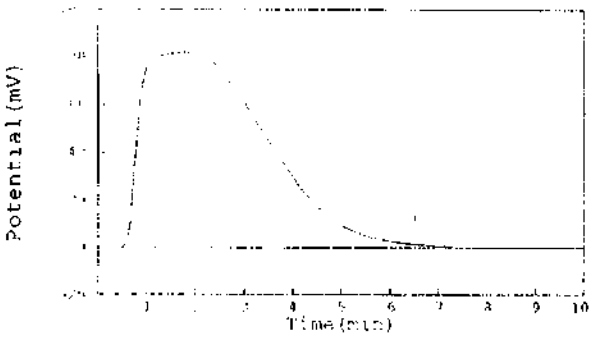
Reps. : 1-1 12/14/11 11:13
Sample ID : MB
Counts(µg): 0.161



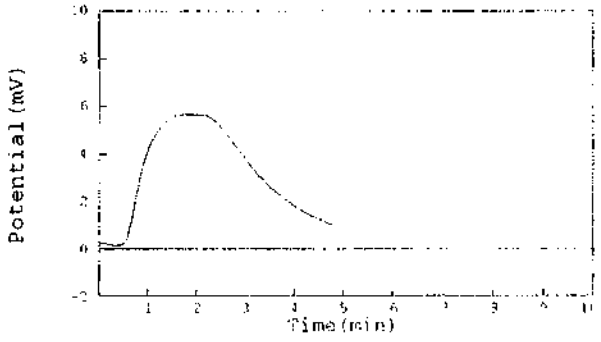
Reps. : 1-2 12/14/11 11:18
Sample ID : MB
Counts(µg): 0.096



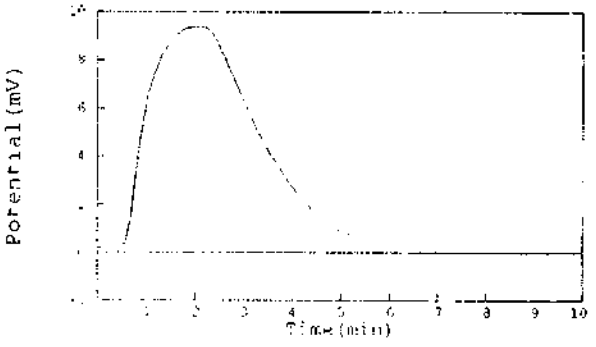
Reps. : 1-1 12/14/11 11:38
Sample ID : PAR
Counts(µg): 9.580



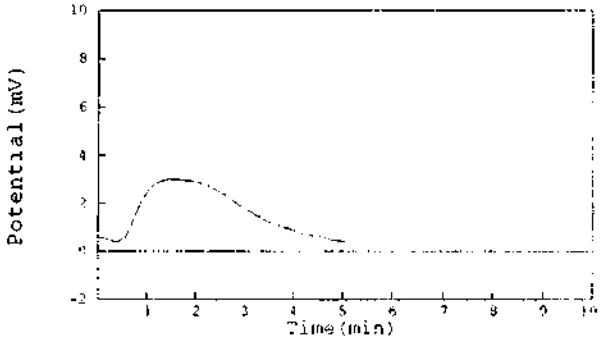
Reps. : 1-2 12/14/11 11:44
Sample ID : PAR
Counts(µg): 0.446



Reps. : 1-1 12/14/11 11:52
Sample ID : K11929-1
Counts(µg): 0.776



Reps. : 1-2 12/14/11 11:58
Sample ID : K11929-1
Counts(µg): 0.141



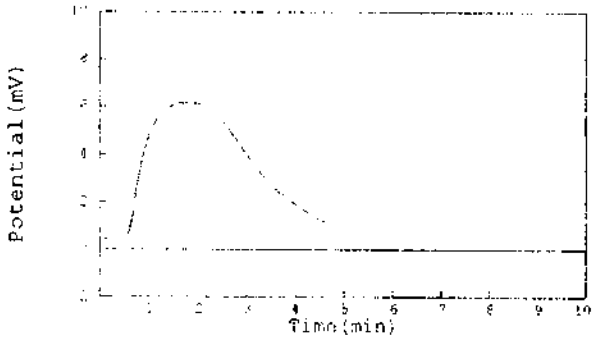
T284 : 00483

Sample Report

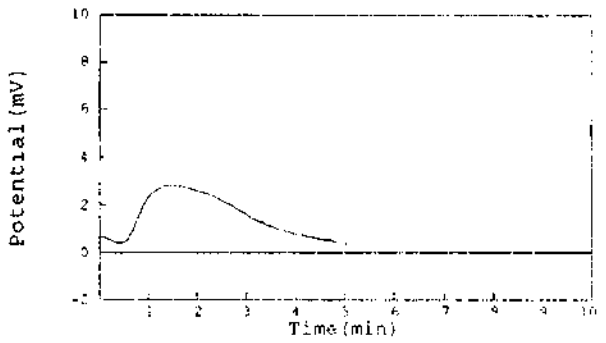
Sample Charts

Data ID : AOX212142011.002

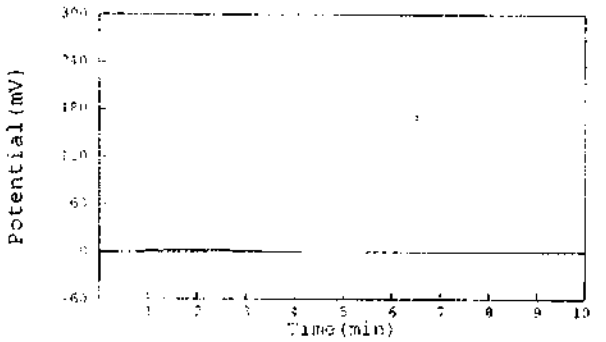
Reps. : 1-1 12/14/11 12:03
Sample ID : K11929-2
Counts(µg): 0.450



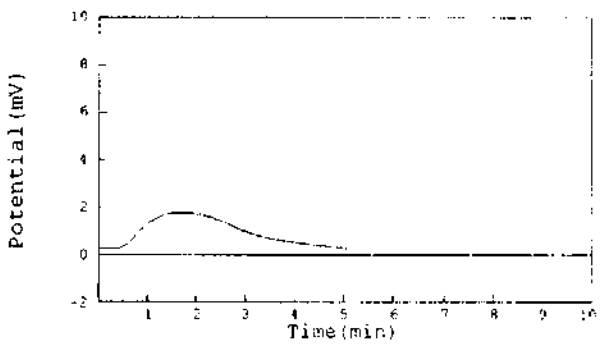
Reps. : 1-2 12/14/11 12:09
Sample ID : K11929-2
Counts(µg): 0.112



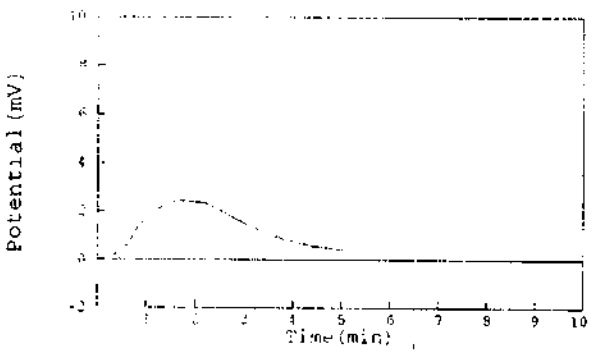
Reps. : 1-1 12/14/11 12:27
Sample ID : K11881-18
Counts(µg): 0.266



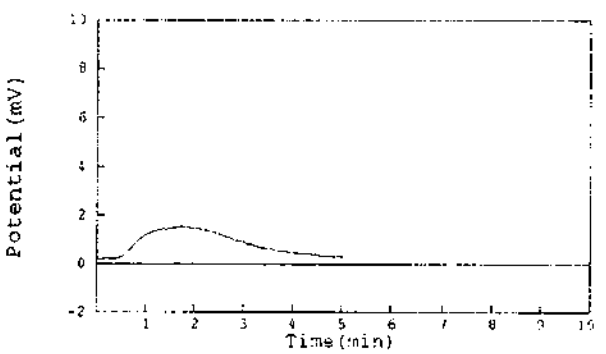
Reps. : 1-2 12/14/11 12:32
Sample ID : K11881-18
Counts(µg): 0.087



Reps. : 1-1 12/14/11 12:38
Sample ID : K11881-19
Counts(µg): 0.173



Reps. : 1-2 12/14/11 12:44
Sample ID : K11881-19
Counts(µg): 0.090



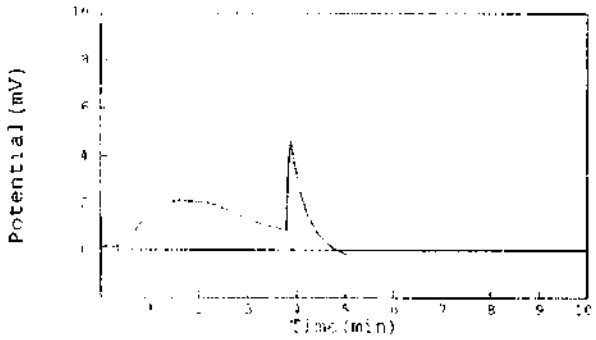
TZ84 : 00404

Sample Report

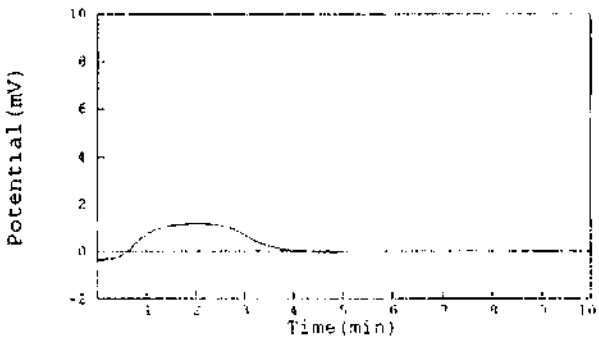
Sample Charts

Data ID : AOX212142011.002

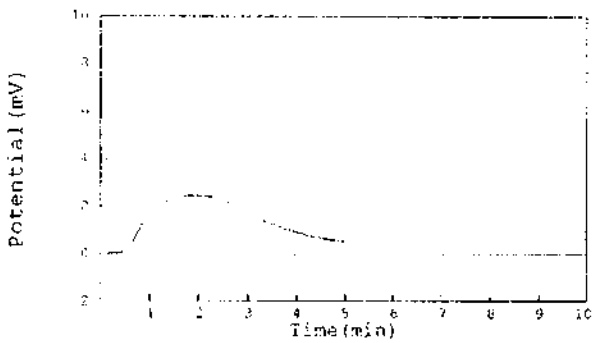
Reps. : 1-1 12/14/11 12:54
Sample ID : K11881-20
Counts(µg): 0.218



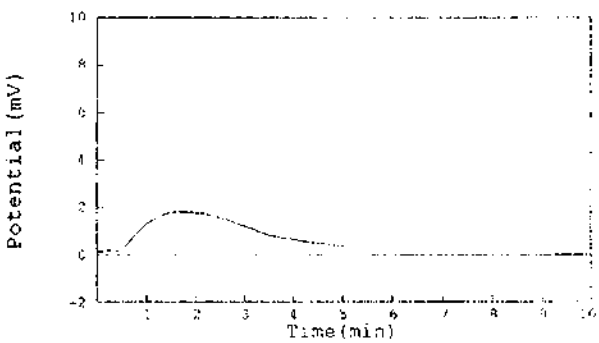
Reps. : 1-2 12/14/11 13:00
Sample ID : K11881-20
Counts(µg): 0.127



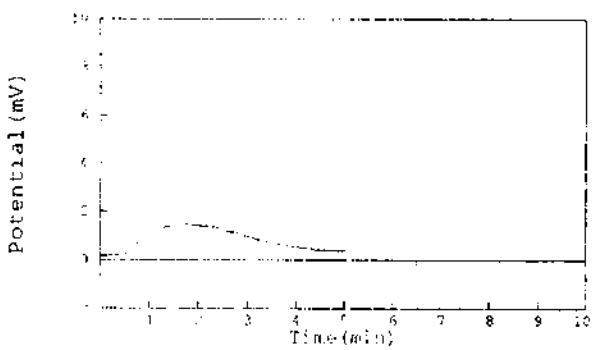
Reps. : 1-1 12/14/11 13:09
Sample ID : K11881-22
Counts(µg): 0.236



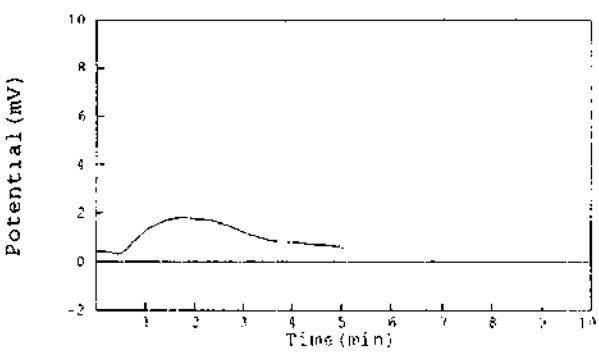
Reps. : 1-2 12/14/11 13:17
Sample ID : K11881-22
Counts(µg): 0.143



Reps. : 1-1 12/14/11 13:25
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.105



Reps. : 1-2 12/14/11 13:31
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.116



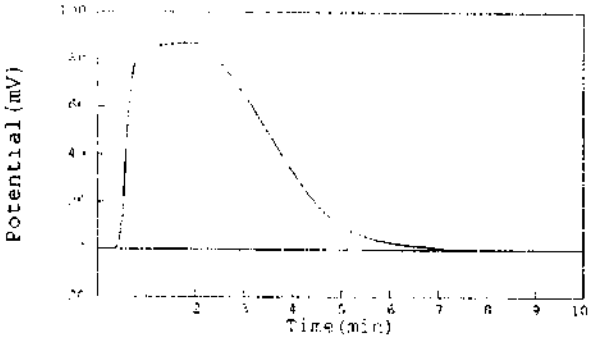
TZ84 : 00405

Sample Report

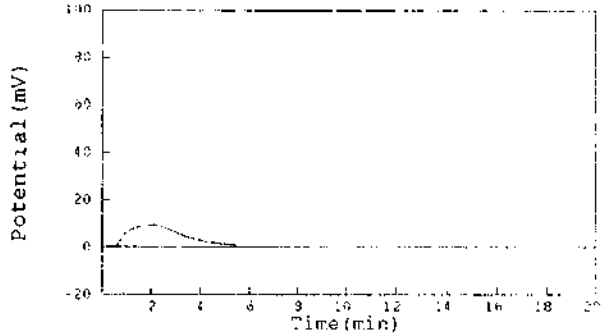
Sample Charts

Data ID : AOX212142011.002

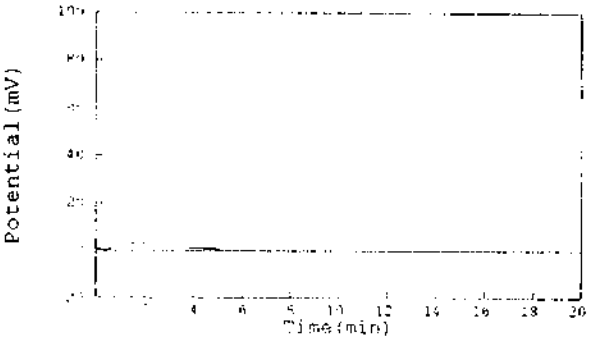
Reps. : 1-1 12/14/11 13:38
Sample ID : ICS
Counts(µg): 10.489



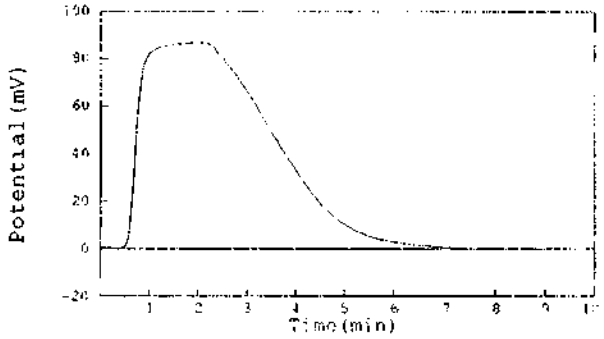
Reps. : 1-1 12/14/11 13:51
Sample ID : K11929-1D
Counts(µg): 0.815



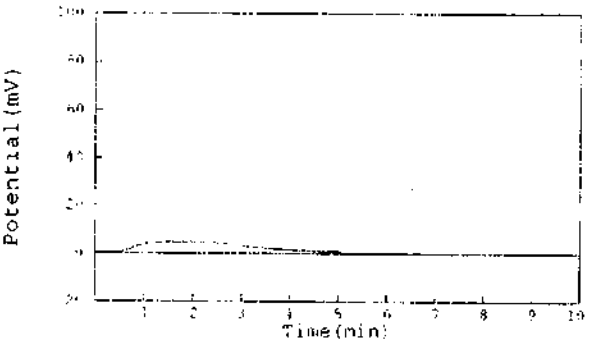
Reps. : 1-2 12/14/11 13:58
Sample ID : K11929-1D
Counts(ug): 0.190



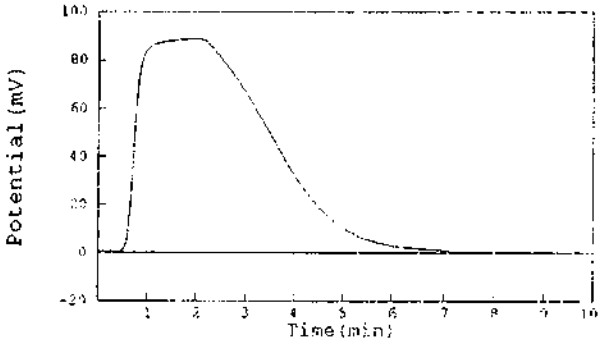
Reps. : 1-1 12/14/11 14:05
Sample ID : K11929-1MS
Counts(µg): 10.291



Reps. : 1-2 12/14/11 14:11
Sample ID : K11929-1MS
Counts(µg): 0.362



Reps. : 1-1 12/14/11 14:19
Sample ID : K11929-1MSD
Counts(µg): 10.761



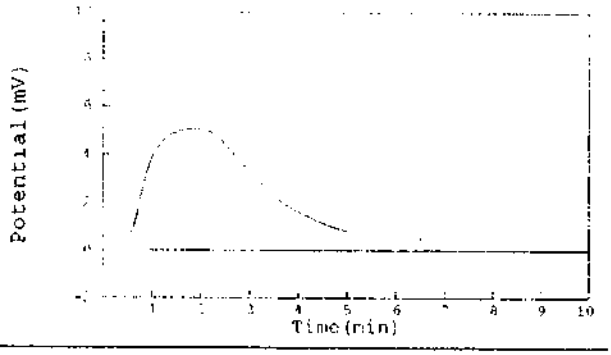
TZ84 : 00406

Sample Report

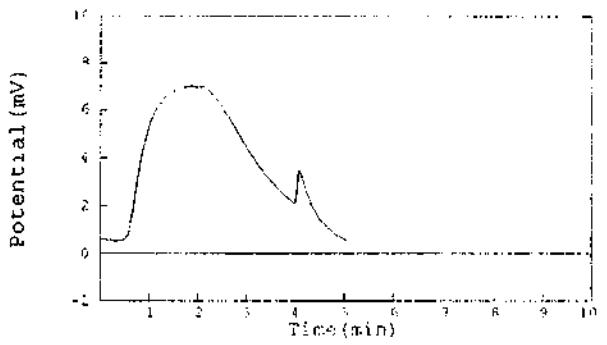
Sample Charts

Data ID : AOX212142011.002

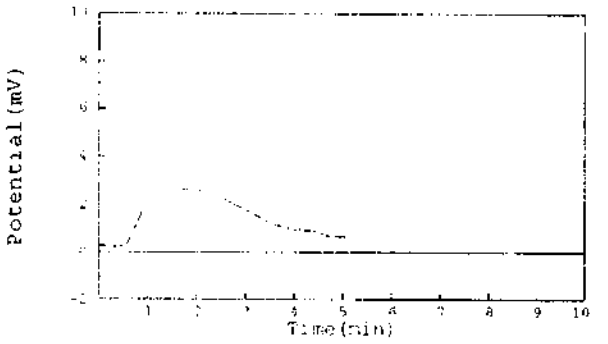
Reps. : 1-2 12/14/11 14:24
Sample ID : K11929-1MSD
Counts(µg): 0.346



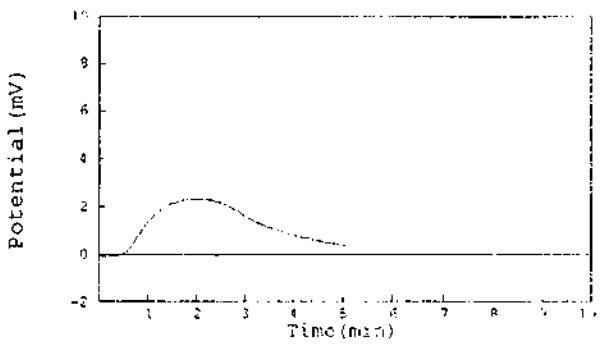
Reps. : 1-1 12/14/11 14:30
Sample ID : K11929-2D
Counts(µg): 0.510



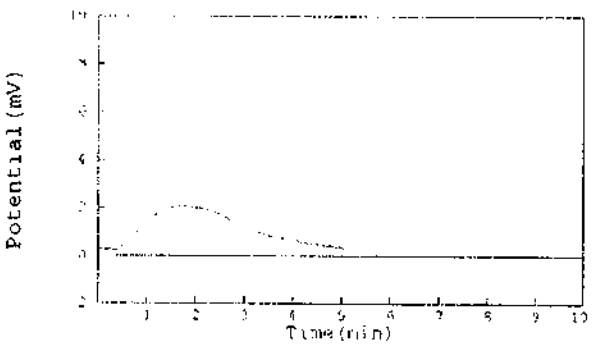
Reps. : 1-2 12/14/11 14:35
Sample ID : K11929-2D
Counts(µg): 0.200



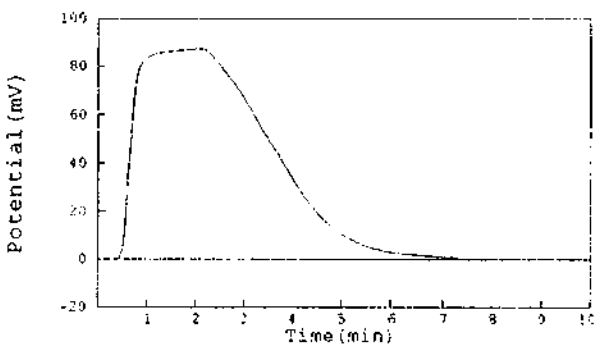
Reps. : 1-1 12/14/11 14:49
Sample ID : K11881-22D
Counts(µg): 0.232



Reps. : 1-2 12/14/11 14:55
Sample ID : K11881-22D
Counts(µg): 0.121



Reps. : 2-1 12/14/11 15:04
Sample ID : ICS
Counts(µg): 10.632



TZ84 : 00407

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 360.636.1068 fax www.caslab.com

December 22, 2011 Analytical Report for Service Request No: K1111930

Sue Dunnihoo
Analytical Resources, Incorporated
4611 So. 134th Place
Suite 100
Tukwila, WA 98168

RE: TZ97

Dear Sue:

Enclosed are the results of the samples submitted to our laboratory on December 08, 2011. For your reference, these analyses have been assigned our service request number K1111930

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa A Domenighini

Lisa Domenighini
Project Chemist

LD/ln

TZ84 : 60408

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

TZ84 : 00409

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA)
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

T284 : 00410

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

TZ84 : 00411

Case Narrative

TZ84:00412

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Analytical Resources, Incorporated	**Service Request No.:**	K1111930
Project:	UA17	**Date Received:**	12/08/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Three water samples were received for analysis at Columbia Analytical Services on 12/08/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Total Organic Halides by Method 9020B:
The as per the method the samples were analyzed in duplicate. The initial result of the sample was a J Flag hit and the replicate was Non-Detect. The initial value was reported. No further corrective action taken.

No other anomalies associated with the analysis of these samples were observed.

Approved by [signature] Date 12/23/11

TZ84 : 00413

Chain of Custody

TZ84 : 00414

K1111930

SUBCONTRACTOR ANALYSIS REQUEST
CUSTODY TRANSFER 12/06/11

ANALYTICAL RESOURCES INCORPORATED

ARI Project: TZ97

Laboratory: Columbia Analytical Services Inc.
Lab Contact: Ed Wallace
Lab Address: 1317 South 13th Street
Kelso, WA 98626
Phone: 360-577-7222
Fax: 360-636-1068

ARI Client: ERM-West
Project ID: RG
ARI PM: Sue Dunnihoo
Phone: 206-695-6207
Fax: 206-695-6201
Email: subdata@arilabs.com

Analytical Protocol: In-house
Special Instructions:

Requested Turn Around:
Email Results (Y/N): **email**

Limits of Liability. *Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or sucessors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.*

ARI ID	Client ID/ Add'l ID	Sampled	Matrix	Bottles	Analyses
11-27938-TZ97A	MW-30S-120511	12/05/11 08:13	Water	1	Total Organic Halides
Special Instructions: None					Method 9020
11-27939-TZ97B	MW-31S-120511	12/05/11 10:41	Water	1	Total Organic Halides
Special Instructions: None					Method 9020
11-27940-TZ97C	MW-33S-120511	12/05/11 13:53	Water	1	Total Organic Halides
Special Instructions: None					Method 9020

Carrier UPS	Airbill 1Z832695 03 5132 6490		Date 12/7/11
Relinquished by	Company ARI	Date 12/7/11	Time 1340
Received by	Company CAS	Date 12/8/11	Time 1030

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Usa

Client / Project: Analytical Resources Inc. Service Request K11 11930

Received: 12/8/11 Opened: 12/8/11 By: SMW Unloaded: 12/8/11 By: SMW

1. Samples were received via? *Mail* *Fed Ex* (*UPS*) *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? One, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.9		299		1E 832 6950 3513 2649 6	

7. Packing material used. *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* (*Wet Ice*) (*Sleeves*) *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

T284 : 00416

General Chemistry Parameters

T284 00417

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Analytical Resources, Incorporated	**Service Request:**	K1111930
Project:	TZ97	**Date Collected:**	12/5/2011
Sample Matrix:	Water	**Date Received:**	12/8/2011

Halides, Total Organic (TOX)

Prep Method:	NONE	Units:	ug/L (ppb)
Analysis Method:	9020B	Basis:	NA
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
11-27938-TZ97A / MW-30S-120511	K1111930-001	10	4	1	NA	12/19/2011	ND	
11-27939-TZ97B / MW-31S-120511	K1111930-002	10	4	1	NA	12/19/2011	6	J
11-27940-TZ97C / MW-33S-120511	K1111930-003	10	4	1	NA	12/19/2011	7	J
Method Blank	K1111930-MB	10	4	1	NA	12/19/2011	ND	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Analytical Resources, Incorporated	**Service Request:**	K1111930
Project:	TZ97	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
		Date Extracted:	NA
		Date Analyzed:	12/19/2011

Matrix Spike/Duplicate Matrix Spike Summary
Halides, Total Organic (TOX)

Sample Name:	Batch QC	Units:	ug/L (ppb)
Lab Code:	K1111923-001MS, K1111923-001DMS	Basis:	NA
Test Notes:			

				Spike Level		Sample	Spike Result		Percent Recovery		CAS Acceptance	Relative Percent	Result
Analyte	**Prep Method**	**Analysis Method**	**MRL**	MS	DMS	**Result**	MS	DMS	MS	DMS	Limits	**Difference**	**Notes**
Halides, Total Organic (TOX)	NONE	9020B	10	100	100	5 J	101	99	96	94	82-121	2	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Analytical Resources, Incorporated
Project: TZ97
Sample Matrix: Water

Service Request: K1111930
Date Collected: NA
Date Received: NA
Date Analyzed: 12/19/2011

Calibration and Method Blank Summary
Halides, Total Organic (TOX)
EPA Method 9020

	Halide Check Standard (µg)	Instrument Calibration Standard (µg)	Adsorption Standard (µg/L)	Method Blank (µg/L)
True Value	3.64	10.0	100	ND
Run A	3.72	10.7	97	ND
Percent Recovery	102	107	97	
Run B	3.63	10.6		
Percent Recovery	100	106		

Work Request # Original (K11923) K11924 K11930 273580

Tier: IV IV

Date Analyzed: 12/19/11

Analyst: EM

Analysis: TOX 9020B KTOX03

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?		yes/no/NA
2.	Holding times met for all analyses and for all samples?		yes/no/NA
3.	Are calculations correct?		yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)		yes/no/NA
5.	All quality control criteria met?		yes/no/NA
	a.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
	b.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
	c.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
	d.	Are results for methods blanks all ND?	yes/no/NA
	e.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
	f.	Are all exceptions explained?	yes/no/NA
6.	Are all service requests that apply attached?		yes/no/NA
7.	Are all samples labelled correctly?		yes/no/NA
8.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample)		yes/no/NA
9.	Are detection limits and units reported correctly?		yes/no/NA
10.	Are proper Analysis/Extraction stickers included on report?		yes/no/NA
11.	Is the unused space on the benchsheet crossed out?		yes/no/NA
12.	Was analysis turned in by the due date? (n-2) (If not record SR#)		yes/no/NA

COMMENTS:

K11923
K11924 > Due 12/18
K11930

See bench sheet for QC failure comment.

Final Approved by: [signature] Date: 12/20/11

DQREPORT

AOX/TOX Benchsheet

Service Request # K1111923, K1111924, K1111930 Method # : TOX-9020B

Analysis For : Total Organic Halides Instrument: Crackers

Calibration Date 7/5/2001 IPR Date: 5/9/2000

Instrument:	Volume	Concentration	Result	Reported Value	% Rec.
Halide Check	Run A = 10 µL	3.64	3.7240	3.7240	102
	Run B = 10 µL	3.64	3.6240	3.6240	100
NO_3 Wash Blank	2 mL	1) 0.2270	2) 0.1220	Average =	0.1745
Inst. Cal. Std.	Run A = 10 µL	10.0	10.8360	10.6615	107
	Run B = 10 µL	10.0	10.7900	10.6155	106

Lab Code	Initial Volume (mls)	Final Volume (mls)	OBS A µg	OBS B µg	Conc. (ppb)	Reported Value (ppb)	% Break-through	% RPD	Head-space	pH	% Recovery
MB	100	100	0.1480	0.1320	-1	< 10					
PAR STD	100	100	9.8940	0.1860	97	97	<1				97
K11923-1	100	100	0.4650	0.3530	5J		38.1		n	2	
K11924-1	100	100	0.7490	0.2260	6J		8.2		n	2	
K11924-2	100	100	0.4600	NA	3		<1		y	2	
K11930-1	100	100	0.5600	NA	3.9		<1		n	2	
K11930-2	100	100	0.6790	0.3010	6J		20.0		y	2	
K11930-3	10	100	0.2840	NA	11	NR	268.5		y	2	
NO_3 Wash Blank	2 mL		1) 0.1970		2) 0.2480		Average =			0.2225	
ICS	10 µl				10.841	10.6185					106

Comments: NA signifies B column is equal to or less than the nitrate wash blank and should be disregarded as per method.
High break through is disregarded if sample concentration is less than or equal to the MRL.

sulfuric acid: EMD 51164 nitric acid: JTB41037

Halide Check = 3.64 µg/L **Inst. Cal Std. =** 10.0 µg/L

TOX-9020B (ppb) = $\frac{[(OBS.A - NO_3\ Blank) + (OBS.B - NO_3\ Blank)] \times (DF)}{Volume\ Analyzed\ (L)}$

AOX-506 (ppb)

AOX-1650C (ppb) = $\frac{((OBS.A + OBS.B) - (MB\ OBS.A + MB\ OBS.B))}{Initial\ Volume\ Analyzed\ (L)}$

% Breakthrough = $\frac{(OBS.B - MB\ OBS.B) \times 100}{(OBS.A - MB\ OBS.A) + (OBS.B - MB\ OBS.B)}$

Matrix Spike = $\frac{10\ µl \times 1\ µg \times 100\ ml}{1\ µl \times 100ml \times 0.1\ L}$ = 100 µg/L

NO_3 Wash ID #: TOX/3-27-J
Electrolyte ID #: TOX/3-60-N
Carbon Lot #: 1106134
0.0103 NaCl ID #: TOX/3-70-M
1000 ppm TCP (PAR) ID #: TOX/3-72-E
1000 ppm TCP (ICS) ID #: TOX/3-72-D

NO3 = < 1.0
ICS = 90%-110%
PAR = 87-113%
MS =82-121%

Analyzed By:	DM	Date:	12/19/11 0925
Reviewed By:	[illegible]	Date:	12/20/11

AOX/TOX Benchsheet

Service Request # K1111923, K1111924, K1111930 Method # : TOX-9020B

Analysis For : Total Organic Halides Instrument: Crackers

Lab Code	Initial Volume (mls)	Final Volume (mls)	OBS A µg	OBS B µg	Conc. (ppb)	Reported Value (ppb)	% Break-through	% RPD	Head-space	pH	% Recovery
K11923-1D	100	100	0.4760	0.2590	3	NC	12.6	NC			1+1d
K11923-1MS	100	100	9.7710	0.7900	101	101	5.6				96
K11923-1MSD	100	100	9.7190	0.6100	99	99	3.9	2			94
K11924-1D	100	100	0.5480	NA	3	NC	<1	NC			1+1d
K11924-2D	100	100	0.3270	NA	1	<4	188.6	-			2+2d
K11930-1D	100	100	0.4950	NA	3	<4	<1	-			1+1d
K11930-2D	100	100	0.4750	NA	3	NC	<1	NC			2+2d
K11930-3D	100	100	0.7520	NA	5 J		<1				
NO3 Wash Blank	2 mL		1)	0.2050	2)	0.1850	Average =				0.1950
ICS	10 µl				11 059	~~10.8640~~					109
K11930-3T	100	100	0 8920	0.3730	9	7J	20.3	57*			3d+3t
ICS	10 µl				10.940	10 7450					107

Comments K11930-3d/3t high RPD due to sample concentration less than MRL.

Analyzed By DM	Date: 12/19/11
Reviewed By:	Date: 12/20/11

Blank Report

Blank Results

Data ID : AOX212192011.001 lw 12/20/11

Reps.	Mode	Counts(µg)	Total Counts	$\bar{X}$	SD	RSD(%)	ABC No.	Date
1-1	AOX-2	0.227					1	12/19/11 09:25
1-2	AOX-2	0.122	0.349	0.349	***.**	***.**	1	12/19/11 09:35

EM 12/19/11

T284:00424

Sample Report

Sample All Data

Data ID : AOX212192011.001
Blank : 0.349 µg/2Column lk 1/12/2011

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	ICS	10.00 µl	1.0000	10.836			1
1-2	ICS	10.00 µl	1.0000	10.790	21.626	0.21 %	1
n = 1		$\bar{X}$ = 0.21 %		SD = ****.**		RSD(%) = ***.**	

EM 12/19/11

TZ84 : 00425

Sample Report

Sample All Data

Data ID : AOX212192011.002
Blank : 0.349 µg/2Column LC/12/20/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	MB	100.00 ml	1.0000	0.148			1
1-2	MB	100.00 ml	1.0000	0.132	0.280	0.00 ppm	1
n = 1	$\bar{X}$ = 0.00 ppm			SD = ****.**		RSD(%) = ***.**	
1-1	PAR	100.00 ml	1.0000	9.894			1
1-2	PAR	100.00 ml	1.0000	0.186	10.080	97.31 ppb	1
n = 1	$\bar{X}$ = 97.31 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11923-1	100.00 ml	1.0000	0.465			1
1-2	K11923-1	100.00 ml	1.0000	0.353	0.818	4.69 ppb	1
n = 1	$\bar{X}$ = 4.69 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11924-1	100.00 ml	1.0000	0.749			1
1-2	K11924-1	100.00 ml	1.0000	0.226	0.975	6.26 ppb	1
n = 1	$\bar{X}$ = 6.26 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11924-2	100.00 ml	1.0000	0.460			1
1-2	K11924-2	100.00 ml	1.0000	0.149 NA	0.609	2.60 ppb	1
n = 1	$\bar{X}$ = 2.60 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11930-1	100.00 ml	1.0000	0.560			1
1-2	K11930-1	100.00 ml	1.0000	0.165 NA	0.725	3.76 ppb	1
n = 1	$\bar{X}$ = 3.76 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11930-2	100.00 ml	1.0000	0.679			1
1-2	K11930-2	100.00 ml	1.0000	0.301	0.980	6.31 ppb	1
n = 1	$\bar{X}$ = 6.31 ppb			SD = ****.**		RSD(%) = ***.**	
~~1-1~~	~~K11930-3~~ overdilute	~~100.00 ml~~	~~0.1000~~	~~0.284~~			~~1~~
~~1-2~~	~~K11930-3~~	100.00 ml	0.1000	0.093 NA	0.377	2.80 ppb	1
n = 1	$\bar{X}$ = 2.80 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	NITRATE WASH BLANK	100.00 ml	1.0000	0.197			1
1-2	NITRATE WASH BLANK	100.00 ml	1.0000	0.248	0.445	0.96 ppb	1
n = 1	$\bar{X}$ = 0.96 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	ICS	100.00 ml	1.0000	10.841	10.841	104.92 ppb	1
n = 1	$\bar{X}$ = 104.92 ppb			SD = ****.**		RSD(%) = ***.**	

overdilute DM 12/19/11

DM 12/19/11

T284 : 00426

Sample Report

Sample All Data

Data ID : AOX212192011.002
Blank : 0.349 µg/2Column 12/12/2011

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	K11923-1D	100.00 ml	1.0000	0.476			1
1-2	K11923-1D	100.00 ml	1.0000	0.259	0.735	3.86 ppb	1
n = 1	$\bar{X}$ = 3.86 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11923-1MS	100.00 ml	1.0000	9.771			1
1-2	K11923-1MS	100.00 ml	1.0000	0.790	10.561	102.12 ppb	1
n = 1	$\bar{X}$ = 102.12 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11923-1MSD	100.00 ml	1.0000	9.719			1
1-2	K11923-1MSD	100.00 ml	1.0000	0.610	10.329	99.80 ppb	1
n = 1	$\bar{X}$ = 99.80 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11924-1D	100.00 ml	1.0000	0.548			1
1-2	K11924-1D	100.00 ml	1.0000	0.132 NA	0.680	3.31 ppb	1
n = 1	$\bar{X}$ = 3.31 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11924-2D	100.00 ml	1.0000	0.327			1
1-2	K11924-2D	100.00 ml	1.0000	0.083 NA	0.410	0.61 ppb	1
n = 1	$\bar{X}$ = 0.61 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11930-1D	100.00 ml	1.0000	0.495			1
1-2	K11930-1D	100.00 ml	1.0000	0.049 NA	0.544	1.95 ppb	1
n = 1	$\bar{X}$ = 1.95 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11930-2D	100.00 ml	1.0000	0.475			1
1-2	K11930-2D	100.00 ml	1.0000	0.162 NA	0.637	2.88 ppb	1
n = 1	$\bar{X}$ = 2.88 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11930-3D	100.00 ml	1.0000	0.752			1
1-2	K11930-3D	100.00 ml	1.0000	0.148 NA	0.900	5.51 ppb	1
n = 1	$\bar{X}$ = 5.51 ppb			SD = ****.**		RSD(%) = ***.**	
2-1	NITRATE WASH BLANK	100.00 ml	1.0000	0.205			1
2-2	NITRATE WASH BLANK	100.00 ml	1.0000	0.185	0.390	0.41 ppb	1
n = 1	$\bar{X}$ = 0.41 ppb			SD = ****.**		RSD(%) = ***.**	
2-1	ICS	100.00 ml	1.0000	11.059	11.059	107.10 ppb	1
n = 1	$\bar{X}$ = 107.10 ppb			SD = ****.**		RSD(%) = ***.**	

12/19/11

TZ84:00427

Sample Report

Sample All Data

Data ID : AOX212192011.002
Blank : 0.349 µg/2Column

LA/12/20/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	K11930-3T	100.00 ml	1.0000	0.892			1
1-2	K11930-3T	100.00 ml	1.0000	0.373	1.265	9.16 ppb	1
n = 1	$\bar{X}$ = 9.16 ppb			SD = ****.**		RSD(%) = ***.**	
3-1	ICS	100.00 ml	1.0000	10.940	10.940	105.91 ppb	1
n = 1	$\bar{X}$ = 105.91 ppb			SD = ****.**		RSD(%) = ***.**	

DM 12/19/11

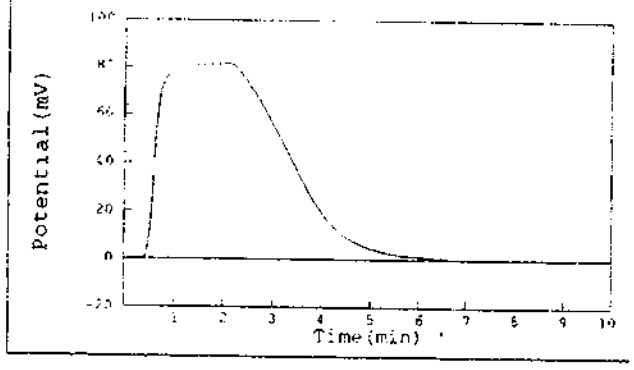
TZ84 : 00428

Sample Report

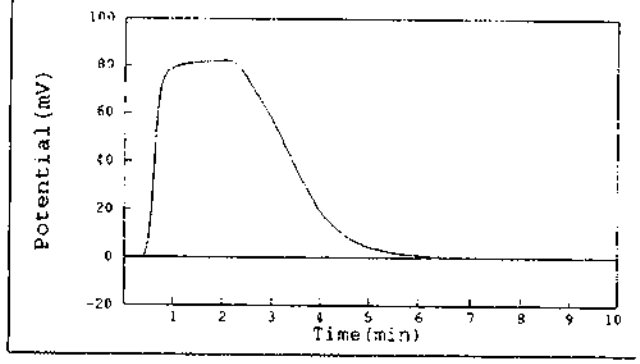
Sample Charts

Data ID : AOX212192011.001 12/12/2011

Reps. : 1-1 12/19/11 09:42
Sample ID : ICS
Counts(µg): 10.836



Reps. : 1-2 12/19/11 09:49
Sample ID : ICS
Counts(µg): 10.790



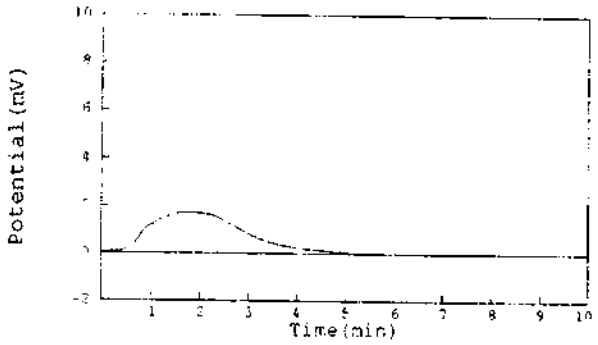
T284 : 00429

Sample Report

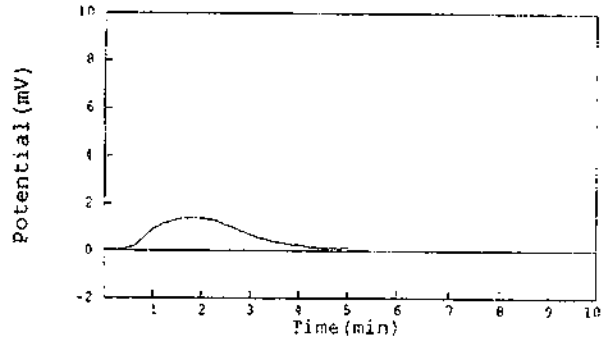
Sample Charts

Data ID : AOX212192011.002 12w/12/2011

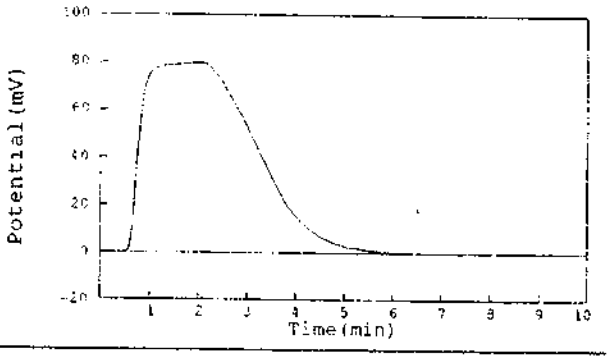
Reps. : 1-1 12/19/11 09:57
Sample ID : MB
Counts(µg): 0.148



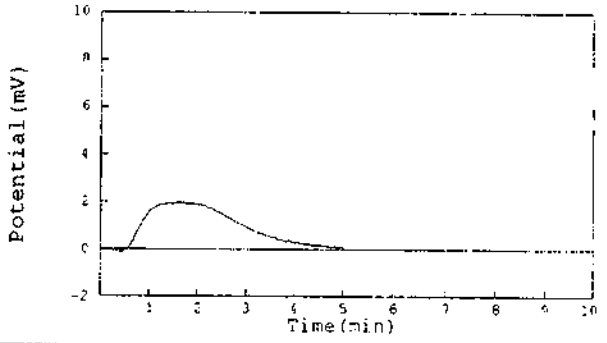
Reps. : 1-2 12/19/11 10:23
Sample ID : MB
Counts(µg): 0.132



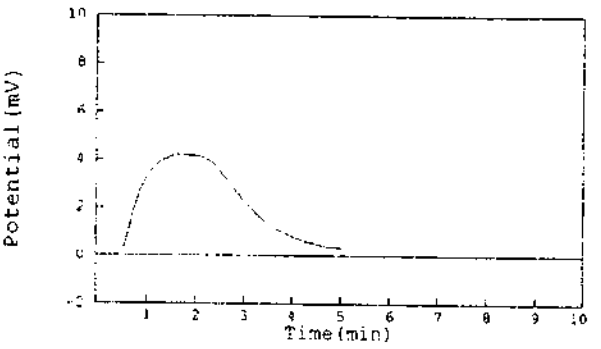
Reps. : 1-1 12/19/11 10:30
Sample ID : PAR
Counts(µg): 9.894



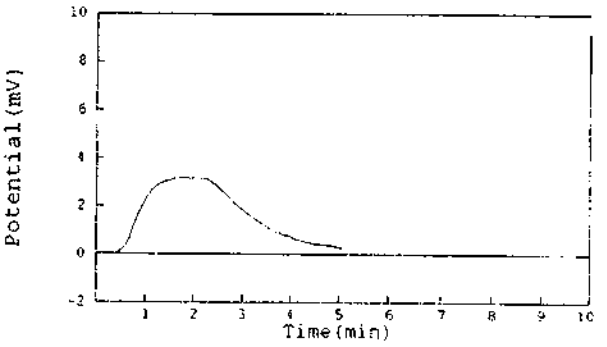
Reps. : 1-2 12/19/11 10:35
Sample ID : PAR
Counts(µg): 0.186



Reps. : 1-1 12/19/11 10:42
Sample ID : K11923-1
Counts(µg): 0.465



Reps. : 1-2 12/19/11 10:48
Sample ID : K11923-1
Counts(µg): 0.353



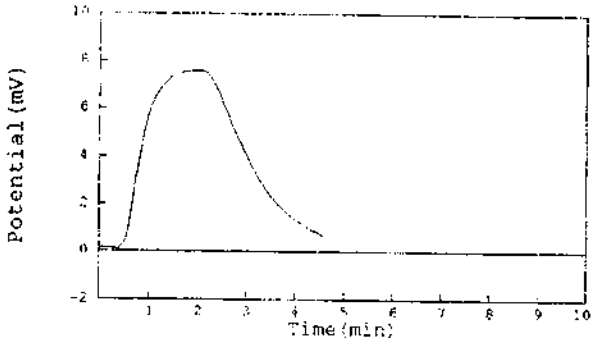
TZ84 . 00430

Sample Report

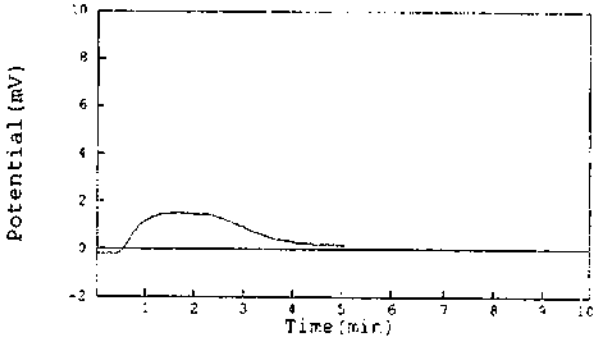
Sample Charts

Data ID : AOX212192011.002

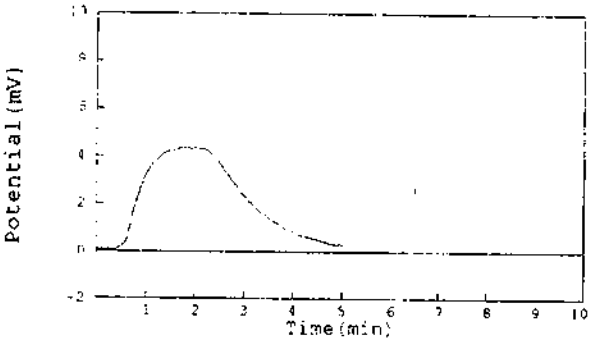
Reps. : 1-1 12/19/11 10:54
Sample ID : K11924-1
Counts(µg): 0.749



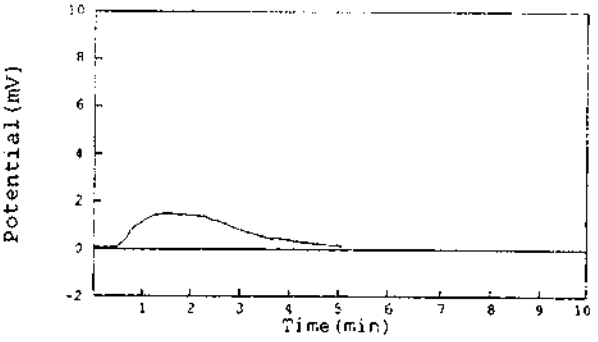
Reps. : 1-2 12/19/11 11:03
Sample ID : K11924-1
Counts(µg): 0.226



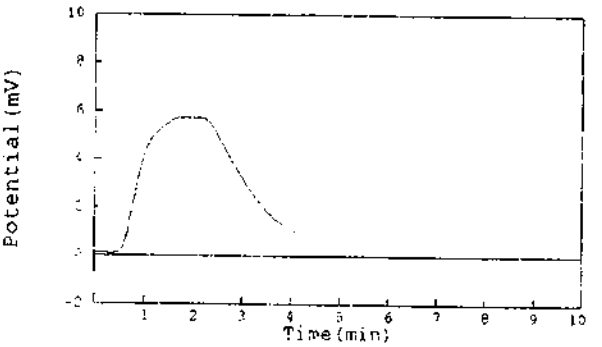
Reps. : 1-1 12/19/11 11:11
Sample ID : K11924-2
Counts(µg): 0.460



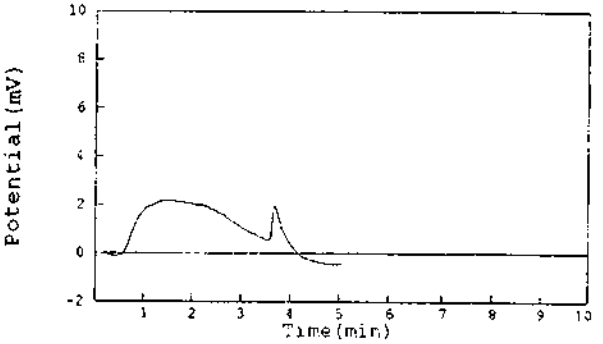
Reps. : 1-2 12/19/11 11:20
Sample ID : K11924-2
Counts(µg): 0.149



Reps. : 1-1 12/19/11 11:24
Sample ID : K11930-1
Counts(µg): 0.560



Reps. : 1-2 12/19/11 11:30
Sample ID : K11930-1
Counts(µg): 0.165



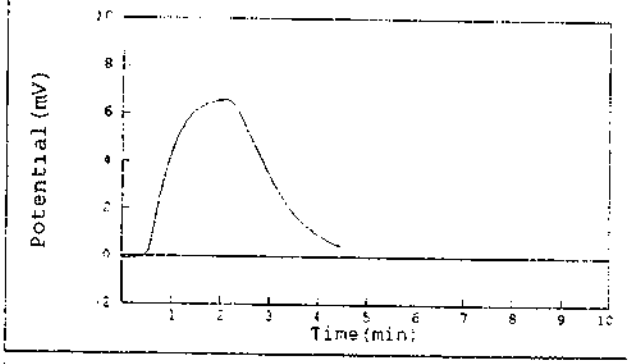
T284:00431

Sample Report

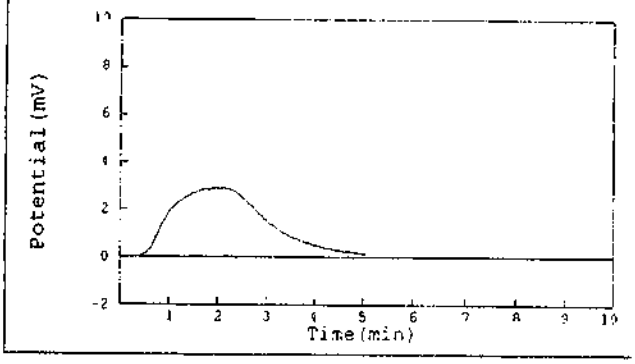
Sample Charts

Data ID : AOX212192011.002

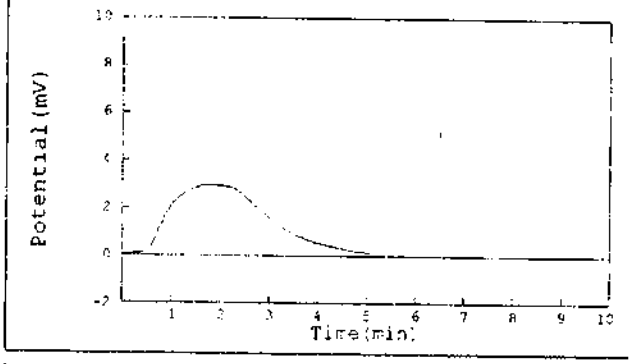
Reps. : 1-1 12/19/11 11:43
Sample ID : K11930-2
Counts(µg): 0.679



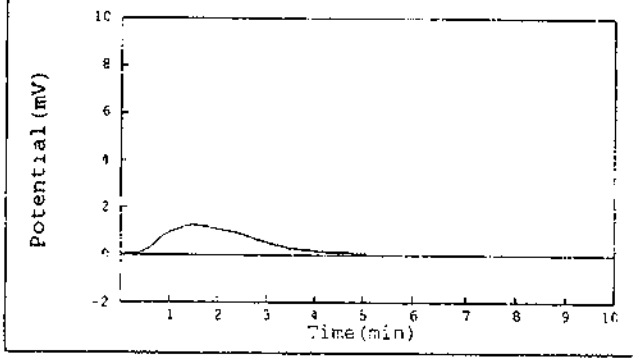
Reps. : 1-2 12/19/11 11:51
Sample ID : K11930-2
Counts(µg): 0.301



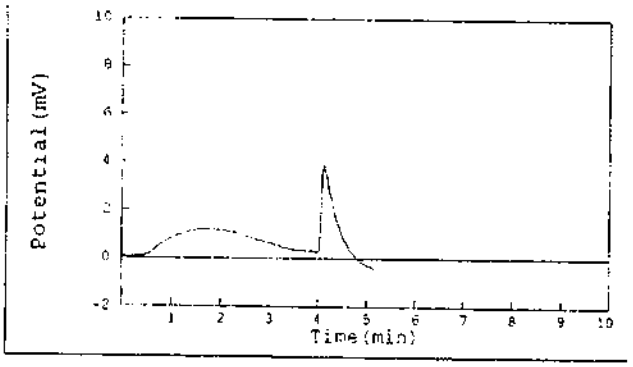
Reps. : 1-1 12/19/11 11:56
Sample ID : K11930-3
Counts(µg): 0.284



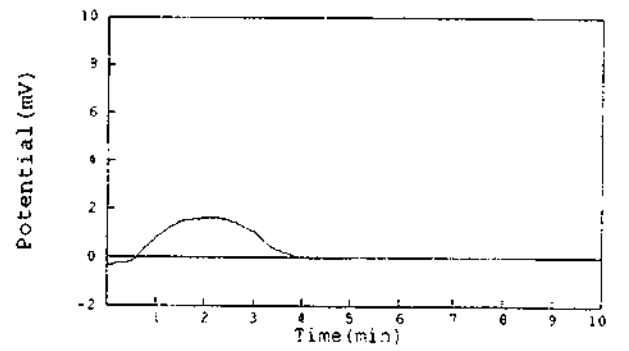
Reps. : 1-2 12/19/11 12:01
Sample ID : K11930-3
Counts(µg): 0.093



Reps. : 1-1 12/19/11 12:07
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.197



Reps. : 1-2 12/19/11 12:13
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.248



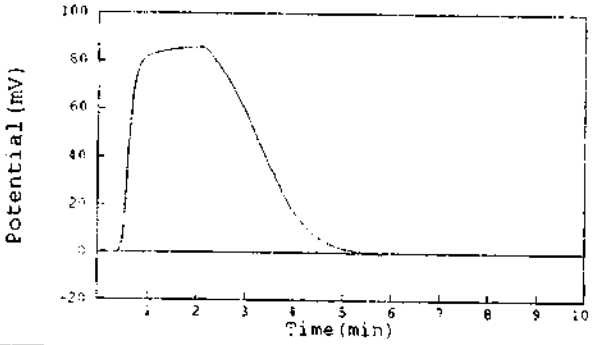
TZ84 : 00432

Sample Report

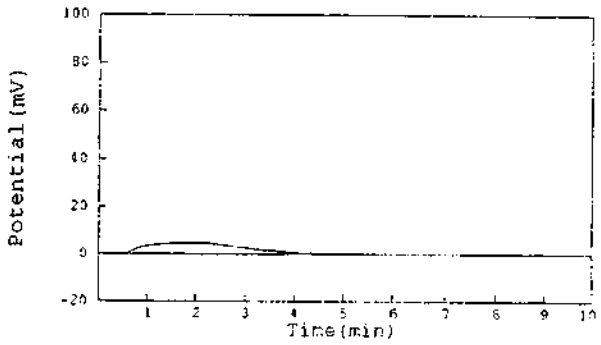
Sample Charts

Data ID : AOX212192011.002

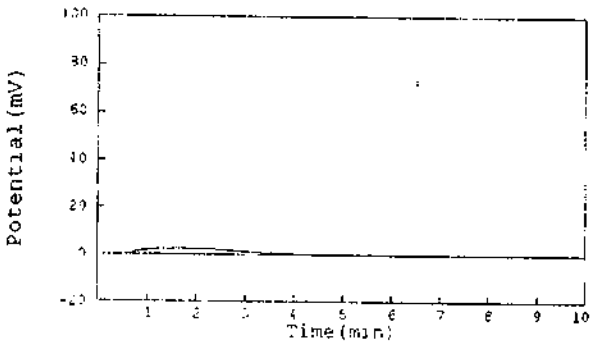
Reps. : 1-1 12/19/11 12:22
Sample ID : ICS
Counts(µg): 10.841



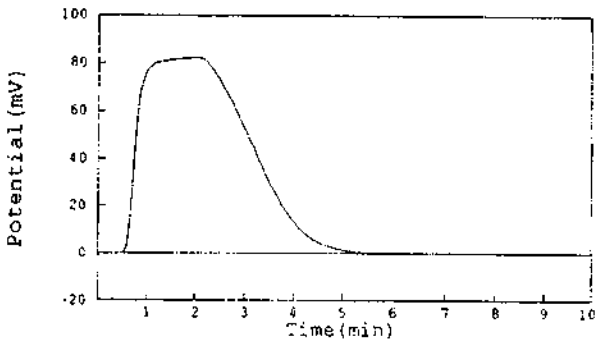
Reps. : 1-1 12/19/11 12:33
Sample ID : K11923-1D
Counts(µg): 0.476



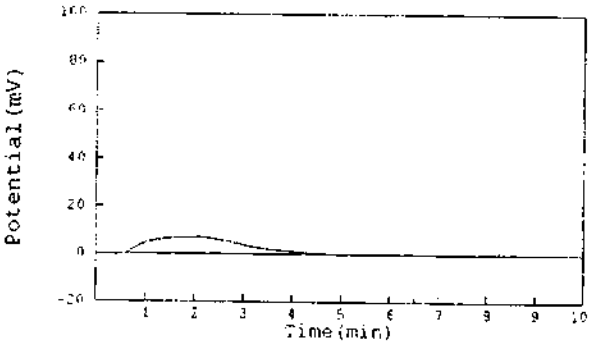
Reps. : 1-2 12/19/11 12:39
Sample ID : K11923-1D
Counts(µg): 0.259



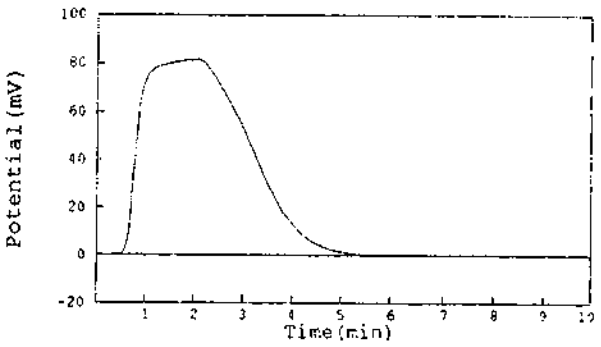
Reps. : 1-1 12/19/11 12:47
Sample ID : K11923-1MS
Counts(µg): 9.771



Reps. : 1-2 12/19/11 12:54
Sample ID : K11923-1MS
Counts(µg): 0.790



Reps. : 1-1 12/19/11 13:08
Sample ID : K11923-1MSD
Counts(µg): 9.719



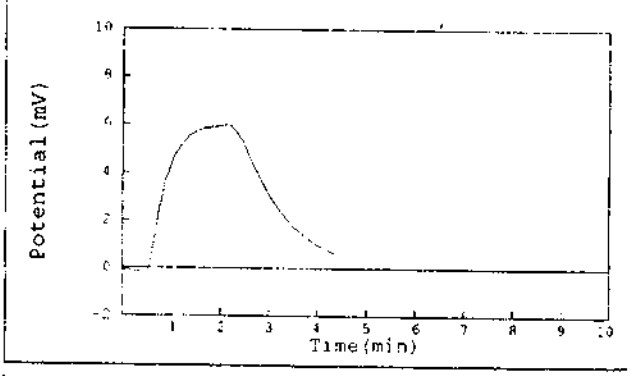
TZ84 : 00433

Sample Report

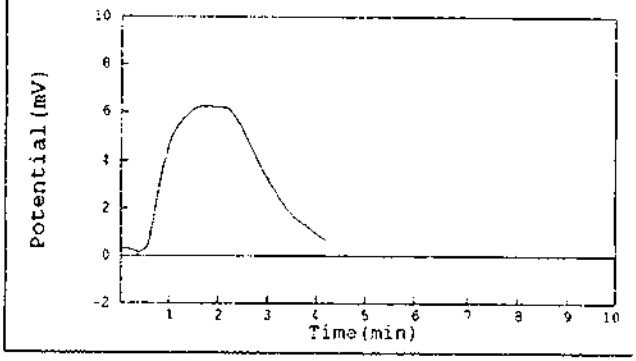
Sample Charts

Data ID : AOX212192011.002

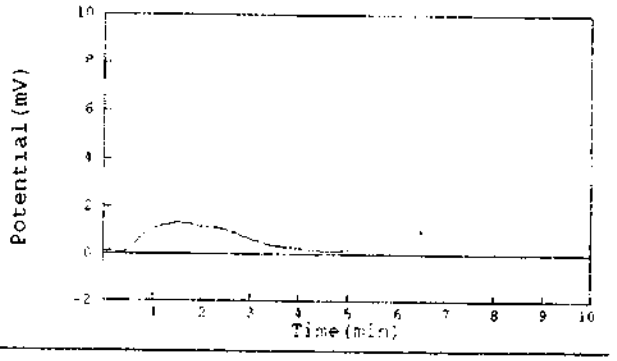
Reps. : 1-2 12/19/11 13:12
Sample ID : K11923-1MSD
Counts(µg): 0.610



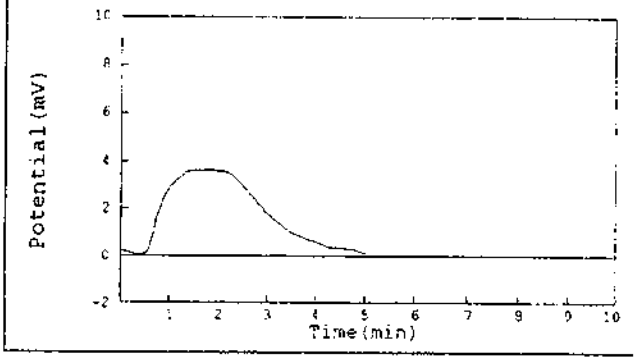
Reps. : 1-1 12/19/11 13:17
Sample ID : K11924-1D
Counts(µg): 0.548



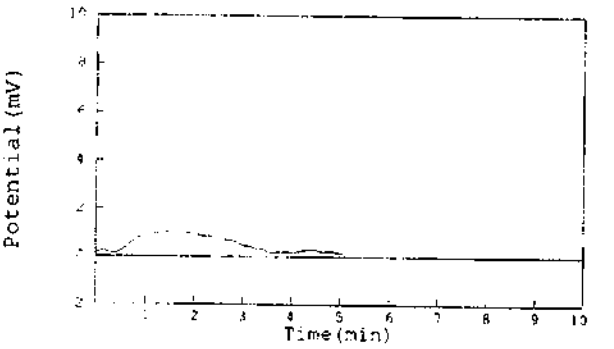
Reps. : 1-2 12/19/11 13:26
Sample ID : K11924-1D
Counts(µg): 0.132



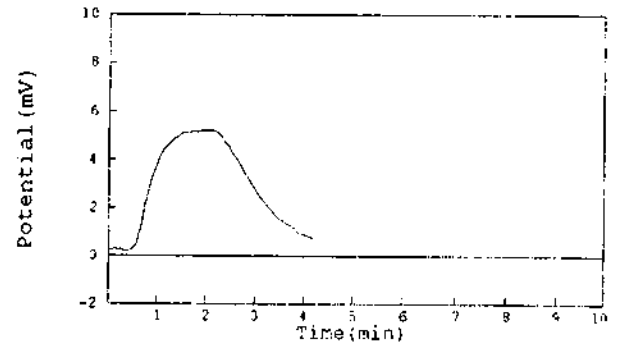
Reps. : 1-1 12/19/11 13:32
Sample ID : K11924-2D
Counts(µg): 0.327



Reps. : 1-2 12/19/11 13:40
Sample ID : K11924-2D
Counts(µg): 0.083



Reps. : 1-1 12/19/11 13:46
Sample ID : K11930-1D
Counts(µg): 0.495



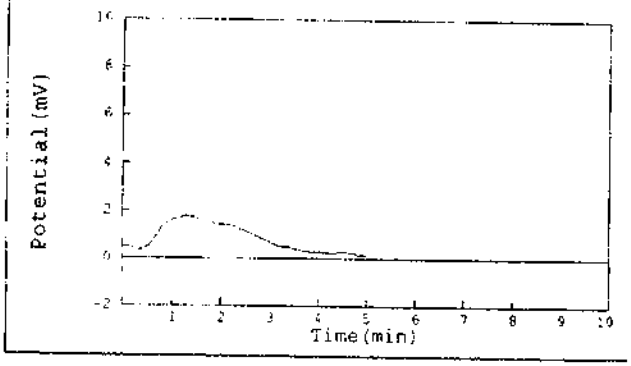
TZ84 : 00434

Sample Report

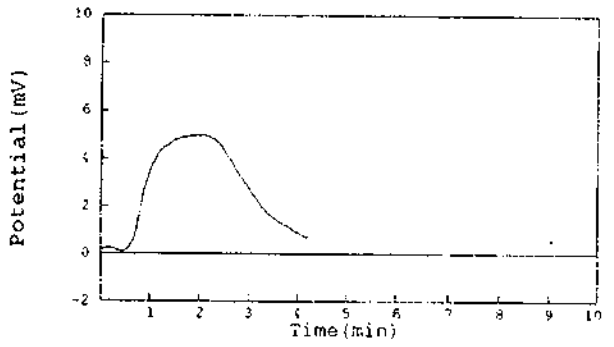
Sample Charts

Data ID : AOX212192011.002

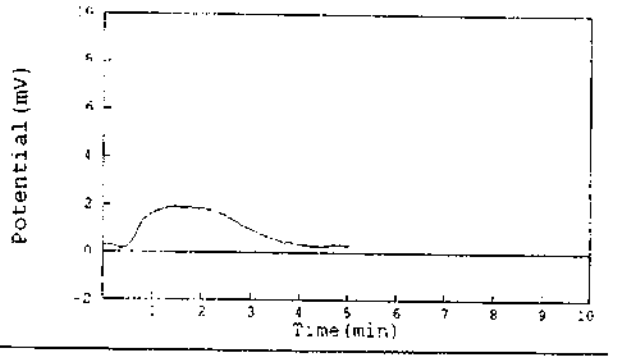
Reps. : 1-2 12/19/11 13:51
Sample ID : K11930-1D
Counts(µg): 0.049



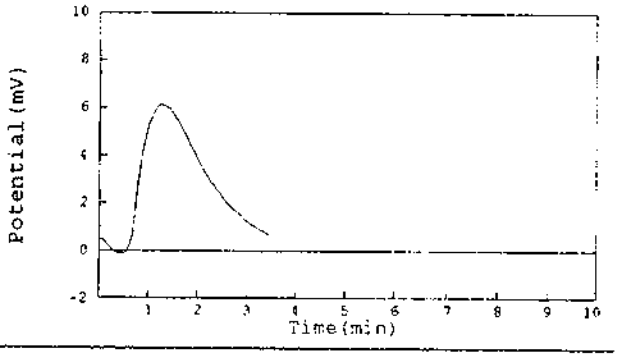
Reps. : 1-1 12/19/11 14:00
Sample ID : K11930-2D
Counts(µg): 0.475



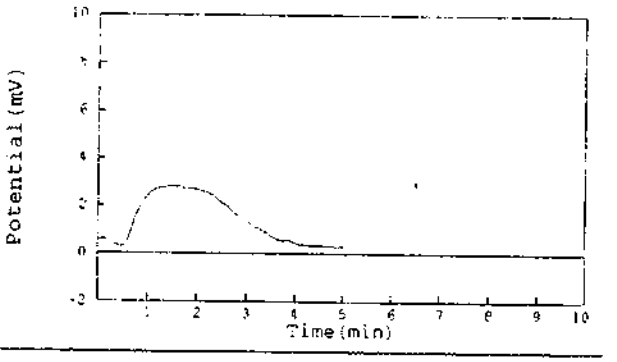
Reps. : 1-2 12/19/11 14:09
Sample ID : K11930-2D
Counts(µg): 0.162



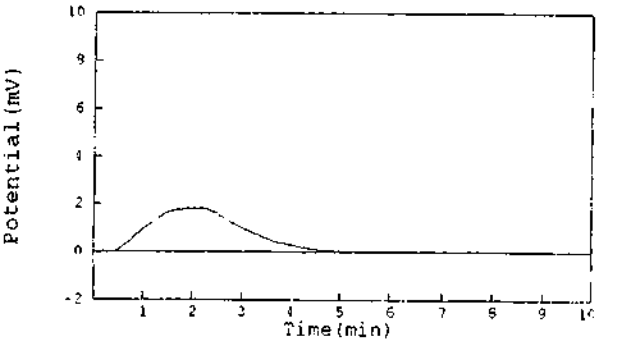
Reps. : 1-1 12/19/11 14:16
Sample ID : K11930-3D
Counts(µg): 0.752



Reps. : 1-2 12/19/11 14:23
Sample ID : K11930-3D
Counts(µg): 0.148



Reps. : 2-1 12/19/11 14:46
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.205



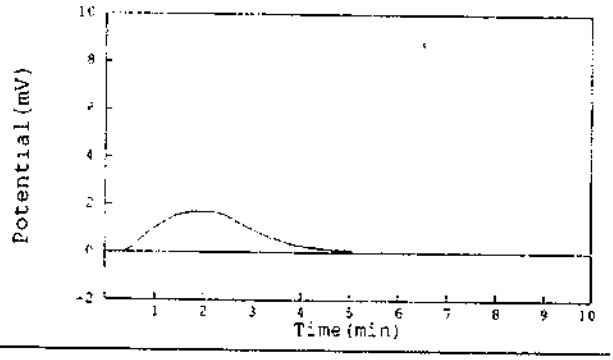
TZ84 : 60435

Sample Report

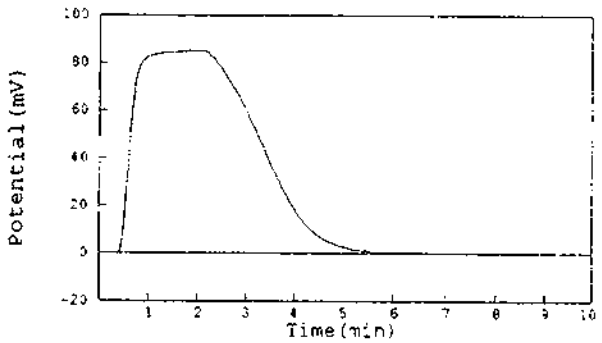
Sample Charts

Data ID : AOX212192011.002

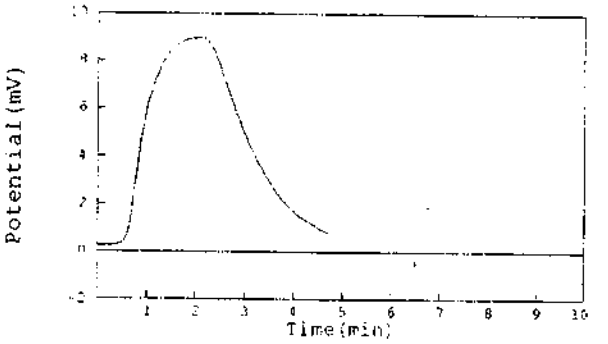
Reps. : 2-2 12/19/11 14:52
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.185



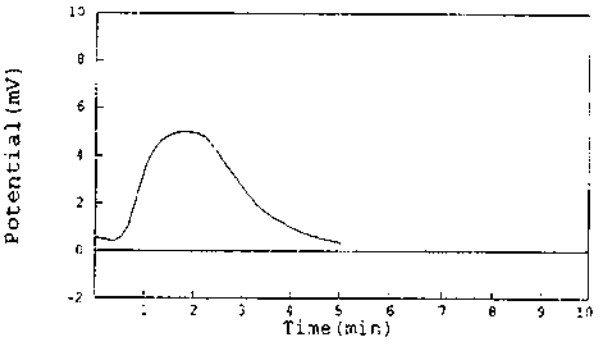
Reps. : 2-1 12/19/11 15:00
Sample ID : ICS
Counts(µg): 11.059



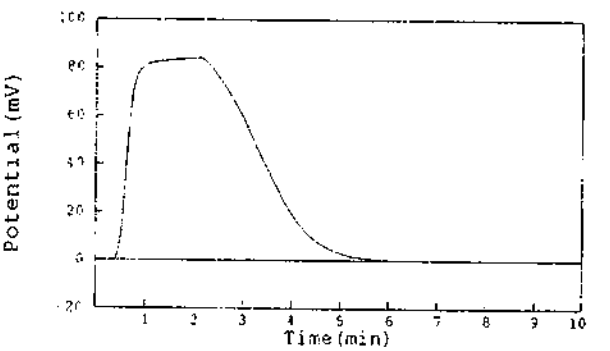
Reps. : 1-1 12/19/11 15:19
Sample ID : K11930-3T
Counts(µg): 0.892



Reps. : 1-2 12/19/11 15:25
Sample ID : K11930-3T
Counts(µg): 0.373



Reps. : 3-1 12/19/11 15:41
Sample ID : ICS
Counts(µg): 10.940



T284 : 00436

General Chemistry Raw Data
Analyst Notes and Raw Data

ARI Job ID: TZ84, TZ97

12-1341

ALKALINITY BENCHSHEET

methods: **SM 2320 B-97**

Date/Time: 12/12/11 10:34

pH meter verification — pH meter ID: **ACCUMET AR60** — Buret ID: **01G30627** — Analyst: KE

Buffer pH 7.00 — pH Probe ID : **AR60**

Measured pH 7.01 — *Calibration OK* — **LOW CURVE**

Standardization of acid titrant ***(titration to pH 4.5)***

ARI ID: ***00122 - 1***

grams Na2CO3 =	**0.6250**	*to* **250**	*ml DI*
Normality Na2CO3 =	0.0472		
Assumed Acid Normality =	**0.02**		
Standardized Acid Normality=	0.0198	***OK!***	

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.08	5	12.02	0.020
2	0.08	5	11.98	0.020
3	0.09	5	12.01	0.020
AVERAGE	0.08			0.020

Partitioning Calculations T=Total, P=Phenolphthalein			
Obs	*HCO3*	*CO3*	*OH*
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: ***00133 - 2***

grams Na2CO3 =	**0.6260**	*grams in*	**250**	*mL =*	2363
dilution:	**5.0**	*mL to*	**100**	*CVS =*	**118.1**
DQL Std (2ppm)	*dilute*	**0.085**	*mL stock to 100 mL DI =*		**2.0**

mg/L CaCO3

Laboratory Control Standard (LCS)

Source: ***P194 - 506*** — *mg/L CaCO3* **49.20**

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample — *(shaded cells are calculated, make no entries)*

low level = {{{(2 X mL4.5)-mL4.2} X Nacid) X 50,000} / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.44	100	20.9	5.89	12.00	0.00	58.3	117.9		*99.8%*	*OK!*		
ICB		5.04	100	20.8	0.00	0.09	0.17	0.0		0.1	0.1	0.0	0.0	1.8
DQL Std (2ppm)		6.98	100	20.5	0.00	0.26	0.36	0.0		1.6				
LCS		8.88	50	19.8	1.18	2.48	0.00	23.4	49.1		*99.7%*	*OK!*		
TZ47 A2		6.44	100	18.9	0.00	8.22	0.00	0.0	81.3		81.3	0.0	0.0	59.1
TZ47 A2 dup		6.46	100	19.0	0.00	8.20	0.00	0.0	81.1		81.1	0.0	0.0	56.3
RPD =									*0.2%*		*0.2%*			*4.8%*
TZ47 B2		6.52	100	19.2	0.00	3.78	0.00	0.0	37.4		37.4	0.0	0.0	22.6
TZ47 C2		6.44	100	19.5	0.00	5.55	0.00	0.0	54.9		54.9	0.0	0.0	39.9
TZ47 D2		6.38	100	19.8	0.00	16.94	0.00	0.0	167.6		167.6	0.0	0.0	139.7
TZ47 E2		6.50	100	19.4	0.00	6.08	0.00	0.0	60.2		60.2	0.0	0.0	38.0
TZ47 F2		6.54	100	19.4	0.00	7.46	0.00	0.0	73.8		73.8	0.0	0.0	42.6
TZ47 G2		6.72	100	19.6	0.00	3.42	0.00	0.0	33.8		33.8	0.0	0.0	12.9
TZ84 B10		6.65	100	19.0	0.00	19.26	0.00	0.0	190.6		190.6	0.0	0.0	85.3
TZ97 A10		6.52	100	21.2	0.00	21.88	0.00	0.0	216.5		216.5	0.0	0.0	130.8
CCV		10.48	100	20.6	5.84	12.01	0.00	57.8	118.0		*99.9%*	*OK!*		0.0
TZ97 B19		6.48	100	20.7	0.00	14.27	0.00	0.0	141.2		141.2	0.0	0.0	93.5
TZ97 B19 dup		6.52	100	20.6	0.00	14.22	0.00	0.0	140.7		140.7	0.0	0.0	85.0
RPD =									*0.4%*		*0.4%*			*9.6%*
UA20 A6		6.84	100	20.4	0.00	9.44	0.00	0.0	93.4		93.4	0.0	0.0	27.0
UA20 B5		6.36	100	20.5	0.00	12.23	0.00	0.0	121.0		121.0	0.0	0.0	105.6
UA31 C4		6.90	100	20.7	0.00	4.50	0.00	0.0	44.5		44.5	0.0	0.0	11.2
UA31 C4 dup		6.92	100	20.7	0.00	4.53	0.00	0.0	44.8		44.8	0.0	0.0	10.8
RPD =									*0.7%*		*0.7%*			*3.9%*

128 in 0038

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample *(shaded cells are calculated, make no entries)*

low level = {{{(2 X mL4.5)-mL4.2} X Nacid) X 50,000} / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4			ALK (mg CaCO3/l)			Partitioning (mg/l CaCO3)			(mg/l)
					pH=8.3	pH =4.5	pH=4.2	Phenolph	TOT HIGH	TOT LOW	HCO3	CO3	OH	FREE CO2
UA31 D4		7.68	100	20.6	0.00	23.76	0.00	0.0	235.1		235.1	0.0	0.0	9.8
UA43 C5		6.68	100	20.2	0.00	3.90	0.00	0.0	38.6		38.6	0.0	0.0	16.1
UA43 D5		7.24	100	20.4	0.00	19.09	0.00	0.0	188.9		188.9	0.0	0.0	21.7
UA67 B3		7.21	100	20.1	0.00	15.70	0.00	0.0	155.3		155.3	0.0	0.0	19.2
CCV		10.48	100	20.7	5.85	12.03	0.00	57.9	118.2		*100.1%*	*OK!*		0.0
UA74 C5		6.64	100	20.0	0.00	8.12	0.00	0.0	80.3		80.3	0.0	0.0	36.8
UA74 D2		7.46	100	20.2	0.00	17.02	0.00	0.0	168.4		168.4	0.0	0.0	11.7
UA61 A1		8.09	50	21.1	0.00	8.28	0.00	0.0	163.8		163.8	0.0	0.0	2.7
UA61 B1		11.95	50	21.1	42.55	48.15	0.00	842.0	952.8		0.0	221.6	731.2	0.0
UA61 C1		6.83	50	21.2	0.00	4.82	0.00	0.0	95.4		95.4	0.0	0.0	28.2
UA37 A2		6.54	25	20.9	0.00	2.57	0.00	0.0	101.7		101.7	0.0	0.0	58.7
UA42 A3		7.06	100	20.8	0.00	7.82	0.00	0.0	77.4		77.4	0.0	0.0	13.5
UA42 A3 dup		7.08	100	20.7	0.00	7.77	0.00	0.0	76.9		76.9	0.0	0.0	12.8
RPD =									*0.6%*		*0.6%*			*5.2%*
UA42 B3		6.46	100	20.5	0.00	10.26	0.00	0.0	101.5		101.5	0.0	0.0	70.4
CCV		10.44	100	20.0	5.79	12.01	0.00	57.3	118.0		*99.9%*	*OK!*		0.0

TZ8h : 60h35

12-12-11 (D)

ALKALINITY BENCHSHEET

methods: **SM 2320 B-97**

Date/Time: 12-12-11

Analyst: (D) 10:34

pH meter verification — pH meter ID: **ACCUMET AR60** — Buret ID: **01G30627**

Buffer pH: **7.00** — pH Probe ID: **AR60**

Measured pH: 7.01 *must agree within 0.1 pH unit* — **LOW CURVE**

Standardization of acid titrant *(titration to pH 4.5)*

ARI ID: **00122 - 1**

grams Na2CO3 =	**0.6250**	*to*	**250** *ml DI*
Normality Na2CO3 =	0.0472		
Assumed Acid Normality =	**0.02**		
Standardized Acid Normality=			

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.08	5	12.02	
2	0.08	5	11.98	
3	0.09	5	12.01	
AVERAGE				

Partitioning Calculations

T=Total, P=Phenolphthalein

Obs	HCO3	CO3	OH
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: **00133 - 2** *mg/L CaCO3*

grams Na2CO3 = **0.6260** *grams in* **250** *mL =* **2363**

dilution: **5.0** *mL to* **100** *CVS =* **118.1**

DQL Std (2ppm) *dilute* **0.085** *mL stock to 100 mL DI =* **2.0**

Laboratory Control Standard (LCS)

Source: **P194 - 506** *mg/L CaCO3* **49.20**

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample *(shaded cells are calculated, make no entries)*

low level = {{{(2 X mL4.5)-mL4.2] X Nacid) X 50,000} / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.44	100	20.9	5.89	12.00	0.00							
ICB		5.04	100	20.8	0.00	0.09	0.17							
DQL Std (2ppm)		6.98	100	20.5	0.00	0.36	0.36							
LCS		8.39	50	19.8	1.16	2.88	0.02							
T247 A2		6.44	100	18.9	0.00	8.22	0.00							
dup A2		6.46	100	19.0	0.00	8.20	0.00							
B2		6.52	100	19.2	0.00	9.78	0.00							
C2		6.44	100	19.5	0.00	5.66	0.00							
D2		6.38	100	19.8	0.00	16.94	0.00							
E2		6.50	100	19.4	0.00	6.08	0.00							
(1) F2		6.54	100	19.4	0.38	46.46	0.00							
G2		6.72	100	19.6	0.00	3.42	0.00							
T254 B10		6.65	100	19.0	0.00	19.26	0.00							
T247 A10		6.52	100	21.2	0.00	21.88	0.00							
CCV		10.48	100	20.6	5.89	12.01	0.00							
T247 B9		6.48	100	20.7	0.00	14.27	0.00							
dup B9		6.52	100	20.6	0.00	14.22	0.00							
(1) A20 A6		6.54	100	20.4	0.00	9.44	0.00							
G5		6.32	100	20.5	0.00	12.23	0.00							
LA31 C4		6.90	100	20.7	0.00	4.50	0.00							
dup C4		6.92	100	20.7	0.00	4.53	0.00							
D4		7.67	100	20.6	0.00	23.76	0.00							
LA43 C5		6.68	100	20.2	0.00	3.90	0.00							
D5		7.24	100	20.4	0.00	19.09	0.00							
LA67 B3		7.21	100	20.1	0.00	15.70	0.00							
CCV		10.48	100	20.2	5.85	12.03	0.00							

T284 - 6894

① 12-12-11 ② 25-12-12-11 ③ 20.8 12-12-11 ④

ALKALINITY BENCHSHEET methods: **SM 2320 B-97** Date/Time: 12-12-11

pH meter verification **pH meter ID:** **ACCUMET AR60** **Buret ID:** **01G30627** Analyst: ④

Buffer pH **7.00** **pH Probe ID :** **AR60**

Measured pH 7.01 *must agree within 0.1 pH unit*

Partitioning Calculations

T=Total, P=Phenolphthalein

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	(mg/l CaCO3) HCO3	(mg/l CaCO3) CO3	(mg/l CaCO3) OH	(mg/l) FREE CO2
UA24 C5		6.64	100	20.0	0.00	8.12	0.00							
UA24 B2		7.46	100	20.2	0.00	17.02	0.00							
UA41 A1		8.09	50	21.1	0.00	8.28	0.00							
B1		11.95	50	21.1	42.55	28.15	0.00							
C1		6.83	50	21.2	0.00	4.82	0.00							
UA37 A2	654	~~6.55~~	~~30~~	20.9	0.00	2.97	0.00							
UA42 A3		7.11	100	~~20.5~~ ③	0.00	7.82	0.00							
A3		7.08	100	20.7	0.00	7.77	0.00							
B3		6.46	100	20.5	0.00	10.26	0.00							
C3		6.70	100	20.9	0.00		0.00	high						
CCV		10.44	100	20.0	5.79	12.01	0.00							
CCV														
CCV														

12-12 ④

ALKALINITY BENCHSHEET methods: **SM 2320 B-97** Date/Time: 12/12/11 18:02

pH meter verification **pH meter ID:** **ACCUMET AR60** **Buret ID:** **01G30627** Analyst: KE

Buffer pH **7.00** **pH Probe ID :** **AR60**

Measured pH 7.01 *Calibration OK* **HIGH CURVE**

Partitioning Calculations
T=Total, P=Phenolphthalein

Obs	HCO3	CO3	OH
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Standardization of acid titrant ***(titration to pH 4.5)***

ARI ID: ***00122 - 1***

grams Na2CO3 =	**0.6250**	*to*	**250**	*ml DI*
Normality Na2CO3 =	0.0472			
Assumed Acid Normality =	**0.1**			
Standardized Acid Normality=	0.1004	***OK!***		

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.03	**5**	2.40	0.100
2	0.03	**5**	2.36	0.101
3	0.03	**5**	2.38	0.100
AVERAGE	0.03			0.100

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: ***00133 - 2*** *mg/L CaCO3*

grams Na2CO3 = **0.6260** *grams in* **250** *mL =* *2363*

dilution: **5.0** *mL to* **100** *CVS =* **118.1**

DQL Std (2ppm) *dilute* **0.085** *mL stock to 100 mL DI =* **2.0**

Laboratory Control Standard (LCS)

mg/L CaCO3

Source: ***P194 - 506*** **49.20**

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample *(shaded cells are calculated, make no entries)*

low level = {[((2 X mL4.5)-mL4.2] X Nacid) X 50,000} / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.46	100	20.1	1.13	2.38	0.00	56.7	117.9		*99.8%*	*OK!*		
ICB		5.41	100	21.3	0.00	0.03	0.06	0.0		0.0	0.0	0.0	0.0	0.0
LCS		8.90	50	21.0	0.28	0.51	0.54	28.1	51.2		*104.0%*	*OK!*		
TZ83 A4		6.74	100	21.2	0.00	8.61	0.00	0.0	432.1		432.1	0.0	0.0	157.3
TZ84 A8		6.52	100	20.8	0.00	5.04	0.00	0.0	253.0		253.0	0.0	0.0	152.8
TZ84 A8 dup		6.55	100	20.8	0.00	5.07	0.00	0.0	254.5		254.5	0.0	0.0	143.4
RPD =									*0.6%*		*0.6%*			*6.3%*
TZ97 A3		6.74	100	21.0	0.00	4.34	0.00	0.0	217.8		217.8	0.0	0.0	79.3
UA17 A3		6.50	100	21.0	0.00	5.79	0.00	0.0	290.6		290.6	0.0	0.0	183.8
UA31 A4		7.22	100	20.9	0.00	9.39	0.00	0.0	471.3		471.3	0.0	0.0	56.8
UA31 A4 dup		7.20	100	20.8	0.00	9.32	0.00	0.0	467.8		467.8	0.0	0.0	59.0
RPD =									*0.7%*		*0.7%*			*3.9%*
UA31 B4		7.36	100	20.8	0.00	6.26	0.00	0.0	314.2		314.2	0.0	0.0	27.4
UA43 A5		7.12	100	20.8	0.00	5.61	0.00	0.0	281.6		281.6	0.0	0.0	42.7
UA43 B5		7.28	100	20.8	0.00	5.50	0.00	0.0	276.0		276.0	0.0	0.0	29.0
CCV		10.46	100	20.2	1.15	2.41	0.00	57.7	119.4		*101.1%*	*OK!*		0.0
UA43 E5		6.92	100	20.7	0.00	10.51	0.00	0.0	527.5		527.5	0.0	0.0	126.8
UA43 F5		7.04	100	20.6	0.00	10.58	0.00	0.0	531.0		531.0	0.0	0.0	96.9
UA67 A3		7.46	100	20.6	0.00	6.03	0.00	0.0	302.6		302.6	0.0	0.0	21.0
UA67 C3		7.24	100	20.5	0.00	7.93	0.00	0.0	398.0		398.0	0.0	0.0	45.8
UA74 A5		6.72	100	20.4	0.00	6.47	0.00	0.0	324.7		324.7	0.0	0.0	123.7
UA74 B5		7.28	100	20.5	0.00	4.40	0.00	0.0	220.8		220.8	0.0	0.0	23.2
UA42 C3		6.74	100	20.9	0.00	12.56	0.00	0.0	630.4		630.4	0.0	0.0	229.4
CCV		10.44	100	20.0	1.15	2.39	0.00	57.7	118.4		*100.3%*	*OK!*		0.0

ALKALINITY BENCHSHEET methods: **SM 2320 B-97** Date/Time: 12-12-11

pH meter verification **pH meter ID:** **ACCUMET AR60** **Buret ID:** 01G30627 Analyst: KE 1802

Buffer pH 7.00 **pH Probe ID :** AR60

Measured pH 7.01 *must agree within 0.1 pH unit* **HIGH CURVE**

Standardization of acid titrant ***(titration to pH 4.5)***

ARI ID: 00122 - 1

grams Na2CO3 = 0.6250 to 250 ml DI

Normality Na2CO3 = 0.0472

Assumed Acid Normality = 0.1

Standardized Acid Normality=

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.03	5	2.40	
2	0.03	5	2.36	
3	0.03	5	2.38	
AVERAGE				

Partitioning Calculations			
T=Total, P=Phenolphthalein			
Obs	HCO3	CO3	OH
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: 00133 - 2 mg/L CaCO3

grams Na2CO3 = 0.6260 grams in 250 mL = 2363

dilution: 5.0 mL to 100 CVS = 118.1

DQL Std (2ppm) dilute 0.085 mL stock to 100 mL DI = 2.0

Laboratory Control Standard (LCS)

Source: P194 - 506 mg/L CaCO3 49.20

SAMPLE DATA *Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample* *(shaded cells are calculated, make no entries)*

low level = ((((2 X mL4.5)-mL4.2] X Nacid) X 50,000) / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.46	100	20.1	1.13	2.38	0.20							
ICB		5.41	100	21.3	0.00	0.03	0.06							
~~DQL Std (2ppm)~~								12-12-11	@					
LCS		8.90	50	21.0	0.28	0.98 (2)	0.54							
T283 A4		6.74	100	21.2	0.00	8.61	0.00							
T284 B3		6.52	100	20.8	0.00	5.04	0.00							
" DUP B3		6.55	100	20.8	0.00	5.07	0.00							
U217 C1		6.71	100	21.0	0.00	4.34	0.00							
AU17 A3		6.50	100	21.0	0.00	5.79	0.00							
U931 A4		7.22	100	20.9	0.00	9.39	0.00							
" DUP A4		7.20	100	20.8	0.00	9.32	0.00							
B4		7.36	100	20.8	0.00	6.36	0.00							
UA43 A5		7.12	100	20.8	0.00	5.61	0.00							
" B5		7.28	100	20.8	0.00	5.60	0.00							
CCV		10.46	100	20.2	1.15	2.41	0.00							
UAU3 E3		6.92	100	20.7	0.00	10.51	0.00							
" F5		7.04	100	20.6	0.00	10.58	0.00							
UA07 A3		7.46	100	20.6	0.00	6.03	0.00							
" C3		7.34	100	20.5	0.00	7.93	0.00							
UA74 A5		6.72	100	20.4	0.00	6.47	0.00							
" B5		7.28	100	20.5	0.00	6.40	0.00							
UA42 C3		6.74	100	20.9	0.00	12.56	0.00							
(CCV)		10.49	100	20.0	1.15	2.39	0.00							
						12-12-11 (1)								
CCV														

ARI 6003 Alkalinity
Revised: 2/16/01

(2) 0.51 12-12-11 (W)

DEC 8 2011 Alkwater1
Date Printed: 12/8/2011

Ch00 : h97.1

12-6-11

TOTAL SUSPENDED SOLIDS / VOLATILE SUSPENDED SOLIDS (TSS / TVSS)

Methods : SM 2540 D-97, 2540 E-97

DATE: 12/6/11 951

ANALYST: SM

Instrumentation ***Drying Ovens:*** 12 ***Analytical Balance:*** 1123230597

Muffle Furnace:

make no entries to shaded cells
they are calculated !!

TSS (mg/l) calculated as:
Final dry wt (mg) = (minimum Dry Wt - Tare Wt)*1000
TSS = [(Final Dry Wt)/ ml Sample] * 1000
if dy wt < 1mg, TSS = <1mg / mL sample * 1000
with "<" flag

Loss on ignition (LOI) = TVSS (mg/L) calculated as:
LOI (mg) = Dry wt(mg) -((min ash wt - tare wt) * 1000)
TVSS (mg/L) = LOI / mL sample * 1000
if LOI <1mg, TVSS = <1mg / mL sample * 1000
with "<" flag

LCS source: *Cellulose, MP Biomedicals Lot# 6399J* 0.05 grams to 1000 mL = **50** ***mg/L TSS***

SAMPLE ID	DISH #	filtered (mL)	TARE WT (grams)	DRY WT 104C (grams) 1	2	3	4	DryWT (mg)	TSS (mg/L)	ASH WT 550C (grams) 1	2	3	4	LOI (mg)	TVSS (mg/l)
Cal Weight ID			CV-02	CV-02	CV-02	CV-02	CV-02			CV-02	CV-02	CV-02	CV-02		
Date & Time				12/6/11 1230	12/6/11 1417										
Cal Wt (g) 10.0000				10.0000	10.0000										
record weights to 4 places				*Cal OK!*	*Cal OK!*										
BLANK		1000	0.1185	0.1185	0.1184	STOP		-0.1	< 1						
LCS # 586-5		1000	0.1167	0.1646	0.1647	STOP		47.9	**47.9**	95.8%	% Recovery				
TZ60 A5		910	0.1195	0.1203	0.1203	STOP		0.8	< 1.1						
TZ83 A5		926	0.1174	0.1190	0.1190	STOP		1.6	**1.7**						
TZ84 A13		930	0.1169	0.1288	0.1287	STOP		11.8	**12.7**						
TZ84 B11		940	0.1186	0.1400	0.1398	STOP		21.2	**22.6**						
TZ87 A2		945	0.1172	0.1209	0.1209	STOP		3.7	**3.9**						
TZ89A2		350	0.1144	0.1243	0.1242	STOP		9.8	**28.0**						
TZ89A2 dup		350	0.1193	0.1294	0.1294	STOP		10.1	**28.9**						
								RPD =	*3.2%*					*RPD =*	*NA*
TZ89 B2		950	0.1194	0.1194	0.1194	STOP		0.0	< 1.1						
TZ97 A11		930	0.1151	0.1227	0.1227	STOP		7.6	**8.2**						
TZ97 B20		950	0.1205	0.1216	0.1216	STOP		1.1	**1.2**						
TZ97 C5		960	0.1207	0.1352	0.1351	STOP		14.4	**15.0**						

hh08 h87

Analytical Resources, Incorporated
Analytical Chemists and Consultants

TOTAL SUSPENDED (TSS) / TOTAL VOLATILE SUSPENDED SOLID(TVSS) BENCHSHEET

Analyst:	SM	Date/Time:	12-6-11 951	Oven #:	012	Muffle Furnance:		Balance:	1123230597

Dry at 104 °C (12-24 hrs) then combust at 550 °C for 30 min. Record Weights to 4 places

TSS (mg/L) calculated as:
Final Dry Weight (mg) = (Min Dry Weight – Tare Weight) * 1000
TSS = (Final Dry Weight) / (mL Sample) * 1000
If dry wt < 1 mg / mL sample * 1000 use "<" flag

Loss on Ignition (LOI) = TVSS (mg / L) is calculated as:
LOI (mg / L) = Dry Weight (mg) – [(Minimum Ash Weight – Tare Weight) * 1000]
TVSS (mg / L) = LOI / mL sample * 1,000
If LOI < 1 mg, TVSS = < 1 mg / mL sample * 1000 use "<" flag

LCS (Cellulose from MP Biochemicals) Lott #		8399J	0.0500 Gram to 1000 mL = 50 mg / L TSS								
Cal Weight ID	CV-02	CV-02	CV-02	CV-02	CV-02			CV-02	CV-02		
Date & Time:			12-6-11 1230	12-6-11 1919							
Cal Weight (10.0000g):			10.0000	10.0000							

Sample ID	Dish #	Filtered mL	Tare	Dry Weight 104°C (grams)			Dry Wt mg	TSS	Ash Weight 550°C		LOI - mg	TVSS mg/L
				1	2	3			1	2		
BLANK		1000	0.1185	0.1185	0.1184							
LCS 586-5		1000	0.1167	0.1646	0.1647							
T260 A5	1	910	0.1195	0.1203	0.1205							
T283 A5	2	926	0.1174	0.1190	0.1190							
T284 A13	3	930	0.1169	0.1288	0.1287							
↓ B11	4	940	0.1136	0.1400	0.1398							
T287 A2	5	945	0.1172	0.1209	0.1209							
T289 A2	6	950	0.1144	0.1243	0.1242							
↓ A2 lip	7	950	0.1193	0.1294	0.1294							
↓ B2	8	950	0.1194	0.1194	0.1194							
T297 A11	9	930	0.1151	0.1228	0.1227							
↓ A20	10	950	0.1205	0.1216	0.1216							
↓ C5	11	960	0.1207	0.1352	0.1351							

T284 TSS

UI 6054F

① = SM 12-6-11

TOC, Aqueous Data Summary (Apollo 9000) DATE: 12/5/2011

EPA 9060 A, SM 5310 B-00 ANALYST: UW

Analysis Mode: **NPOC** *Instrument:* ***Apollo 9000***

Detection Limits (mgC/L)

MRL = 1.5 **upper blank =** 1.5 **lower blank =** -1.5

Calibration Data

Stock ID:	ARI 00121-6	factor (m):	1.442E+05	r^2:	0.99994
Curve Date:	11/28/2011	intercept (b_{cal}):	30905	sys blk (b_{sys})	21111
Curve ID:	112811X 0-50ppm				

LCS, Verification Standard and Inorganic Sparge Check

	Organic Carbon			Inorganic carbon		
Source:	**ERA 0523-11-05**			**ARI # 0104-9**		
Conc:	5,000	*mg/L*		1,000	*mg/L*	
dilution:	1.00	*mL to*	mg C/ L	5.00	*mL to*	mg C/ L
Volume:	250	*mL =*	**20.0**	250	*mL =*	**20**

Sample Data

SAMPLE ID	Dilution Factor	Carbon (mg C/L) enter Form as TC, TIC, NPOC						Notes:
		Form	# reps	mean	stdev	Measured	Report as	*will flag if RSD >5%*
ICV	1	NPOC	3	20.4761	0.06	20.48	20.5	*102.50%*
ICB	1	NPOC	3	0.0338	0.09	0.03	<1.5	*OK !*
1.5 ppm	1	NPOC	3	1.3602	0.08	1.36	<1.5	90.68%
~~IC Sparge Check~~	~~1~~	~~NPOC~~	~~3~~	~~22.1679~~	~~0.32~~	~~22.17~~	~~22.2~~	~~*CVS Err @ 111%*~~
TZ65 A6	1	NPOC	3	3.0302	0.17	3.03	3.03	RSD > 5% chk value
IC Sparge Check	1	NPOC	3	20.1343	0.67	20.13	20.1	*100.50%*
TZ65 A6 dup	1	NPOC	3	2.7342	0.10	2.73	2.73	*RPD =3.5%*
TZ65 A6 ms	1	NPOC	3	24.4202	0.96	24.42	24.4	*106.95%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ65 B6	1	NPOC	3	1.9279	0.11	1.93	1.93	
TZ65 C6	1	NPOC	3	2.4059	0.04	2.41	2.41	
TZ65 D6	1	NPOC	3	2.4299	0.22	2.43	2.43	RSD > 5% chk value
TZ65 E6	1	NPOC	3	2.3752	0.37	2.38	2.38	RSD > 5% chk value
TZ65 F6	1	NPOC	3	1.3792	0.01	1.38	<1.5	
CCV	1	NPOC	3	20.1897	0.28	20.19	20.2	*101.00%*
CCB	1	NPOC	3	0.1113	0.06	0.11	<1.5	*OK !*
TZ65 G6	1	NPOC	3	0.8370	0.09	0.84	<1.5	
TZ83 A1	1	NPOC	3	28.4740	0.40	28.47	28.5	
TZ84 A7	1	NPOC	3	7.5852	0.39	7.59	7.59	RSD > 5% chk value
TZ84 A7 dup	1	NPOC	3	7.0820	0.26	7.08	7.08	*RPD =7%*
TZ84 A7 ms	1	NPOC	3	27.4732	0.89	27.47	27.5	*99.44%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ84 B7	1	NPOC	3	6.1481	0.21	6.15	6.15	
TZ93 B6	1	NPOC	3	12.5329	0.41	12.53	12.5	
TZ93 B6 dup	1	NPOC	3	12.6828	0.21	12.68	12.7	*RPD =1.6%*
TZ93 B6 ms	1	NPOC	3	34.9637	0.36	34.96	35	*112.15%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ93 D6	1	NPOC	3	16.0279	0.39	16.03	16	
CCV	1	NPOC	3	21.8402	0.20	21.84	21.8	*109.00%*
CCB	1	NPOC	3	0.3138	0.12	0.31	<1.5	*OK !*
~~TZ94 A4~~	~~1~~	~~NPOC~~	~~3~~	~~0.9056~~	~~0.10~~	~~0.91~~	~~<1.5~~	~~RSD > 5% chk value~~
~~TZ94 A4 dup~~	~~1~~	~~NPOC~~	~~3~~	~~0.7840~~	~~0.02~~	~~0.78~~	~~<1.5~~	~~*#VALUE!*~~
~~TZ94 A4 ms~~	~~1~~	~~NPOC~~	~~3~~	~~22.6510~~	~~0.22~~	~~22.65~~	~~22.7~~	~~*113.26%*~~
~~*Spike at*~~	~~0.200~~	~~*mL of*~~	~~2,000~~	~~*ppm Std to*~~	~~20.00~~	~~*mL =*~~	~~20.0~~	~~*mg/L*~~
~~TZ94 B4~~	~~1~~	~~NPOC~~	~~3~~	~~0.8148~~	~~0.09~~	~~0.81~~	~~<1.5~~	
~~CCV~~	~~1~~	~~NPOC~~	~~3~~	~~22.3308~~	~~0.57~~	~~22.33~~	~~22.3~~	~~*CVS Err @ 111.6%*~~
~~CCB~~	~~1~~	~~NPOC~~	~~3~~	~~0.2278~~	~~0.10~~	~~0.23~~	~~<1.5~~	~~*OK !*~~

Detailed Analysis Report Print Date/Time: 2011/12/06 9:34:50

12-6-11

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 10:01
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	20.4278	10.2139	1503512	16.220	17.218	204
2	20.5412	10.2706	1511690	16.050	17.047	197
3	20.4593	10.2296	1505784	15.798	16.794	194

<<<Statistics>>> Mean: 20.4761 Std Dev: 0.0585 RSD: 0.29

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 10:23
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1371	0.0685	40788	14.482	15.472	106
2	-0.0109	-0.0054	30122	14.347	14.499	120
3	-0.0247	-0.0124	29124	14.137	14.188	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.0338 Std Dev: 0.0897 RSD: 265.12

Sample ID: 1.5 ppm
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 10:45
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.4223	0.7111	133433	13.457	14.452	126
2	1.2680	0.6340	122312	13.396	14.391	122
3	1.3902	0.6951	131124	13.206	14.205	123

<<<Statistics>>> Mean: 1.3602 Std Dev: 0.0814 RSD: 5.99

Sample ID: CHECK
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 11:10
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	21.7987	10.8993	1602339	13.083	14.081	184
2	22.3138	11.1569	1639469	12.770	13.768	188
3	22.3911	11.1956	1645044	12.624	13.620	187

Last Message: Out of Calibration
<<<Statistics>>> Mean: 22.1679 Std Dev: 0.3220 RSD: 1.45

Sample ID: TZ65 A6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 11:33
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	3.2223	1.6112	232292	11.938	12.935	143
2	2.9432	1.4716	212167	11.884	12.879	143
3	2.9251	1.4625	210864	11.826	12.824	144

<<<Statistics>>> Mean: 3.0302 Std Dev: 0.1666 RSD: 5.50

Sample ID: CHECK
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 11:58
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	19.3643	9.6821	1426845	12.023	13.022	182
2	20.4654	10.2327	1506227	11.554	12.553	188
3	20.5732	10.2866	1513998	11.460	12.459	187

<<<Statistics>>> Mean: 20.1343 Std Dev: 0.6690 RSD: 3.32

Sample ID: TZ65 A6 DUP
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 12:21
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.8501	1.4250	205457	10.997	11.994	141
2	2.6494	1.3247	190990	10.920	11.917	141
3	2.7032	1.3516	194871	10.836	11.833	142

<<<Statistics>>> Mean: 2.7342 Std Dev: 0.1039 RSD: 3.80

Sample ID: TZ65 A6 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 12:47
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	23.3555	11.6778	1683664	11.413	12.407	188
2	24.6984	12.3492	1780468	10.953	11.948	194
3	25.2067	12.6033	1817110	10.755	11.751	197

<<<Statistics>>> Mean: 24.4202 Std Dev: 0.9564 RSD: 3.92

Sample ID: TZ65 B6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 13:09
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.0513	1.0256	147874	10.347	11.343	127
2	1.8976	0.9488	136796	10.288	11.287	127
3	1.8349	0.9174	132273	10.227	11.222	129

<<<Statistics>>> Mean: 1.9279 Std Dev: 0.1113 RSD: 5.78

Sample ID: TZ65 C6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 13:32
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.3898	1.1949	172280	10.083	11.082	134
2	2.3748	1.1874	171192	10.008	11.005	136
3	2.4530	1.2265	176830	9.952	10.947	138

<<<Statistics>>> Mean: 2.4059 Std Dev: 0.0415 RSD: 1.73

Sample ID: TZ65 D6

Mode: TOC

Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Filename: 12050937
Timestamp: 2011/12/05 13:55
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.6885	1.3442	193809	9.846	10.846	136
2	2.3178	1.1589	167088	9.839	10.837	135
3	2.2833	1.1416	164599	9.825	10.819	137

<<<Statistics>>> Mean: 2.4299 Std Dev: 0.2246 RSD: 9.25

Sample ID: TZ65 E6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 14:17
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.7943	1.3972	201438	9.760	10.759	131
2	2.2292	1.1146	160698	9.791	10.790	132
3	2.1020	1.0510	151533	9.708	10.707	130

<<<Statistics>>> Mean: 2.3752 Std Dev: 0.3685 RSD: 15.52

Sample ID: TZ65 F6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 14:39
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.3929	0.6965	100412	9.631	10.631	120
2	1.3659	0.6830	98467	9.570	10.566	121
3	1.3788	0.6894	99397	9.559	10.556	123

<<<Statistics>>> Mean: 1.3792 Std Dev: 0.0135 RSD: 0.98

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 15:05
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	20.4378	10.2189	1504232	9.643	10.642	207
2	20.2412	10.1206	1490061	9.763	10.762	204
3	19.8900	9.9450	1464743	9.783	10.781	196

<<<Statistics>>> Mean: 20.1897 Std Dev: 0.2775 RSD: 1.37

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 15:27
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1748	0.0874	43506	9.386	9.617	120
2	0.0957	0.0478	37801	9.345	9.627	120
3	0.0634	0.0317	35476	9.377	9.662	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.1113 Std Dev: 0.0573 RSD: 51.50

Sample ID: TZ65 G6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 15:49

Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.9387	0.4694	67672	9.390	10.384	113
2	0.7673	0.3836	55310	9.389	10.388	112
3	0.8049	0.4025	58025	9.395	10.391	113

<<<Statistics>>> Mean: 0.8370 Std Dev: 0.0901 RSD: 10.76

Sample ID: TZ83 A1 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12050937
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/05 16:14
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	28.9154	14.4577	2084466	9.411	10.410	190
2	28.3626	14.1813	2044616	9.497	10.496	185
3	28.1439	14.0720	2028853	9.544	10.539	184

<<<Statistics>>> Mean: 28.4740 Std Dev: 0.3976 RSD: 1.40

Sample ID: TZ84 A7 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12050937
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/05 16:38
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	8.0349	4.0175	579226	9.330	10.324	161
2	7.4193	3.7097	534849	9.398	10.394	159
3	7.3015	3.6508	526356	9.343	10.342	158

<<<Statistics>>> Mean: 7.5852 Std Dev: 0.3939 RSD: 5.19

Sample ID: TZ84 A7 DUP Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12050937
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/05 17:01
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	7.3751	3.6876	531663	9.332	10.329	156
2	6.9670	3.4835	502238	9.378	10.377	158
3	6.9040	3.4520	497697	9.357	10.353	157

<<<Statistics>>> Mean: 7.0820 Std Dev: 0.2558 RSD: 3.61

Sample ID: TZ84 A7 MS Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12050937
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/05 17:27
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	26.6142	13.3071	1918573	10.069	11.067	187
2	27.4214	13.7107	1976766	9.557	10.557	198
3	28.3841	14.1921	2046166	9.467	10.463	199

<<<Statistics>>> Mean: 27.4732 Std Dev: 0.8861 RSD: 3.23

Sample ID: TZ84 B7 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12050937
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/05 17:51
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning	Ending	Integration

				Baseline	Baseline	Time
1	6.3948	3.1974	460991	9.371	10.368	153
2	6.0455	3.0228	435813	9.401	10.398	152
3	6.0039	3.0019	432811	9.430	10.428	153

<<<Statistics>>> Mean: 6.1481 Std Dev: 0.2147 RSD: 3.49

Sample ID: TZ93 B6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 18:15
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	12.9414	6.4707	932928	9.349	10.343	177
2	12.1222	6.0611	873873	9.349	10.346	169
3	12.5352	6.2676	903642	9.379	10.375	174

<<<Statistics>>> Mean: 12.5329 Std Dev: 0.4096 RSD: 3.27

Sample ID: TZ93 B6 DUP
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 18:40
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	12.9215	6.4607	931489	9.324	10.321	177
2	12.5725	6.2863	906335	9.354	10.351	171
3	12.5543	6.2772	905023	9.337	10.336	173

<<<Statistics>>> Mean: 12.6828 Std Dev: 0.2069 RSD: 1.63

Sample ID: TZ93 B6 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 19:07
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	34.8925	17.4463	2515347	9.277	10.276	219
2	34.6423	17.3211	2497309	9.437	10.432	215
3	35.3563	17.6782	2548783	9.502	10.499	215

<<<Statistics>>> Mean: 34.9637 Std Dev: 0.3623 RSD: 1.04

Sample ID: TZ93 D6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 19:31
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	16.4739	8.2369	1187576	9.308	10.306	182
2	15.7625	7.8813	1136297	9.454	10.450	177
3	15.8474	7.9237	1142418	9.426	10.424	178

<<<Statistics>>> Mean: 16.0279 Std Dev: 0.3885 RSD: 2.42

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 19:58
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	22.0697	11.0348	1621874	9.348	10.344	212
2	21.6761	10.8380	1593500	9.535	10.534	204

3	21.7749	10.8875	1600627	9.519	10.515	205

<<<Statistics>>> Mean: 21.8402 Std Dev: 0.2048 RSD: 0.94

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 20:19
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.4487	0.2244	63251	9.329	10.327	112
2	0.2567	0.1283	49410	9.309	10.307	111
3	0.2360	0.1180	47916	9.325	10.322	109

<<<Statistics>>> Mean: 0.3138 Std Dev: 0.1173 RSD: 37.38

Sample ID: TZ94 A4
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 20:41
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.9759	0.4879	70349	9.286	10.279	113
2	0.9502	0.4751	68495	9.291	10.286	114
3	0.7907	0.3954	57001	9.364	10.358	113

<<<Statistics>>> Mean: 0.9056 Std Dev: 0.1003 RSD: 11.08

Sample ID: TZ94 A4 DUP
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 21:02
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.8033	0.4017	57909	9.334	10.326	113
2	0.7899	0.3950	56943	9.294	10.287	113
3	0.7589	0.3794	54706	9.319	10.312	112

<<<Statistics>>> Mean: 0.7840 Std Dev: 0.0228 RSD: 2.90

Sample ID: TZ94 A4 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 21:27
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	22.9062	11.4531	1651275	9.301	10.298	192
2	22.5349	11.2674	1624505	9.482	10.482	183
3	22.5120	11.2560	1622854	9.468	10.465	182

<<<Statistics>>> Mean: 22.6510 Std Dev: 0.2213 RSD: 0.98

Sample ID: TZ94 B4
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 21:49
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.9192	0.4596	66263	9.313	10.306	113
2	0.7720	0.3860	55654	9.280	10.274	112
3	0.7533	0.3767	54304	9.298	10.294	112

<<<Statistics>>> Mean: 0.8148 Std Dev: 0.0909 RSD: 11.15

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 22:15
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	22.9909	11.4954	1688282	9.333	10.330	205
2	21.9832	10.9916	1615639	9.540	10.539	196
3	22.0184	11.0092	1618177	9.492	10.489	196

Last Message: Out of Calibration
<<<Statistics>>> Mean: 22.3308 Std Dev: 0.5719 RSD: 2.56

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 22:36
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1766	0.0883	43635	9.369	10.362	109
2	0.3413	0.1706	55505	9.288	10.285	112
3	0.1656	0.0828	42842	9.273	9.586	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.2278 Std Dev: 0.0984 RSD: 43.20

Calibration Report Print Date/Time: 2011/11/28 12:48:57

Cal. Curve ID: 112811X 0-50ppm
Created: 2011/11/28 12:48
Calibration Factor (m): 1.442e+05
Y Intercept (b): 30905
r-squared: 0.99994

Standard ID	Y Raw Data	X Expected ug C	Measured ug C	Message	Date & Time
BLK	41742	0.000	0.075	Low Sample De	2011/11/28 10:44
1.5	129933	0.750	0.687		2011/11/28 11:06
5.0	376619	2.500	2.398		2011/11/28 11:29
10.0	760027	5.000	5.057		2011/11/28 11:53
25.0	1842433	12.500	12.565		2011/11/28 12:19
50.0	3630767	25.000	24.968		2011/11/28 12:45

TZ84 : 00454

12-6-11

PHOSPHORUS BENCHSHEET, Aqueous	Date	Digested: 12/5/2011	Analyzed: 12/5/2011
Total and Ortho P by EPA 365.2	Analyst	KE	14:10

Describe digestion procedure if used:
H2SO4 + POT. PERSULFATE

Curve Standards — *make no entries to shaded cells, they are calculated !!*

Prep date:	6/1/2011	*Stock #:*	00116 - 8			
Weight KH2PO4:	0.2197	*grams in*	1000	*ml*		
Conc =	50.00	*mg/L P*				
Intermediate Std =	20	*ml stk to*	100	*ml DI =*	***10.00***	***mg P/L***

Calibration Curve — *std make-up volume (mL) =* 250

ml int Std to 250 ml	CONC (mg/l)	UNITS (ABS 880 nm 5cm cell)		AVG	mg/L
0.0	0.000	0.000		0.000	*0.001*
0.1	0.004	0.012		0.012	*0.005*
0.4	0.016	0.041		0.041	*0.015*
1.6	0.064	0.186		0.186	*0.063*
3.2	0.128	0.382		0.382	*0.128*
5.0	0.200	0.591		0.591	*0.198*
10.0	0.400	1.202		1.202	*0.401*

REGRESSION DATA
CONC = (ABS-intercept)/ slope

intercept =	-0.0039
Slope =	3.0061
r =	1.0000
Comment:	*Calibration OK!*
maxabs =	*1.202*

Verification Standards — *Source:* *ERA # 210109* — *Conc (mg/l)* 1000

dilution =	0.06	*ml to*	250	*ml DI =*	***0.240***	*mg/l*

Digest Prep Standards — *Source:* *ERA # 200951* — *Conc (mg/l)* 10

dilution 1 =	0.100	*ml to*	50	*ml DI =*	***0.020***	*mg/l*
dilution 2 =	0.50	*ml to*	50	*ml DI =*	***0.100***	*mg/l*
dilution 2 =	1.00	*ml to*	50	*ml DI =*	***0.200***	*mg/l*

Sample Data

1. *For SRP, leave digest data blank!!*
2. *Spike with 10 mg/L Intermediate Standard* — *enter dilution as final vol / sample vol*

SAMPLE ID	Tot P Digest mL sample	mL digest	Analysis Data Abs	Dilution	(mg/l)	TOT P (mg/l)	SRP (mg/l)	Notes
Calib Blank			0.000	1.0	0.0013		< 0.004	*OK*
ICV			0.751	1.0	0.2511		0.251	*104.63%*
Prep Blank	25	50	0.009	1.0	0.0043	0.009		*OK*
Prep Std			0.068	1.0	0.0239		0.024	*119.55%*
Prep Std			0.306	1.0	0.1031		0.103	*103.08%*
Prep Std			0.678	1.0	0.2268		0.227	*113.42%*
TX59 A5	25	50	0.125	1.0	0.0429	0.086		
TX64 A2	25	50	0.092	1.0	0.0319	0.064		
TX96 A2	25	50	0.067	1.0	0.0236	0.047		
TX96 B2	25	50	0.050	1.0	0.0179	0.036		
TX96 C2	25	50	0.525	5.0	0.1759	1.759		
TZ83 A2	25	50	0.067	1.0	0.0236	0.047		
Calib Blank			0.000	1.0	0.0013		< 0.004	*OK*
CCV			0.752	1.0	0.2514		0.251	*104.77%*
TZ84 A9	25	50	0.348	1.0	0.1171	0.234		
TZ84 A9 dup	25	50	0.345	1.0	0.1161	0.232		*RPD = 0.86*
TZ84 A9 ms	25	50	0.939	1.0	0.3137	0.627		*98.3% Rec*
Spike =	1	*ml of*	10	*mg/L to*	25	*ml sample =*	0.400	
TZ84 B8	25	50	0.573	2.0	0.1919	0.768		
Calib Blank			-0.003	1.0	0.0003		< 0.004	*OK*
CCV			0.749	1.0	0.2504		0.250	*104.35%*

(1) 12-5-11 (2)

PHOSPHORUS BENCHSHEET, Aqueous	Analyst	Digested: 12-5-11	Analyzed: 12-5-11
Total P by EPA 365.2	Date	(1)	14:30

Describe digestion procedure if used:
H2SO4 + POT. PERSULFATE

Curve Standards — *make no entries to shaded cells, they are calculated !!*

Prep date: 6/1/2011 Stock #: 00116 - 8
Weight KH2PO4: 0.2197 grams in 1000 ml
Conc = 50.00 mg/L P
Intermediate Std = 20 ml stk to 100 ml DI = 10.00 mg P/L

Calibration Curve — std make-up volume (mL) = 250

ml int Std to 250 ml	CONC (mg/l)	UNITS (ABS 880 nm 5cm cell)		AVG	mg/L
0.0	0.000	0.000			
0.1	0.004	0.012			
0.4	0.016	0.041			
1.6	0.064	0.196			
3.2	0.128	0.382			
5.0	0.200	0.591			
10.0	0.400	1.202			

REGRESSION DATA
CONC = (ABS-intercept)/ slope
intercept =
Slope =
r =
Comment:
maxabs = 0.000

Verification Standards — Source: ERA # 210109 — Conc (mg/l) 1000
dilution = 0.06 ml to 250 ml DI = 0.240 mg/l

Digest Prep Standards

				Source:		Conc (mg/l)
dilution 1 =	0.100	ml to	50	ml DI =	0.020 mg/l	10
dilution 2 =	0.50	ml to	50	ml DI =	0.100 mg/l	
dilution 2 =	1.00	ml to	50	ml DI =	0.200 mg/l	

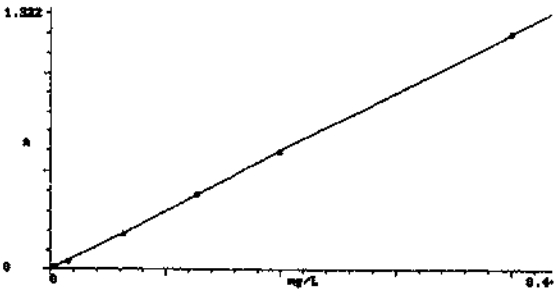
Sample Data
1. For SRP, leave digest data blank!!
2. Spike with 10 mg/L Intermediate Standard — enter dilution as final vol / sample vol

SAMPLE ID	Tot P Digest		Analysis Data			TOT P (mg/l)	SRP (mg/l)	Notes
	mL sample	mL digest	Abs	Dilution	(mg/l)			
Calib Blank			0.000	1.0				
ICV			0.757	1.0				
Prep Blank	25	50	0.009	1.0				
Prep Std			0.068	1.0				
Prep Std			0.306	1.0				
Prep Std			0.678	1.0				
TX59 A1	25	50	0.125	1.0				
TX64 A2			0.092	1.0				
TX96 A2			0.067	1.0				
B2			0.050	1.0				
C2			0.525	(1)10.5x				
TZ83 A2			0.067	1.0				
Calib Blank			0.000	1.0				
CCV			0.758	1.0				
TZ84 A1	25	50	0.348	1.0				
A1 dup			0.345	1.0				
A1 MS			0.939	1.0				
B1			0.573	(1)10.5x2x				
Calib Blank			-0.003	1.0				
CCV			0.749	1.0				
				1.0				
				1.0				
				1.0 (12-5-11) (2)				
Calib Blank				1.0				Chk for Err
CCV				1.0				

12-5-11(W)

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Standard Curve	17:02 5Dec11
Test Name	ORTHO PHOS
Date Standards Measured	5Dec11
Wavelength	880nm
Ref. Wavelength Correction	Off
Curve Fit	Linear
Number of Standards	7
Units	mg/L
ID# (0=OFF)	Off
Low/High Limits	0.000/0.400
Statistics	On
Auto Print	On



Curve Fit	Linear
Slope	3.01
Intercept	-0.00388
Std Dev	0.004
Corr Coeff	1.000

Conc. mg/L	Abs 880nm
0.000	0.000
0.004	0.012
0.016	0.041
0.064	0.186
0.128	0.382
0.200	0.591
0.400	1.202

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Advanced A-XT-C	17:26 5Dec11
Test Name	TOTAL PHOS[Saved]
Measurement Mode	Absorbance
Wavelength	880nm
Ref. Wavelength Correction	Off
Delay Time (min:sec)	0:00
ID# (0=OFF)	1
Low/High Limits	0.000/0.800
Statistics	Off
Auto Print	On

ID#	Abs 880nm
1	0.000
2	0.751
3	0.009

1	1.324	11	0.050
2	0.525	12	0.067
3	0.306	13	0.000
4	0.068	14	0.752
5	0.306	15	0.348
6	0.678	16	0.345
7	0.125	17	0.939
8	0.092	18	0.573
9	0.067	19	-0.003
10	0.050	20	0.749
11	1.324	21	
12	0.525		
13	0.067		
14	0.000		
15	0.752		
16	0.348		
17	0.345		
18	0.939		
19	0.573		
20	-0.003		
21	0.749		

TZ84:00457

Original Run Filename: OM_12-8-2011_03-52-51PM.OMN Created: 12/8/2011 3:52:51 PM
Original Run Author's Signature: [Ursula Walter]
Current Run Filename: 120811NH3C.omn Last Modified: 12/8/2011 6:57:44 PM
Current Run Author's Signature: [Ursula Walter]
Description: LACHAT1
ARI In-House Standards:00117-5

Sample	Cup No.	Channel 1		Detection Time	MANUAL DILUTION FACTOR	
STD 1.0	S1	1	36.3795	12/8/2011@3:53:51 PM		
STD 0.8	S2	0.8	28.4636	12/8/2011@3:55:01 PM		
STD 0.5	S3	0.5	17.7943	12/8/2011@3:56:11 PM		
STD 0.2	S4	0.2	6.6334	12/8/2011@3:57:22 PM		
STD 0.05	S5	0.05	2.6908	12/8/2011@3:58:32 PM		
STD 0.02	S6	0.02	0.3943	12/8/2011@3:59:42 PM		
STD 0.01	S7	0.01	0.2603	12/8/2011@4:00:53 PM		
BLANK	S8	0	-0.1156	12/8/2011@4:02:04 PM		
ICV ERA 130611	9	0.4591	16.4913	12/8/2011@4:03:14 PM		% R = 91.82
Known Conc:		0.5				
Calibration:		Table/Fig. : 1				
ICB	10	0.0043	0.0796	12/8/2011@4:09:22 PM		
Known Conc:		0				
LOW	11	0.0068	0.1682	12/8/2011@4:15:30 PM		% R = 68.00
Known Conc:		0.01				
FILTER BLK	12	-0.001	-0.113	12/8/2011@4:22:07 PM		
TZ60 A4	13	0.0166	0.5246	12/8/2011@4:23:18 PM		
TZ46 A3	14	0.0014	-0.0236	12/8/2011@4:24:28 PM		% RPD = NA
TZ46 A3 DUP	15	0.0066	0.161	12/8/2011@4:25:38 PM		
TZ46 A3 MS	16	0 5243	18.8454	12/8/2011@4:26:50 PM		% R = 104.86
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml

TZ46 B3	19	0.0106	0.3071	12/8/2011@4:28:00 PM		
TZ46 C3	20	0.0127	0.3813	12/8/2011@4:29:11 PM		
TZ46 D3	21	0.0094	0.2654	12/8/2011@4:30:22 PM		
TZ46 E3	22	0.0071	0.1794	12/8/2011@4:31:33 PM		
~~CCV~~	~~17~~	~~0.3976~~	~~14.2727~~	12/8/2011@4:32:44 PM		~~% R = 79.52~~
Known Conc:		0.5				
CCB	18	-0.0052	-0.2648	12/8/2011@4:38:55 PM		
Known Conc:		0				
CCV	17	0.5359	19.2635	12/8/2011@4:45:03 PM		% R = 107.18
Known Conc:		0.5				
~~LOW~~	~~11~~	~~0.0046~~	~~0.0818~~	12/8/2011@4:49:57 PM		
~~Known Conc:~~		~~0.01~~				
~~TZ46 F3~~	~~23~~	~~-0.0025~~	~~-0.1667~~	12/8/2011@4:51:36 PM		
TZ47 A4	24	0.0457	1.5722	12/8/2011@4:52:47 PM		
TA47 B4	25	0.0094	0.2625	12/8/2011@4:53:57 PM		
TZ47 C4	26	0.0094	0.2641	12/8/2011@4:55:09 PM		
TZ47 D4	27	0.0126	0.3804	12/8/2011@4:56:20 PM		
TZ47 E4	28	0.0279	0.9328	12/8/2011@4:57:31 PM		
TZ47 F4	29	-7.97E-05	-0.0784	12/8/2011@4:58:42 PM		
TZ47 G4	30	0.0073	0.1862	12/8/2011@4:59:53 PM		
CCV	17	0.5252	18.8757	12/8/2011@5:01:04 PM		% R = 105.04
Known Conc:		0.5				
CCB	18	0.0028	0.0255	12/8/2011@5:07:13 PM		
Known Conc:		0				
TZ46 F3	31	0.0092	0.2559	12/8/2011@5:13:22 PM		
TZ84 A12	32	0.3597	12.905	12/8/2011@5:14:34 PM		

TZ84 A12 DUP	33	0.3737	13.4106	12/8/2011@5:15:45 PM		% RPD = 3.82
TZ84 A12 MS	34	0.8157	29.3611	12/8/2011@5:16:56 PM		% R = 91.20
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml
~~TZ84 B8~~	~~35~~	~~1.923~~	~~69.3194~~	12/8/2011@5:18:07 PM		
~~TZ97 A9~~	~~36~~	~~2.2813~~	~~82.2514~~	12/8/2011@5:19:19 PM		
TZ97 B17	37	0.4707	16.9113	12/8/2011@5:20:31 PM		
UA20 A5	38	0.0403	1.3799	12/8/2011@5:21:43 PM		
UA20 B4	39	0.2068	7.3883	12/8/2011@5:22:54 PM		
UA20 C2	40	0.074	2.5938	12/8/2011@5:24:05 PM		
CCV	17	0.5391	19.379	12/8/2011@5:25:16 PM		% R = 107.82
Known Conc:		0.5				
CCB	18	0.0004	-0.0624	12/8/2011@5:31:25 PM		
Known Conc:		0				
TZ84 B8	41	1.8195	13.0566	12/8/2011@5:37:35 PM	5	
TZ97 A9	42	2.056	14.7633	12/8/2011@5:38:46 PM	5	
TZ87 A1	43	0.2016	7.1981	12/8/2011@5:39:58 PM		
TZ87 A1 DUP	44	0.1943	6.9372	12/8/2011@5:41:10 PM		% RPD = 3.69
TZ87 A1 MS	45	0.7293	26.2433	12/8/2011@5:42:22 PM		% R = 105.54
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml
UA03 A2	46	0.6979	25.1115	12/8/2011@5:43:33 PM		
UA03 A2 DUP	47	0.7411	26.6702	12/8/2011@5:44:45 PM		% RPD = 6.00
~~UA03 A2 MS~~	~~48~~	~~1.2195~~	~~43.9334~~	12/8/2011@5:45:57 PM		
~~Spiking Conc:~~		~~0.5~~				
UA03 B2	49	0.0088	0.2434	12/8/2011@5:47:09 PM		
UA03 C2	50	0.0199	0.641	12/8/2011@5:48:21 PM		
CCV	17	0.5357	19.2565	12/8/2011@5:49:32 PM		% R = 107.14

Known Conc:		0.5				
CCB	18	0.0045	0.086	12/8/2011@5:55:40 PM		
Known Conc:		0				
UA03 A2 MS @ 2.5 PPM	51	3.2925	23.6881	12/8/2011@6:01:51 PM	5	% R = 103.78
						0.25 ml * 20 ppm / 10 ml
UA31 A3	52	0.0182	0.582	12/8/2011@6:03:02 PM		
UA31 A3 DUP	53	0.0193	0.6201	12/8/2011@6:04:15 PM		% RPD = 5.87
UA31 A3 MS	54	0.5435	19.5361	12/8/2011@6:05:26 PM		% R = 105.06
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml
~~UA31 B3~~	~~55~~	~~0.0247~~	~~0.8176~~	12/8/2011@6:06:38 PM		
UA31 C3	56	0.0456	1.5695	12/8/2011@6:07:51 PM		
UA31 D3	57	0.023	0.7558	12/8/2011@6:09:03 PM		
UA43 A4	58	0.0099	0.2823	12/8/2011@6:10:15 PM		
UA43 B4	59	0.0248	0.8189	12/8/2011@6:11:27 PM		
UA43 C4	60	0.0284	0.9506	12/8/2011@6:12:39 PM		
CCV	17	0.529	19.0153	12/8/2011@6:13:50 PM		% R = 105.80
Known Conc:		0.5				
CCB	18	0.0095	0.2688	12/8/2011@6:19:58 PM		
Known Conc:		0				
UA43 D4	19	0.0294	0.9848	12/8/2011@6:26:07 PM		
UA43 E4	20	0.017	0.5378	12/8/2011@6:27:17 PM		
UA43 F4	21	-0.0031	-0.1882	12/8/2011@6:28:29 PM		
~~UA50 A2~~	~~22~~	~~19.2323~~	~~693.9603~~	12/8/2011@6:29:40 PM		
~~UA31 B3~~	~~23~~	~~-0.0286~~	~~-1.1069~~	12/8/2011@6:30:51 PM		
~~DI WATER~~	~~8~~	~~-0.0029~~	~~-0.1793~~	12/8/2011@6:32:01 PM		
~~DI WATER~~	~~8~~	~~0.0012~~	~~-0.0323~~	12/8/2011@6:36:30 PM		

UA50 A2	24	24.185	8.6522	12/8/2011@6:37:41 PM	100
UA31 B3	23	0.0068	0.1714	12/8/2011@6:38:51 PM	
~~1 PPM~~	~~1~~	~~0.9948~~	~~35.8255~~	12/8/2011@6:40:02 PM	
CCV	17	0.5176	18.6014	12/8/2011@6:46:11 PM	
Known Conc:		0.5			
CCB	18	0.0061	0.144	12/8/2011@6:52:19 PM	
Known Conc:		0			

% R = 103.52

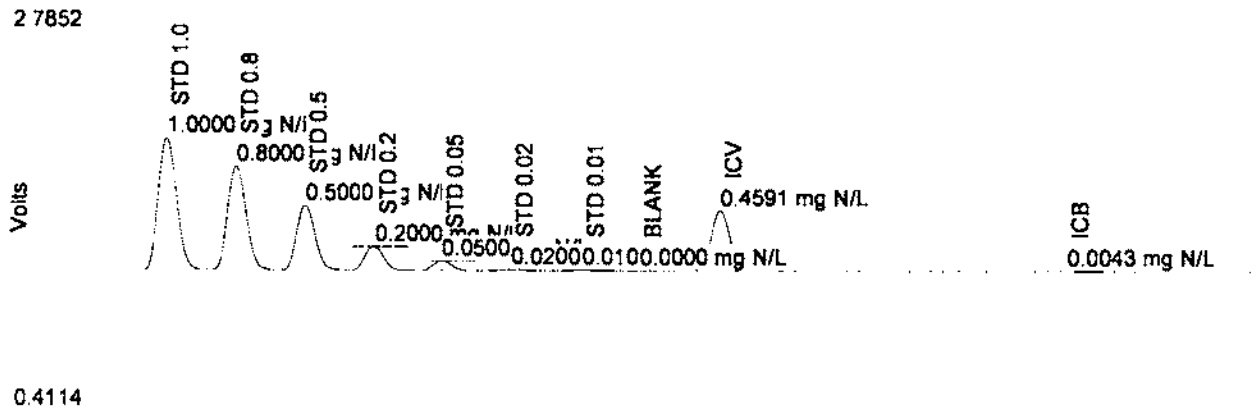
Original Run Filename: OM_12-8-2011_03-52-51PM.OMN Created: 12/8/2011 3:52:51 PM
Original Run Author's Signature: [Ursula Walter]
Current Run Filename: 120811NH3C.omn Last Modified: 12/8/2011 6:57:44 PM
Current Run Author's Signature: [Ursula Walter]
Description: Default New Run

Sample	Cup No.	Channel 1 NH3 Conc. (mg N/L)	Area (V.s)	Detection Time	MDF
STD 1.0	S1	1.0000	36.3795	12/8/2011@3:53:51 PM	
STD 0.8	S2	0.8000	28.4636	12/8/2011@3:55:01 PM	
STD 0.5	S3	0.5000	17.7943	12/8/2011@3:56:11 PM	
STD 0.2	S4	0.2000	6.6334	12/8/2011@3:57:22 PM	
STD 0.05	S5	0.0500	2.6908	12/8/2011@3:58:32 PM	
STD 0.02	S6	0.0200	0.3943	12/8/2011@3:59:42 PM	
STD 0.01	S7	0.0100	0.2603	12/8/2011@4:00:53 PM	
BLANK	S8	0.0000	-0.1156	12/8/2011@4:02:04 PM	
ICV	9	0.4591	16.4913	12/8/2011@4:03:14 PM	
	Known Conc:	0.5000			
	Calibration:	Table/Fig. : 1			
ICB	10	0.0043	0.0796	12/8/2011@4:09:22 PM	
	Known Conc:	0.0000			
LOW	11	0.0068	0.1682	12/8/2011@4:15:30 PM	
	Known Conc:	0.0100			
FILTER BLK	12	-0.0010	-0.1130	12/8/2011@4:22:07 PM	
TZ60 A4	13	0.0166	0.5246	12/8/2011@4:23:18 PM	
TZ46 A3	14	0.0014	-0.0236	12/8/2011@4:24:28 PM	
TZ46 A3 DUP	15	0.0066	0.1610	12/8/2011@4:25:38 PM	
TZ46 A3 MS	16	0.5243	18.8454	12/8/2011@4:26:50 PM	
	Spiking Conc:	0.5000			
TZ46 B3	19	0.0106	0.3071	12/8/2011@4:28:00 PM	
TZ46 C3	20	0.0127	0.3813	12/8/2011@4:29:11 PM	
TZ46 D3	21	0.0094	0.2654	12/8/2011@4:30:22 PM	
TZ46 E3	22	0.0071	0.1794	12/8/2011@4:31:33 PM	
CCV	17	0.3976	14.2727	12/8/2011@4:32:44 PM	
	Known Conc:	0.5000			
CCB	18	-0.0052	-0.2648	12/8/2011@4:38:55 PM	
	Known Conc:	0.0000			
CCV	17	0.5359	19.2635	12/8/2011@4:45:03 PM	
	Known Conc:	0.5000			
LOW	11	0.0046	0.0918	12/8/2011@4:49:57 PM	
	Known Conc:	0.0100			
TZ46 F3	23	-0.0025	-0.1667	12/8/2011@4:51:36 PM	
TZ47 A4	24	0.0457	1.5722	12/8/2011@4:52:47 PM	
TA47 B4	25	0.0094	0.2625	12/8/2011@4:53:57 PM	
TZ47 C4	26	0.0094	0.2641	12/8/2011@4:55:09 PM	
TZ47 D4	27	0.0126	0.3804	12/8/2011@4:56:20 PM	
TZ47 E4	28	0.0279	0.9328	12/8/2011@4:57:31 PM	
TZ47 F4	29	-7.9664e-5	-0.0784	12/8/2011@4:58:42 PM	
TZ47 G4	30	0.0073	0.1862	12/8/2011@4:59:53 PM	
CCV	17	0.5252	18.8757	12/8/2011@5:01:04 PM	
	Known Conc:	0.5000			
CCB	18	0.0028	0.0255	12/8/2011@5:07:13 PM	
	Known Conc:	0.0000			
TZ46 F3	31	0.0092	0.2559	12/8/2011@5:13:22 PM	
TZ84 A12	32	0.3597	12.9050	12/8/2011@5:14:34 PM	
TZ84 A12 DUP	33	0.3737	13.4106	12/8/2011@5:15:45 PM	
TZ84 A12 MS	34	0.8157	29.3611	12/8/2011@5:16:56 PM	
	Spiking Conc:	0.5000			
TZ84 B8	35	1.9230	69.3194	12/8/2011@5:18:07 PM	
TZ97 A9	36	2.2813	82.2514	12/8/2011@5:19:19 PM	
TZ97 B17	37	0.4707	16.9113	12/8/2011@5:20:31 PM	
UA20 A5	38	0.0403	1.3799	12/8/2011@5:21:43 PM	
UA20 B4	39	0.2068	7.3883	12/8/2011@5:22:54 PM	
UA20 C2	40	0.0740	2.5938	12/8/2011@5:24:05 PM	
CCV	17	0.5391	19.3790	12/8/2011@5:25:16 PM	
	Known Conc:	0.5000			

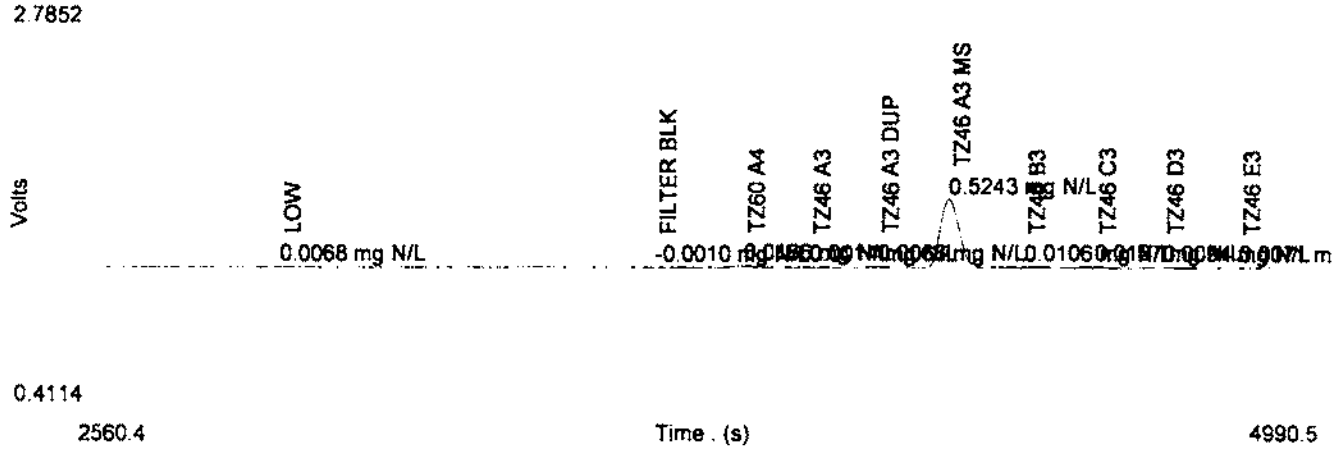
TZ84 : 00463

CCB	18	0.0004	-0.0624	12/8/2011@5:31:25 PM	
Known Conc:		0.0000			
TZ84 B8	41	1.8195	13.0566	12/8/2011@5:37:35 PM	5.00
TZ97 A9	42	2.0560	14.7633	12/8/2011@5:38:46 PM	5.00
TZ87 A1	43	0.2016	7.1981	12/8/2011@5:39:58 PM	
TZ87 A1 DUP	44	0.1943	6.9372	12/8/2011@5:41:10 PM	
TZ87 A1 MS	45	0.7293	26.2433	12/8/2011@5:42:22 PM	
Spiking Conc:		0.5000			
UA03 A2	46	0.6979	25.1115	12/8/2011@5:43:33 PM	
UA03 A2 DUP	47	0.7411	26.6702	12/8/2011@5:44:45 PM	
UA03 A2 MS	48	1.2195	43.9334	12/8/2011@5:45:57 PM	
Spiking Conc:		0.5000			
UA03 B2	49	0.0088	0.2434	12/8/2011@5:47:09 PM	
UA03 C2	50	0.0199	0.6410	12/8/2011@5:48:21 PM	
CCV	17	0.5357	19.2565	12/8/2011@5:49:32 PM	
Known Conc:		0.5000			
CCB	18	0.0045	0.0860	12/8/2011@5:55:40 PM	
Known Conc:		0.0000			
UA03 A2 MS @ 2.5 PPM	51	3.2925	23.6881	12/8/2011@6:01:51 PM	5.00
UA31 A3	52	0.0182	0.5820	12/8/2011@6:03:02 PM	
UA31 A3 DUP	53	0.0193	0.6201	12/8/2011@6:04:15 PM	
UA31 A3 MS	54	0.5435	19.5361	12/8/2011@6:05:26 PM	
Spiking Conc:		0.5000			
UA31 B3	55	0.0247	0.8176	12/8/2011@6:06:38 PM	
UA31 C3	56	0.0456	1.5695	12/8/2011@6:07:51 PM	
UA31 D3	57	0.0230	0.7558	12/8/2011@6:09:03 PM	
UA43 A4	58	0.0099	0.2823	12/8/2011@6:10:15 PM	
UA43 B4	59	0.0248	0.8189	12/8/2011@6:11:27 PM	
UA43 C4	60	0.0284	0.9506	12/8/2011@6:12:39 PM	
CCV	17	0.5290	19.0153	12/8/2011@6:13:50 PM	
Known Conc:		0.5000			
CCB	18	0.0095	0.2688	12/8/2011@6:19:58 PM	
Known Conc:		0.0000			
UA43 D4	19	0.0294	0.9848	12/8/2011@6:26:07 PM	
UA43 E4	20	0.0170	0.5378	12/8/2011@6:27:17 PM	
UA43 F4	21	-0.0031	-0.1882	12/8/2011@6:28:29 PM	
UA50 A2	22	19.2323	693.9603	12/8/2011@6:29:40 PM	
UA31 B3	23	-0.0286	-1.1059	12/8/2011@6:30:51 PM	
DI WATER	8	-0.0029	-0.1793	12/8/2011@6:32:01 PM	
DI WATER	8	0.0012	-0.0323	12/8/2011@6:36:30 PM	
UA50 A2	24	24.1850	8.6522	12/8/2011@6:37:41 PM	100.00
UA31 B3	23	0.0068	0.1714	12/8/2011@6:38:51 PM	
Sample81	1	0.9948	35.8255	12/8/2011@6:40:02 PM	
CCV	17	0.5176	18.6014	12/8/2011@6:46:11 PM	
Known Conc:		0.5000			
CCB	18	0.0061	0.1440	12/8/2011@6:52:19 PM	
Known Conc:		0.0000			

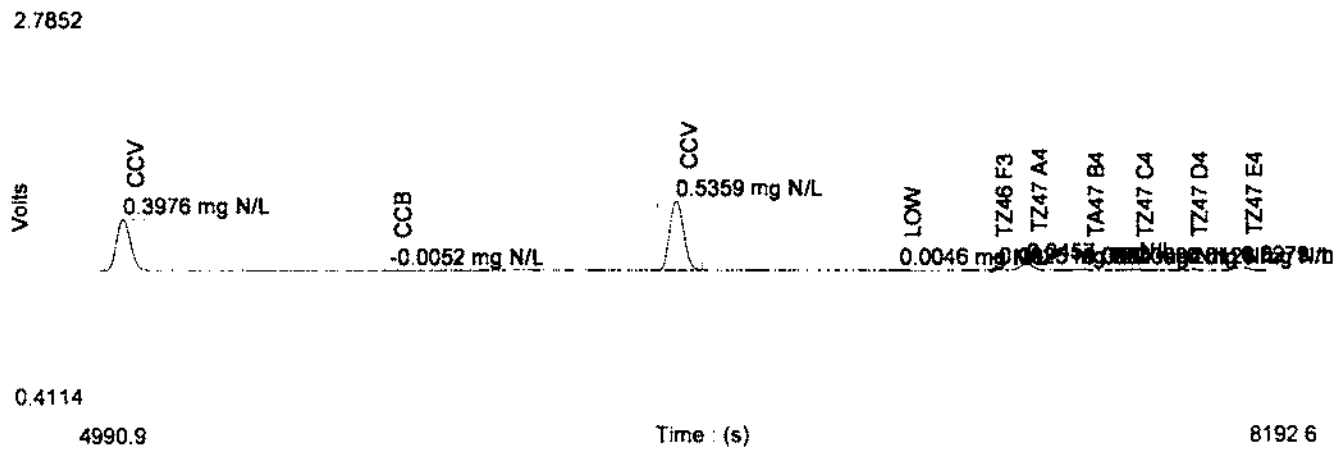
Channel 1 - Set: 1 / 9



Channel 1 - Set: 2 / 9

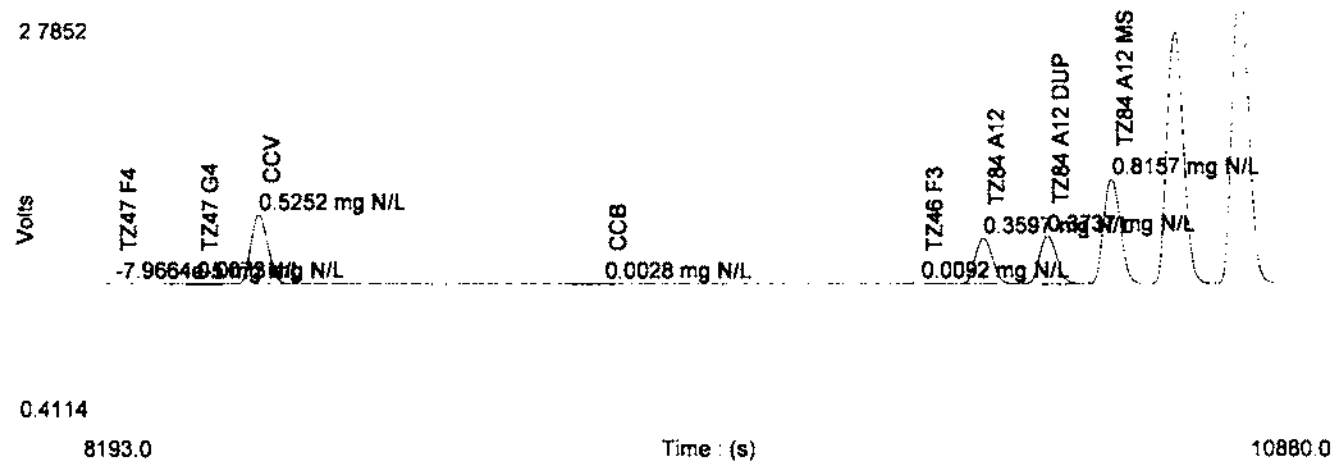


Channel 1 - Set: 3 / 9

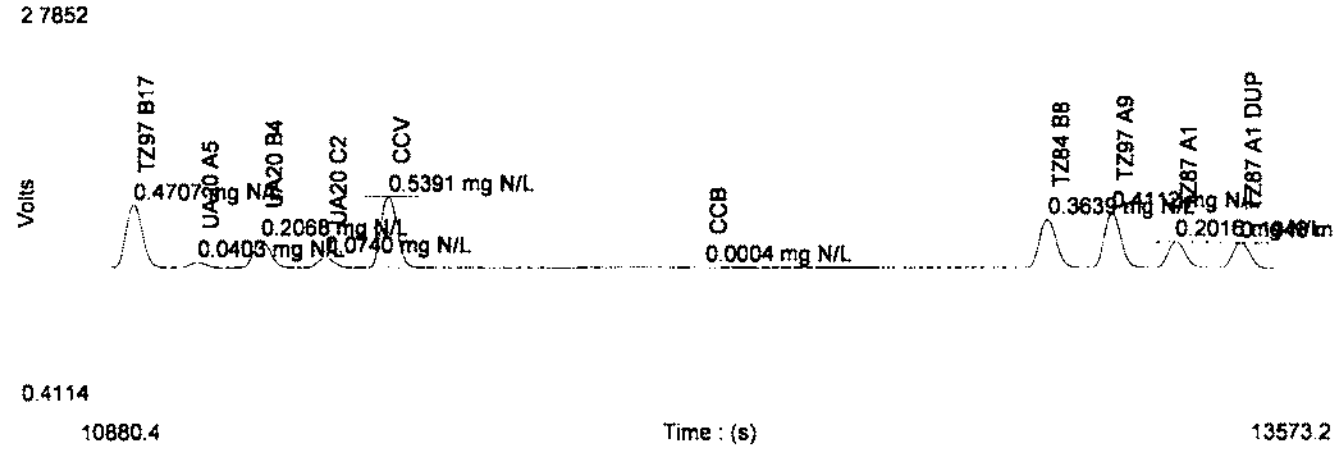


TZ64 : 00465

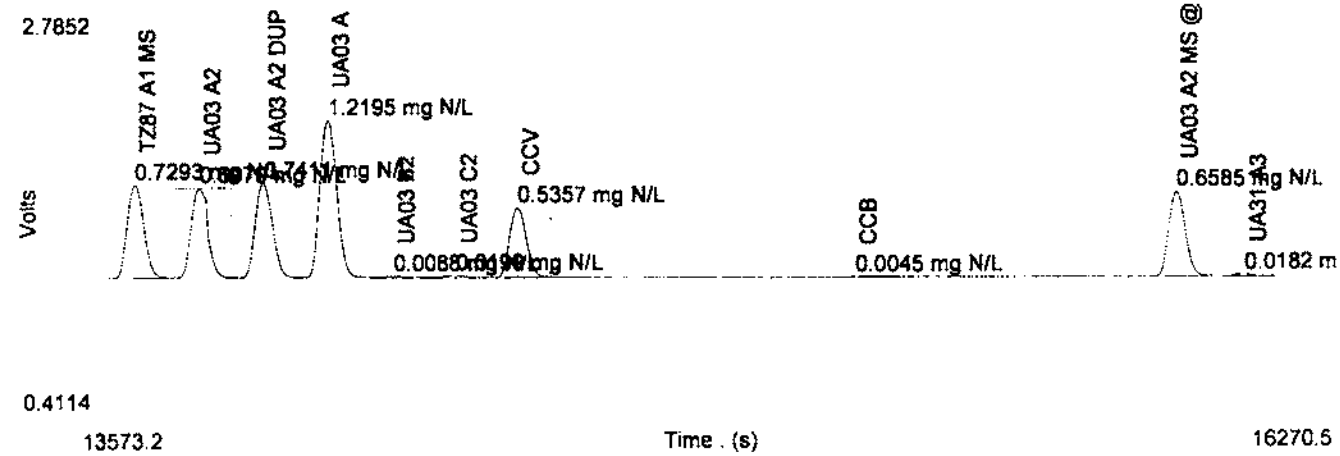
Channel 1 - Set: 4 / 9



Channel 1 - Set: 5 / 9

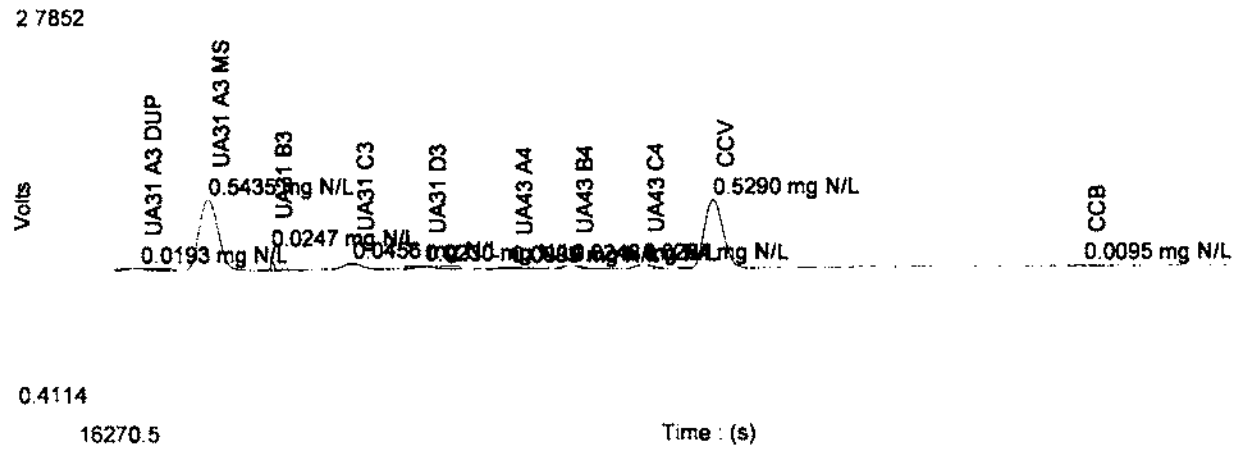


Channel 1 - Set: 6 / 9

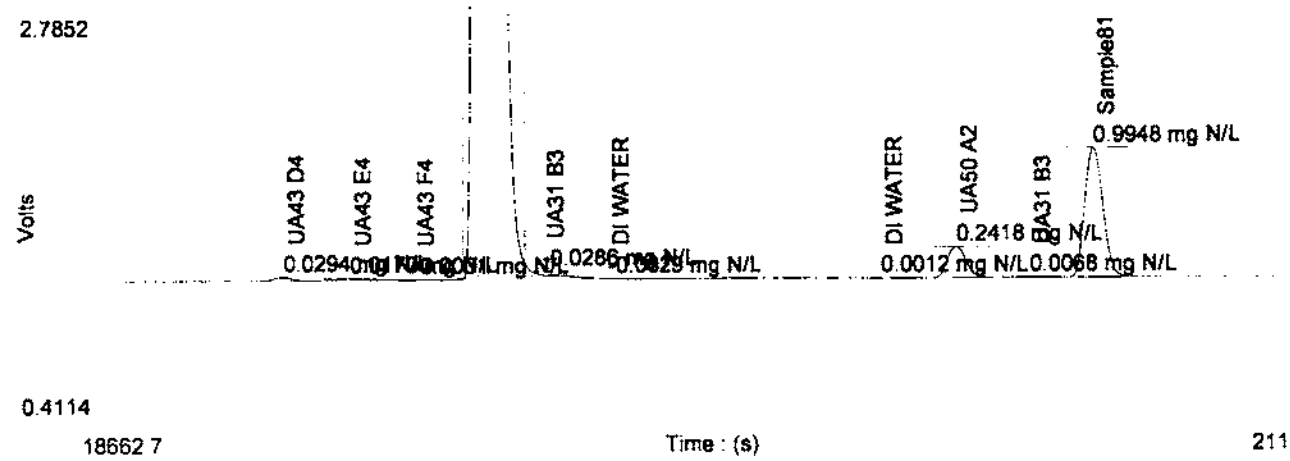


TZ84 : 00466

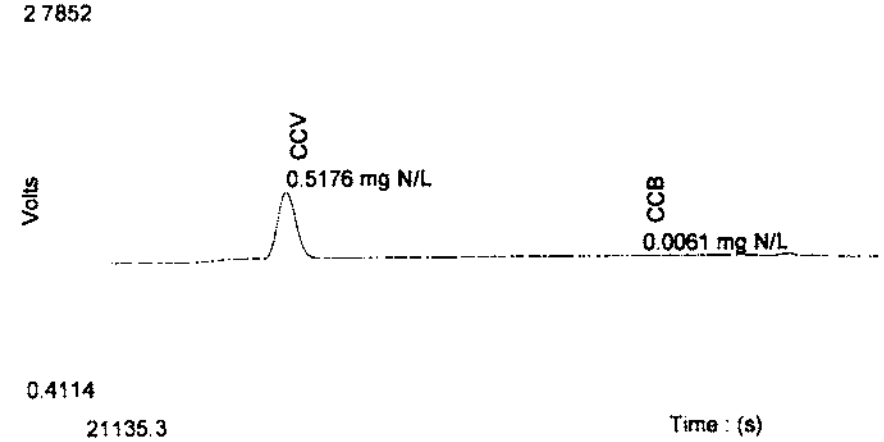
Channel 1 - Set: 7 / 9



Channel 1 - Set: 8 / 9



Channel 1 - Set: 9 / 9

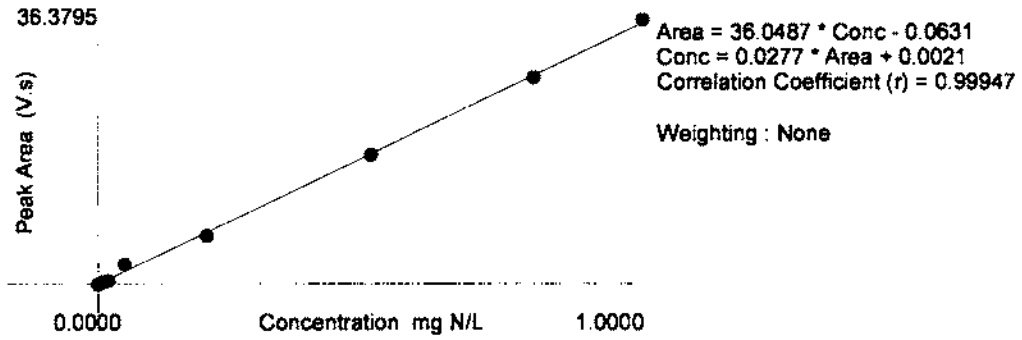


TZ84 : 00467

Table : 1 (NH3)

	Known Conc (mg N/L)	Rep.	Peak Area (V.s)	Peak Height (V)	% RSD	% Residual	Det. Conc (mg N/L)	Detection Date	Detection Time
1	1.0000	1	36.3795	0.8251	0.0	-1.1	1.0102	12/8/2011	3:53:51 PM
2	0.8000	1	28.4636	0.6461	0.0	1.1	0.7908	12/8/2011	3:55:01 PM
3	0.5000	1	17.7943	0.4019	0.0	0.9	0.4952	12/8/2011	3:56:11 PM
4	0.2000	1	6.6334	0.1494	0.0	7.2	0.1859	12/8/2011	3:57:22 PM
5	0.0500	1	2.6908	0.0613	0.0	-54.7	0.0767	12/8/2011	3:58:32 PM
6	0.0200	1	0.3943	0.0098	0.0	40.1	0.0130	12/8/2011	3:59:42 PM
7	0.0100	1	0.2603	0.0067	0.0	12.5	0.0093	12/8/2011	4:00:53 PM
8	0.0000	1	-0.1156	-0.0021			-0.0011	12/8/2011	4:02:04 PM

Figure : 1 (NH3)



TZ84 00468

Name:	**DEC0211RR**	*Calibration:*	**OCT0611RR** **ARI # 581-9**
Directory:	**Instrument Data\DEC 2011**	*Calibration exp:*	**1/6/2012**
Data Vault:	**ChromeleonLocal**	*Queue Start:*	12/2/2011 18:35
No. of Injections:	**22.000**	*User:*	**RR**

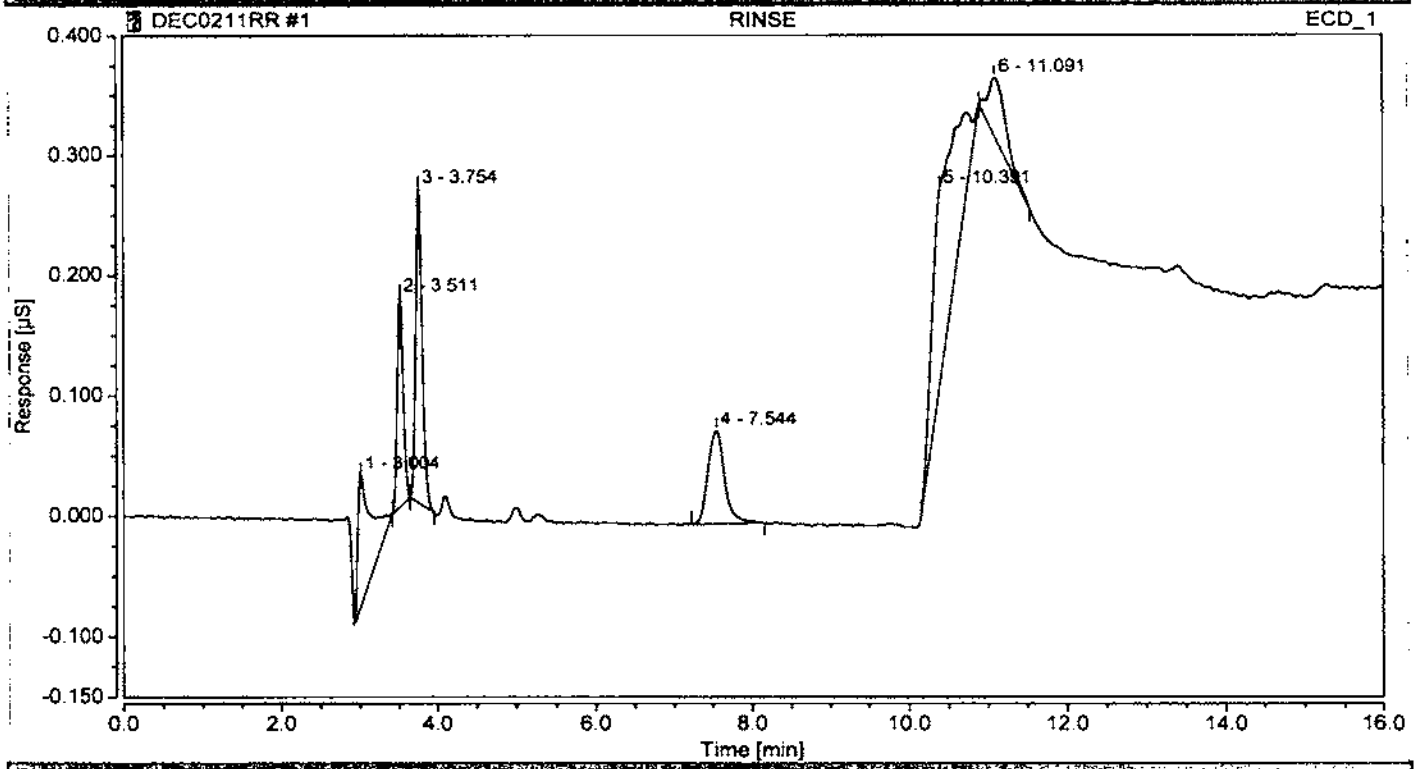
		ERA 161110	**ERA 411010**	**ERA 401010**	**ERA 111109**	**ERA 160111**	**ERA 230511**	**ERA 200810**
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a. Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ICV	1.0	3.000	3.057	3.161	3.005	2.660	3.060	2.936
%R=		**100.0%**	**101.9%**	**105.4%**	**100.2%**	**88.7%**	**102.0%**	**97.9%**
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	0.017	n.a.
[redacted]		0.075	9.408	n.a.	0.072	6.147	[redacted]	n.a.
		0.073	9.410	n.a.	0.071	6.138		n.a.
%RPD=		**3.08%**	**0.02%**		**1.28%**	**0.14%**		
[redacted]		2.109	11.424	1.980	1.968	8.172	[redacted]	1.630
%R=		**105.4%**	**100.8%**	**99.0%**	**94.8%**	**101.3%**	**106.0%**	**81.5%**
SPK=	**0.02mL*10000ppm/5mL**		**=40ppm**					
[redacted]		0.060	15.803	0.059	0.140	10.144	[redacted]	0.017
		0.066	10.662	n.a.	0.098	7.577		n.a.
		0.083	9.366	n.a.	0.088	3.146		n.a
		0.062	8.487	n.a.	0.083	0.395		n.a.
		0.048	7.487	0.012	0.078	8.426		n.a
TZ65 G7	1.0	0.074	5.241	0.074	0.071	19.656	8.051	n.a.
[redacted]		0.336	[redacted]	n.a.	n.a.	n.a.	n.a.	1.406
CCV	1.0	2.990	3.060	3.154	3.010	2.525	3.081	2.888
%R=		**99.7%**	**102.0%**	**105.1%**	**100.3%**	**84.2%**	**102.7%**	**96.3%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
[redacted]		0.426	10.919	n.a.	n.a.	13.998	[redacted]	n.a
		0.427	10.939	n.a.	n.a.	13.866		n.a
%RPD=		**0.15%**	**0.18%**			**0.94%**		
[redacted]		2.381	12.922	1.985	1.855	15.761	[redacted]	n.a.
%R=		**97.7%**	**100.2%**	**99.3%**	**92.7%**	**88.2%**	**107.3%**	
SPK=	**0.02mL*10000ppm/5mL**		**=40ppm**					
[redacted]		0.548	51.968	n.a	n.a.	12.443	[redacted]	n.a.
CCV	1.0	3.005	3.062	3.164	3.012	2.624	3.120	2.908
%R=		**100.2%**	**102.1%**	**105.5%**	**100.4%**	**87.5%**	**104.0%**	**96.9%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a	n.a.	n.a
STOP	1.0	n a	n.a.	n.a	n a	n.a.	n.a	n.a

Name:	**DEC0211RR**	*Queue Start:*	**2011-12-02T18:35:54**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**22**		

No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	02/Dec/11 18:35:54
2	ICV	2	Check Standard	06	1.0	02/Dec/11 18:54:47
3	ICB	3	Blank		1.0	02/Dec/11 19:13:58
4	TZ65 A7	4	Unknown		1.0	02/Dec/11 19:33:14
5	TZ65 A7 DUP	5	Unknown		1.0	02/Dec/11 19:52:35
6	TZ65 A7 MS	6	Unknown		1.0	02/Dec/11 20:12:02
7	TZ65 B7	7	Unknown		1.0	02/Dec/11 20:31:35
8	TZ65 C7	8	Unknown		1.0	02/Dec/11 20:51:14
9	TZ65 D7	9	Unknown		1.0	02/Dec/11 21:10:58
10	TZ65 E7	10	Unknown		1.0	02/Dec/11 21:30:48
11	TZ65 F7	11	Unknown		1.0	02/Dec/11 21:50:43
12	TZ65 G7	12	Unknown		1.0	02/Dec/11 22:10:44
13	TZ83 A3	13	Unknown		10.0	02/Dec/11 22:30:51
14	CCV	2	Check Standard	06	1.0	02/Dec/11 22:51:04
15	CCB	3	Blank		1.0	02/Dec/11 23:11:40
16	TZ84 A1	14	Unknown		1.0	02/Dec/11 23:32:24
17	TZ84 A1 DUP	15	Unknown		1.0	02/Dec/11 23:52:52
18	TZ84 A1 MS	16	Unknown		1.0	03/Dec/11 00:13:24
19	TZ84 B1	17	Unknown		1.0	03/Dec/11 00:34:01
20	CCV	2	Check Standard	06	1.0	03/Dec/11 00:54:46
21	CCB	3	Blank		1.0	03/Dec/11 01:16:15
22	STOP	1	Unknown		1.0	03/Dec/11 01:36:22

TZ84 : 00476

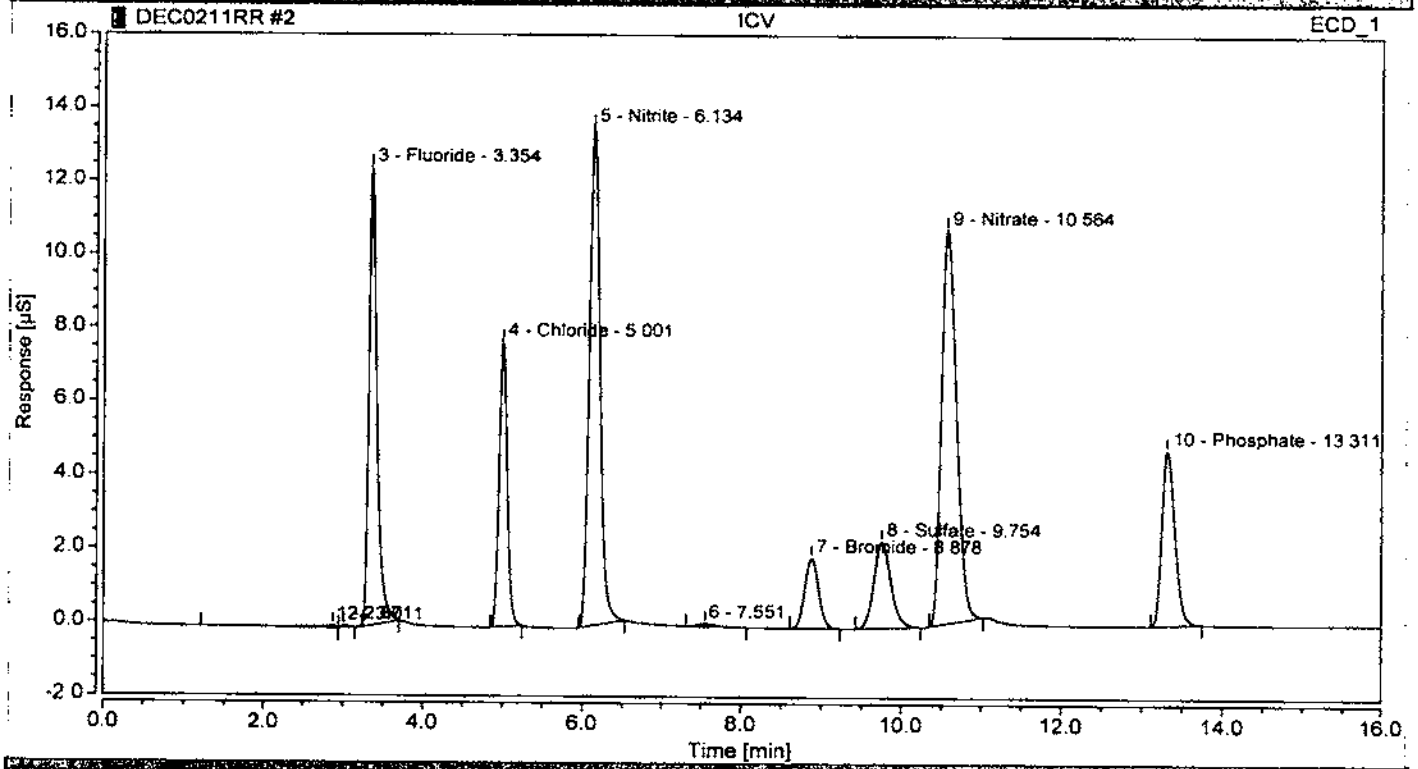
Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 18:35*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.00	0.021	0.109	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.51	0.016	0.174	FALSE	n.a.
3		1.0	n.a.	3.75	0.025	0.261	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.54	0.019	0.077	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	10.39	0.064	0.162	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	11.09	0.013	0.049	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

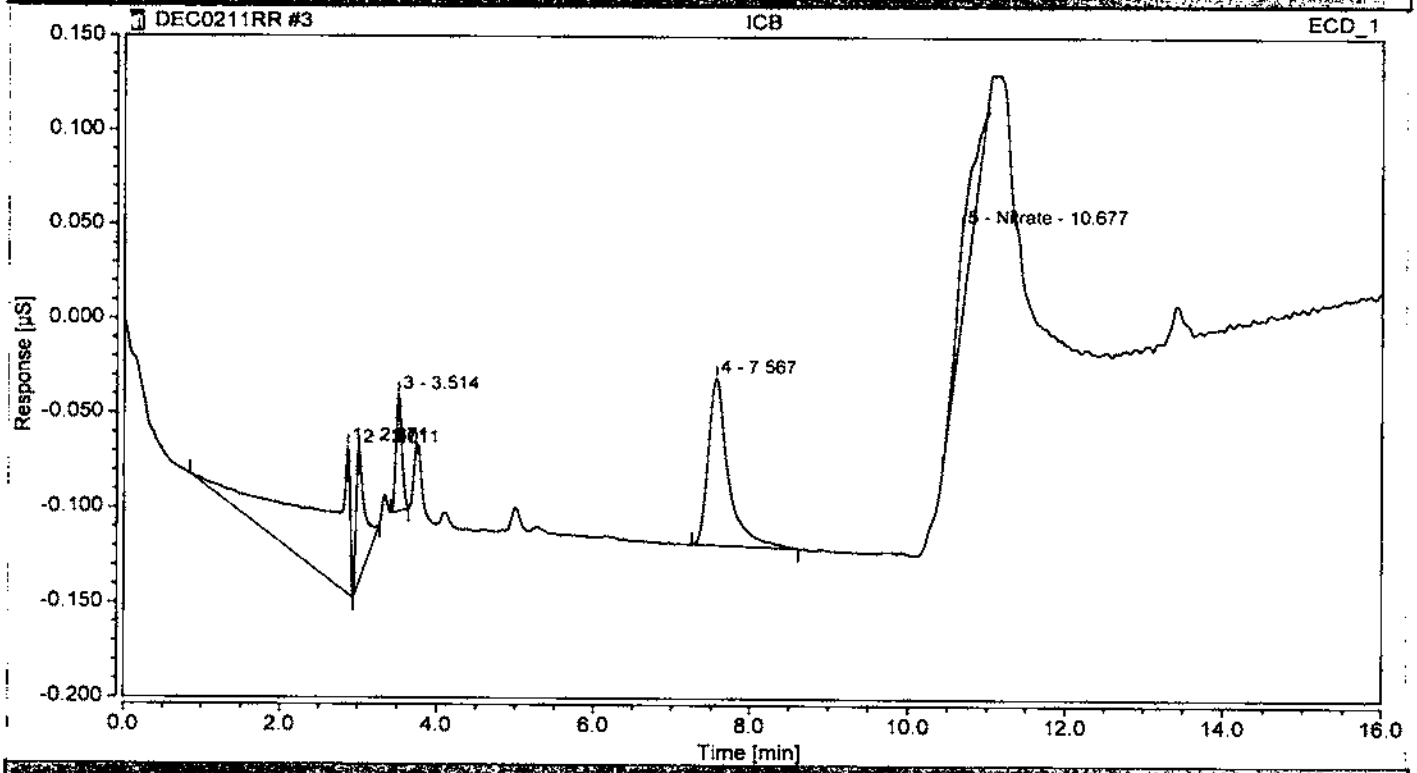
TZ84 : 00471

Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 18:54*		



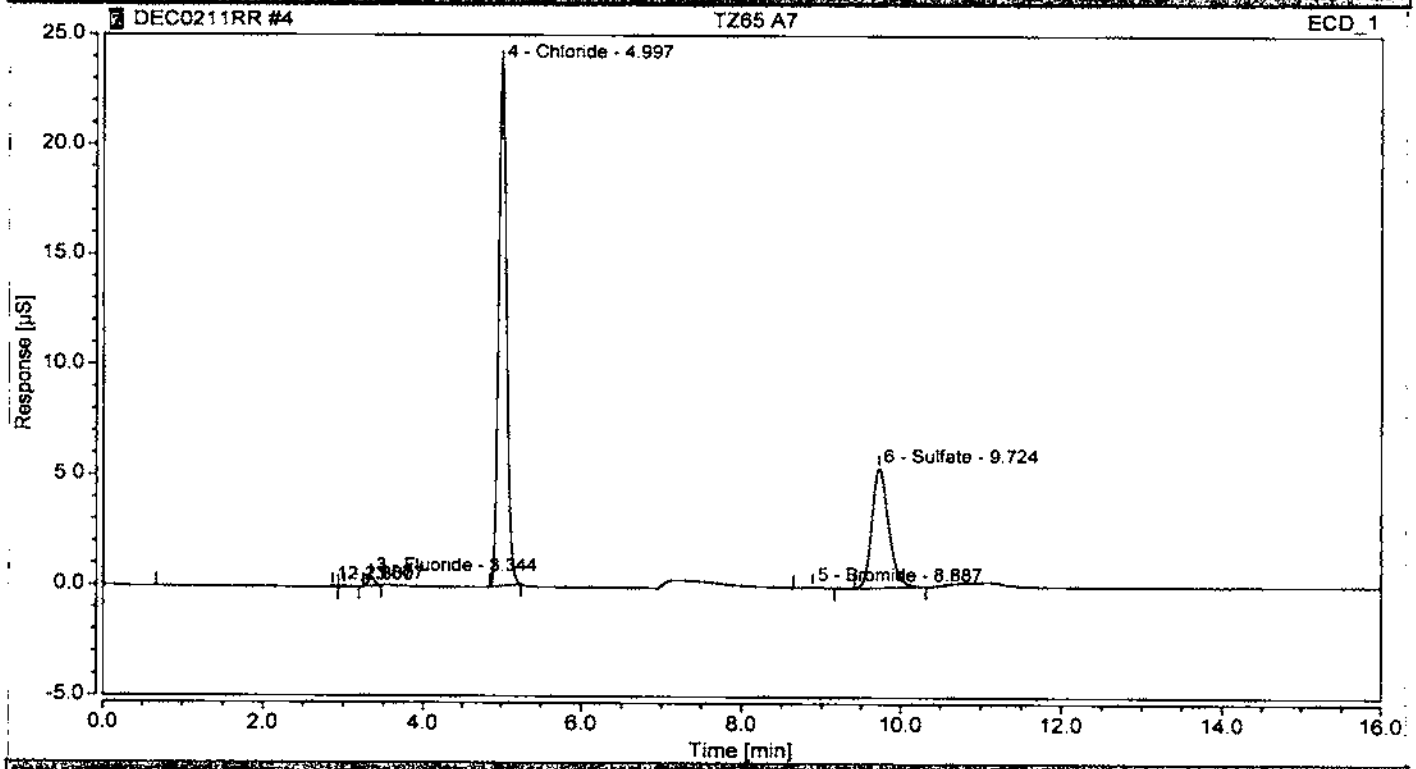
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.033	0.076	FALSE	n.a.
2		1.0	n.a.	3.01	0.006	0.062	FALSE	n.a.
3	Fluoride	1.0	3.000	3.35	1.441	12.466	FALSE	0.01
4	Chloride	1.0	3.057	5.00	0.905	7.730	FALSE	1.91
5	Nitrite	1.0	3.161	6.13	2.113	13.545	FALSE	5.36
6		1.0	n.a.	7.55	0.019	0.077	FALSE	n.a.
7	Bromide	1.0	3.005	8.88	0.383	1.908	FALSE	0.16
8	Sulfate	1.0	2.660	9.75	0.580	2.350	FALSE	-11.32
9	Nitrate	1.0	3.060	10.56	2.315	10.693	FALSE	2.01
10	Phosphate	1.0	2.936	13.31	0.886	4.753	FALSE	-2.15

Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 19:13*		



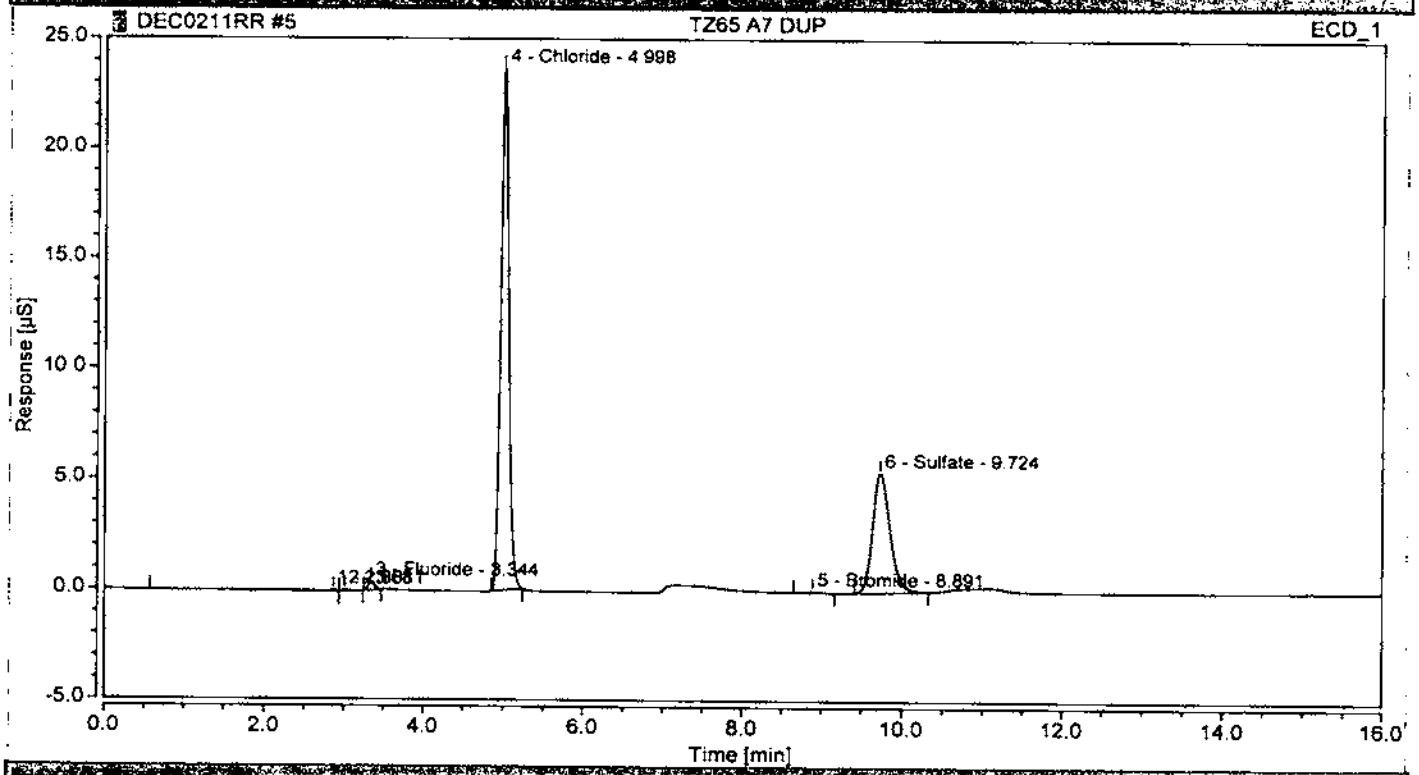
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.041	0.077	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.070	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.005	0.061	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.57	0.027	0.088	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.017	10.68	0.013	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 A7*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 19:33*		



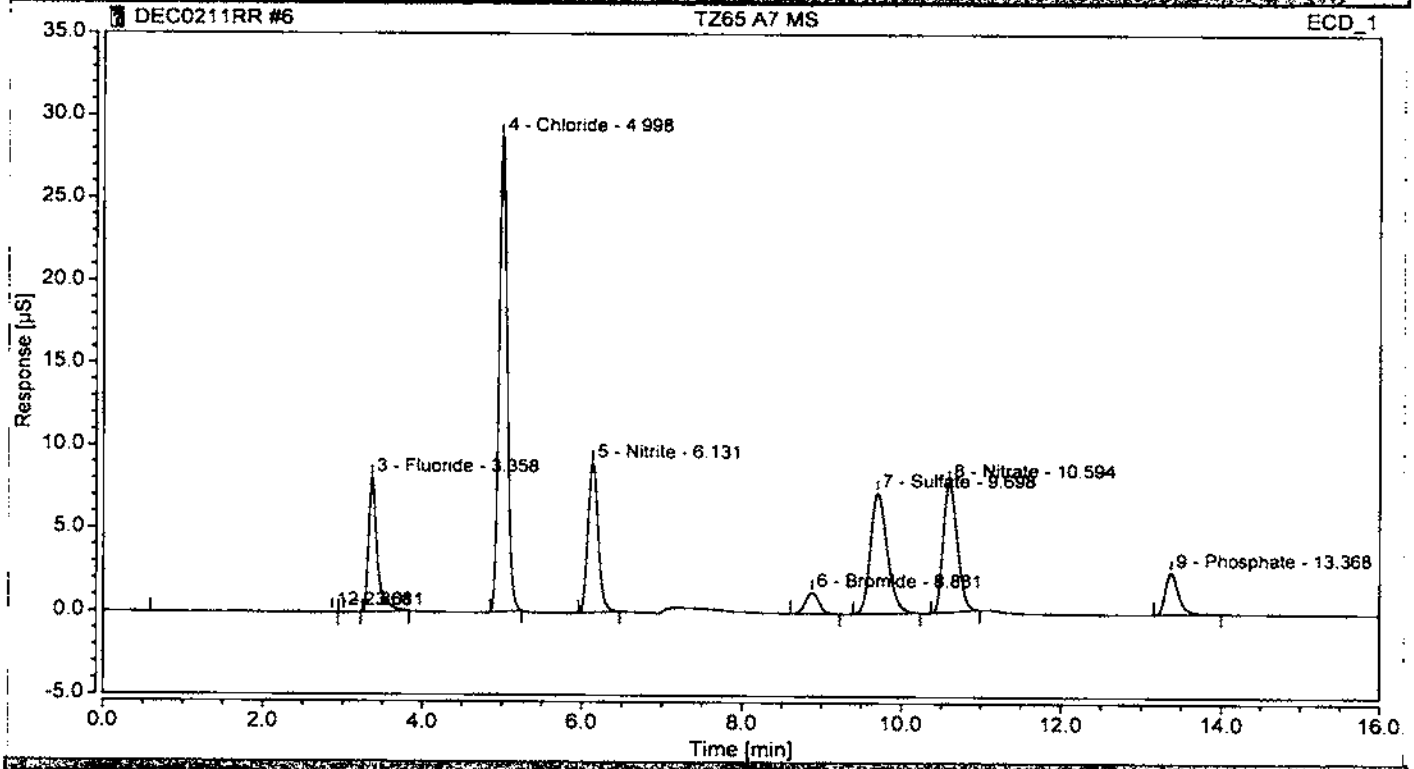
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.007	0.068	FALSE	n.a.
3	Fluoride	1.0	0.075	3.34	0.036	0.408	FALSE	n.a.
4	Chloride	1.0	9.408	5.00	2.784	23.723	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.072	8.89	0.009	0.046	FALSE	n.a.
6	Sulfate	1.0	6.147	9.72	1.340	5.423	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 A7 DUP*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 19:52*		



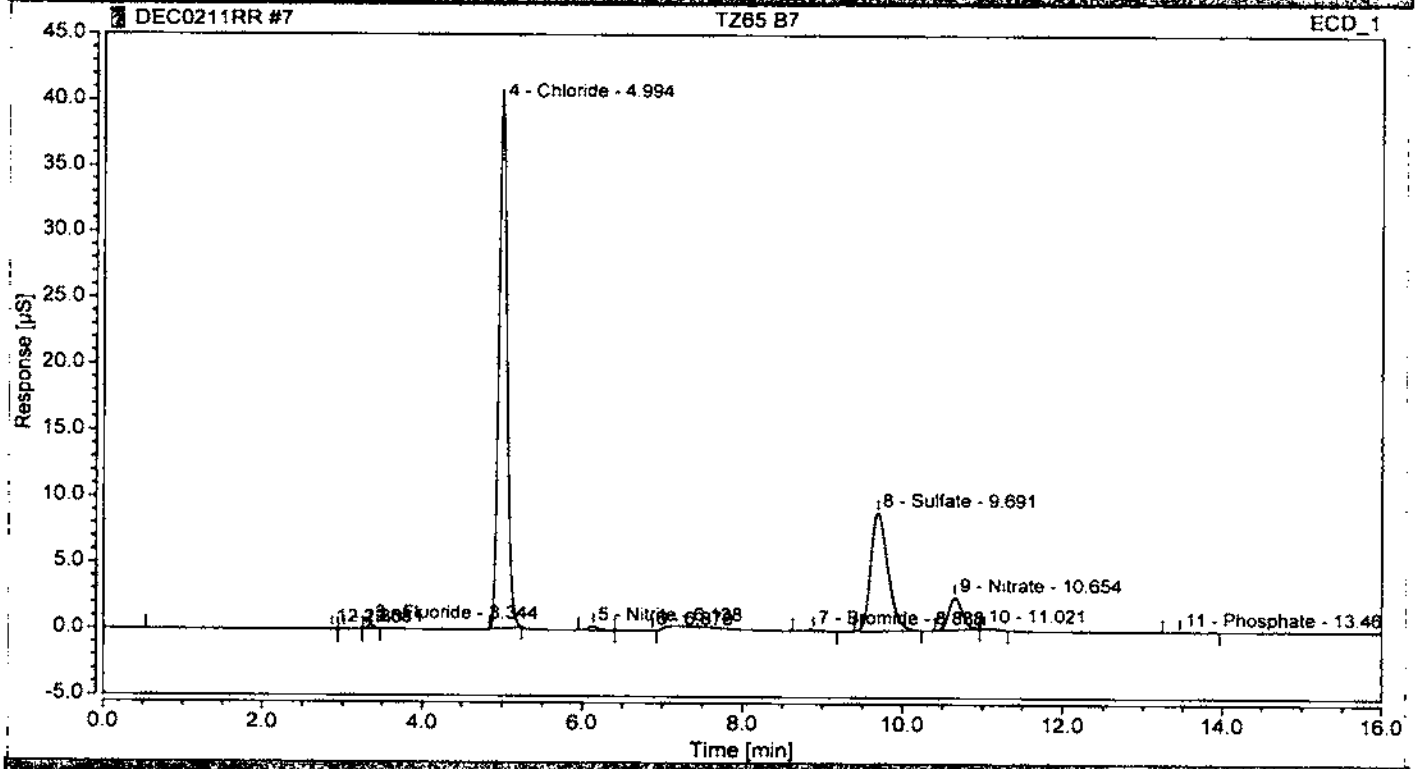
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.051	0.074	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.070	FALSE	n.a.
3	Fluoride	1.0	0.073	3.34	0.035	0.397	FALSE	n.a.
4	Chloride	1.0	9.410	5.00	2.785	23.681	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.071	8.89	0.009	0.045	FALSE	n.a.
6	Sulfate	1.0	6.138	9.72	1.338	5.400	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 A7 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 20:12*		



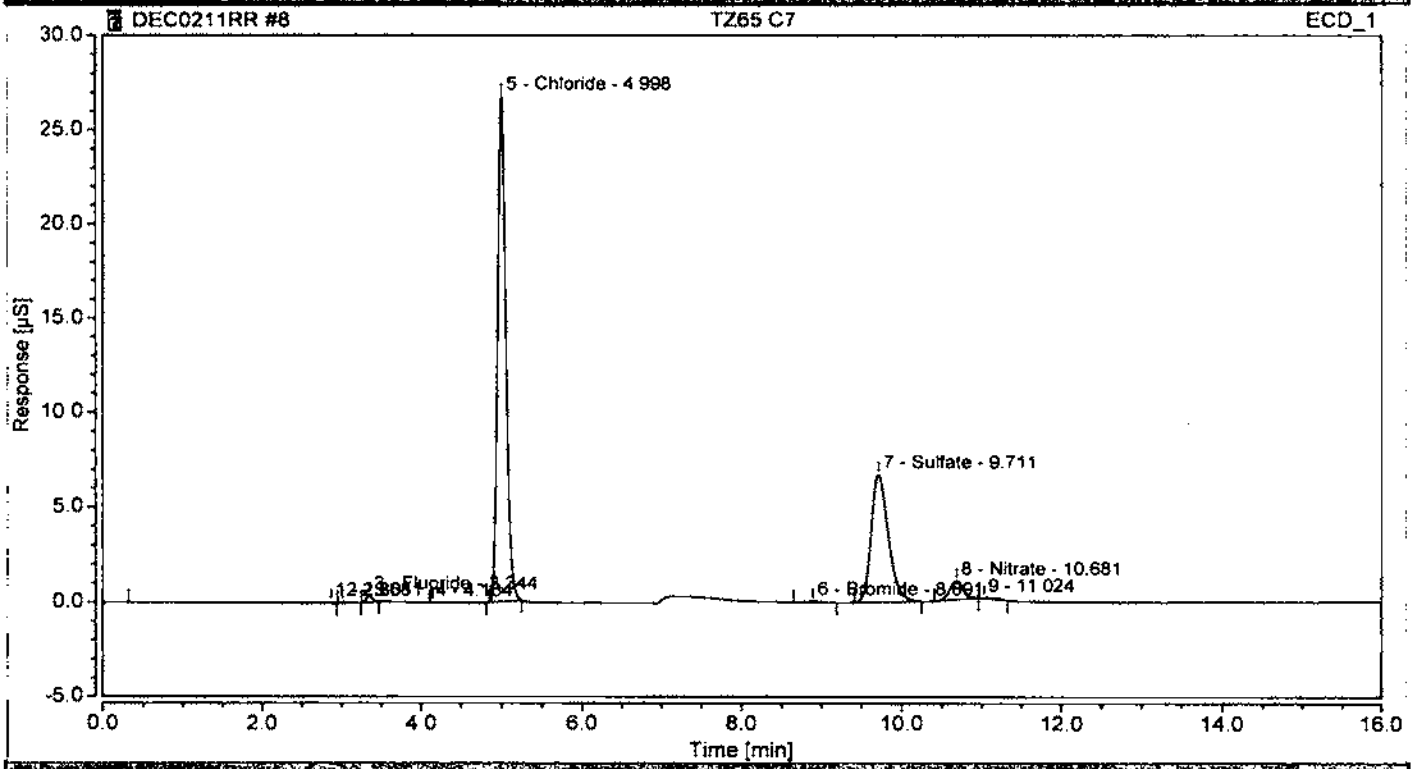
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.67	0.052	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.071	FALSE	n.a.
3	Fluoride	1.0	2.108	3.36	1.013	8.080	FALSE	n.a.
4	Chloride	1.0	11.424	5.00	3.381	28.702	FALSE	n.a.
5	Nitrite	1.0	1.980	6.13	1.323	8.968	FALSE	n.a.
6	Bromide	1.0	1.966	8.88	0.251	1.257	FALSE	n.a.
7	Sulfate	1.0	8.172	9.70	1.781	7.252	FALSE	n.a.
8	Nitrate	1.0	2.120	10.59	1.604	7.759	FALSE	n.a.
9	Phosphate	1.0	1.630	13.37	0.492	2.510	FALSE	n.a.

Injection Name:	*TZ65 B7*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 20:31*		



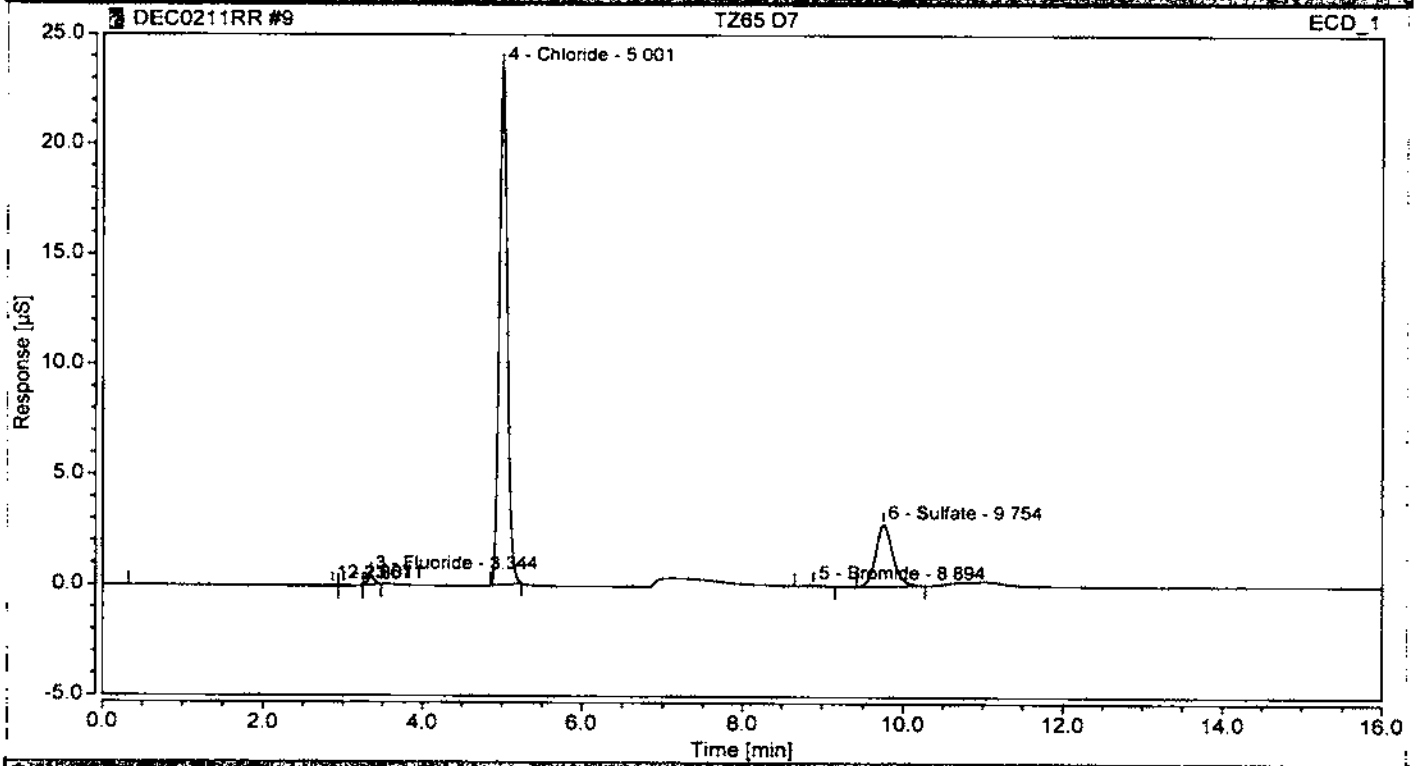
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.056	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.072	FALSE	n.a.
3	Fluoride	1.0	0.060	3.34	0.029	0.331	FALSE	n.a.
4	Chloride	1.0	15.903	4.99	4.706	39.786	FALSE	n.a.
5	Nitrite	1.0	0.059	6.14	0.039	0.285	FALSE	n.a.
6		1.0	n.a.	6.88	0.005	0.021	FALSE	n.a.
7	Bromide	1.0	0.140	8.89	0.018	0.089	FALSE	n.a.
8	Sulfate	1.0	10.144	9.69	2.211	8.947	FALSE	n.a.
9	Nitrate	1.0	0.514	10.65	0.485	2.402	FALSE	n.a.
10		1.0	n.a.	11.02	0.010	0.027	FALSE	n.a.
11	Phosphate	1.0	0.017	13.46	0.005	0.018	FALSE	n.a.

Injection Name:	*TZ65 C7*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 20:51*		



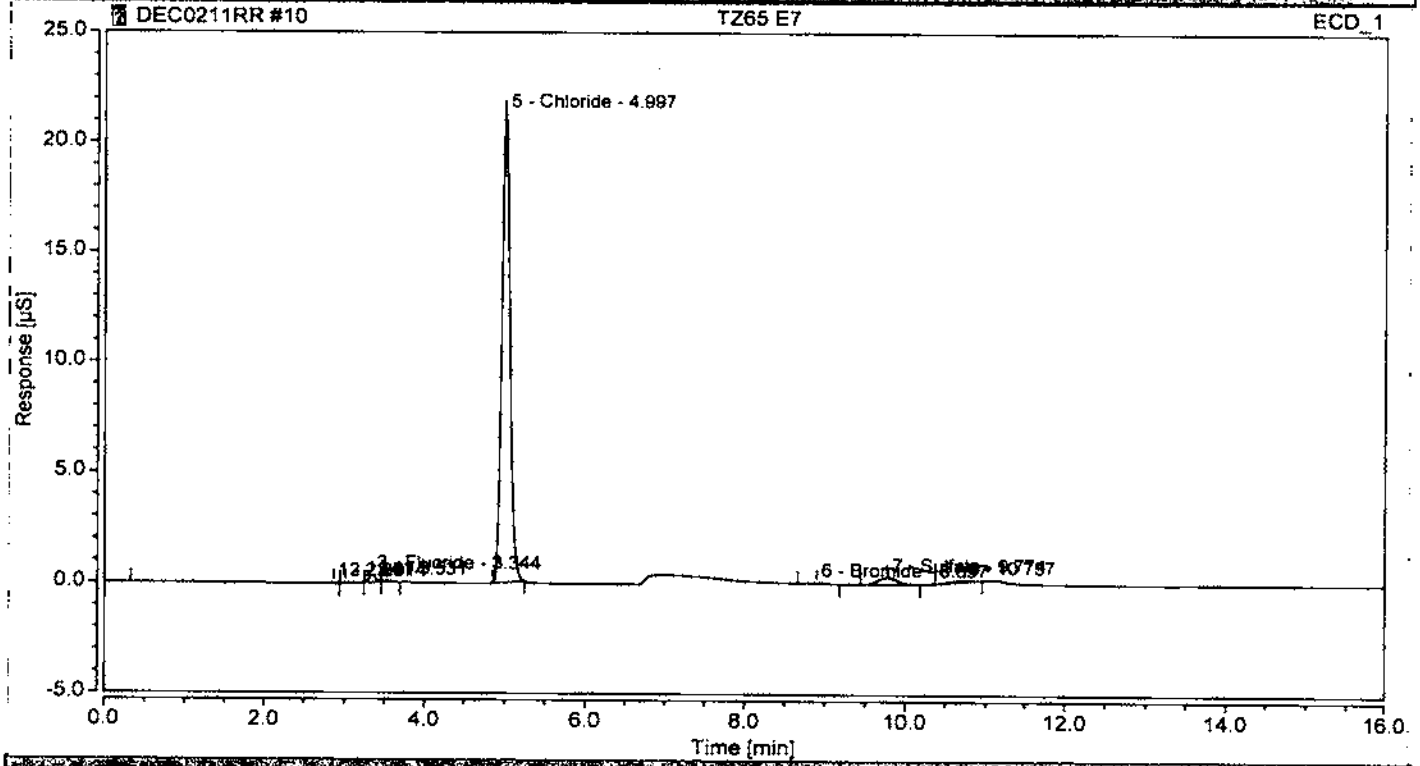
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.062	0.076	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.071	FALSE	n.a.
3	Fluoride	1.0	0.066	3.34	0.032	0.382	FALSE	n.a.
4		1.0	n.a.	4.13	0.021	0.027	FALSE	n.a.
5	Chloride	1.0	10.662	5.00	3.155	26.774	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Bromide	1.0	0.098	8.89	0.013	0.063	FALSE	n.a.
7	Sulfate	1.0	7.577	9.71	1.652	6.733	FALSE	n.a.
8	Nitrate	1.0	0.250	10.68	0.189	0.969	FALSE	n.a.
9		1.0	n.a.	11.02	0.012	0.030	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 D7*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 21:10*		



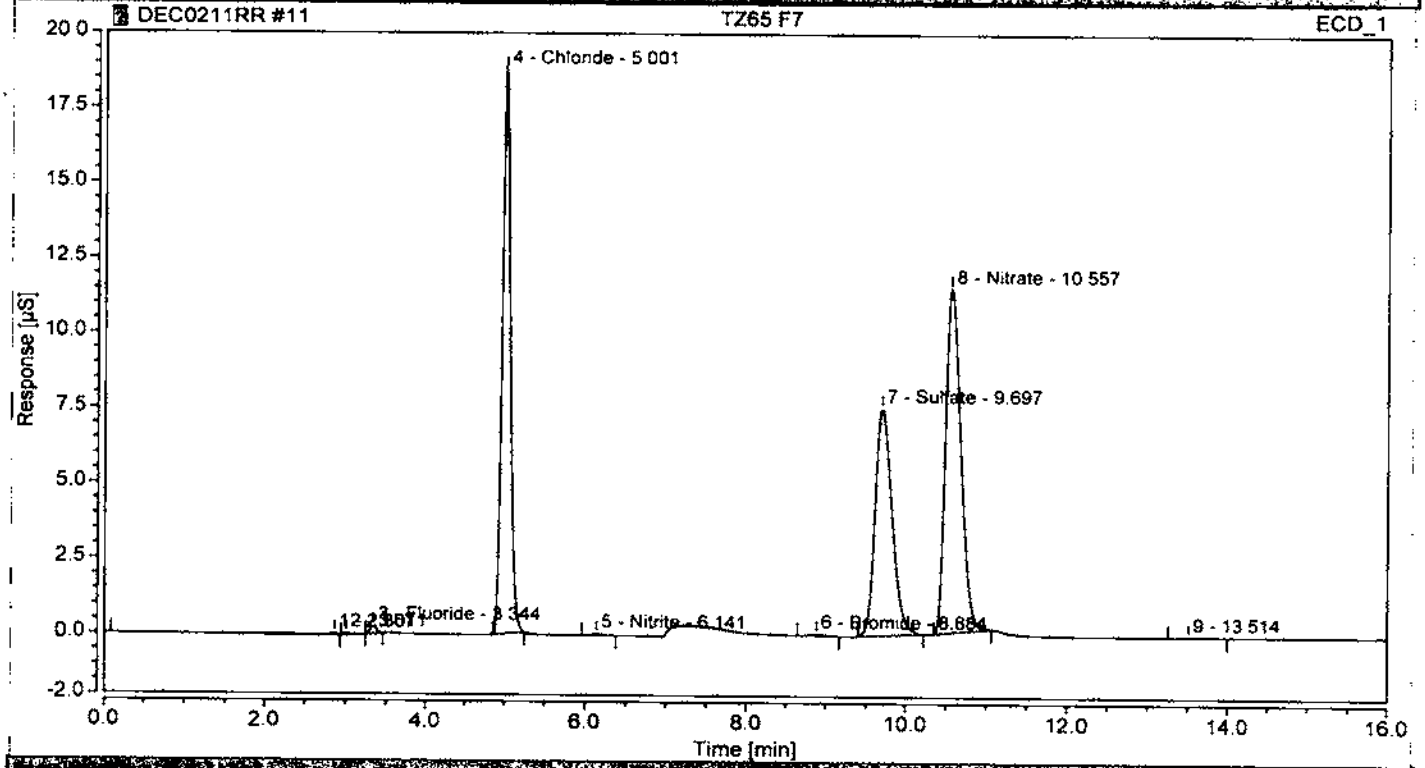
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.064	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.071	FALSE	n.a.
3	Fluoride	1.0	0.083	3.34	0.040	0.444	FALSE	n.a.
4	Chloride	1.0	9.366	5.00	2.772	23.527	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.088	8.89	0.011	0.057	FALSE	n.a.
6	Sulfate	1.0	3.146	9.75	0.886	2.775	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 E7*	Inject Number:	10
Vial Number:	*10*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 21:30*		



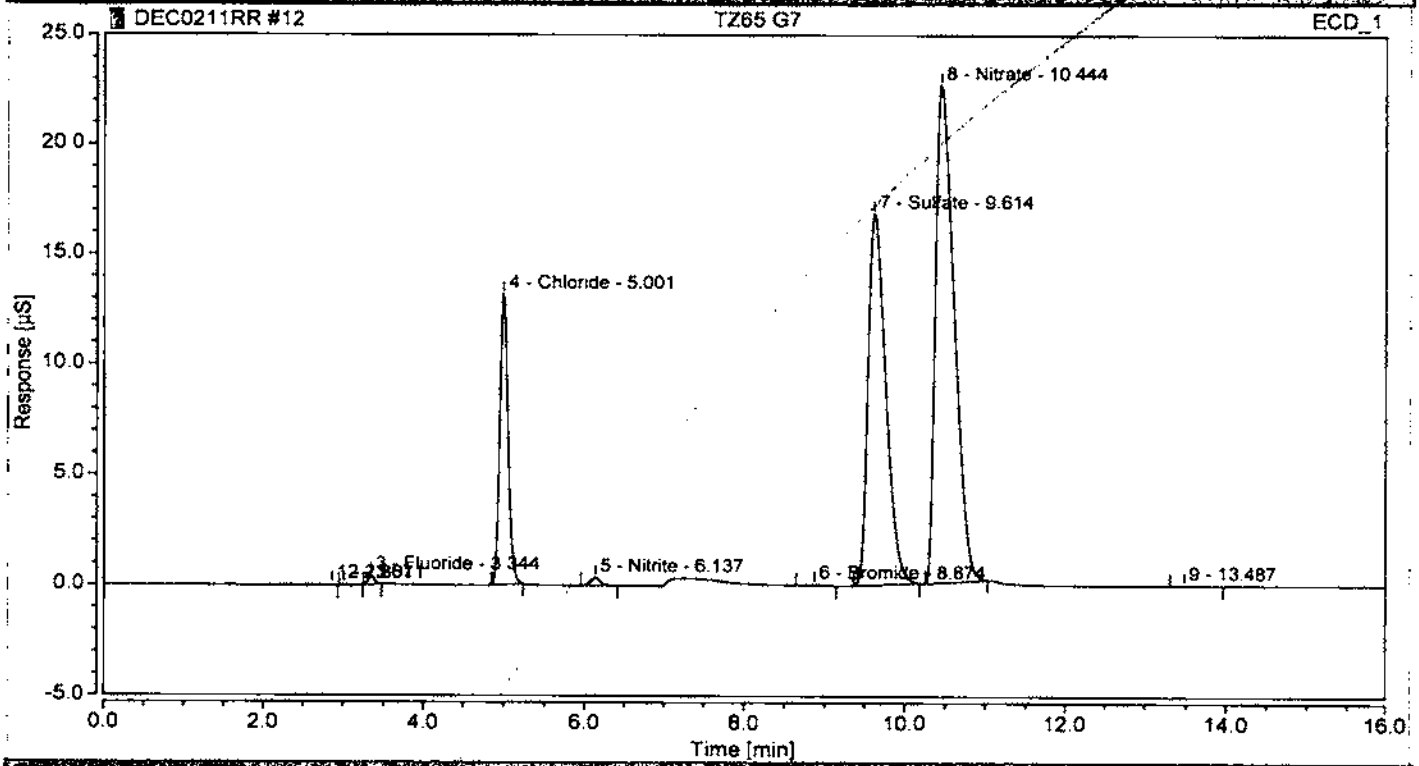
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.065	0.072	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.069	FALSE	n.a.
3	Fluoride	1.0	0.062	3.34	0.030	0.344	FALSE	n.a.
4		1.0	n.a.	3.53	0.006	0.055	FALSE	n.a.
5	Chloride	1.0	8.487	5.00	2.512	21.306	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Bromide	1.0	0.083	8.90	0.011	0.053	FALSE	n.a.
7	Sulfate	1.0	0.395	9.77	0.086	0.312	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	10.74	0.019	0.063	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 F7*	Inject Number:	11
Vial Number:	*11*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 21:50*		



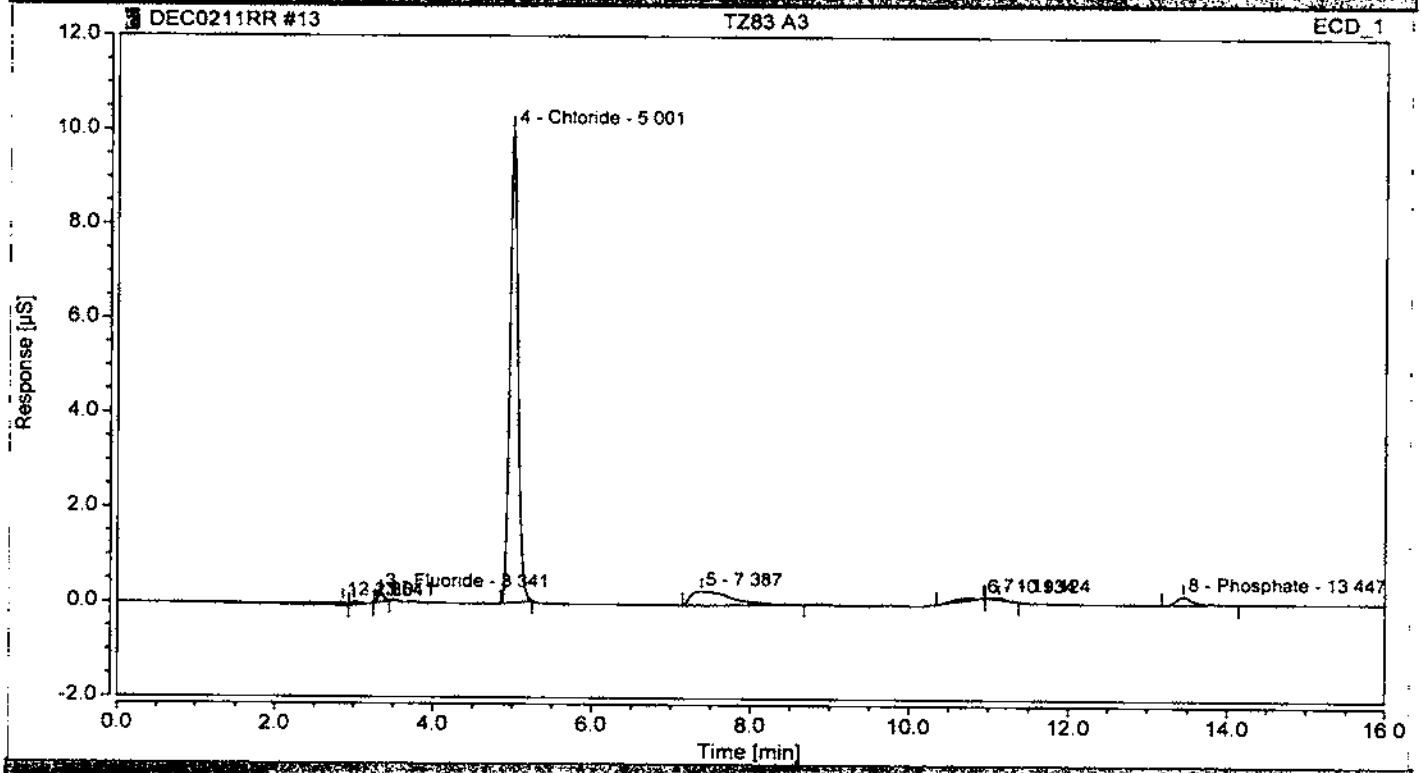
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.67	0.069	0.076	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.073	FALSE	n.a.
3	Fluoride	1.0	0.048	3.34	0.023	0.266	FALSE	n.a.
4	Chloride	1.0	7.487	5.00	2.216	18.766	FALSE	n.a.
5	Nitrite	1.0	0.012	6.14	0.008	0.056	FALSE	n.a.
6	Bromide	1.0	0.078	8.88	0.010	0.050	FALSE	n.a.
7	Sulfate	1.0	8.426	9.70	1.837	7.531	FALSE	n.a.
8	Nitrate	1.0	3.328	10.56	2.518	11.426	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.51	0.006	0.018	FALSE	n.a.

Injection Name:	*TZ65 G7*	Inject Number:	12
Vial Number:	*12*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 22:10*		



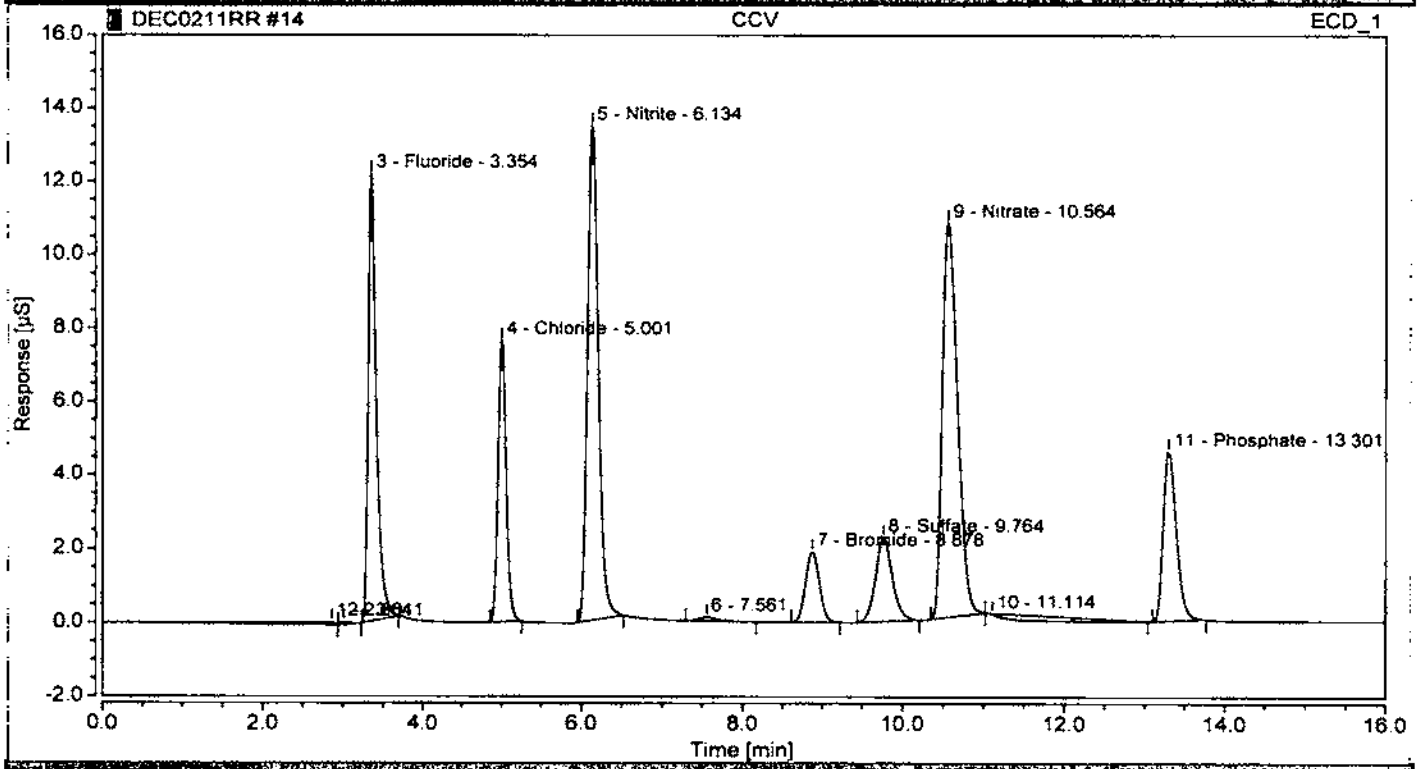
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.071	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.072	FALSE	n.a.
3	Fluoride	1.0	0.074	3.34	0.035	0.398	FALSE	n.a.
4	Chloride	1.0	5.241	5.00	1.551	13.156	FALSE	n.a.
5	Nitrite	1.0	0.074	6.14	0.049	0.355	FALSE	n.a.
6	Bromide	1.0	0.071	8.87	0.009	0.047	FALSE	n.a.
7	Sulfate	1.0	19.696	9.61	4.285	16.807	FALSE	n.a.
8	Nitrate	1.0	8.051	10.44	6.091	22.576	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.49	0.006	0.019	FALSE	n.a.

Injection Name:	*TZ83 A3*	Inject Number:	13
Vial Number:	*13*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 22:30*		



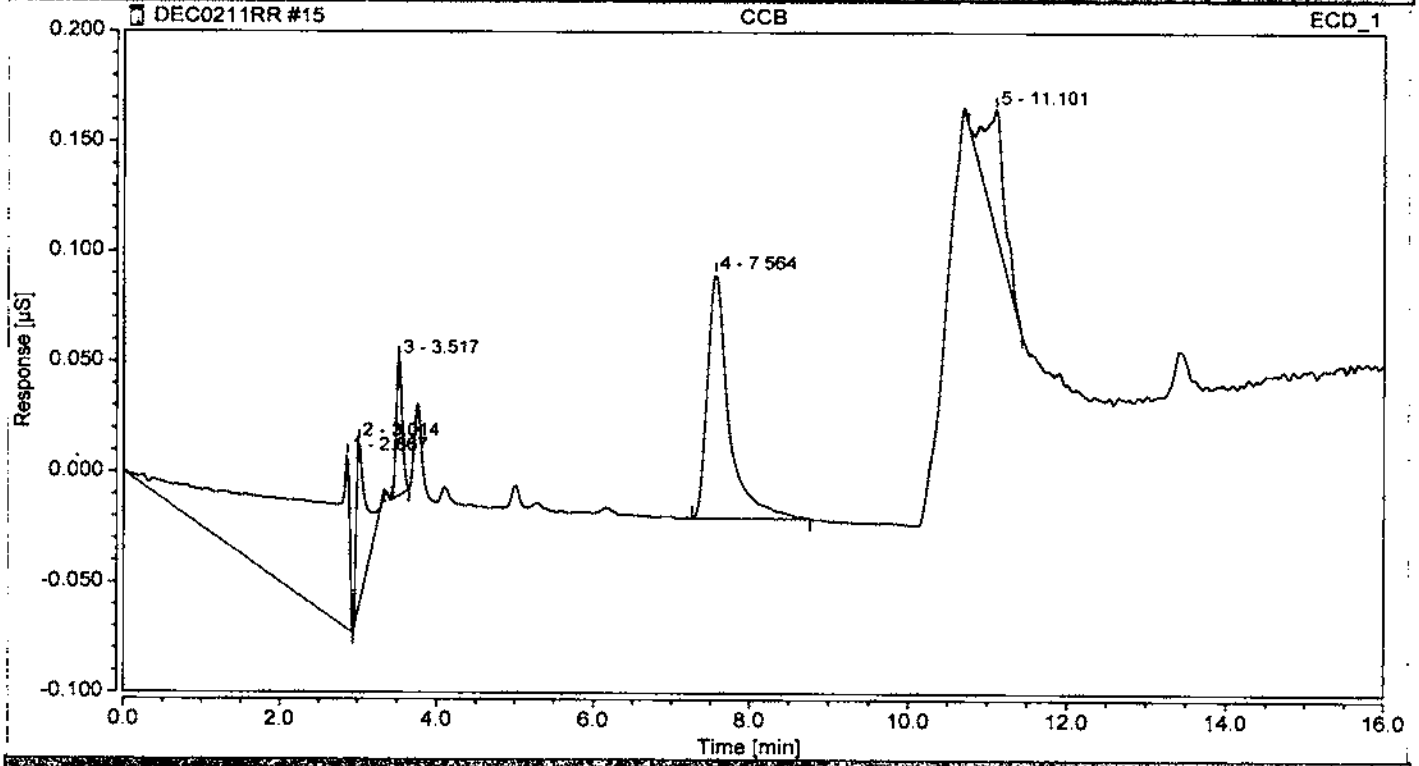
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.86	0.075	0.078	FALSE	n.a.
2		10.0	n.a.	3.01	0.009	0.073	FALSE	n.a.
3	Fluoride	10.0	0.336	3.34	0.016	0.193	FALSE	n.a.
4	Chloride	10.0	39.839	5.00	1.182	10.011	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		10.0	n.a.	7.39	0.179	0.292	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.0	n.a.	10.93	0.017	0.006	FALSE	n.a.
7		10.0	n.a.	11.12	0.008	0.046	FALSE	n.a.
8	Phosphate	10.0	1.406	13.45	0.042	0.177	FALSE	n.a.

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 22:51*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.078	0.077	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.074	FALSE	n.a.
3	Fluoride	1.0	2.990	3.35	1.436	12.176	FALSE	-0.33
4	Chloride	1.0	3.960	5.00	0.905	7.656	FALSE	1.98
5	Nitrite	1.0	3.154	6.13	2.108	13.449	FALSE	5.15
6		1.0	n.a.	7.56	0.028	0.103	FALSE	n.a.
7	Bromide	1.0	3.010	8.88	0.384	1.906	FALSE	0.34
8	Sulfate	1.0	2.525	9.76	0.550	2.263	FALSE	-15.82
9	Nitrate	1.0	3.081	10.56	2.331	10.704	FALSE	2.70
10		1.0	n.a.	11.11	0.161	0.018	FALSE	n.a.
11	Phosphate	1.0	2.888	13.30	0.872	4.591	FALSE	-3.73

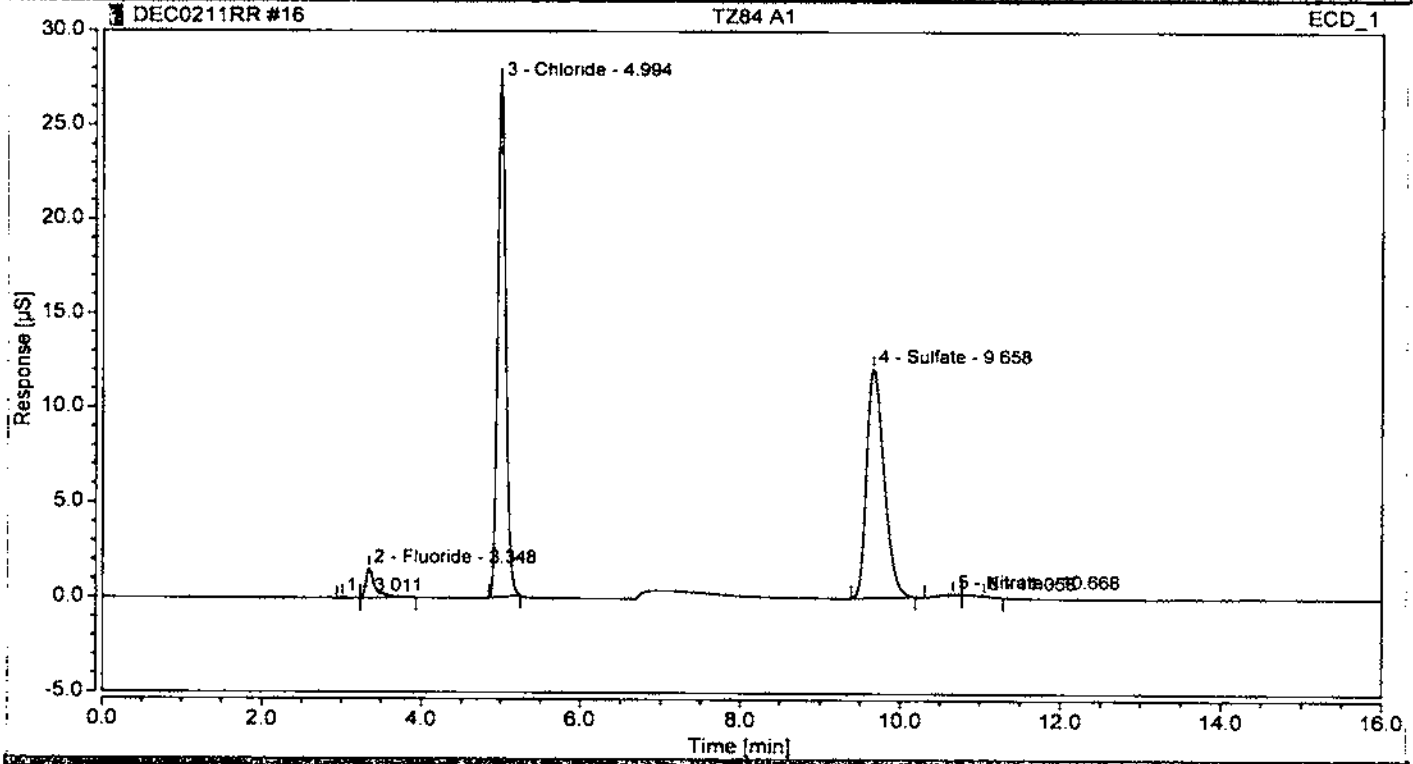
Injection Name:	*CCB*	Inject Number:	15
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodai*		
Injection Date/Time:	*02/12/11 23:11*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.079	0.078	FALSE	n.a.
2		1.0	n.a.	3.01	0.010	0.075	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.52	0.005	0.062	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.56	0.036	0.110	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	11.10	0.015	0.056	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

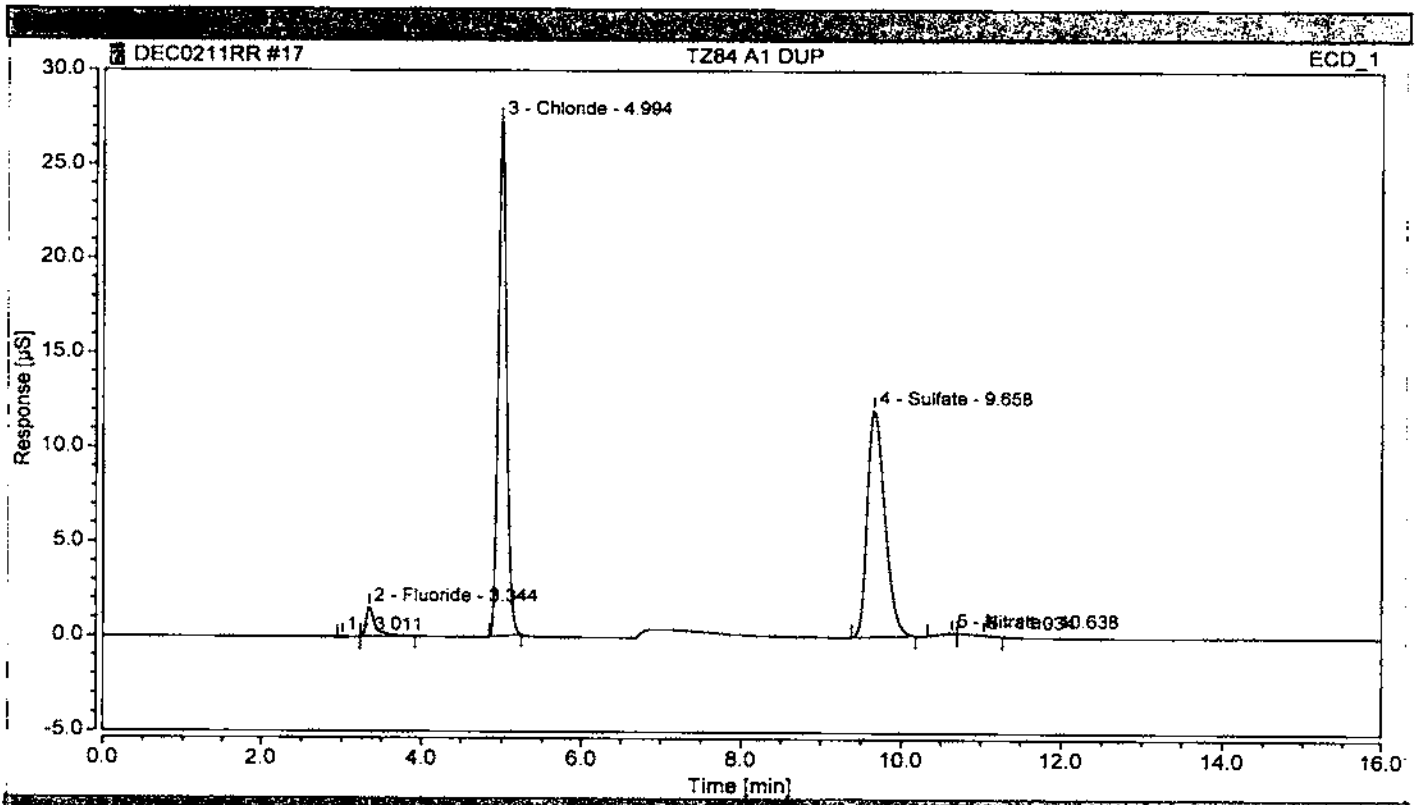
TZ84 : 00485

Injection Name:	*TZ84 A1*	Inject Number:	16
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 23:32*		



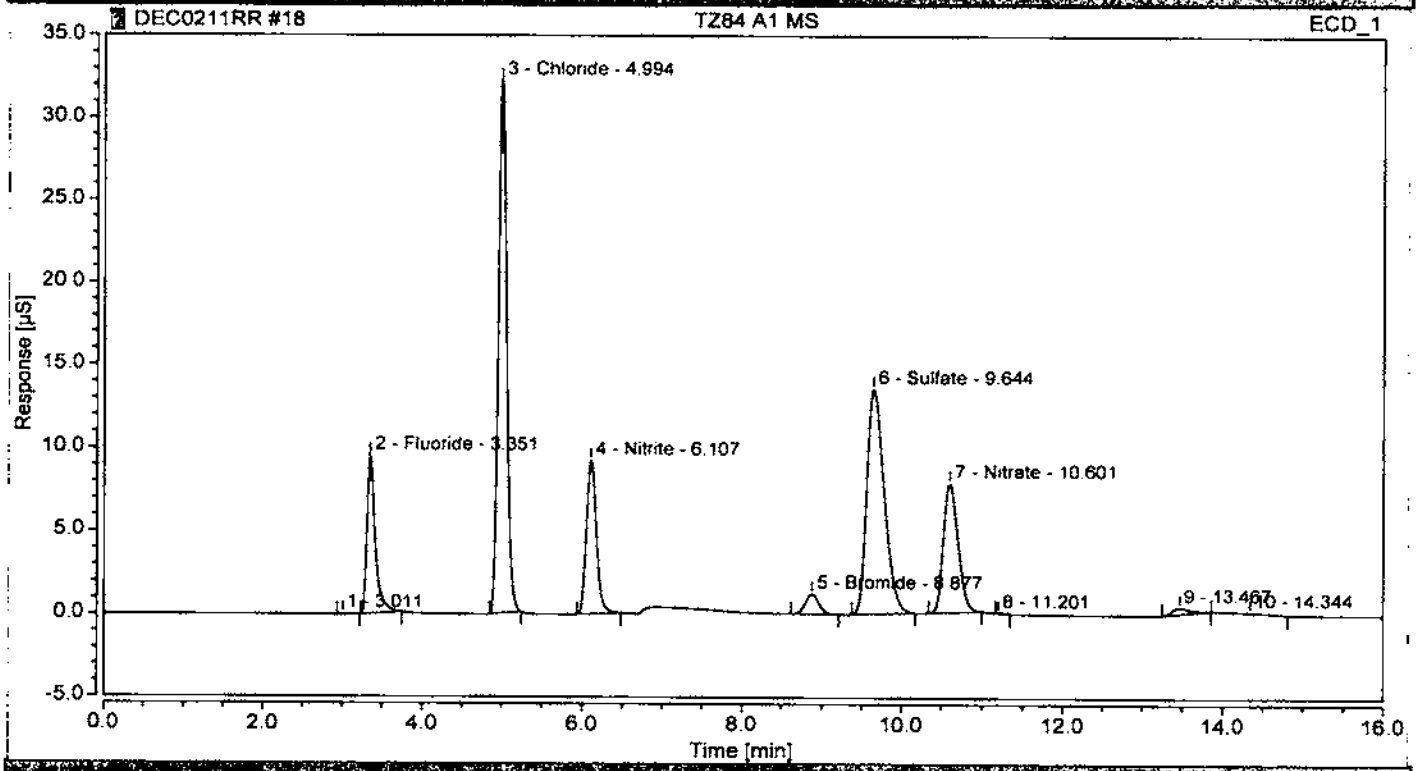
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.067	FALSE	n.a.
2	Fluoride	1.0	0.426	3.35	0.205	1.514	FALSE	n.a.
3	Chloride	1.0	10.919	4.99	3.231	27.279	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	13.898	9.66	3.051	12.080	FALSE	n.a.
5	Nitrate	1.0	0.022	10.67	0.017	0.059	FALSE	n.a.
6		1.0	n.a.	11.06	0.009	0.035	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 DUP*	Inject Number:	17
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 23:52*		



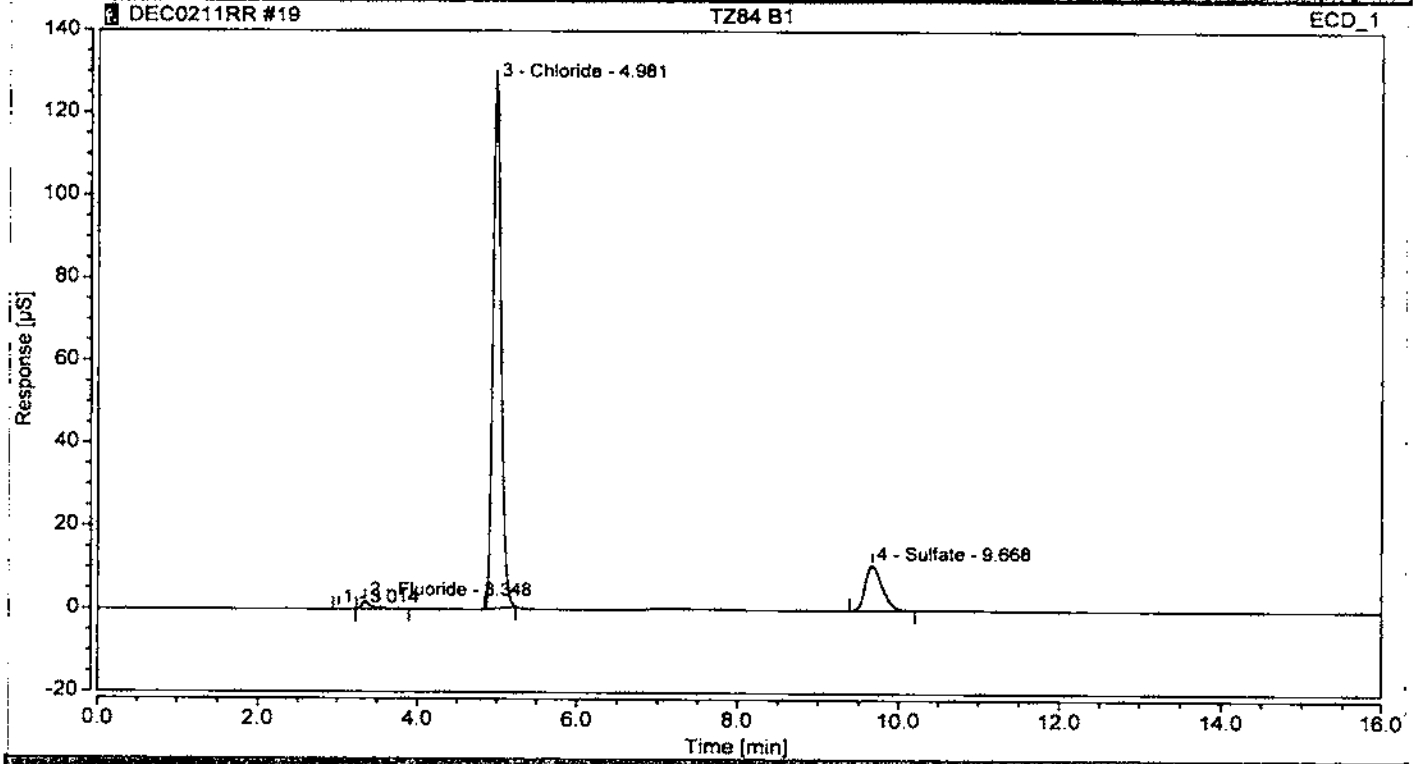
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.066	FALSE	n.a.
2	Fluoride	1.0	0.427	3.34	0.205	1.531	FALSE	n.a.
3	Chloride	1.0	10.939	4.99	3.237	27.311	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	13.865	9.66	3.023	11.978	FALSE	n.a.
5	Nitrate	1.0	0.014	10.64	0.011	0.037	FALSE	n.a.
6		1.0	n.a.	11.03	0.010	0.034	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 MS*	Inject Number:	18
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 00:13*		



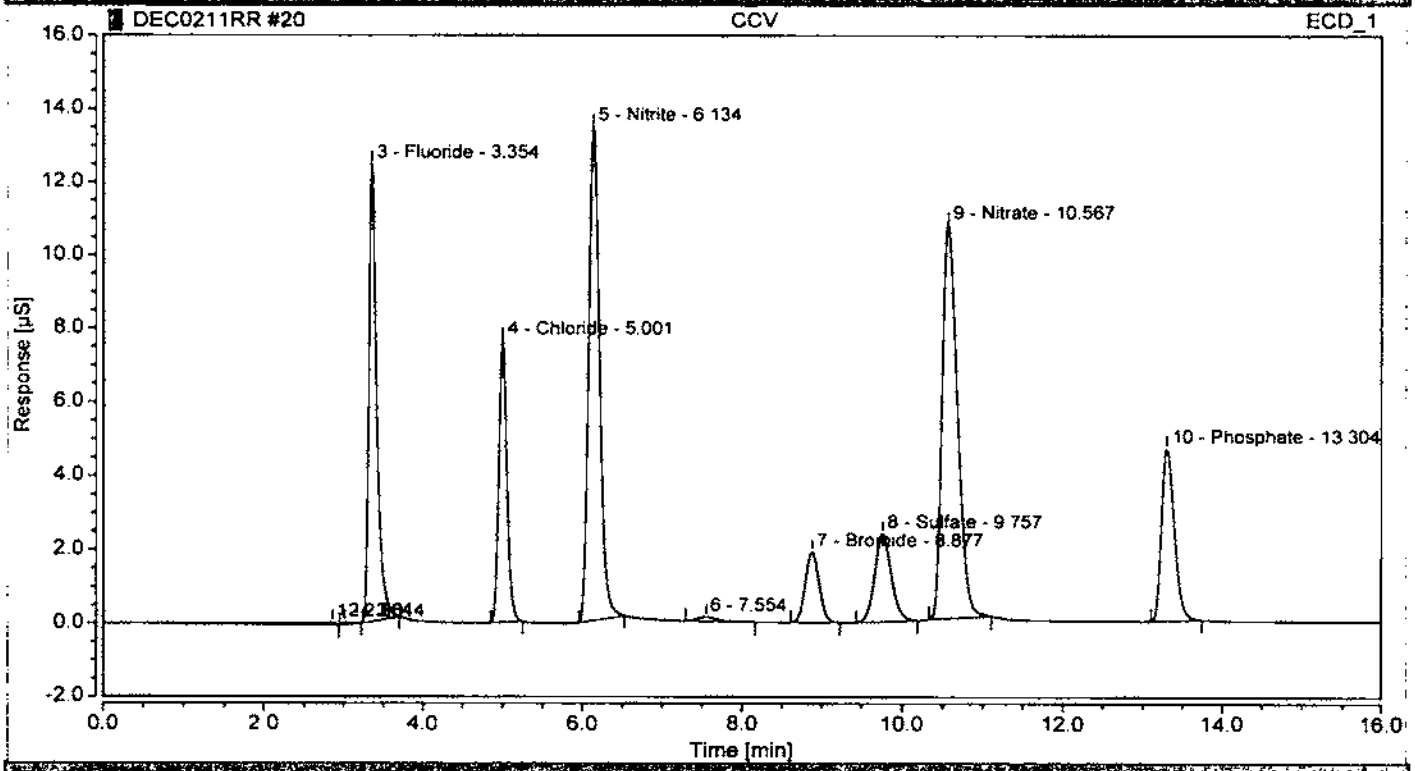
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.065	FALSE	n.a.
2	Fluoride	1.0	2.361	3.35	1.143	9.495	FALSE	n.a.
3	Chloride	1.0	12.922	4.99	3.824	32.194	FALSE	n.a.
4	Nitrite	1.0	1.985	6.11	1.327	9.230	FALSE	n.a.
5	Bromide	1.0	1.865	8.88	0.237	1.184	FALSE	n.a.
6	Sulfate	1.0	15.761	9.64	3.496	13.520	FALSE	n.a.
7	Nitrate	1.0	12.147	10.60	1.624	7.766	FALSE	n.a.
8		1.0	n.a.	11.20	0.011	0.049	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.47	0.102	0.387	FALSE	n.a.
10		1.0	n.a.	14.34	0.023	0.043	FALSE	n.a.

Injection Name:	*TZ84 B1*	Inject Number:	19
Vial Number:	*17*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 00:34*		



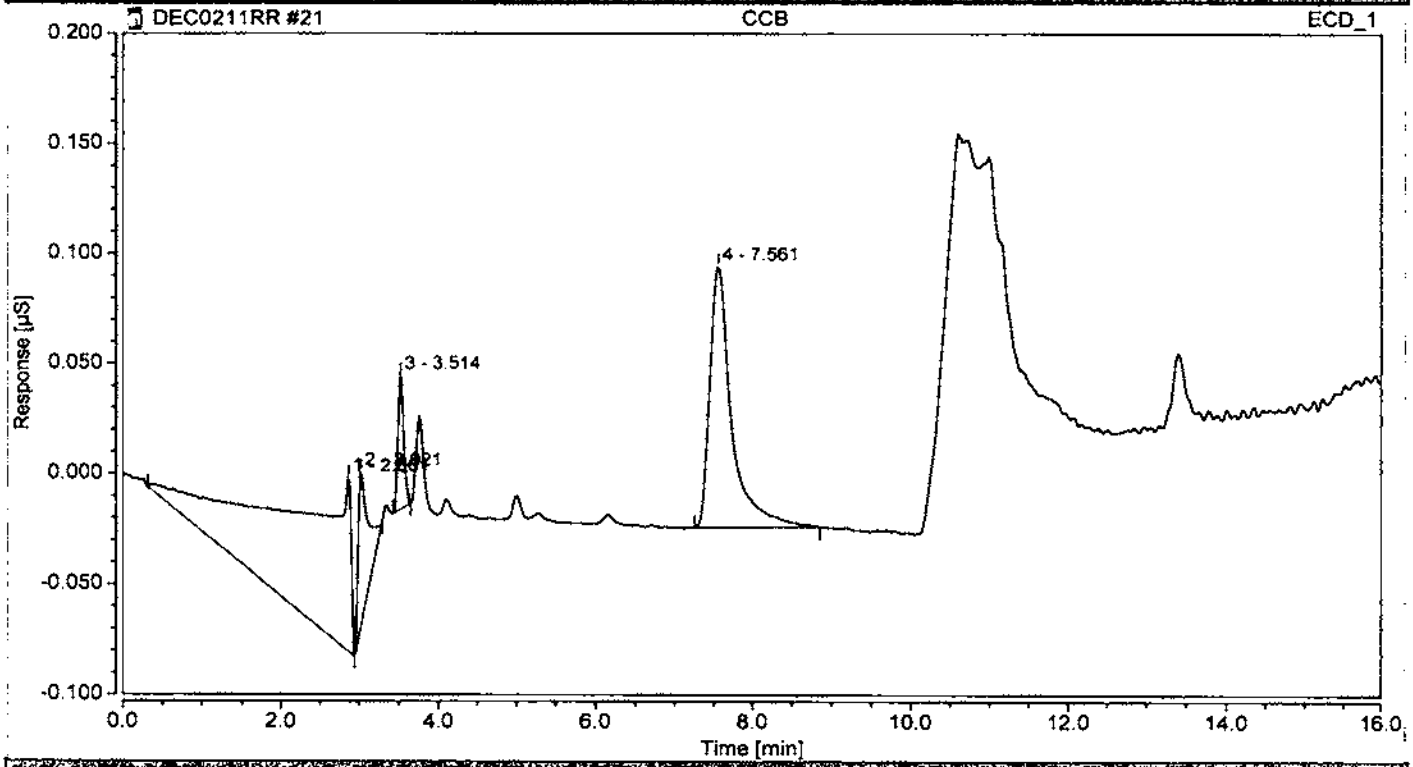
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.065	FALSE	n.a.
2	Fluoride	1.0	0.546	3.35	0.283	1.831	FALSE	n.a.
3	Chloride	1.0	51.968	4.98	15.379	127.139	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	12.443	9.67	2.712	10.858	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*CCV*	Inject Number:	20
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodai*		
Injection Date/Time:	*03/12/11 00:54*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.079	0.073	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.071	FALSE	n.a.
3	Fluoride	1.0	3.005	3.35	1.443	12.454	FALSE	0.18
4	Chloride	1.0	3.082	5.00	0.906	7.649	FALSE	2.07
5	Nitrite	1.0	6.164	6.13	2.115	13.448	FALSE	5.48
6		1.0	n.a.	7.55	0.032	0.116	FALSE	n.a.
7	Bromide	1.0	3.012	8.88	0.384	1.904	FALSE	0.41
8	Sulfate	1.0	2.624	9.76	0.572	2.384	FALSE	-12.54
9	Nitrate	1.0	3.120	10.57	2.360	10.701	FALSE	3.99
10	Phosphate	1.0	2.908	13.30	0.878	4.674	FALSE	-3.06

Injection Name:	*CCB*	Inject Number:	21
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 01:16*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.079	0.079	FALSE	n.a.
2		1.0	n.a.	3.02	0.010	0.070	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.005	0.061	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.56	0.038	0.118	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*STOP*	Inject Number:	22
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 01:36*		

Can't read channel ECD_1 from injection #22 - STOP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	matogram in con	matogram in		n.a.

TZ84 : 00492

[redacted]

Name:	**DEC0311RR**	*Calibration:*	**OCT0611RR** **ARI # 581-9**
Directory:	**Instrument Data\DEC 2011**	*Calibration exp:*	**1/6/2012**
Data Vault:	**ChromeleonLocal**	*Queue Start:*	12/3/2011 10:55
No. of Injections:	**12.000**	*User:*	**RR**

[redacted]

		ERA 161110	ERA 411010	ERA 401010	ERA 111109	ERA 160111	ERA 230611	ERA 200610
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a. Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	0.067	n.a.
ICV	1.0	2.986	3.037	3.171	3.015	2.601	3.132	2.925
%R=		**99.5%**	**101.2%**	**105.7%**	**100.5%**	**86.7%**	**104.4%**	**97.5%**
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
[redacted]		0.069	5.161	0.071	n.a.	18.944	[redacted]	0.035
		0.607	41.066	n.a.	0.316	0.278	[redacted]	1.508
		0.221	[redacted]	n.a.	n.a.	11.322	n.a.	n.a.
		0.216		n.a.	n.a	11.325	n.a.	n.a.
%RPD=		**1.43%**	**0.91%**			**0.02%**		
[redacted]		10.472	[redacted]	10.023	9.689	20.618	11.412	8.956
%R=		**104.7%**	**98.1%**	**100.2%**	**96.9%**	**93.0%**	**114.1%**	**89.6%**
SPK=	**0.25mL*200ppm/5mL**		**=10ppm**					
[redacted]		0.255	[redacted]	n.a.	n.a.	6.489	0.440	0.382
CCV	1.0	2.983	3.038	3.156	3.017	2.493	3.161	2.943
%R=		**99.4%**	**101.3%**	**105.3%**	**100.6%**	**83.1%**	**105.0%**	**98.1%**
CCB	1.0	n.a.	n.a	n.a.	n.a.	n.a.	n.a.	n.a
STOP	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a

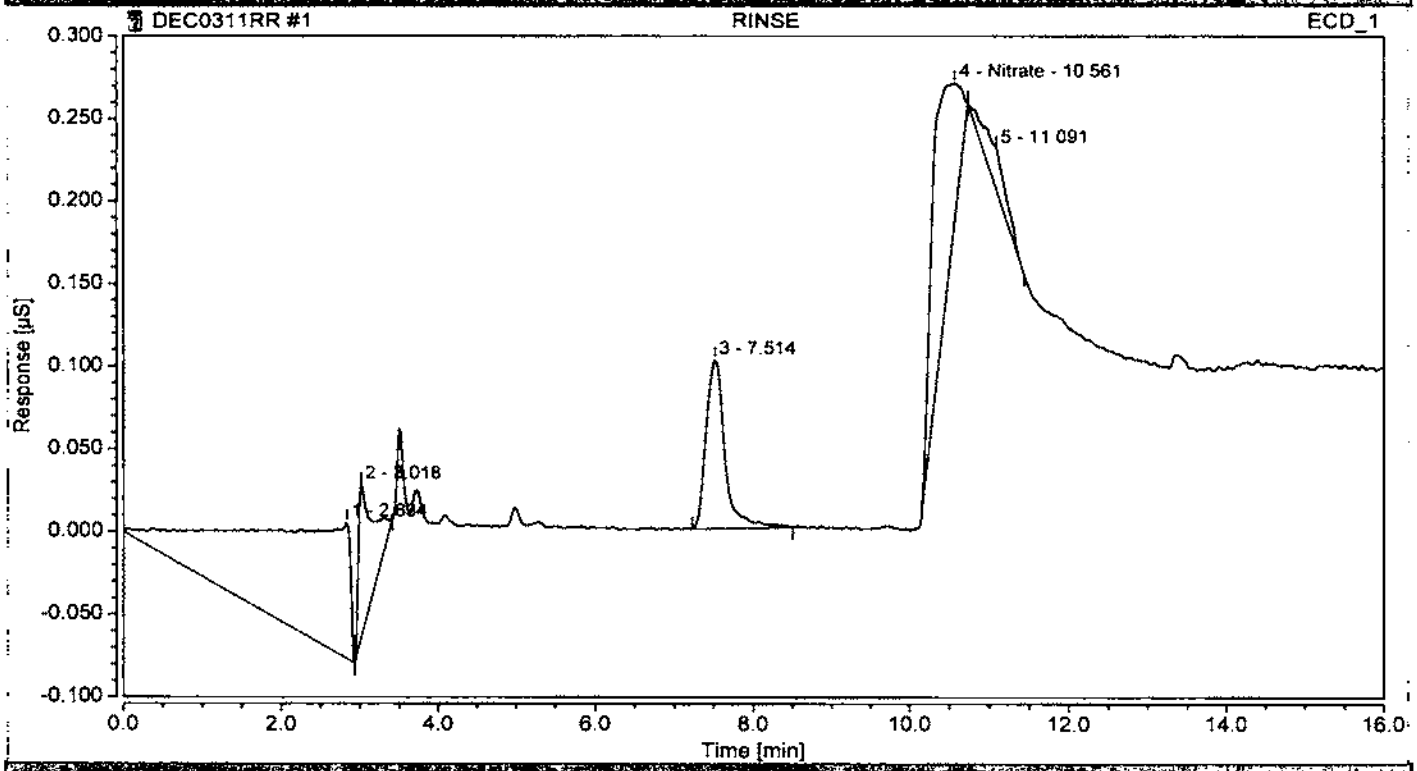
Name:	**DEC0311RR**	*Queue Start:*	**2011-12-03T10:55:41-**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**12**		

No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	03/Dec/11 10:55:41
2	ICV	2	Check Standard	06	1.0	03/Dec/11 11:14:35
3	ICB	3	Blank		1.0	03/Dec/11 11:33:46
4	TZ85 Q7	4	Unknown		2.0	03/Dec/11 11:53:02
5	TZ83 A3	5	Unknown		1.0	03/Dec/11 12:12:23
6	TZ84 A1	6	Unknown		5.0	03/Dec/11 12:31:50
7	TZ84 A1 DUP	7	Unknown		5.0	03/Dec/11 12:51:23
8	TZ84 A1 MS	8	Unknown		5.0	03/Dec/11 13:11:02
9	TZ84 B1	9	Unknown		20.0	03/Dec/11 13:30:46
10	CCV	2	Check Standard	06	1.0	03/Dec/11 13:50:36
11	CCB	3	Blank		1.0	03/Dec/11 14:10:51
12	STOP	1	Unknown		1.0	03/Dec/11 14:31:14

Chromeleon (c) Dionex
Version 7.0.1.272

TZ84 : 00494

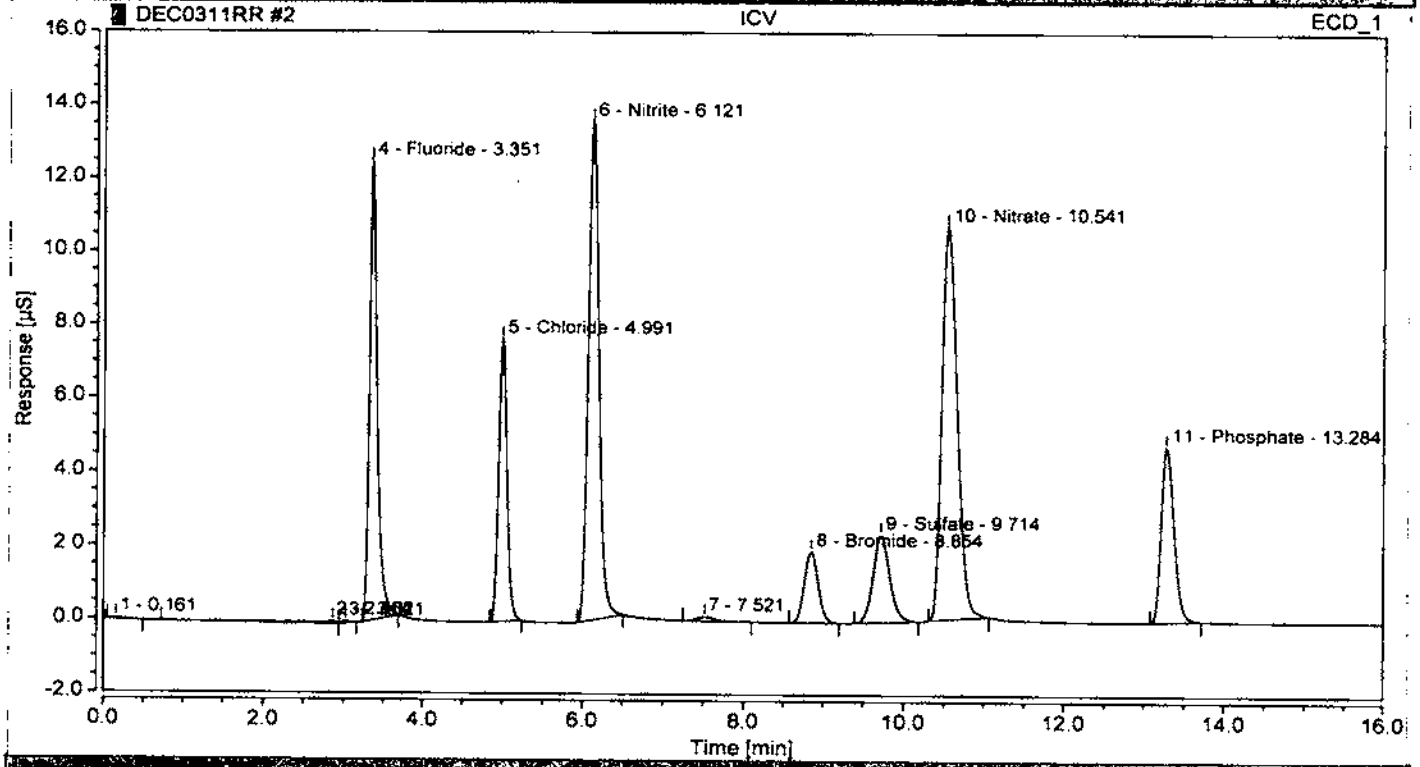
Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 10:55*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.115	0.082	FALSE	n.a.
2		1.0	n.a.	3.02	0.019	0.092	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.51	0.028	0.102	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Nitrate	1.0	0.067	10.56	0.050	0.085	FALSE	n.a.
5		1.0	n.a.	11.09	0.009	0.026	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

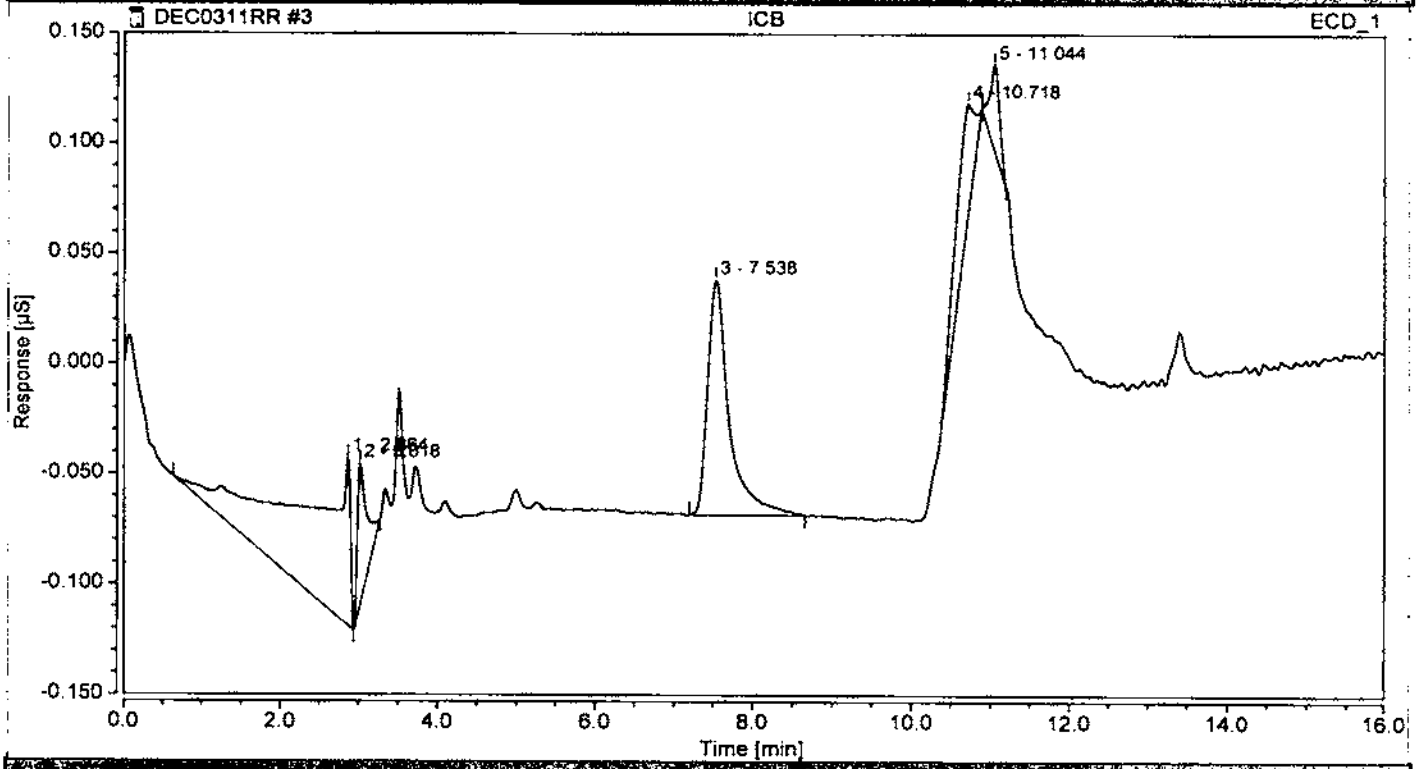
TZ84 : 00495

Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 11:14*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.16	0.007	0.037	FALSE	n.a.
2		1.0	n.a.	2.86	0.058	0.076	FALSE	n.a.
3		1.0	n.a.	3.03	0.008	0.057	FALSE	n.a.
4	Fluoride	1.0	2.686	3.35	1.434	12.492	FALSE	-0.45
5	Chloride	1.0	3.037	4.99	0.899	7.658	FALSE	1.22
6	Nitrite	1.0	3.171	6.12	2.119	13.545	FALSE	5.70
7		1.0	n.a.	7.52	0.030	0.112	FALSE	n.a.
8	Bromide	1.0	3.015	8.85	0.385	1.916	FALSE	0.50
9	Sulfate	1.0	2.601	9.71	0.567	2.368	FALSE	-13.30
10	Nitrate	1.0	3.132	10.54	2.370	10.661	FALSE	4.41
11	Phosphate	1.0	2.925	13.28	0.883	4.745	FALSE	-2.49

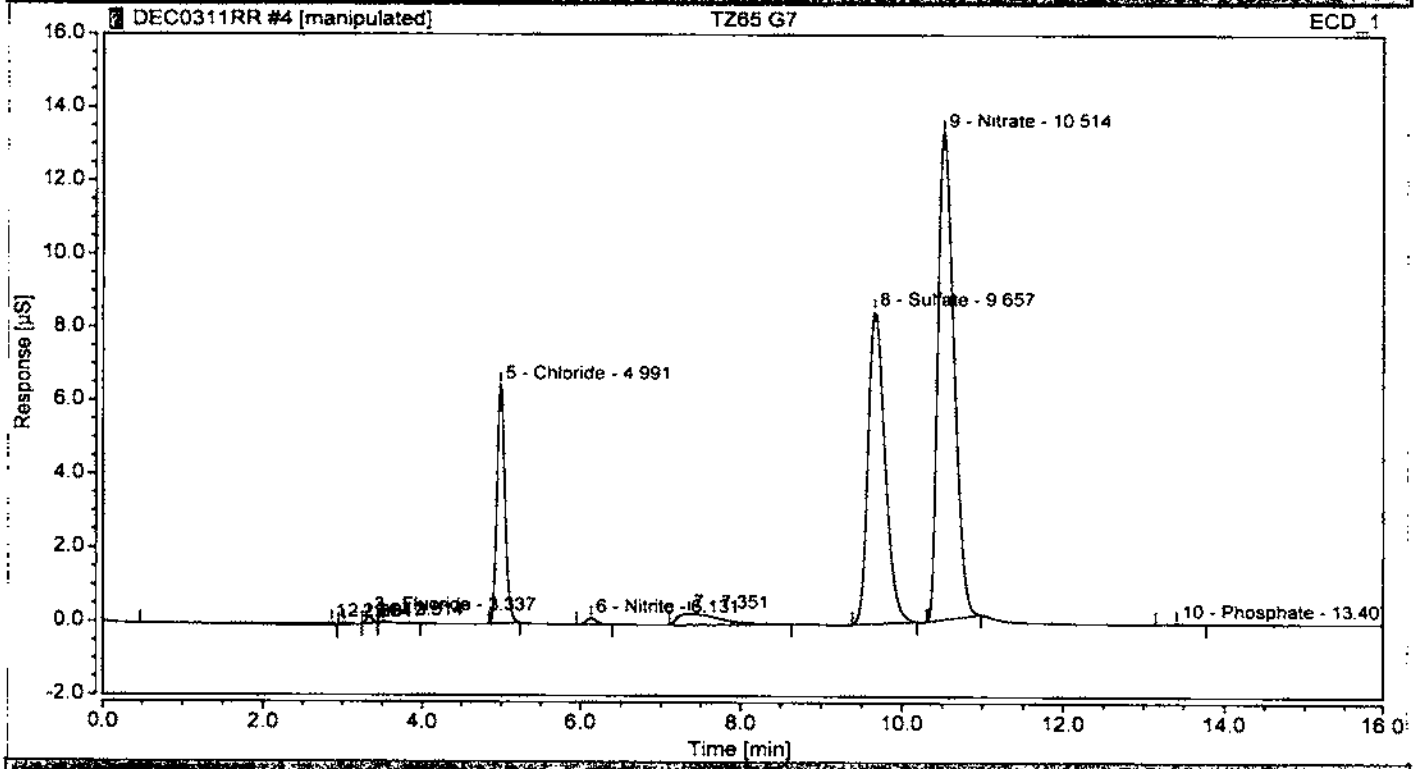
Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 11:33*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.056	0.076	FALSE	n.a.
2		1.0	n.a.	3.02	0.008	0.064	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.54	0.034	0.107	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	10.72	0.015	0.049	FALSE	n.a.
5		1.0	n.a.	11.04	0.006	0.039	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

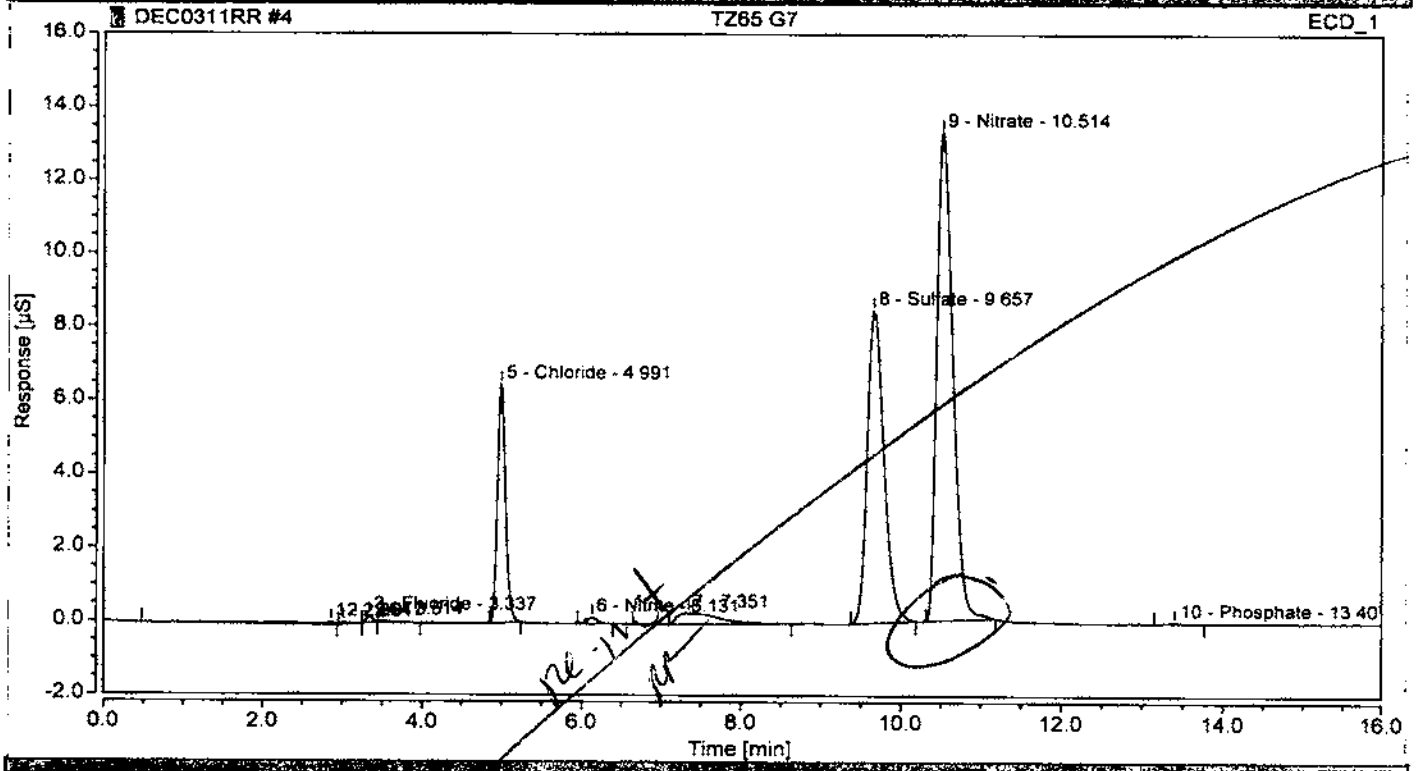
TZ84 : 00497

Injection Name:	*TZ65 G7*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 11:53*		



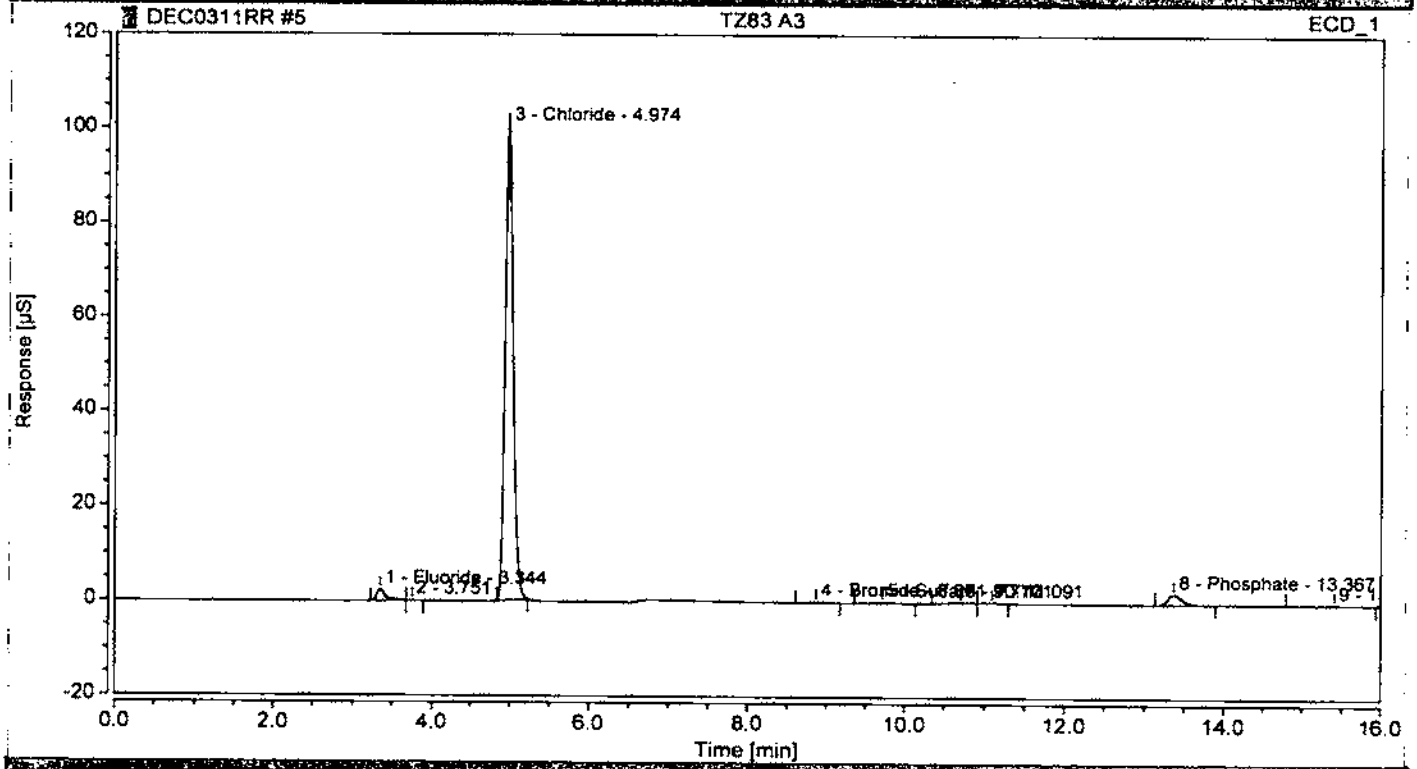
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.86	0.060	0.074	FALSE	n.a.
2		2.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
3	Fluoride	2.0	0.069	3.34	0.017	0.197	FALSE	n.a.
4		2.0	n.a.	3.51	0.007	0.046	FALSE	n.a.
5	Chloride	2.0	5.161	4.99	0.764	6.479	FALSE	n.a.
6	Nitrite	2.0	0.071	6.13	0.024	0.169	FALSE	n.a.
7		2.0	n.a.	7.35	0.191	0.304	FALSE	n.a.
n.a.	Bromide	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Sulfate	2.0	18.944	9.66	2.065	8.497	FALSE	n.a.
9	Nitrate	2.0	8.052	10.51	3.046	13.250	TRUE	n.a.
10	Phosphate	2.0	0.035	13.41	0.005	0.026	FALSE	n.a.

Injection Name:	*TZ65 G7*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 11:53*		



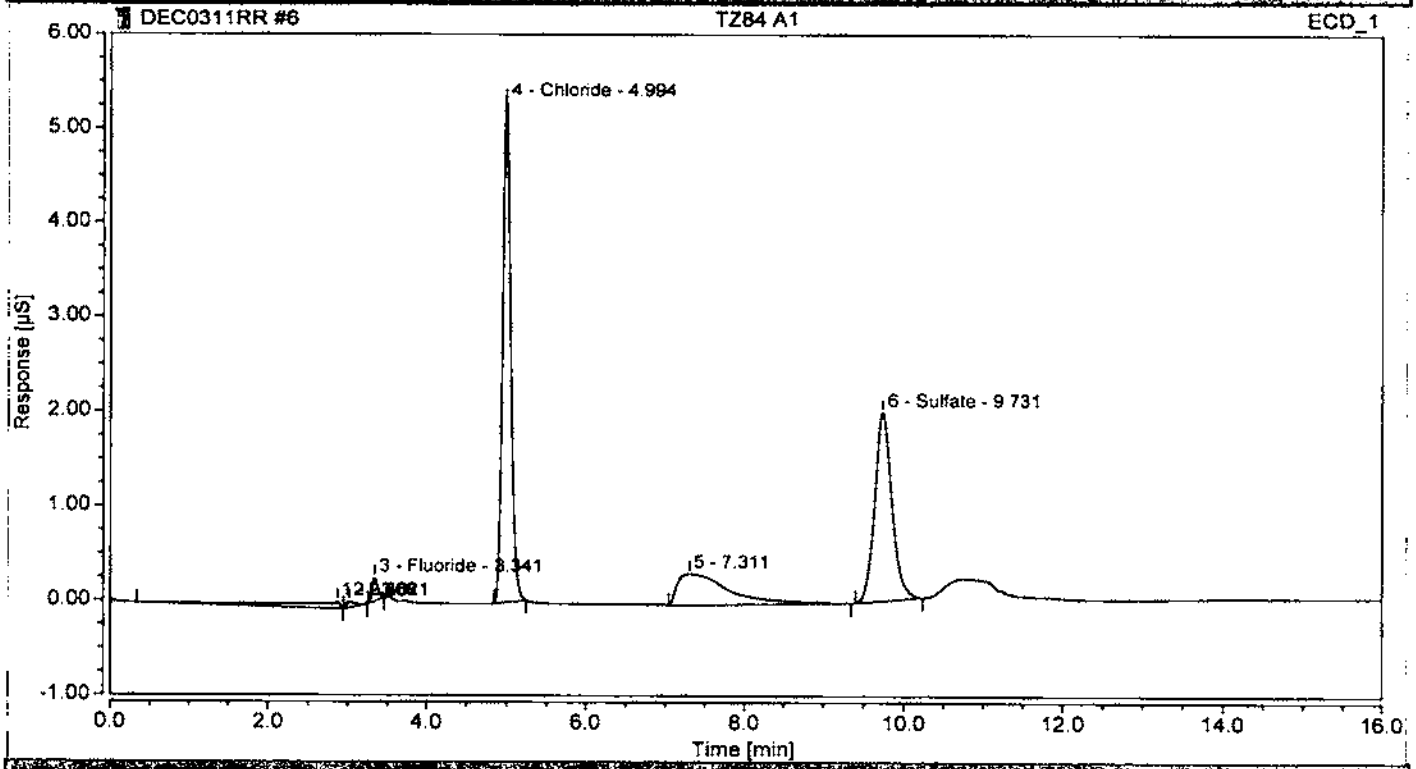
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.86	0.060	0.074	FALSE	n.a.
2		2.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
3	Fluoride	2.0	0.069	3.34	0.017	0.197	FALSE	n.a.
4		2.0	n.a.	3.51	0.007	0.046	FALSE	n.a.
5	Chloride	2.0	5.161	4.99	0.764	6.479	FALSE	n.a.
6	Nitrite	2.0	0.071	6.13	0.024	0.169	FALSE	n.a.
7		2.0	n.a.	7.95	0.181	0.304	FALSE	n.a.
n.a.	Bromide	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Sulfate	2.0	16.944	9.66	2.065	8.497	FALSE	n.a.
9	Nitrate	2.0	8.213	10.51	3.107	13.291	FALSE	n.a.
10	Phosphate	2.0	0.035	13.41	0.005	0.026	FALSE	n.a.

Injection Name:	*TZ83 A3*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 12:12*		



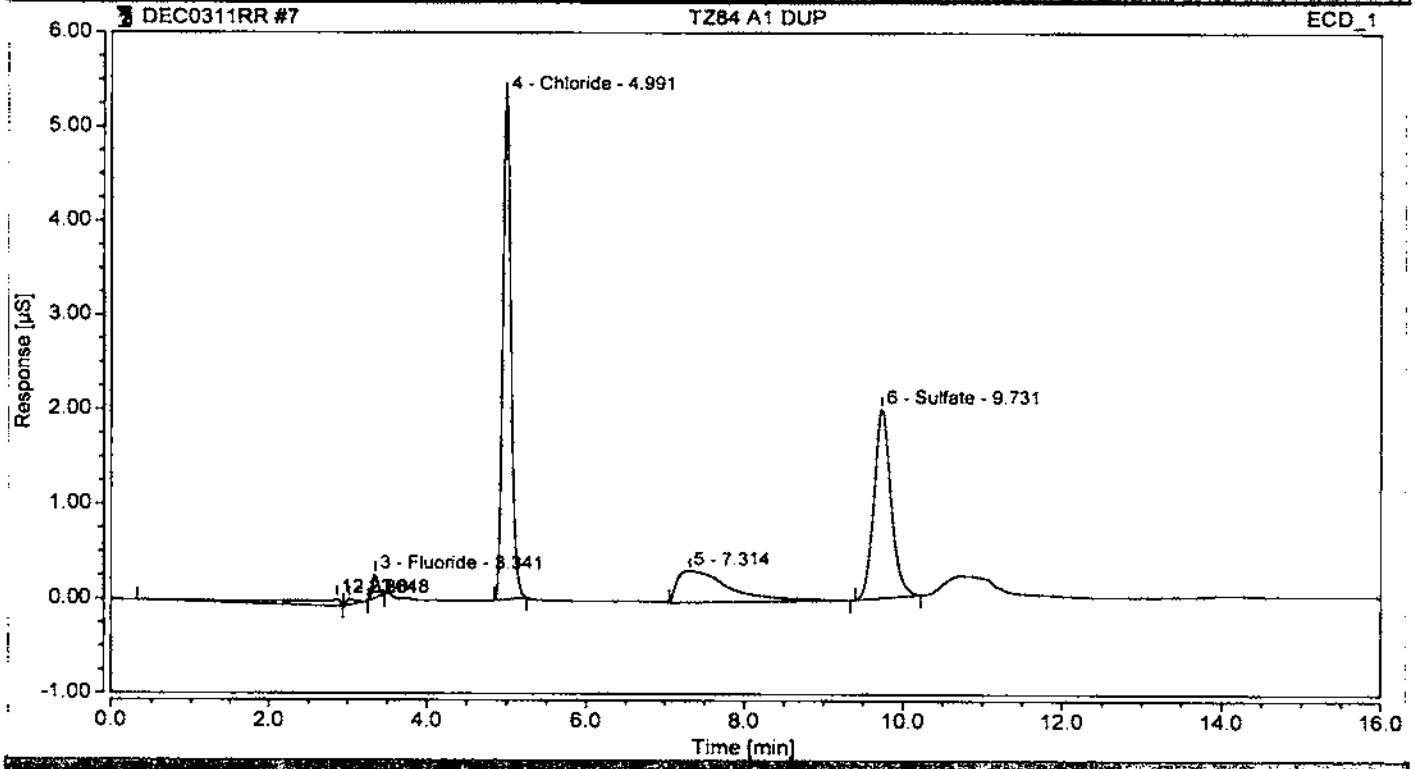
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.607	3.34	0.292	2.315	FALSE	n.a.
2		1.0	n.a.	3.75	0.008	0.088	FALSE	n.a.
3	Chloride	1.0	41.095	4.97	12.153	100.340	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.316	8.67	0.040	0.199	FALSE	n.a.
5	Sulfate	1.0	0.278	9.72	0.061	0.218	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	10.70	0.026	0.094	FALSE	n.a.
7		1.0	n.a.	11.09	0.014	0.082	FALSE	n.a.
8	Phosphate	1.0	1.508	13.37	0.455	2.192	FALSE	n.a.
9		1.0	n.a.	15.41	0.025	0.077	FALSE	n.a.

Injection Name:	*TZ84 A1*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 12:31*		



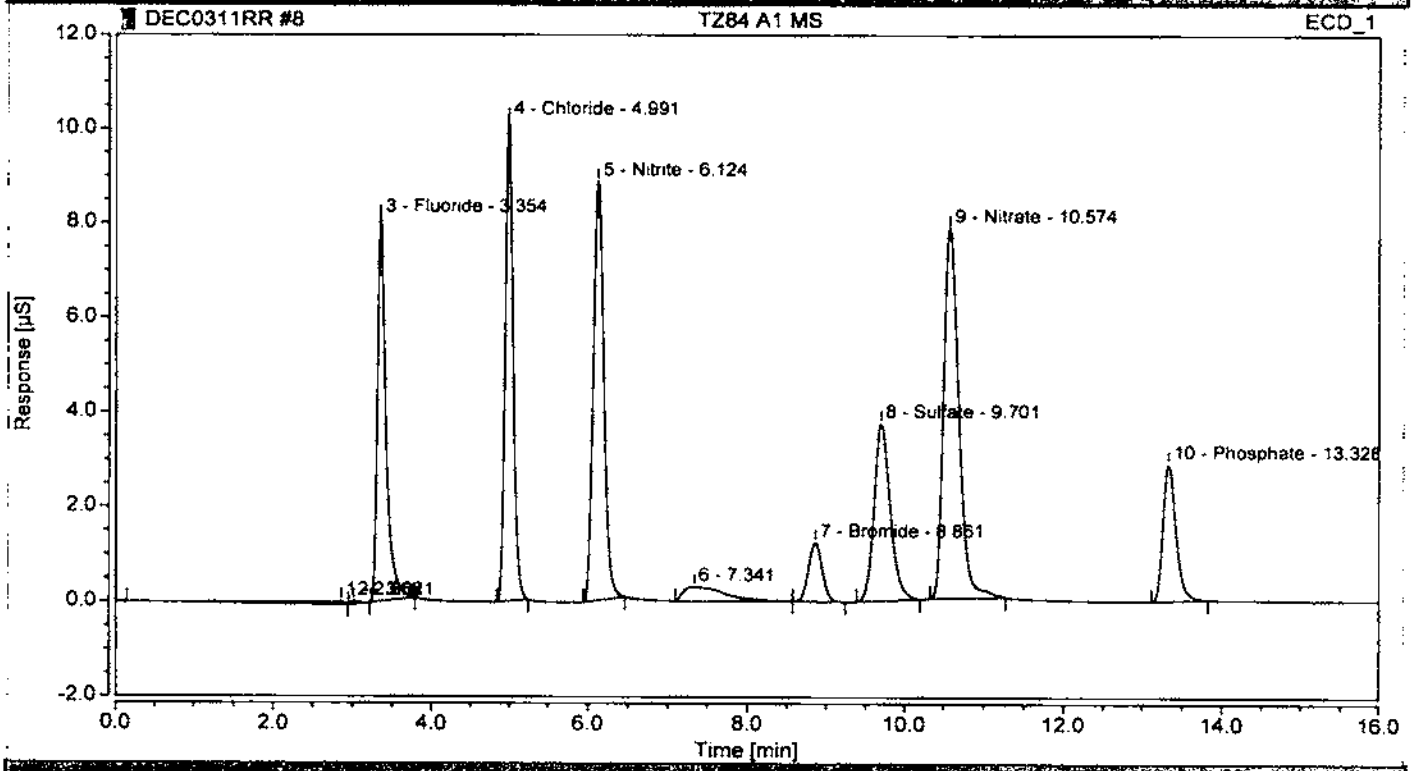
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.065	0.073	FALSE	n.a.
2		5.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
3	Fluoride	5.0	0.221	3.34	0.021	0.249	FALSE	n.a.
4	Chloride	5.0	1.0561	4.99	0.624	5.299	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		5.0	n.a.	7.31	0.255	0.330	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	5.0	11.322	9.73	0.494	1.992	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 DUP*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 12:51*		



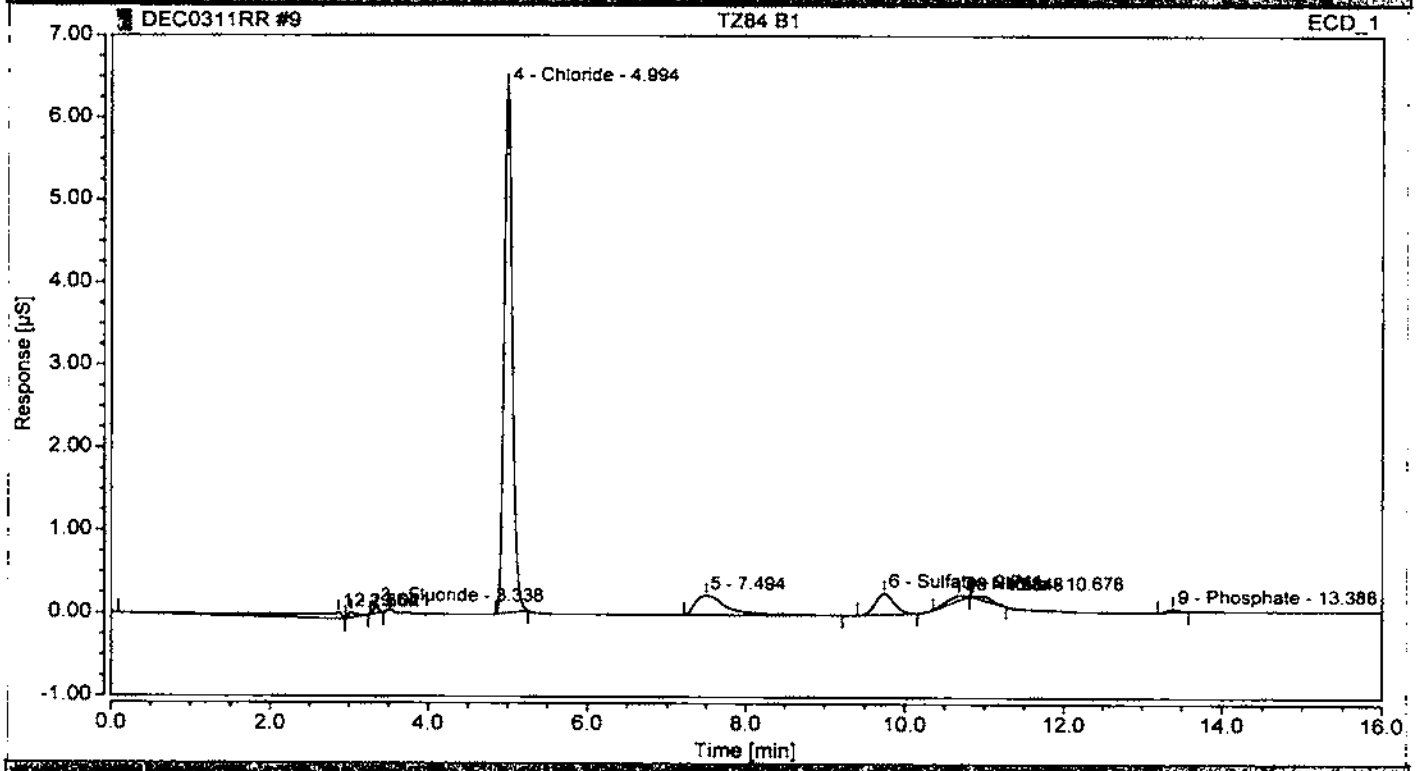
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.86	0.067	0.072	FALSE	n.a.
2		5.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
3	Fluoride	5.0	0.218	3.34	0.021	0.246	FALSE	n.a.
4	Chloride	5.0	10.847	4.99	0.630	5.340	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		5.0	n.a.	7.31	0.256	0.330	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	5.0	11.325	9.73	0.494	1.993	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 MS*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 13:11*		



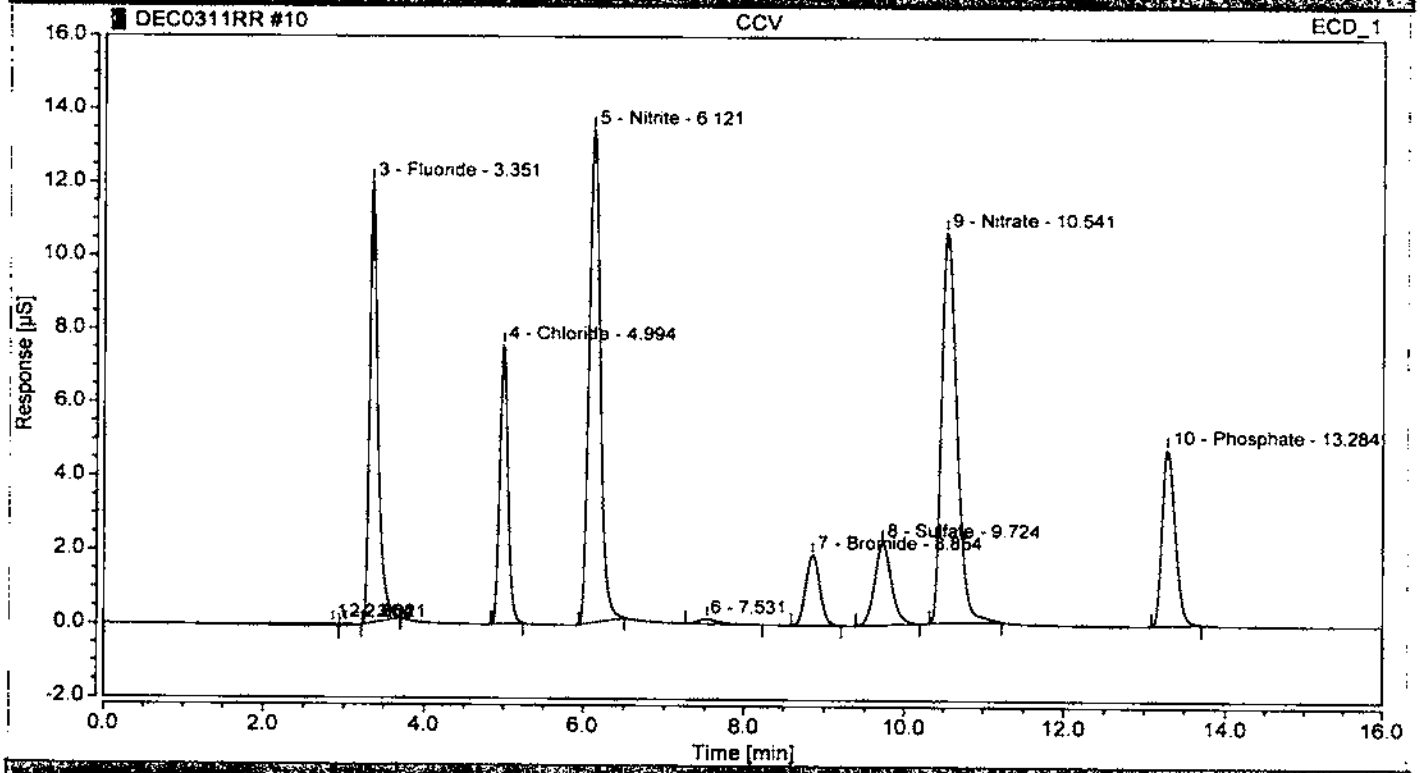
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.068	0.070	FALSE	n.a.
2		5.0	n.a.	3.02	0.007	0.061	FALSE	n.a.
3	Fluoride	5.0	10.472	3.35	1.008	8.094	FALSE	n.a.
4	Chloride	5.0	26.364	4.99	1.205	10.160	FALSE	n.a.
5	Nitrite	5.0	19.023	6.12	1.340	8.850	FALSE	n.a.
6		5.0	n.a.	7.34	0.186	0.301	FALSE	n.a.
7	Bromide	5.0	9.689	8.66	0.247	1.226	FALSE	n.a.
8	Sulfate	5.0	20.619	9.70	0.699	3.735	FALSE	n.a.
9	Nitrate	5.0	11.412	10.57	1.727	7.815	FALSE	n.a.
10	Phosphate	5.0	8.956	13.33	0.541	2.877	FALSE	n.a.

Injection Name:	*TZ84 B1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodel*		
Injection Date/Time:	*03/12/11 13:30*		



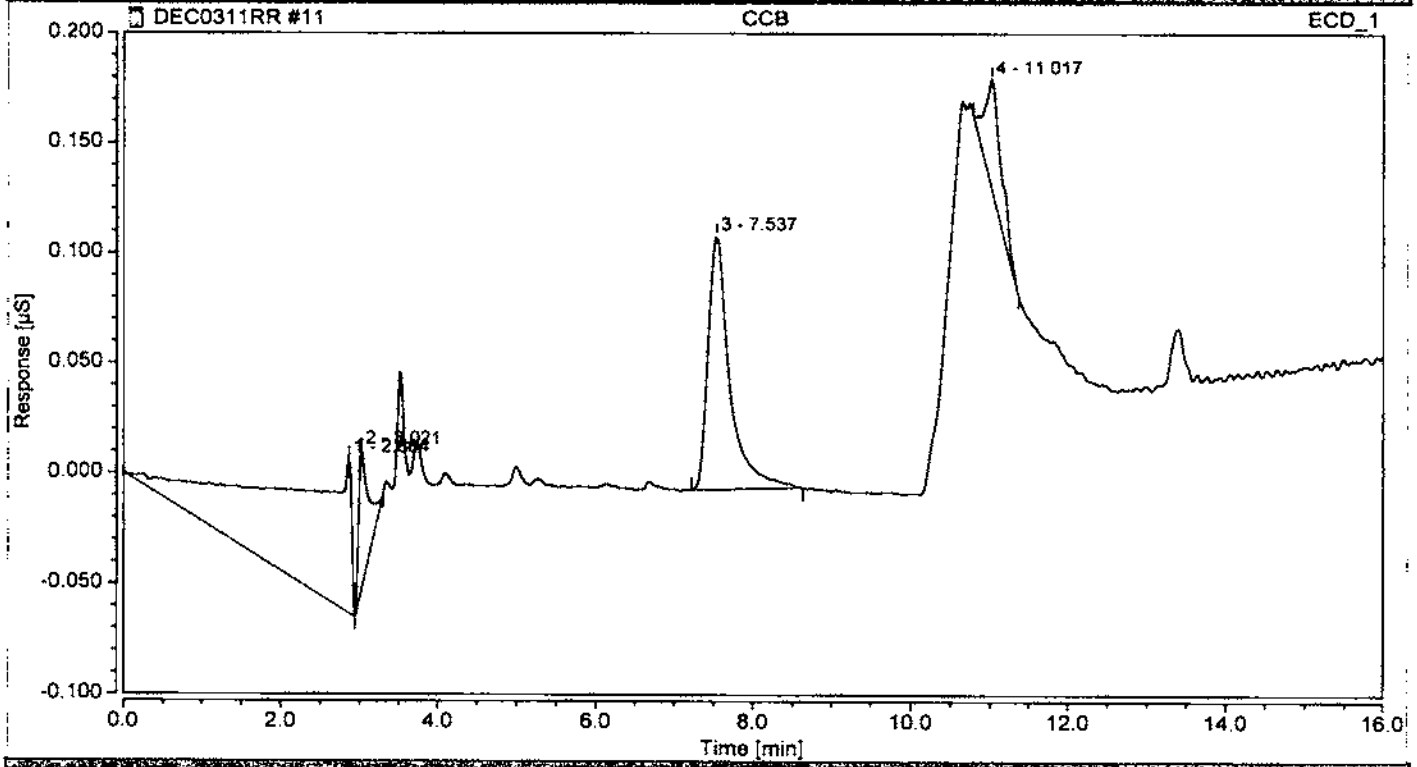
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.86	0.072	0.072	FALSE	n.a.
2		20.0	n.a.	3.02	0.008	0.062	FALSE	n.a.
3	Fluoride	20.0	0.355	3.34	0.008	0.077	FALSE	n.a.
4	Chloride	20.0	51.078	4.99	0.756	6.372	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		20.0	n.a.	7.49	0.113	0.236	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	20.0	6.489	9.74	0.071	0.257	FALSE	n.a.
7	Nitrate	20.0	0.440	10.68	0.017	0.059	FALSE	n.a.
8		20.0	n.a.	10.85	0.012	0.012	FALSE	n.a.
9	Phosphate	20.0	0.362	13.39	0.006	0.036	FALSE	n.a.

Injection Name:	*CCV*	Inject Number:	10
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 13:50*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.077	0.070	FALSE	n.a.
2		1.0	n.a.	3.02	0.008	0.062	FALSE	n.a.
3	Fluoride	1.0	2.983	3.36	1.433	11.990	FALSE	-0.56
4	Chloride	1.0	3.038	4.99	0.699	7.561	FALSE	1.27
5	Nitrite	1.0	3.158	6.12	2.111	13.397	FALSE	5.26
6		1.0	n.a.	7.53	0.035	0.123	FALSE	n.a.
7	Bromide	1.0	3.017	8.85	0.385	1.904	FALSE	0.56
8	Sulfate	1.0	2.493	9.72	0.543	2.225	FALSE	-16.90
9	Nitrate	1.0	3.181	10.54	2.406	10.602	FALSE	6.02
10	Phosphate	1.0	2.943	13.28	0.889	4.770	FALSE	-1.89

Injection Name:	*CCB*	Inject Number:	11
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 14:10*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.077	0.070	FALSE	n.a.
2		1.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.54	0.037	0.115	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	11.02	0.012	0.050	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*STOP*	Inject Number:	12
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 14:31*		

Can't read channel ECD_1 from injection #12 - STOP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	matogram in con	matogram in		n.a.

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.4803
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9996

No.	Injection Name	Calibration Level	X Value Fluoride	Y Value Fluoride	Amount mg/l Fluoride	Area µS*min Fluoride	Height µS Fluoride
1	STD1	01	0.1000	0.0476	0.0991	0.048	0.532
2	STD2	02	0.5000	0.2412	0.5022	0.241	2.740
3	STD3	03	1.0000	0.4992	1.0394	0.499	5.679
4	STD4	04	2.5000	1.2284	2.5577	1.228	13.746
5	STD5	05	5.0000	2.3837	4.9631	2.384	25.998

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2959
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Chloride	Y Value Chloride	Amount mg/l Chloride	Area µS*min Chloride	Height µS Chloride
1	STD1	01	0.1000	0.0295	0.0996	0.029	0.246
2	STD2	02	0.5000	0.1390	0.4696	0.139	1.172
3	STD3	03	1.0000	0.2864	0.9678	0.286	2.426
4	STD4	04	2.5000	0.7316	2.4721	0.732	6.232
5	STD5	05	5.0000	1.4866	5.0234	1.487	12.625

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.6684
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9996

No.	Injection Name	Calibration Level	X Value Nitrite	Y Value Nitrite	Amount mg/l Nitrite	Area µS*min Nitrite	Height µS Nitrite
1	STD1	01	0.1000	0.0614	0.0918	0.061	0.405
2	STD2	02	0.5000	0.3342	0.5000	0.334	2.240
3	STD3	03	1.0000	0.6998	1.0427	0.697	4.634
4	STD4	04	2.5000	1.7087	2.5564	1.709	10.970
5	STD5	05	5.0000	3.3174	4.9634	3.317	20.325

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1276
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9995

No.	Injection Name	Calibration Level	X Value Bromide	Y Value Bromide	Amount mg/l Bromide	Area µS*min Bromide	Height µS Bromide
1	STD1	01	0.1000	0.0118	0.0905	0.012	0.052
2	STD2	02	0.5000	0.0576	0.4515	0.058	0.262
3	STD3	03	1.0000	0.1212	0.9496	0.121	0.553
4	STD4	04	2.5000	0.3135	2.4566	0.313	1.449
5	STD5	05	5.0000	0.6427	5.0367	0.643	3.000

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2180
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Sulfate	Y Value Sulfate	Amount mg/l Sulfate	Area µS*min Sulfate	Height µS Sulfate
1	STD1	01	0.1000	0.0248	0.1137	0.025	0.147
2	STD2	02	0.5000	0.1078	0.4946	0.108	0.692
3	STD3	03	1.0000	0.2162	0.9918	0.216	1.430
4	STD4	04	2.5000	0.5378	2.4673	0.538	3.653
5	STD5	05	5.0000	1.0939	5.0183	1.094	7.341

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.7566
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Nitrate	Y Value Nitrate	Amount mg/l Nitrate	Area µS*min Nitrate	Height µS Nitrate
1	STD1	01	0.1000	0.0781	0.1032	0.078	0.427
2	STD2	02	0.5000	0.3541	0.4681	0.354	2.154
3	STD3	03	1.0000	0.7404	0.9786	0.740	4.473
4	STD4	04	2.5000	1.8749	2.4781	1.875	10.705
5	STD5	05	5.0000	3.7967	5.0183	3.797	19.625

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.3019
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Phosphate	Y Value Phosphate	Amount mg/l Phosphate	Area µS*min Phosphate	Height µS Phosphate
1	STD1	01	0.1000	0.0247	0.0818	0.025	0.120
2	STD2	02	0.5000	0.1414	0.4683	0.141	0.687
3	STD3	03	1.0000	0.2933	0.9712	0.293	1.464
4	STD4	04	2.5000	0.7448	2.4668	0.745	3.618
5	STD5	05	5.0000	1.5175	5.0259	1.518	6.679

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.4737
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9997

No.	Injection Name	Calibration Level	X Value Fluoride	Y Value Fluoride	Amount mg/l Fluoride	Area µS*min Fluoride	Height µS Fluoride
1	STD1	01	0.1000	0.0399	0.0843	0.040	0.301
2	STD2	02	0.5000	0.2347	0.4955	0.235	1.688
3	STD3	03	1.0000	0.4982	1.0516	0.498	3.502
4	STD4	04	2.5000	1.1985	2.5298	1.198	9.167
5	STD5	05	5.0000	2.3571	4.9755	2.357	19.418

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	n.a.	*Slope (C1)*	0.3028
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Chloride	Y Value Chloride	Amount mg/l Chloride	Area µS*min Chloride	Height µS Chloride
1	STD1	01	0.1000	0.0295	0.0975	0.030	0.248
2	STD2	02	0.5000	0.1435	0.4739	0.144	1.203
3	STD3	03	1.0000	0.2953	0.9752	0.295	2.473
4	STD4	04	2.5000	0.7452	2.4609	0.745	6.210
5	STD5	05	5.0000	1.5222	5.0272	1.522	12.630

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.6962
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Nitrite	Y Value Nitrite	Amount mg/l Nitrite	Area µS*min Nitrite	Height µS Nitrite
1	STD1	01	0.1000	0.0619	0.0890	0.062	0.424
2	STD2	02	0.5000	0.3528	0.5068	0.353	2.375
3	STD3	03	1.0000	0.7199	1.0339	0.720	4.752
4	STD4	04	2.5000	1.7599	2.5280	1.760	11.100
5	STD5	05	5.0000	3.4660	4.9788	3.466	20.655

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1286
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9994

No.	Injection Name	Calibration Level	X Value Bromide	Y Value Bromide	Amount mg/l Bromide	Area µS*min Bromide	Height µS Bromide
1	STD1	01	0.1000	0.0113	0.0878	0.011	0.054
2	STD2	02	0.5000	0.0591	0.4601	0.059	0.283
3	STD3	03	1.0000	0.1225	0.9528	0.122	0.590
4	STD4	04	2.5000	0.3133	2.4372	0.313	1.521
5	STD5	05	5.0000	0.6486	5.0451	0.649	3.160

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1854
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9861

No.	Injection Name	Calibration Level	X Value Sulfate	Y Value Sulfate	Amount mg/l Sulfate	Area µS*min Sulfate	Height µS Sulfate
1	STD1	01	0.1000	0.0089	0.0480	0.009	0.032
2	STD2	02	0.5000	0.0512	0.2761	0.051	0.175
3	STD3	03	1.0000	0.1271	0.6855	0.127	0.417
4	STD4	04	2.5000	0.4151	2.2550	0.418	1.514
5	STD5	05	5.0000	0.9657	5.2089	0.966	3.775

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.7586
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Nitrate	Y Value Nitrate	Amount mg/l Nitrate	Area µS*min Nitrate	Height µS Nitrate
1	STD1	01	0.1000	0.0714	0.0941	0.071	0.362
2	STD2	02	0.5000	0.3658	0.4822	0.366	1.823
3	STD3	03	1.0000	0.7513	0.9904	0.751	3.664
4	STD4	04	2.5000	1.8769	2.4741	1.877	8.565
5	STD5	05	5.0000	3.8058	5.0168	3.806	15.377

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2958
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9995

No.	Injection Name	Calibration Level	X Value Phosphate	Y Value Phosphate	Amount mg/l Phosphate	Area µS*min Phosphate	Height µS Phosphate
1	STD1	01	0.1000	0.0239	0.0809	0.024	0.127
2	STD2	02	0.5000	0.1361	0.4566	0.135	0.741
3	STD3	03	1.0000	0.2837	0.9589	0.284	1.575
4	STD4	04	2.5000	0.7228	2.4434	0.723	3.903
5	STD5	05	5.0000	1.4912	5.0413	1.491	7.383

TZ84 : 00541

Name:	**DEC1011RR**	*Calibration:*	**DEC0811RR** **ARI # 586-7**
Directory:	**Instrument Data\DEC 2011**	*Calibration exp:*	**3/8/2011**
Date Vault:	**ChromeleonLocal**	*Queue Start:*	12/10/2011 9:53
No. of Injections:	**51.000**	*User:*	**RR**

		ERA 161110	ERA 411010	ERA 401010	ERA 111109	ERA 160111	ERA 230511	ERA 200610
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a. Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ICV	1.0	3.044	2.944	3.042	3.005	2.898	3.039	2.995
%R=		**101.5%**	**98.1%**	**101.4%**	**100.2%**	**100.0%**	**101.3%**	**99.8%**
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
			55.640	n.a.	0.139	n.a.		
			55.722	n.a.	0.139	n.a.		
%RPD=		**2.23%**	**0.15%**		**0.41%**		**0.40%**	
			57.184	2.038	1.978	n.a.		
%R=		**96.7%**	**77.2%**	**101.9%**	**92.0%**		**102.1%**	**81.0%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
			16.580	n.a.	0.052	n.a.		
			8.418	n.a.	n.a.	20.898	9.279	
			14.589	n.a.	0.060	22.492		
		0.198		n.a.	n.a.	20.612	1.266	n.a.
		0.200		n.a.	n.a.	20.718	1.279	n.a
%RPD=		**1.12%**	**0.09%**			**0.51%**	**1.01%**	
		10.355		9.933	9.446	30.928	11.766	9.181
%R=		**101.6%**	**88.7%**	**99.3%**	**94.5%**	**103.2%**	**105.0%**	**91.8%**
SPK=	**0.25mL*200ppm/5mL**		**=10ppm**					
		0.035		n.a.	0.099	20.064		n.a.
CCV	1.0	3.047	2.947	3.025	3.008	2.909	3.034	2.987
%R=		**101.6%**	**98.2%**	**100.8%**	**100.3%**	**97.0%**	**101.1%**	**99.6%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
UA74 A1	20.0	1.750	54.533	n.a.	n.a.	41.649	2.243	n.a.
UA74 A1 DUP	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a
UA74 A1 MS	20.0	n.a.	96.016	n.a.	n.a.	82.702	5.651	n.a
		0.066		n.a.	n.a	46.504	1.162	n.a.
		n.a.	15.781	n.a.	n.a.		4.379	n a
		n.a.	8.198	n.a.	n.a.		9.936	n.a
		0.118		n.a.	n.a.		n.a.	n.a.
		0.696	40.173	n.a.	0.306		n.a.	1.480
		0.217	10.436	n.a.	n a.		n.a.	n.a.
		0.214	10.366	n.a.	n a.		n.a.	n.a.
%RPD=		**1.27%**	**0.69%**			**1.31%**		
CCV	1.0	3.045	2.949	3.030	3.002	2.901	3.187	2.979
%R=		**101.5%**	**98.3%**	**101.0%**	**100.1%**	**96.7%**	**106.2%**	**99.3%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		10.194	19.964	10.129	9.553		10.827	9 403
%R=		**98.8%**	**95.3%**	**101.3%**	**95.6%**	**108.5%**	**108.3%**	**94.0%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
		0.262	50.158	n.a.	n.a.		n.a.	0.087
		n.a.		n.a.	n.a.		5.985	n.a.
		n.a.		n.a	n.a.		6 149	n.a.
%RPD=			**0.52%**			**0.88%**		
		n.a.		n.a	n.a.		5.896	n.a.
%R=			**103.6%**			**121.6%**		
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
		n.a.	19.341	n.a.	n.a.		4.646	n.a
		0.022	6.795	n.a.	n.a.		0.860	n.a
		0.469	6.770	0.029	0.050		0.355	n a

[redacted]		0.474	[redacted]	0.026	n.a.	1.389	0.588	n.a.
[redacted]		0.202	3.248	n.a.	n.a.	[redacted]	1.100	n.a.
CCV	1.0	3.039	2.949	3.036	3.009	2.908	3.054	2.979
%R=		**101.3%**	**98.3%**	**101.2%**	**100.3%**	**96.9%**	**101.8%**	**99.3%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.017
[redacted]		0.202	3.239	n.a.	n.a.	[redacted]	1.151	n.a.
%RPD=		**0.02%**	**0.27%**			**0.50%**	**4.53%**	
[redacted]		20.125	23.038	20.445	19.597	[redacted]	22.066	19.094
%R=		**99.6%**	**99.0%**	**102.2%**	**98.0%**	**90.9%**	**104.8%**	**95.5%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
[redacted]		0.364	3.393	0.012	n.a.	[redacted]	n.a.	1.031
[redacted]		n.a.	2.342	n.a.	n.a.	[redacted]	1.330	0.272
[redacted]		n.a.	2.341	n.a.	n.a.	[redacted]	2.889	n.a.
%RPD=			**0.07%**			**0.58%**	**73.92%**	
[redacted]		20.509	21.988	20.249	19.428	[redacted]	22.755	19.203
%R=		**102.5%**	**98.2%**	**101.2%**	**97.1%**	**103.2%**	**107.1%**	**94.7%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
[redacted]		n.a.	571.775	n.a.	1.701	[redacted]	n.a.	n.a.
[redacted]		0.070	2.158	n.a.	n.a.	[redacted]	0.414	n.a
[redacted]		0.240	3.355	n.a.	n.a.	[redacted]	0.218	n.a.
CCV	1.0	3.047	2.952	3.030	3.009	2.868	3.041	3.000
%R=		**101.6%**	**98.4%**	**101.0%**	**100.3%**	**95.6%**	**101.4%**	**100.0%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.020
STOP	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Name:	**DEC1011RR**	*Queue Start:*	**2011-12-10T09:53:23-**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**51**		

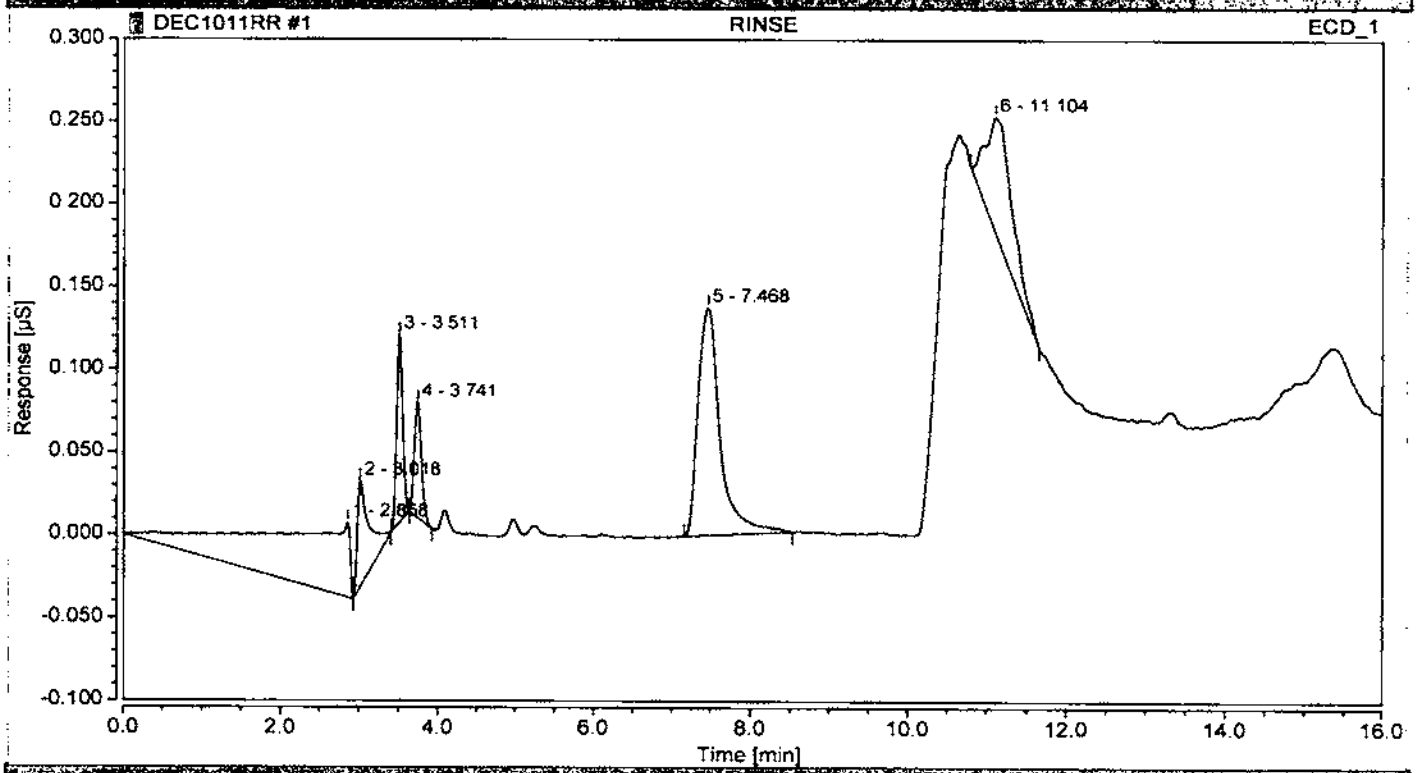
No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	10/Dec/11 09:53:23
2	ICV	2	Check Standard	06	1.0	10/Dec/11 10:12:17
3	ICB	3	Blank		1.0	10/Dec/11 10:31:26
4	UA74 A1	4	Unknown		1.0	10/Dec/11 10:50:41
5	UA74 A1 DUP	5	Unknown		1.0	10/Dec/11 11:10:37
6	UA74 A1 MS	6	Unknown		1.0	10/Dec/11 11:30:05
7	UA74 B1	7	Unknown		1.0	10/Dec/11 11:49:36
8	UA74 C1	8	Unknown		1.0	10/Dec/11 12:09:14
9	UA74 D1	9	Unknown		1.0	10/Dec/11 12:28:56
10	UA09 B4	10	Unknown		5.0	10/Dec/11 12:48:45
11	UA09 B4 DUP	11	Unknown		5.0	10/Dec/11 13:08:41
12	UA09 B4 MS	12	Unknown		5.0	10/Dec/11 13:28:41
13	UA74 C1	13	Unknown		2.0	10/Dec/11 13:48:48
14	CCV	2	Check Standard	06	1.0	10/Dec/11 14:08:59
15	CCB	3	Blank		1.0	10/Dec/11 14:29:35
16	UA74 A1	14	Unknown		20.0	10/Dec/11 15:52:19
17	UA74 A1 DUP	15	Unknown		20.0	10/Dec/11 14:53:26
18	UA74 A1 MS	16	Unknown		20.0	10/Dec/11 16:12:32
19	UA74 B1	17	Unknown		5.0	10/Dec/11 16:33:10
20	UA74 B1	18	Unknown		20.0	10/Dec/11 16:53:54
21	UA74 C1	19	Unknown		5.0	10/Dec/11 17:14:43
22	UA74 D1	20	Unknown		5.0	10/Dec/11 17:34:04
23	TZ83 A3	21	Unknown		1.0	10/Dec/11 17:53:30
24	TZ84 A1	22	Unknown		5.0	10/Dec/11 18:13:01
25	TZ84 A1 DUP	23	Unknown		5.0	10/Dec/11 18:32:37
26	CCV	2	Check Standard	06	1.0	10/Dec/11 18:52:18
27	CCB	3	Blank		1.0	10/Dec/11 19:12:43
28	TZ84 A1 MS	24	Unknown		5.0	10/Dec/11 19:33:17
29	TZ84 B1	25	Unknown		5.0	10/Dec/11 19:53:17
30	UA74 A1	14	Unknown		20.0	10/Dec/11 20:13:17
31	UA74 A1 DUP	15	Unknown		20.0	10/Dec/11 20:33:42
32	UA74 A1 MS	16	Unknown		20.0	10/Dec/11 20:53:52
33	TZ94 A5	26	Unknown		5.0	10/Dec/11 21:14:24
34	TZ94 B5	27	Unknown		1.0	10/Dec/11 21:34:45
35	TZ97 A1	28	Unknown		1.0	10/Dec/11 21:55:06
36	TZ97 A1	29	Unknown		2.0	10/Dec/11 22:15:31
37	TZ97 B1	30	Unknown		5.0	10/Dec/11 22:36:00
38	CCV	31	Check Standard	06	1.0	10/Dec/11 22:56:32
39	CCB	32	Blank		1.0	10/Dec/11 23:17:08
40	TZ97 B1 DUP	33	Unknown		5.0	10/Dec/11 23:37:49
41	TZ97 B1 MS	34	Unknown		10.0	10/Dec/11 23:58:34
42	TZ97 C1	35	Unknown		1.0	11/Dec/11 00:17:49
43	TZ99 A1	36	Unknown		10.0	11/Dec/11 00:37:09

TZ84 : 0051

44	TZ99 A1 DUP	37	Unknown		10.0	11/Dec/11 00:56:31
45	TZ99 A1 MS	38	Unknown		10.0	11/Dec/11 01:15:59
46	TZ99 B1	39	Unknown		10.0	11/Dec/11 01:35:30
47	UA20 A1	40	Unknown		5.0	11/Dec/11 01:55:06
48	UA20 B1	41	Unknown		1.0	11/Dec/11 02:14:45
49	CCV	31	Check Standard	06	1.0	11/Dec/11 02:34:27
50	CCB	32	Blank		1.0	11/Dec/11 02:54:41
51	STOP	1	Unknown		1.0	11/Dec/11 03:15:10

TZ84 : 00515

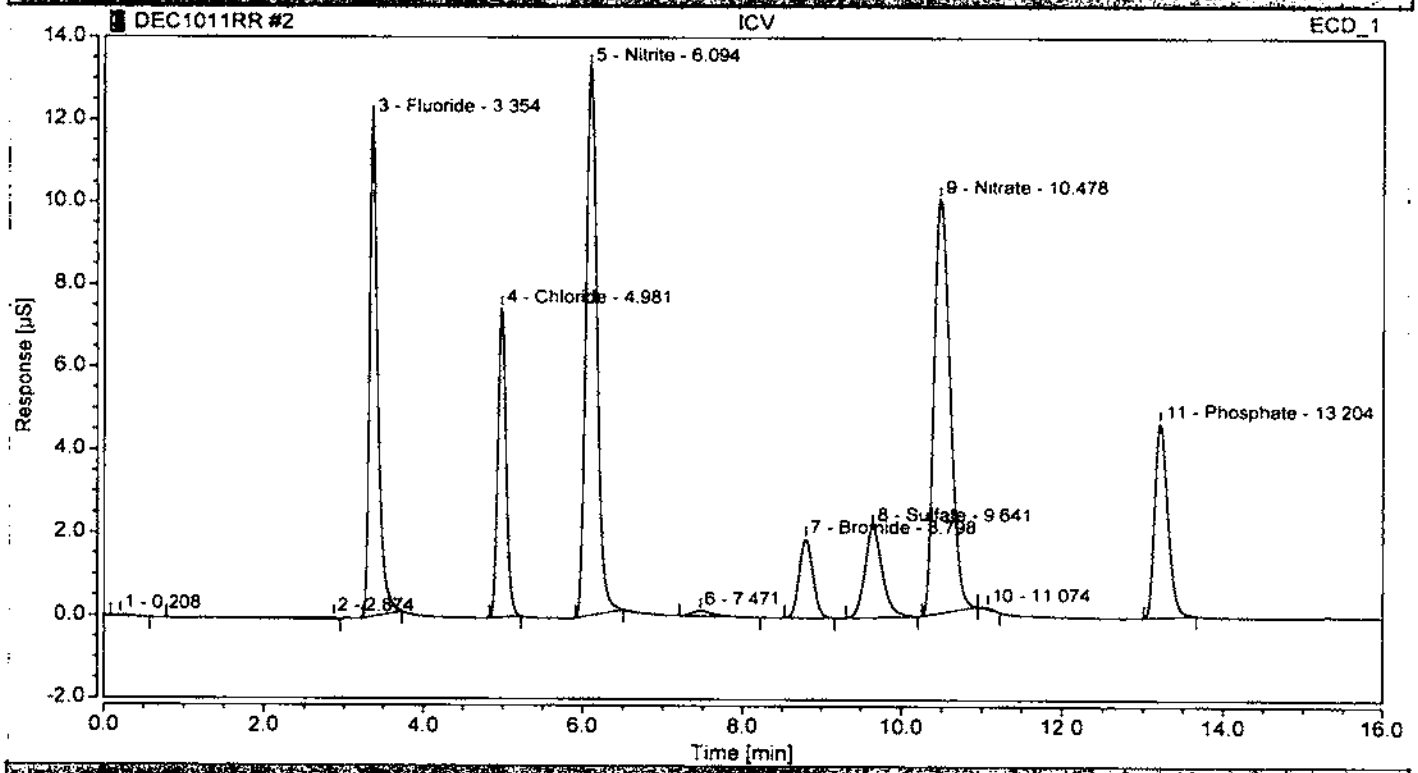
Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 09:53*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.057	0.045	FALSE	n.a.
2		1.0	n.a.	3.02	0.011	0.064	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.010	0.114	FALSE	n.a.
4		1.0	n.a.	3.74	0.007	0.070	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.47	0.045	0.138	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	11.10	0.028	0.070	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

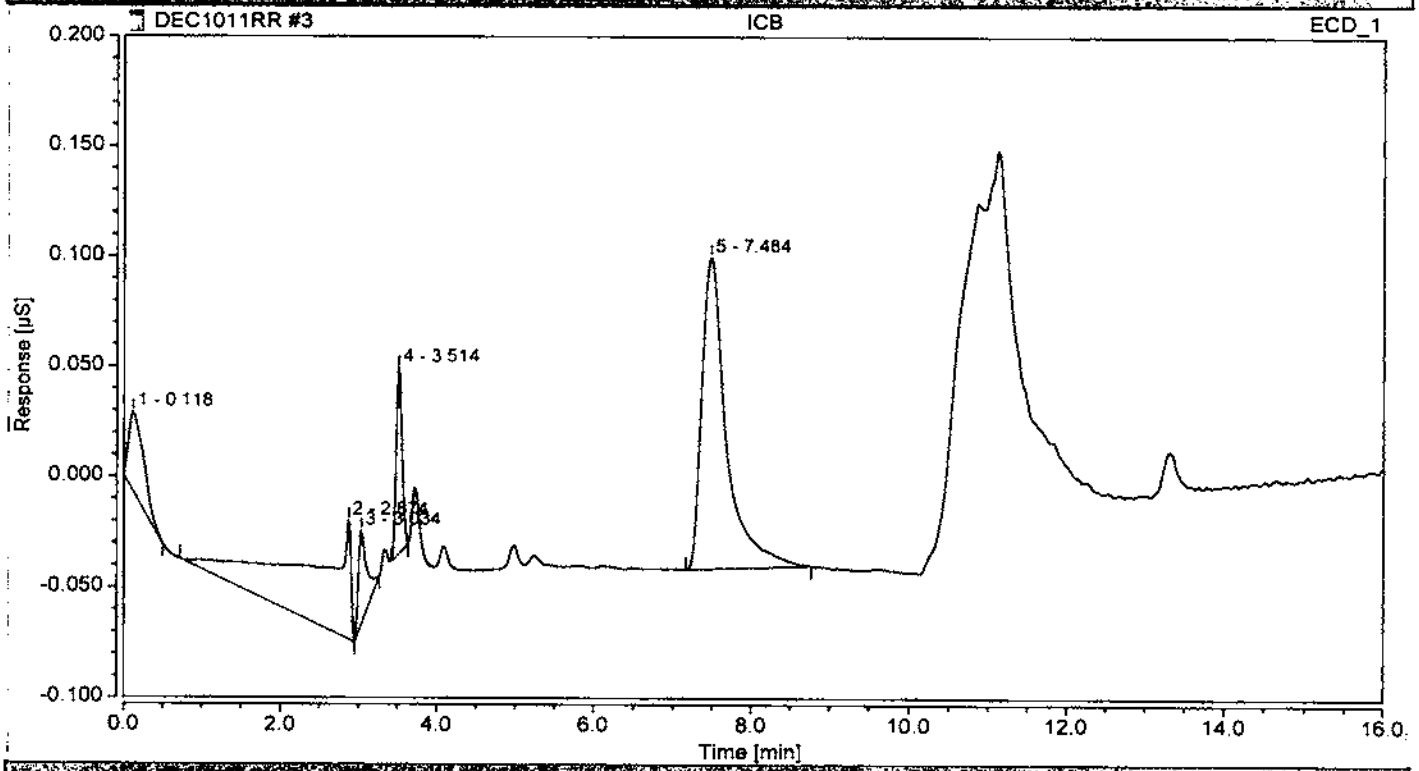
TZ84 : 00516

Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 10:12*		



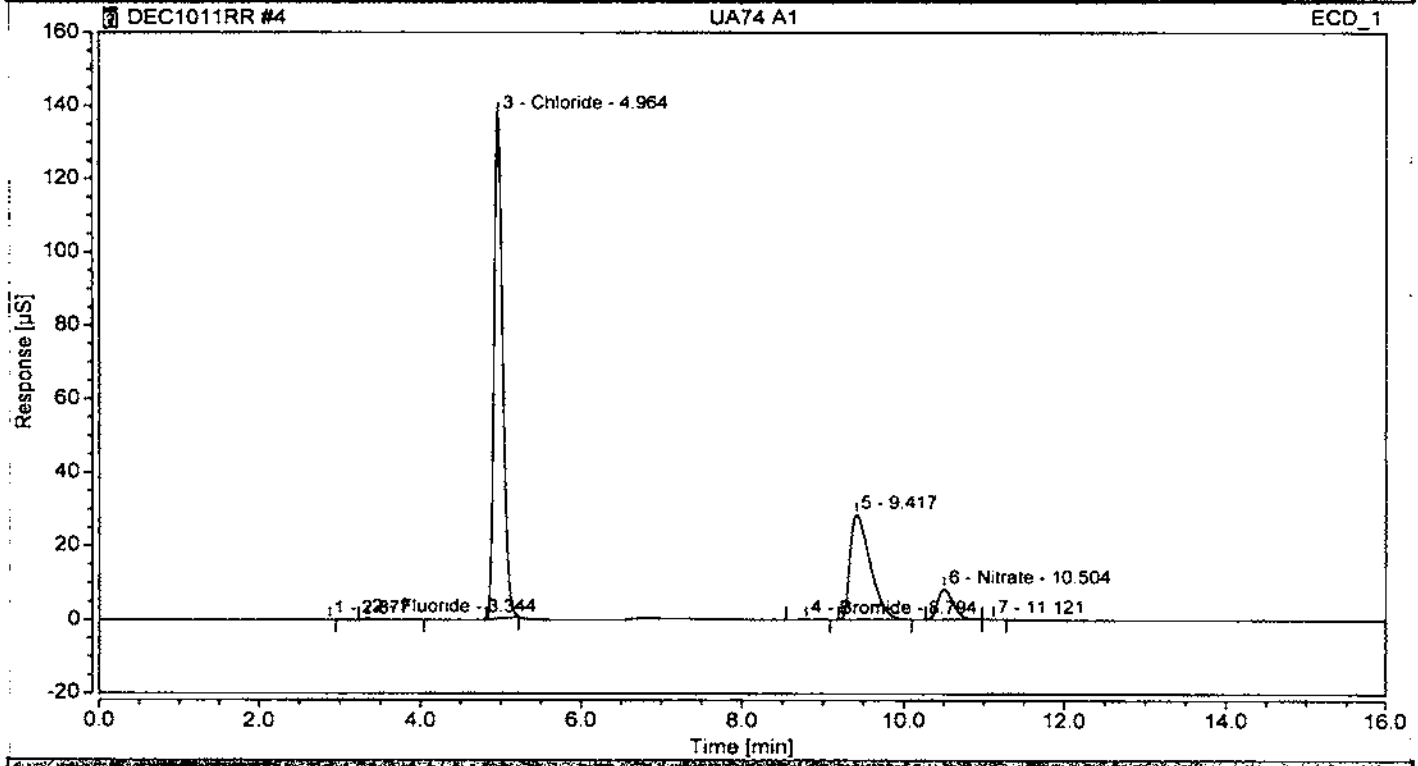
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.21	0.007	0.032	FALSE	n.a.
2		1.0	n.a.	2.87	0.037	0.053	FALSE	n.a.
3	Fluoride	1.0	3.044	3.35	1.442	12.058	FALSE	1.48
4	Chloride	1.0	2.944	4.98	0.892	7.443	FALSE	-1.86
5	Nitrite	1.0	3.042	6.09	2.118	13.261	FALSE	1.39
6		1.0	n.a.	7.47	0.039	0.128	FALSE	n.a.
7	Bromide	1.0	3.005	8.80	0.386	1.890	FALSE	0.16
8	Sulfate	1.0	2.999	9.64	0.556	2.185	FALSE	-0.03
9	Nitrate	1.0	3.039	10.48	2.306	9.997	FALSE	1.31
10		1.0	n.a.	11.07	0.006	0.045	FALSE	n.a.
11	Phosphate	1.0	2.995	13.20	0.886	4.671	FALSE	-0.16

Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 10:31*		



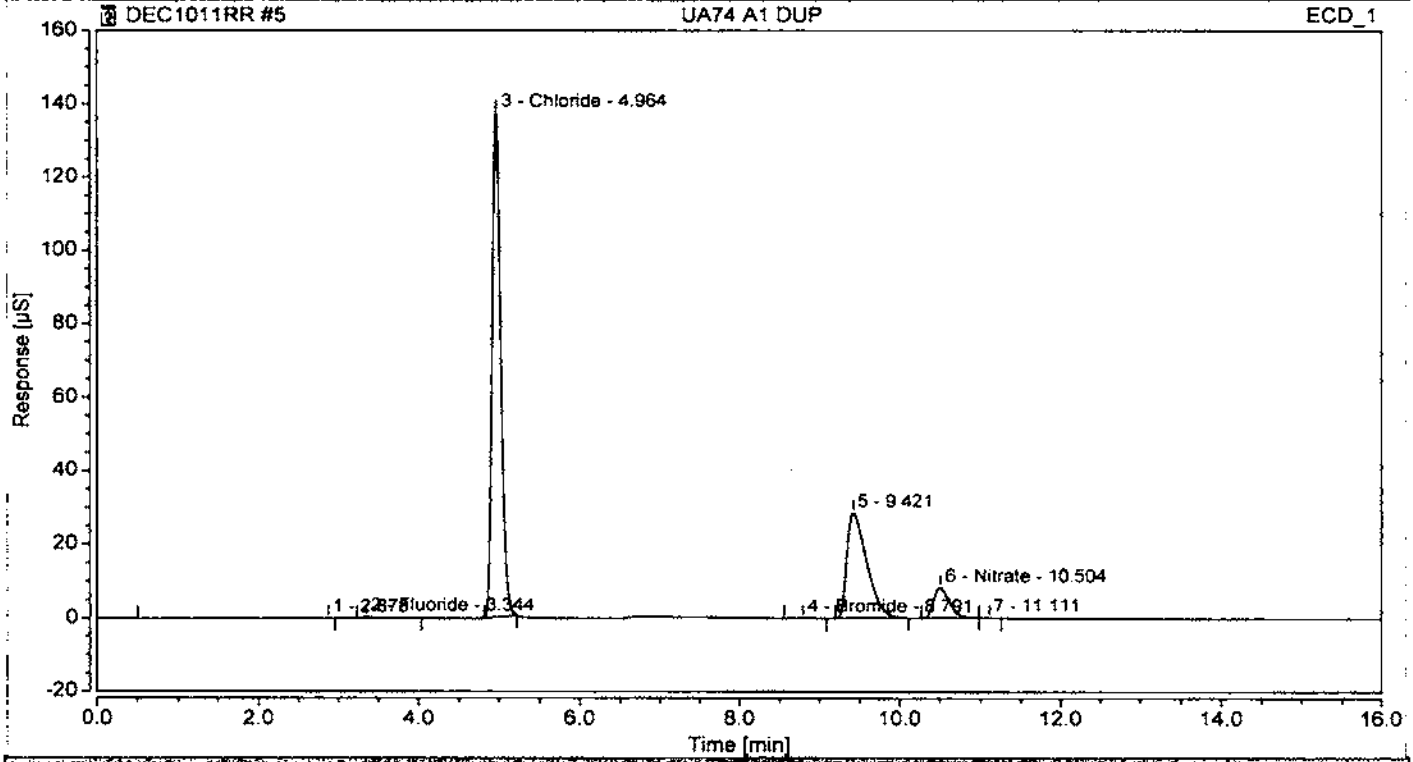
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.12	0.008	0.036	FALSE	n.a.
2		1.0	n.a.	2.87	0.037	0.054	FALSE	n.a.
3		1.0	n.a.	3.03	0.005	0.042	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.48	0.051	0.141	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 10:50*		



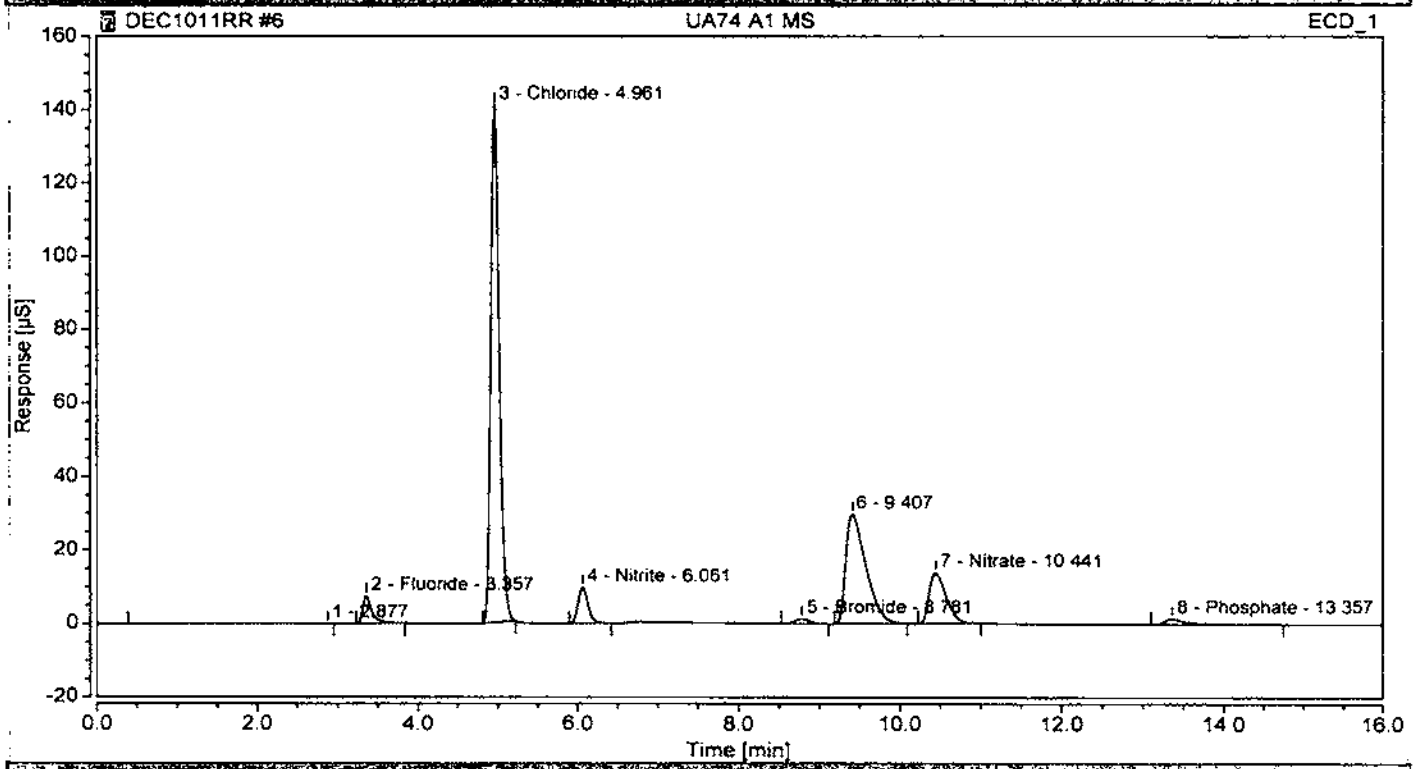
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.049	0.044	FALSE	n.a.
2	Fluoride	1.0	0.125	3.34	0.059	0.408	FALSE	n.a.
3	Chloride	1.0	55.640	4.96	16.848	137.278	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.139	8.79	0.018	0.091	FALSE	n.a.
5		1.0	n.a.	9.42	8.179	28.520	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	2.425	10.50	1.840	8.211	FALSE	n.a.
7		1.0	n.a.	11.12	0.006	0.045	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1 DUP*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:10*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.042	0.045	FALSE	n.a.
2	Fluoride	1.0	0.122	3.34	0.058	0.395	FALSE	n.a.
3	Chloride	1.0	55.722	4.96	16.873	137.325	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.139	8.79	0.018	0.090	FALSE	n.a.
5		1.0	n.a.	9.42	8.190	28.526	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	2.435	10.50	1.847	8.238	FALSE	n.a.
7		1.0	n.a.	11.11	0.005	0.042	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 11:30*		



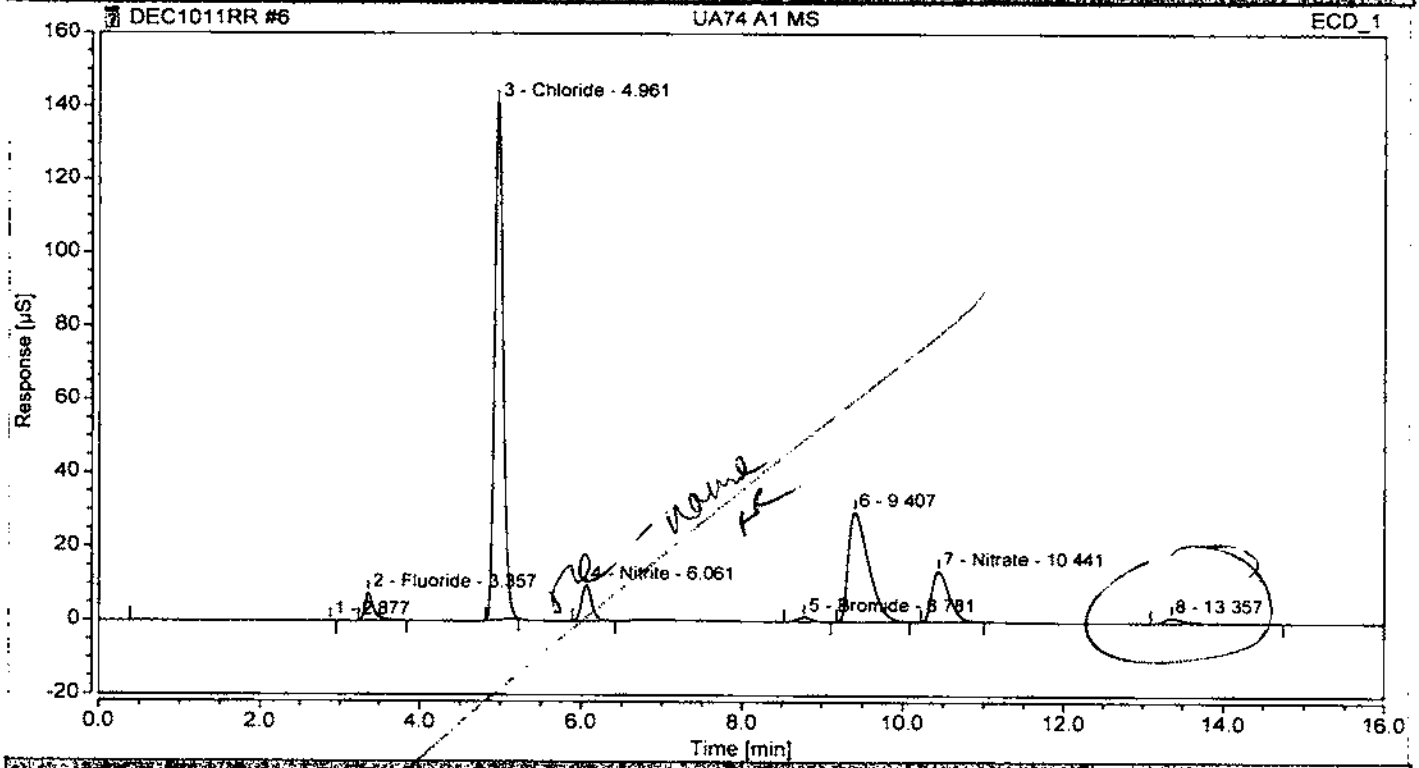
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.041	0.044	FALSE	n.a.
2	Fluoride	1.0	2.060	3.36	0.976	7.443	FALSE	n.a.
3	Chloride	1.0	57.184	4.96	17.315	140.867	FALSE	n.a.
4	Nitrite	1.0	2.038	6.06	1.419	9.749	FALSE	n.a.
5	Bromide	1.0	1.978	8.78	0.254	1.302	FALSE	n.a.
6		1.0	n.a.	9.41	8.563	29.641	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Nitrate	1.0	4.467	10.44	3.388	13.720	FALSE	n.a.
8	Phosphate	1.0	1.619	13.36	0.479	1.444	FALSE	n.a.

TZ84 : 00521

Injection Details

Injection Name:	*UA74 A1 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:30*		

Chromatogram



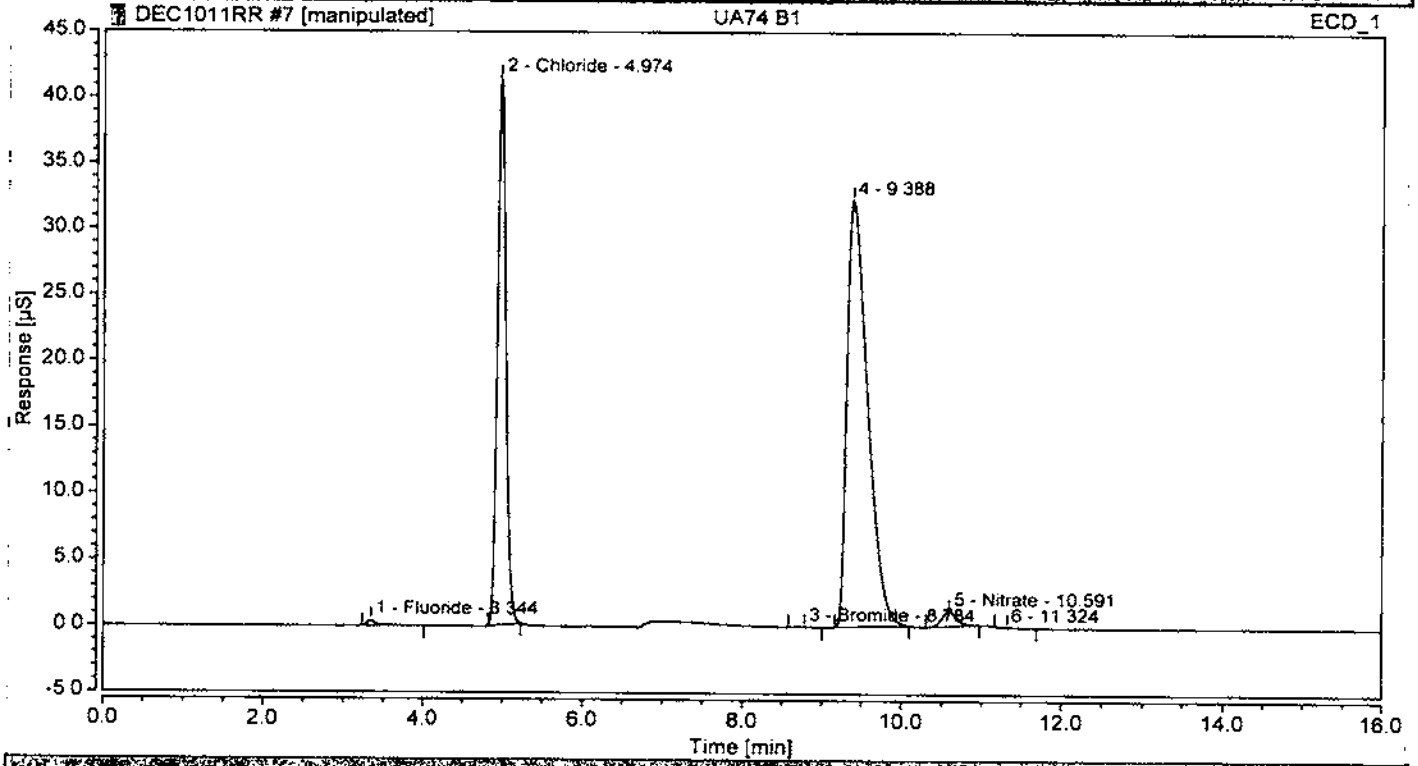
Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.041	0.044	FALSE	n.a.
2	Fluoride	1.0	2.060	3.36	0.976	7.443	FALSE	n.a.
3	Chloride	1.0	57.184	4.96	17.315	140.867	FALSE	n.a.
4	Nitrite	1.0	2.038	6.06	1.419	9.749	FALSE	n.a.
5	Bromide	1.0	1.978	8.78	0.254	1.302	FALSE	n.a.
6		1.0	n.a.	9.41	8.563	29.641	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Nitrate	1.0	4.467	10.44	3.388	13.720	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	13.36	0.479	1.444	FALSE	n.a.

[redacted]

Injection Name:	*UA74 B1*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:49*		

Chromatogram



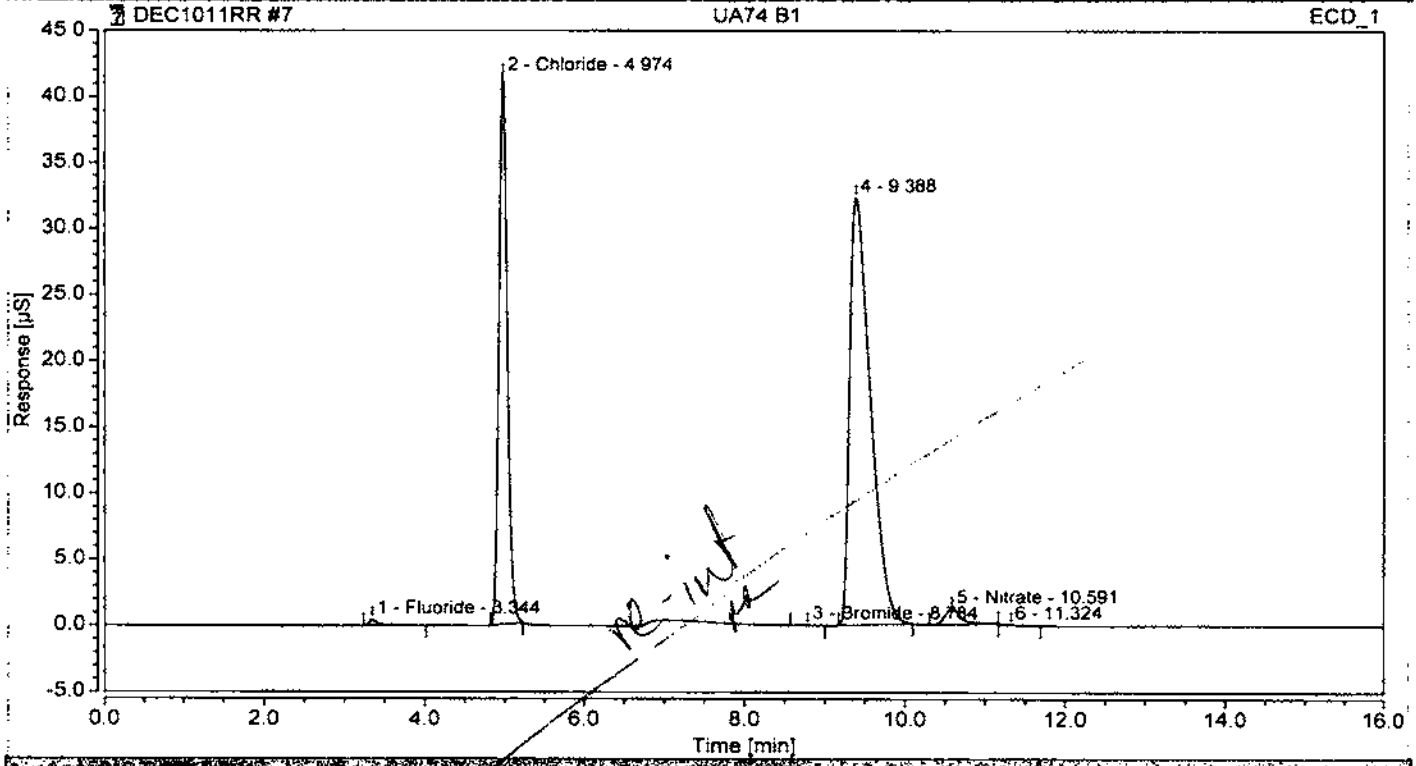
Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.134	3.34	0.064	0.449	FALSE	n.a.
2	Chloride	1.0	16.580	4.97	5.020	41.454	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.052	8.78	0.007	0.035	FALSE	n.a.
4		1.0	n.a.	9.39	9.597	32.258	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.319	10.59	0.242	1.127	TRUE	n.a.
6		1.0	n.a.	11.32	0.016	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 B1*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:49*		

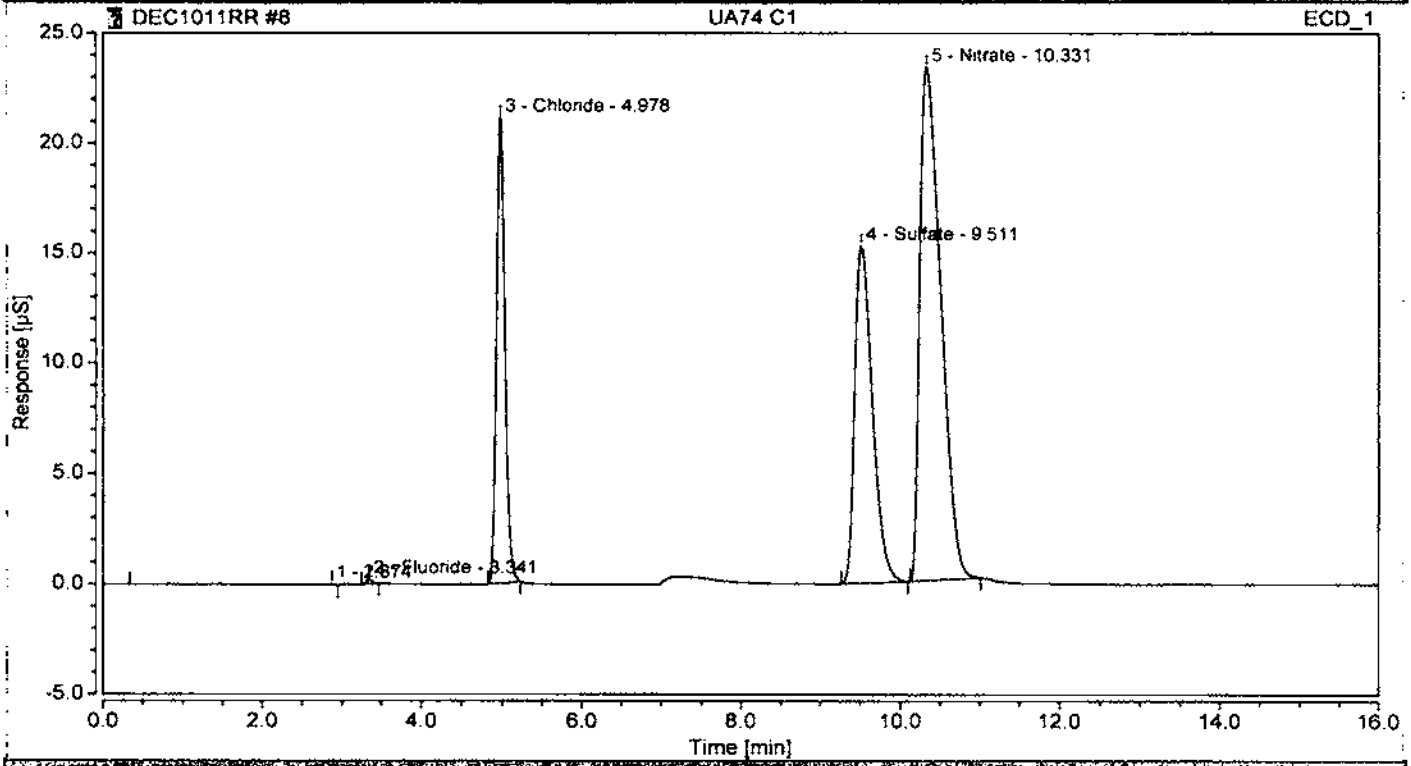
[redacted]



[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.134	3.34	0.064	0.449	FALSE	n.a.
2	Chloride	1.0	16.580	4.97	5.020	41.454	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.052	8.78	0.007	0.035	FALSE	n.a.
4		1.0	n.a.	9.39	9.597	32.258	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.380	10.59	0.288	1.170	FALSE	n.a.
6		1.0	n.a.	11.32	0.016	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

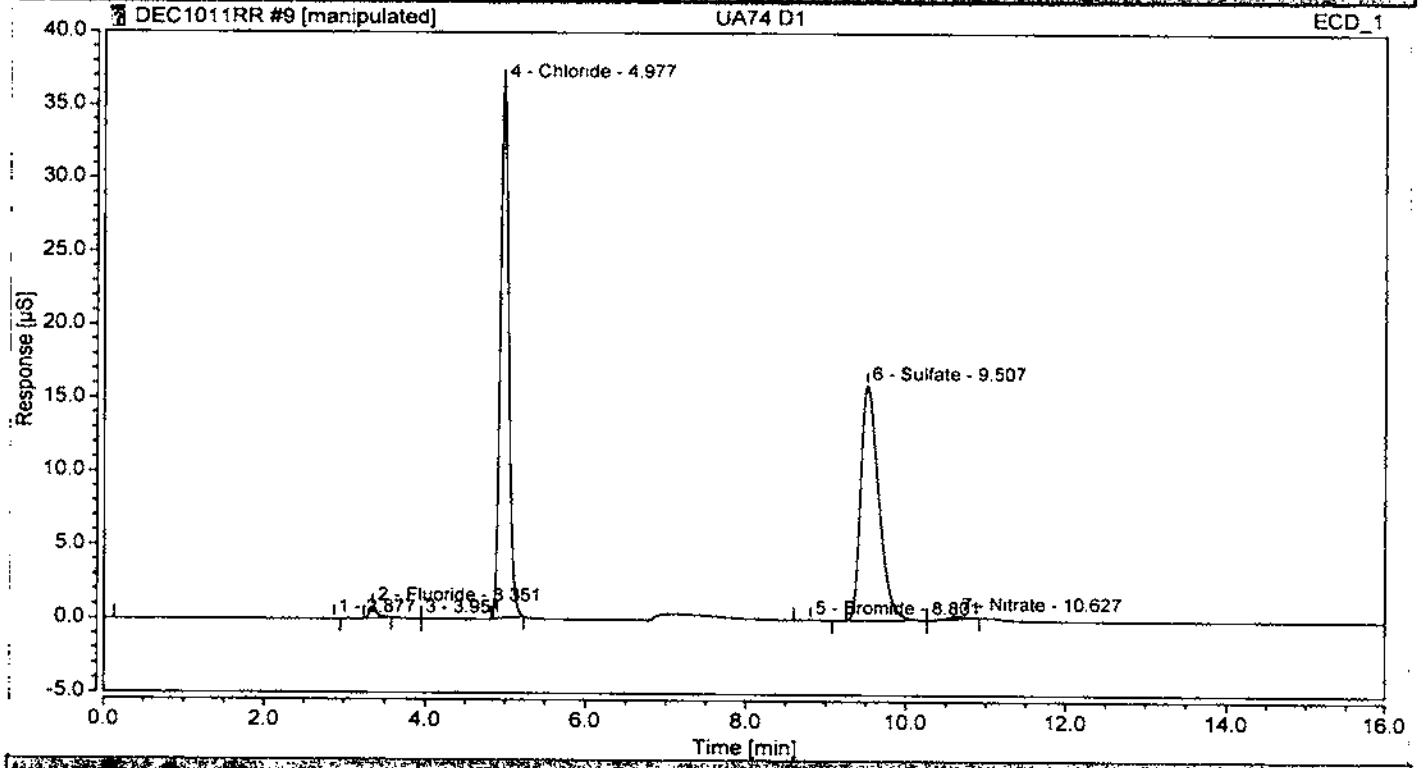
Injection Name:	*UA74 C1*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 12:09*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.044	0.049	FALSE	n.a.
2	Fluoride	1.0	0.037	3.34	0.017	0.205	FALSE	n.a.
3	Chloride	1.0	8.418	4.98	2.549	21.107	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	20.898	9.51	3.874	15.268	FALSE	n.a.
5	Nitrate	1.0	9.279	10.33	7.039	23.275	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Results

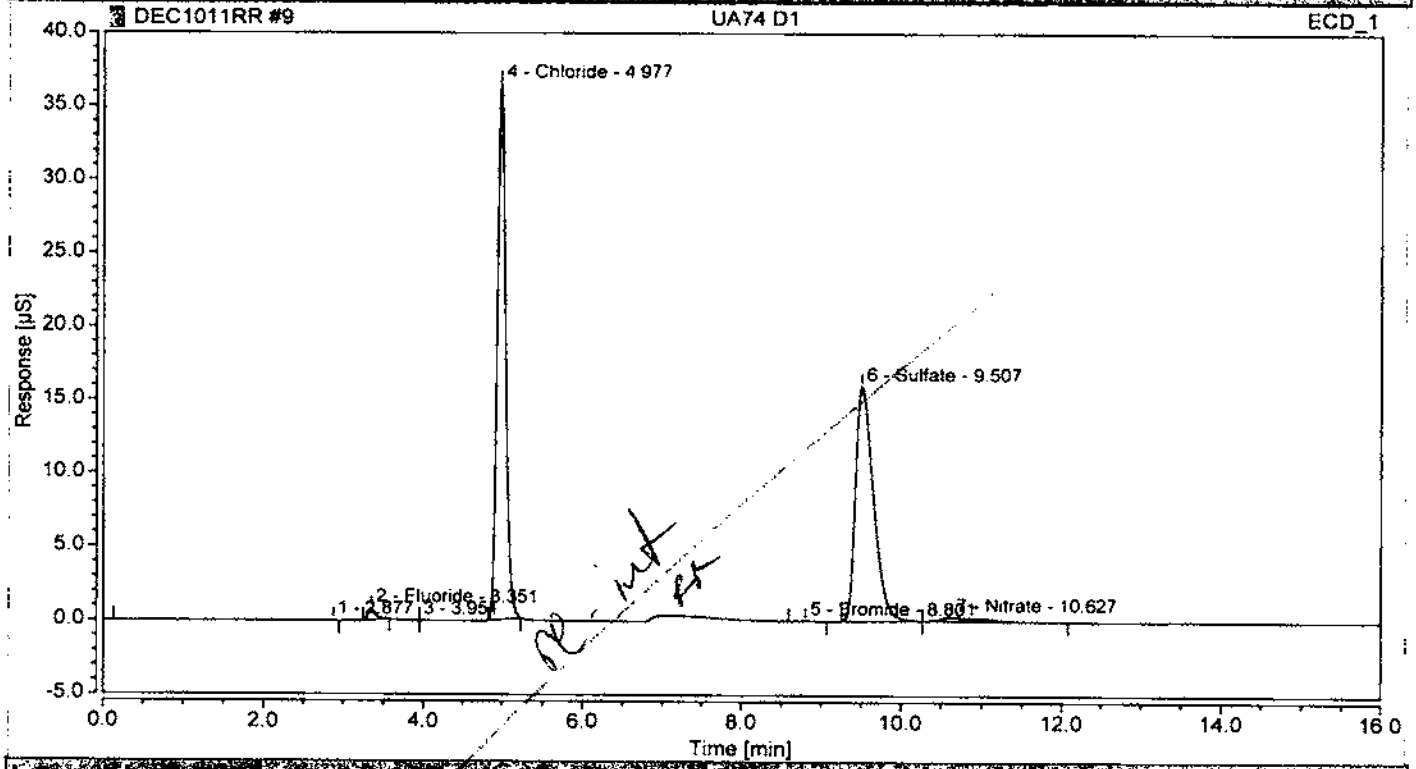
Injection Name:	*UA74 D1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 12:28*		



Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.046	0.047	FALSE	n.a.
2	Fluoride	1.0	0.183	3.35	0.087	0.787	FALSE	n.a.
3		1.0	n.a.	3.95	0.000	0.057	FALSE	n.a.
4	Chloride	1.0	14.589	4.98	4.417	36.453	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.060	8.80	0.008	0.039	FALSE	n.a.
6	Sulfate	1.0	22.492	9.51	4.170	15.938	FALSE	n.a.
7	Nitrate	1.0	0.054	10.63	0.041	0.167	TRUE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 D1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 12:28*		

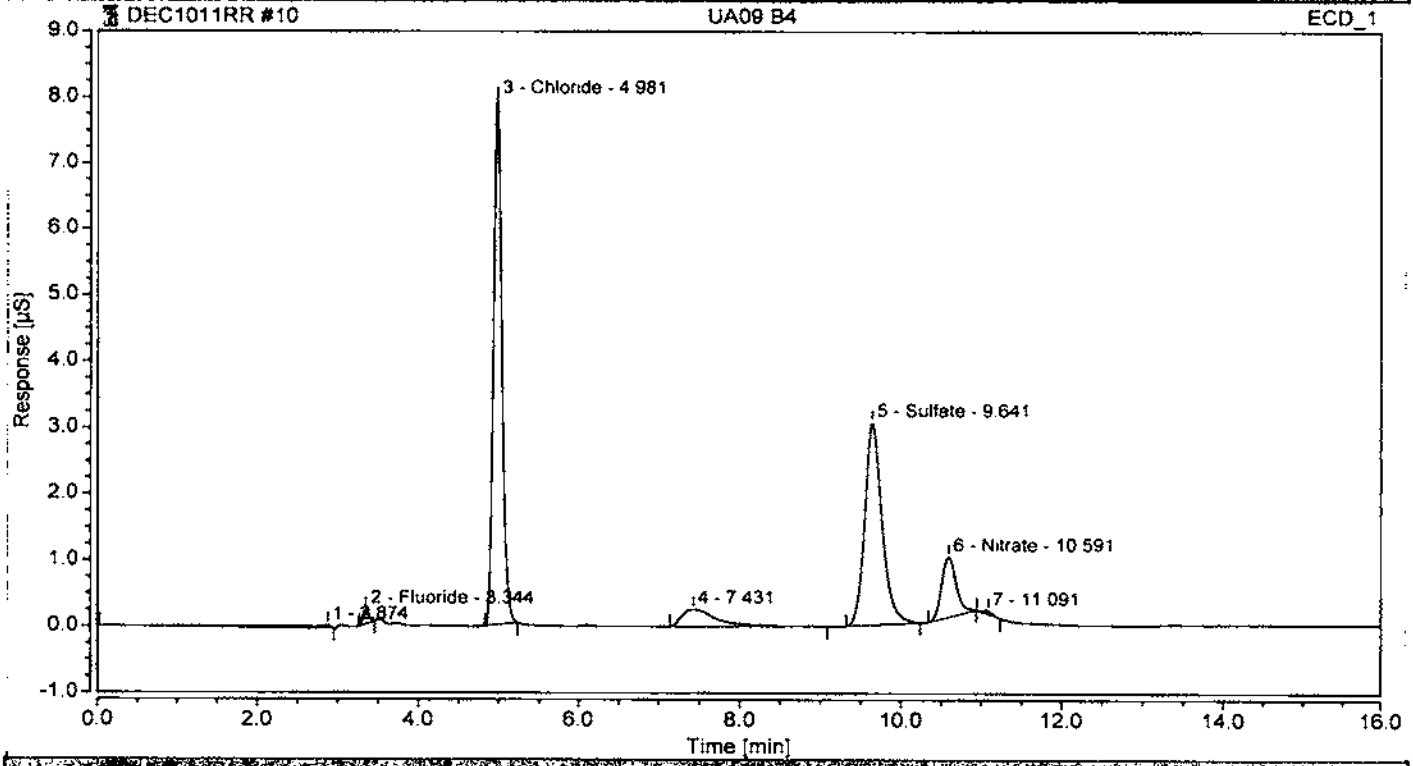


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.046	0.047	FALSE	n.a.
2	Fluoride	1.0	0.183	3.35	0.087	0.787	FALSE	n.a.
3		1.0	n.a.	3.95	0.000	0.057	FALSE	n.a.
4	Chloride	1.0	14.589	4.98	4.417	36.453	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.060	8.80	0.008	0.039	FALSE	n.a.
6	Sulfate	1.0	22.492	9.51	4.170	15.938	FALSE	n.a.
7	Nitrate	1.0	0.221	10.63	0.168	0.275	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[illegible]

Injection Name:	*UA09 B4*	Inject Number:	10
Vial Number:	*10*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 12:48*		

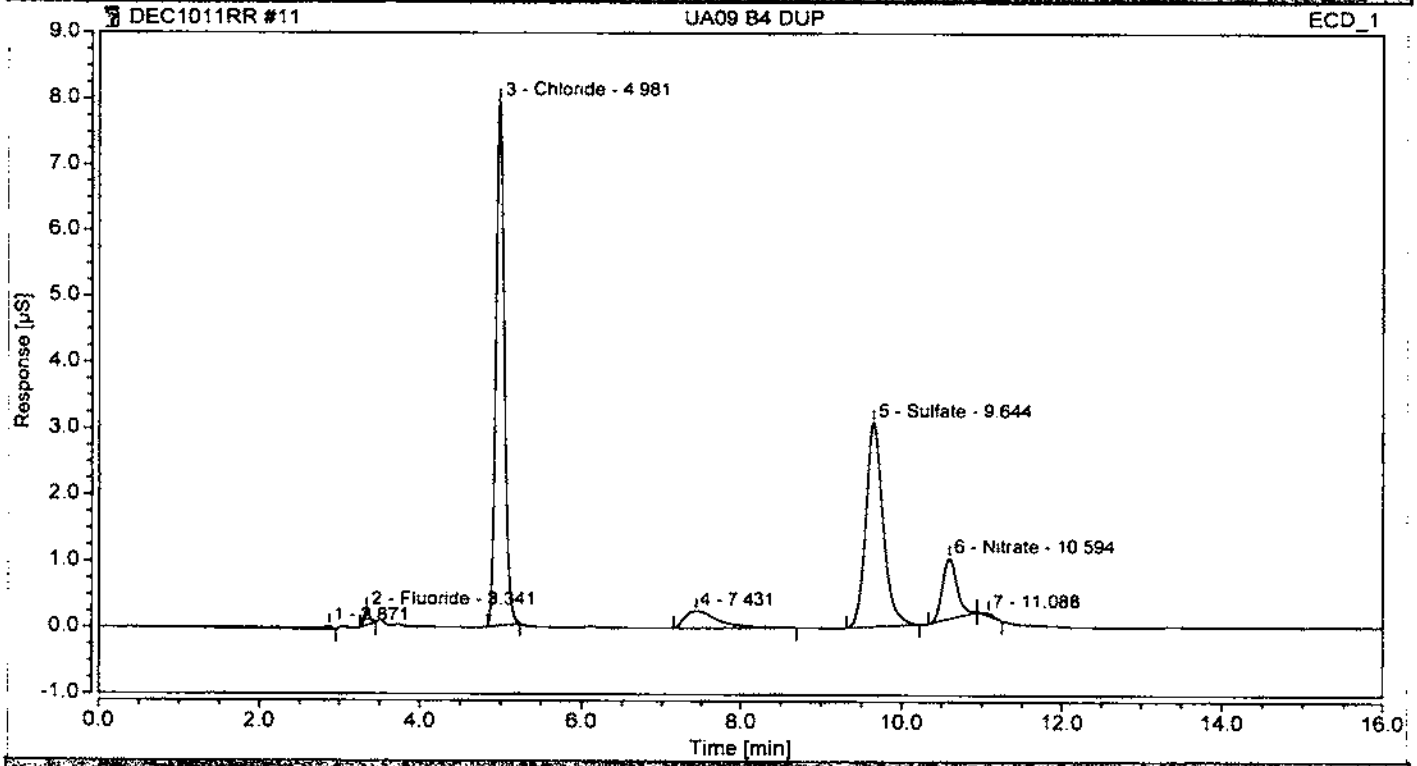
[illegible]



Integration Results

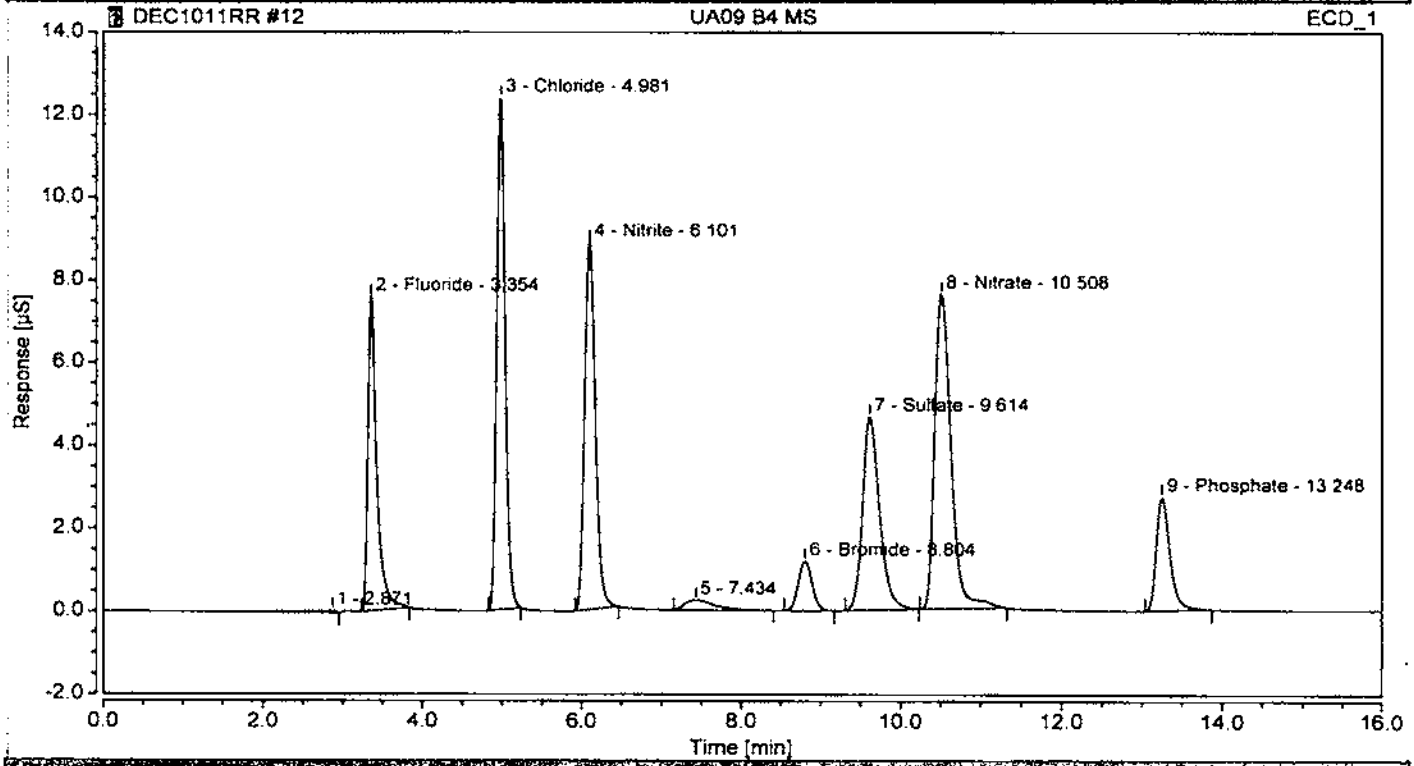
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.047	0.049	FALSE	n.a.
2	Fluoride	5.0	0.198	3.34	0.019	0.223	FALSE	n.a.
3	Chloride	5.0	15.852	4.98	0.960	7.943	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.43	0.134	0.257	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	20.612	9.64	0.764	3.057	FALSE	n.a.
6	Nitrate	5.0	1.266	10.59	0.192	0.908	FALSE	n.a.
7		5.0	n.a.	11.09	0.007	0.049	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA09 B4 DUP*	Inject Number:	11
Vial Number:	*11*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 13:08*		



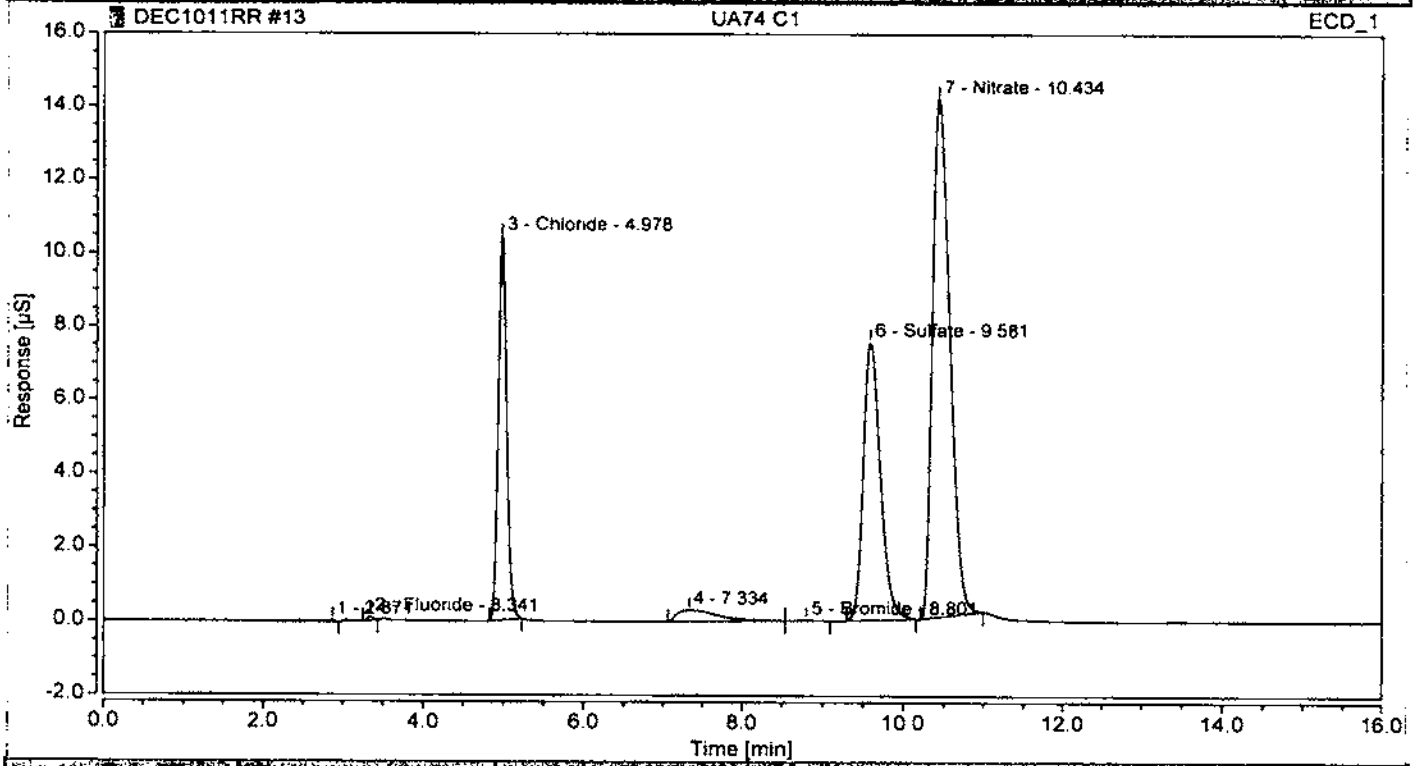
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.049	FALSE	n.a.
2	Fluoride	5.0	0.200	3.34	0.019	0.226	FALSE	n.a.
3	Chloride	5.0	15.838	4.98	0.959	7.940	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.43	0.127	0.257	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	20.718	9.64	0.768	3.076	FALSE	n.a.
6	Nitrate	5.0	1.279	10.59	0.194	0.911	FALSE	n.a.
7		5.0	n.a.	11.09	0.006	0.046	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA09 B4 MS*	Inject Number:	12
Vial Number:	*12*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 13:28*		



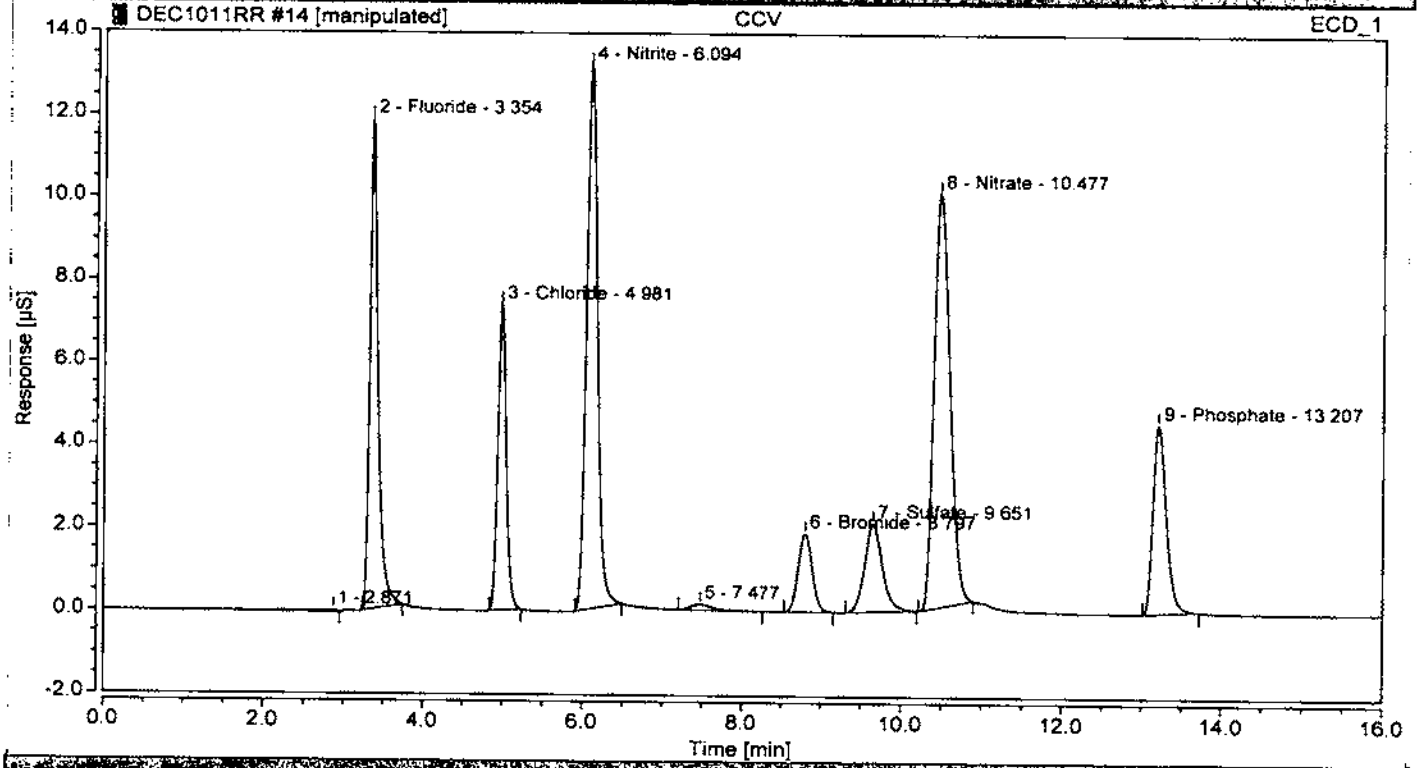
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.049	0.048	FALSE	n.a.
2	Fluoride	5.0	10.355	3.35	0.981	7.590	FALSE	n.a.
3	Chloride	5.0	24.723	4.98	1.497	12.366	FALSE	n.a.
4	Nitrite	5.0	9.933	6.10	1.383	8.871	FALSE	n.a.
5		5.0	n.a.	7.43	0.107	0.239	FALSE	n.a.
6	Bromide	5.0	9.446	8.80	0.243	1.188	FALSE	n.a.
7	Sulfate	5.0	30.928	9.61	1.147	4.647	FALSE	n.a.
8	Nitrate	5.0	11.766	10.51	1.785	7.588	FALSE	n.a.
9	Phosphate	5.0	9.181	13.25	0.543	2.737	FALSE	n.a.

Injection Name:	*UA74 C1*	Inject Number:	13
Vial Number:	*13*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 13:48*		



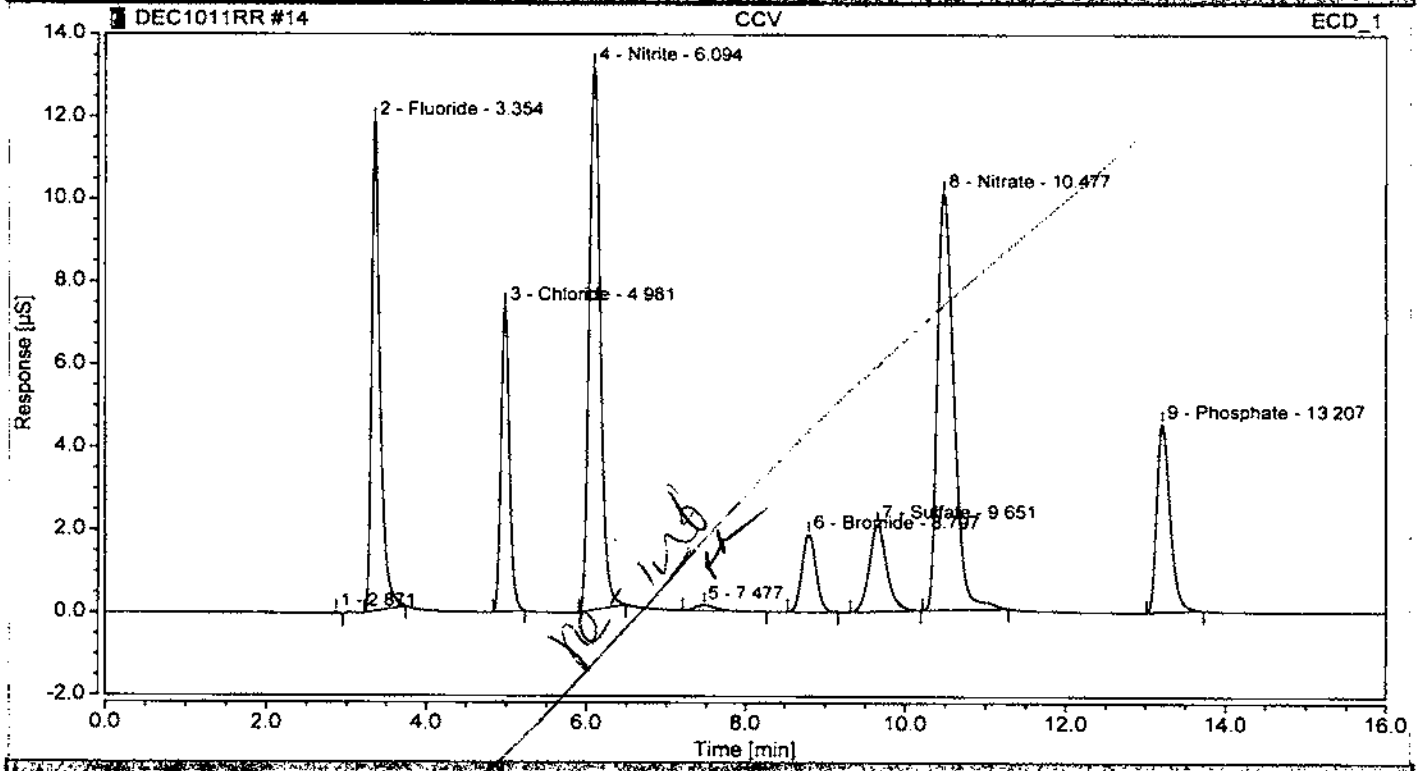
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.87	0.049	0.047	FALSE	n.a.
2	Fluoride	2.0	0.035	3.34	0.008	0.103	FALSE	n.a.
3	Chloride	2.0	8.332	4.98	1.262	10.435	FALSE	n.a.
n.a.	Nitrite	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		2.0	n.a.	7.33	0.190	0.310	FALSE	n.a.
5	Bromide	2.0	0.099	8.80	0.006	0.025	FALSE	n.a.
6	Sulfate	2.0	20.064	9.58	1.860	7.550	FALSE	n.a.
7	Nitrate	2.0	9.298	10.43	3.527	14.084	FALSE	n.a.
n.a.	Phosphate	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodai*		
Injection Date/Time:	*10/12/11 14:08*		



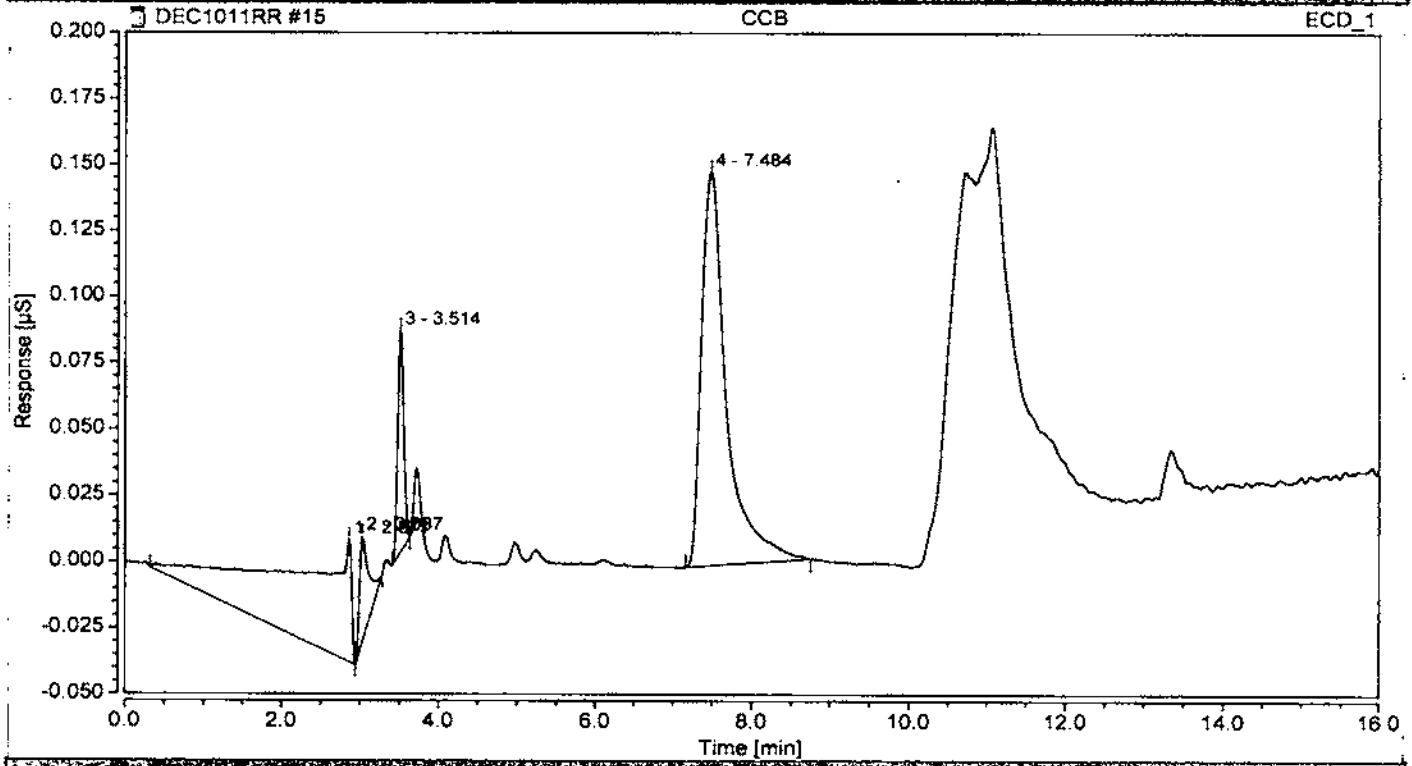
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.049	0.046	FALSE	n.a.
2	Fluoride	1.0	3.047	3.35	1.443	11.858	FALSE	1.56
3	Chloride	1.0	2.947	4.98	0.892	7.378	FALSE	-1.76
4	Nitrite	1.0	3.625	6.09	2.106	13.148	FALSE	0.85
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.008	8.80	0.387	1.883	FALSE	0.26
7	Sulfate	1.0	2.909	9.65	0.539	2.120	FALSE	-3.02
8	Nitrate	1.0	3.034	10.48	2.301	9.987	TRUE	1.13
9	Phosphate	1.0	2.987	13.21	0.884	4.545	FALSE	-0.42

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 14:08*		



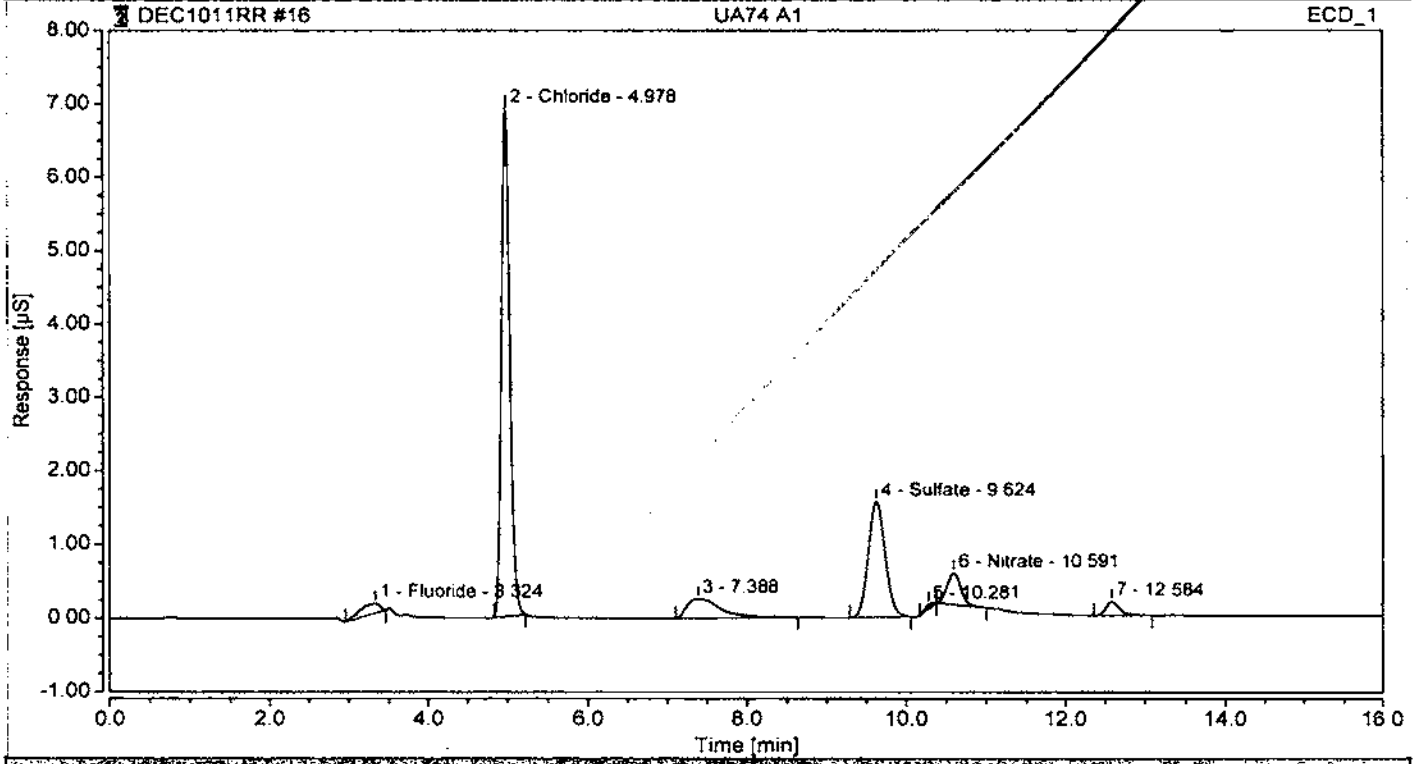
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.049	0.046	FALSE	n.a.
2	Fluoride	1.0	3.047	3.35	1.443	11.858	FALSE	1.56
3	Chloride	1.0	2.947	4.98	0.892	7.378	FALSE	-1.76
4	Nitrite	1.0	3.025	6.09	2.106	13.148	FALSE	0.85
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.008	8.80	0.387	1.883	FALSE	0.26
7	Sulfate	1.0	2.909	9.65	0.539	2.120	FALSE	-3.02
8	Nitrate	1.0	3.191	10.48	2.421	10.071	FALSE	6.36
9	Phosphate	1.0	2.987	13.21	0.884	4.545	FALSE	-0.42

Injection Name:	*CCB*	Inject Number:	15
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 14:29*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.045	0.046	FALSE	n.a.
2		1.0	n.a.	3.04	0.005	0.040	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.48	0.055	0.149	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1*	Inject Number:	16
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodel*		
Injection Date/Time:	*10/12/11 15:52*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	20.0	1.750	3.32	0.041	0.135	FALSE	n.a.
2	Chloride	20.0	54.533	4.98	0.826	6.915	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		20.0	n.a.	7.39	0.132	0.263	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	20.0	41.649	9.62	0.386	1.564	FALSE	n.a.
5		20.0	n.a.	10.28	0.006	0.058	FALSE	n.a.
6	Nitrate	20.0	2.243	10.59	0.085	0.423	FALSE	n.a.
7		20.0	n.a.	12.58	0.037	0.189	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

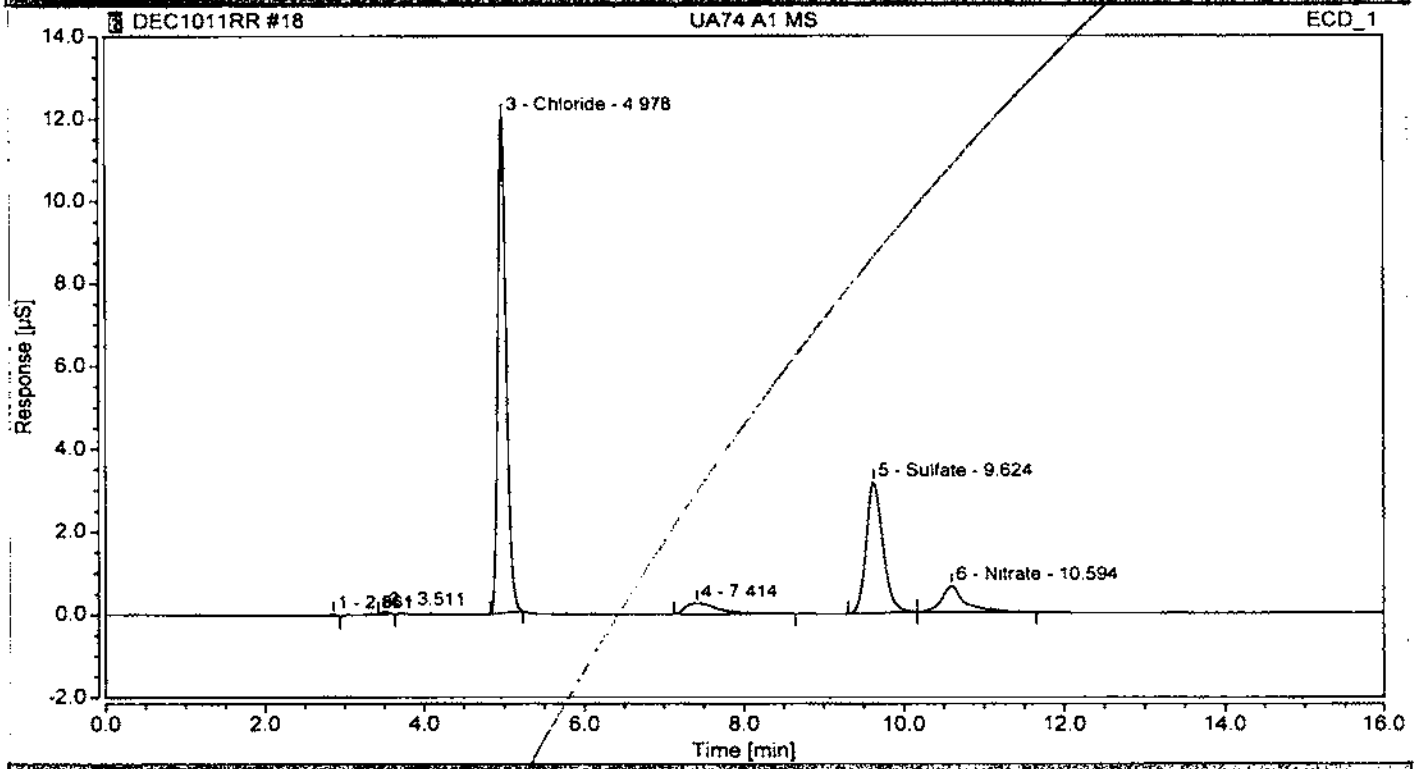
Injection Name:	*UA74 A1 DUP*	Inject Number:	17
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 14:53*		

Can't read channel ECD_1 from injection #17 - UA74 A1 DUP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	matogram in con	matogram in		n.a.

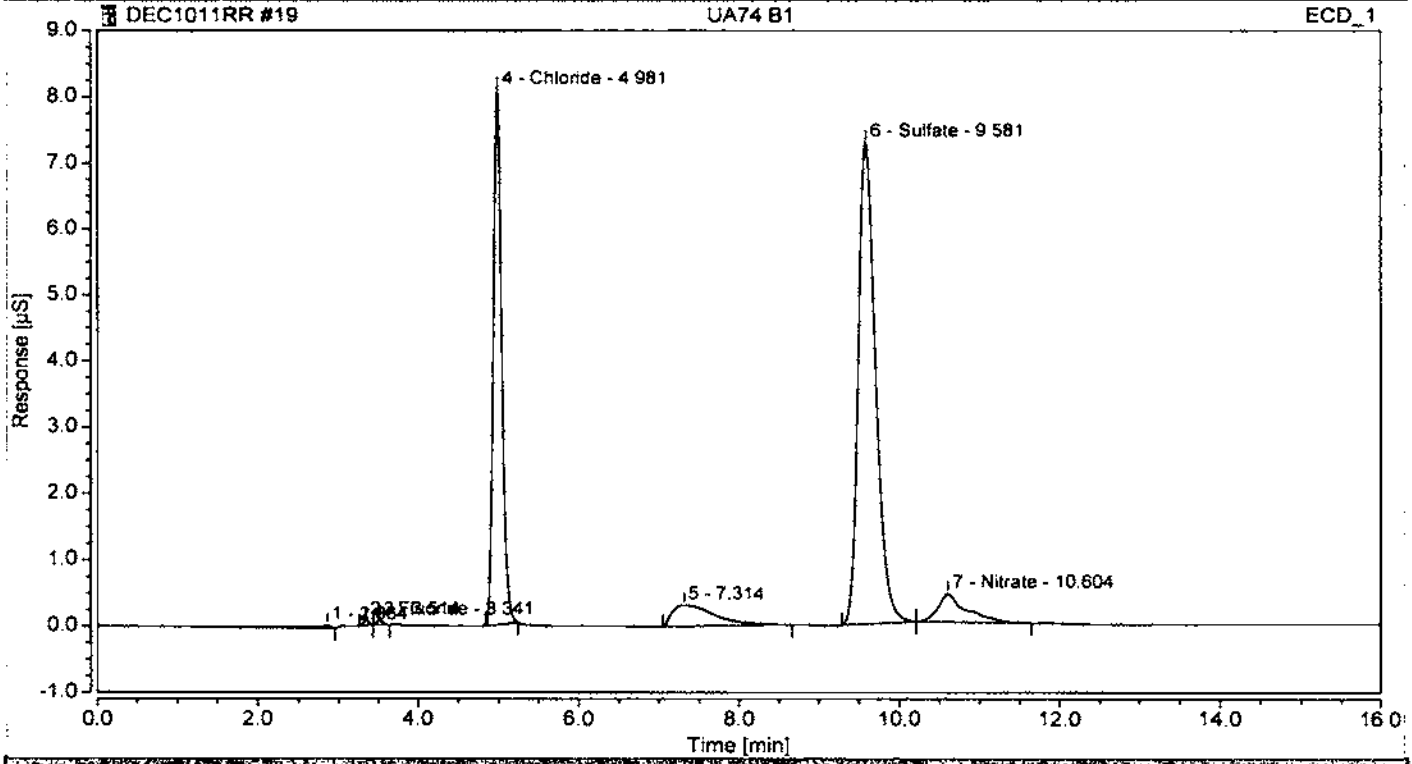
TZ84 : 00535

Injection Name:	*UA74 A1 MS*	Inject Number:	18
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodel*		
Injection Date/Time:	*10/12/11 16:12*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.86	0.052	0.046	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.077	FALSE	n.a.
3	Chloride	20.0	96.018	4.98	1.454	12.027	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.131	0.263	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	82.702	9.62	0.767	3.157	FALSE	n.a.
6	Nitrate	20.0	5.651	10.59	0.214	0.631	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 B1*	Inject Number:	19
Vial Number:	*17*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodel*		
Injection Date/Time:	*10/12/11 16:33*		

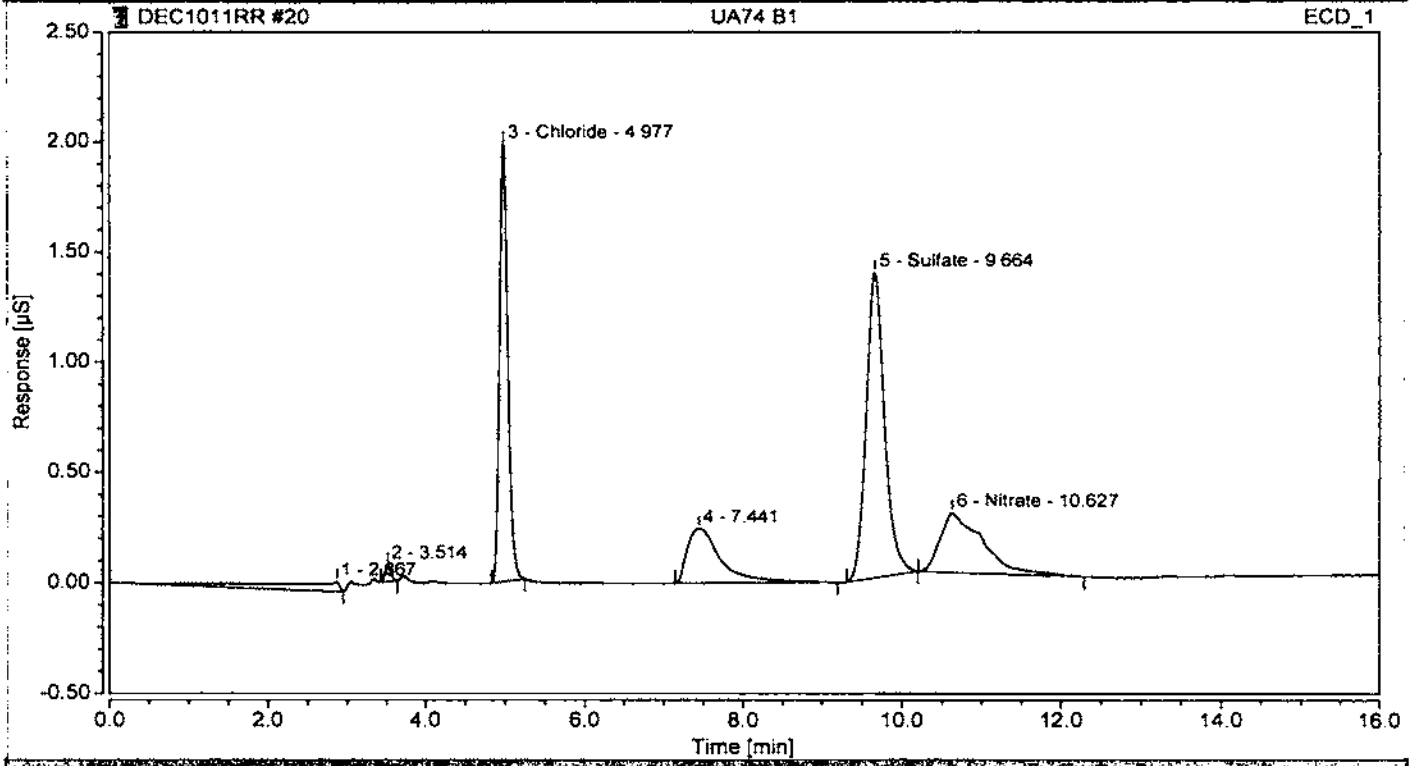


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.86	0.050	0.044	FALSE	n.a.
2	Fluoride	5.0	0.066	3.34	0.006	0.078	FALSE	n.a.
3		5.0	n.a.	3.51	0.005	0.063	FALSE	n.a.
4	Chloride	5.0	16.108	4.98	0.975	8.081	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		5.0	n.a.	7.31	0.199	0.318	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	5.0	48.504	9.58	1.798	7.276	FALSE	n.a.
7	Nitrate	5.0	1.162	10.60	0.176	0.428	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 B1*	Inject Number:	20
Vial Number:	*18*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 16:53*		

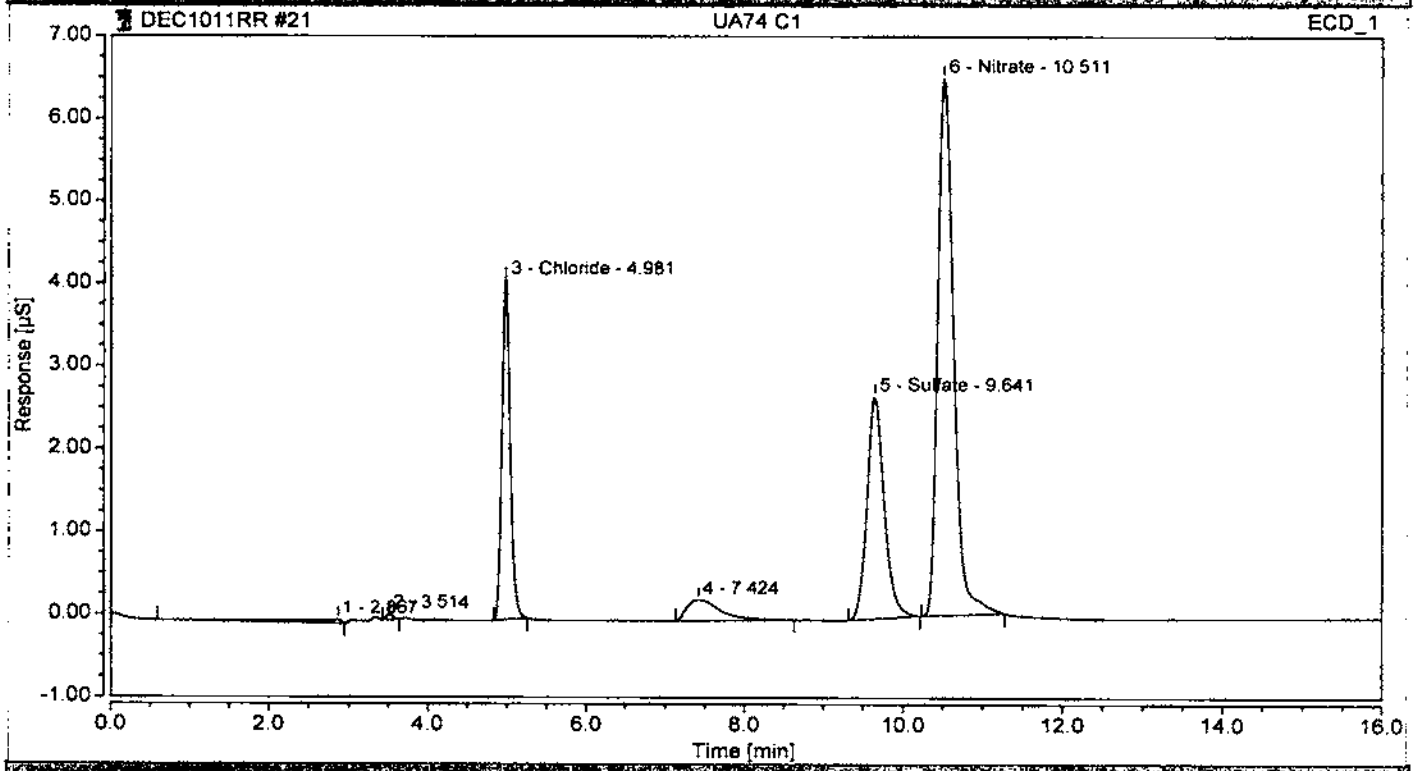
[redacted]



[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.048	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	15.781	4.98	0.239	1.984	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.44	0.122	0.245	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	39.310	9.66	0.364	1.383	FALSE	n.a.
6	Nitrate	20.0	4.379	10.63	0.166	0.269	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

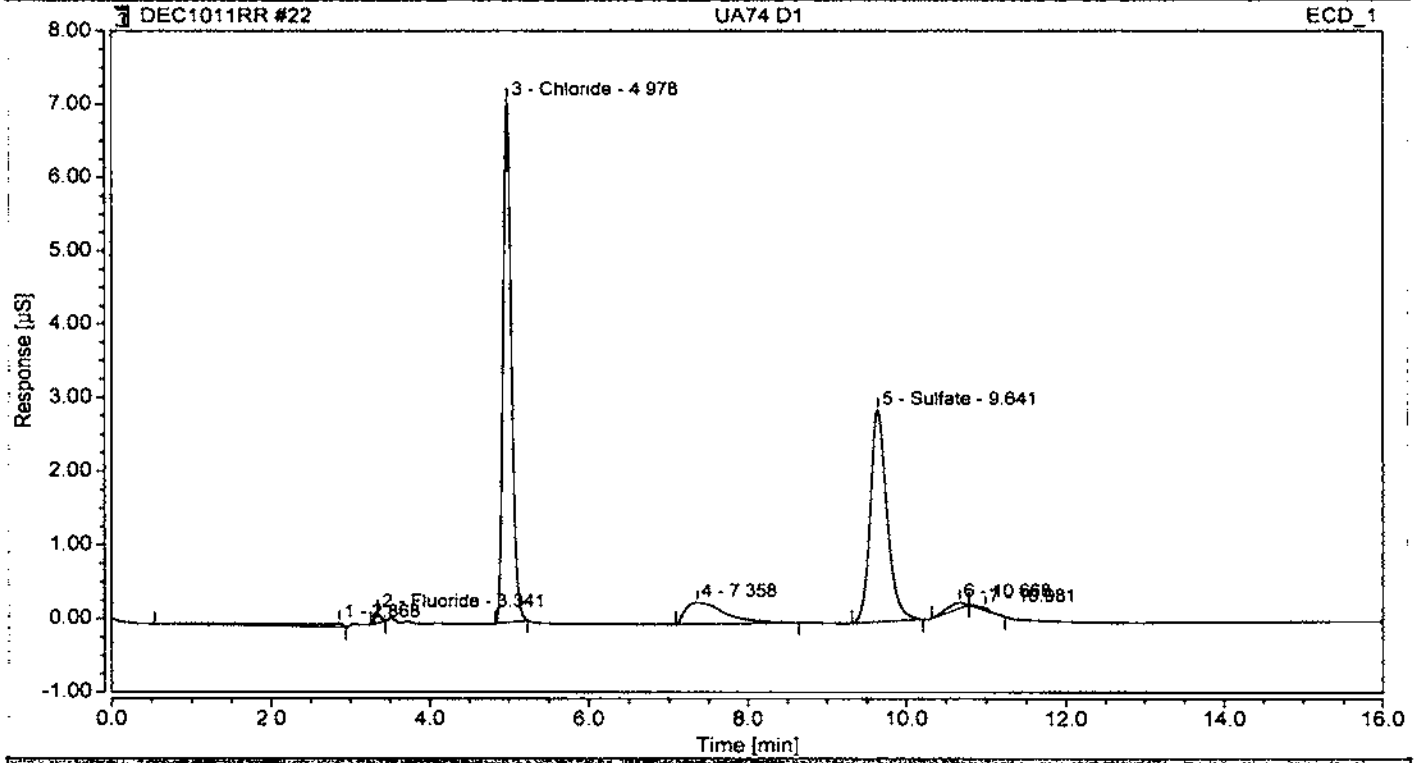
Injection Name:	*UA74 C1*	Inject Number:	21
Vial Number:	*19*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 17:14*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.042	0.049	FALSE	n.a.
n.a.	Fluoride	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.0	n.a.	3.51	0.006	0.069	FALSE	n.a.
3	Chloride	5.0	8.198	4.98	0.496	4.106	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.42	0.128	0.254	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	17.999	9.64	0.667	2.688	FALSE	n.a.
6	Nitrate	5.0	9.936	10.51	1.508	6.504	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

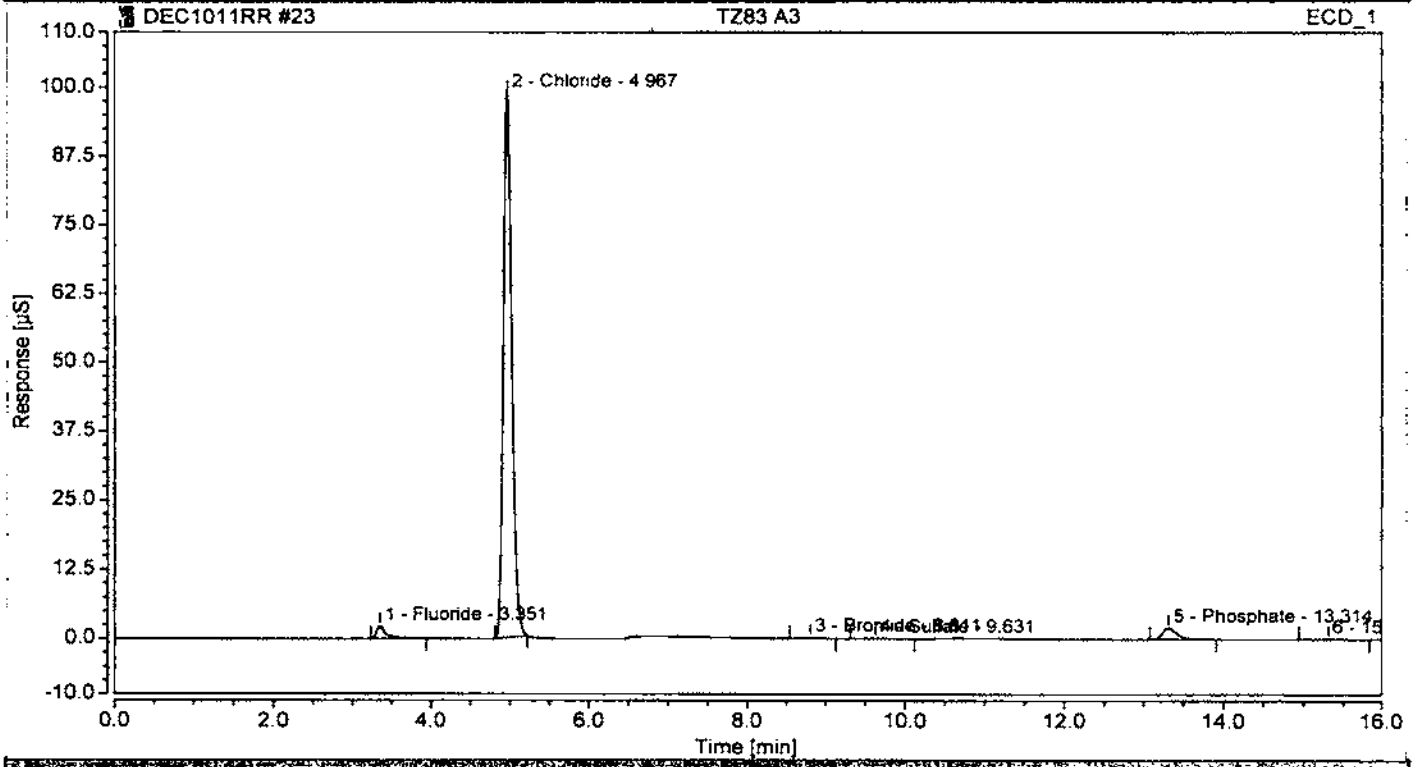
TZ84 : 00540

Injection Name:	*UA74 D1*	Inject Number:	22
Vial Number:	*20*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 17:34*		



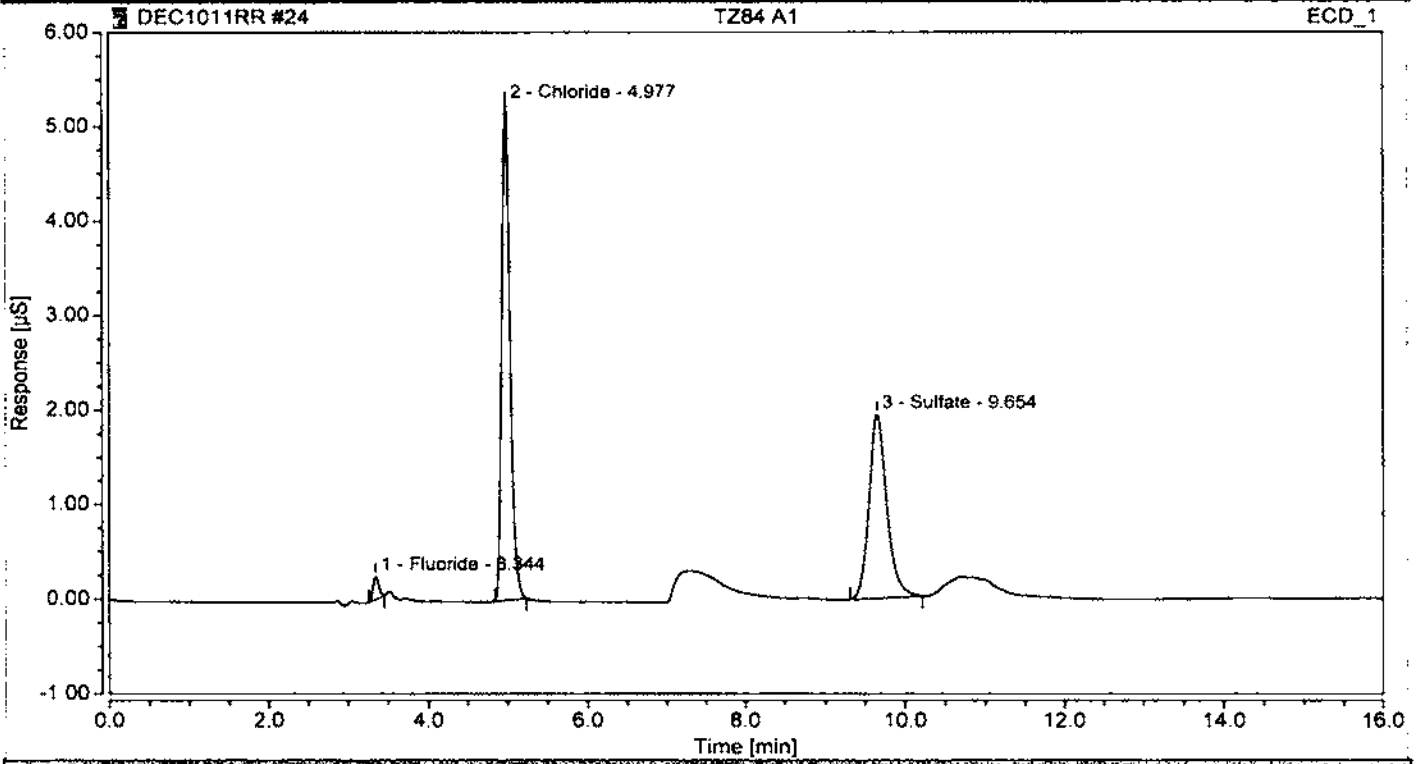
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.049	FALSE	n.a.
2	Fluoride	5.0	0.118	3.34	0.011	0.137	FALSE	n.a.
3	Chloride	5.0	14.153	4.98	0.857	7.099	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.172	0.290	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.196	9.64	0.712	2.865	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		5.0	n.a.	10.67	0.021	0.076	FALSE	n.a.
7		5.0	n.a.	10.98	0.007	0.034	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ83 A3*	Inject Number:	23
Vial Number:	*21*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 17:53*		



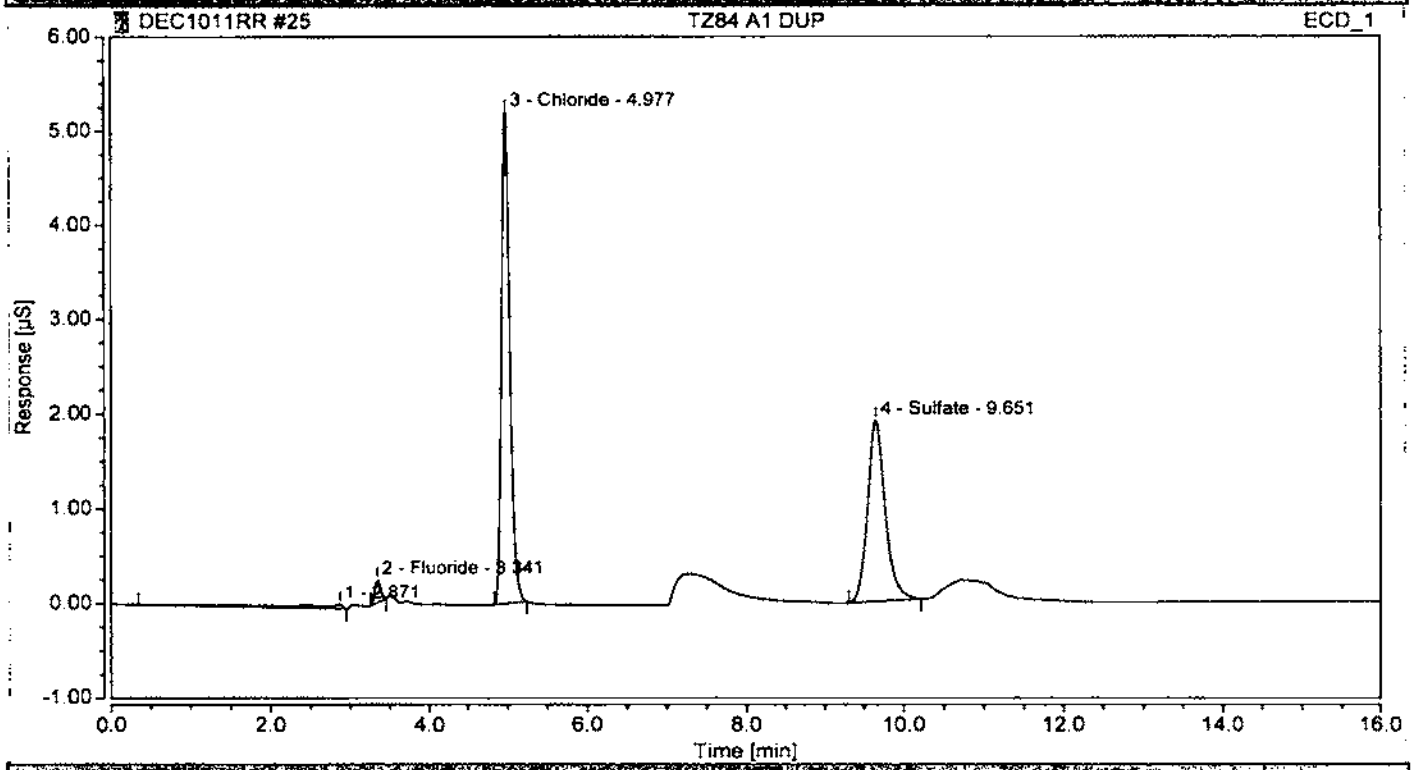
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.696	3.35	0.330	2.244	FALSE	n.a.
2	Chloride	1.0	40.173	4.97	12.164	98.782	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.306	8.81	0.039	0.193	FALSE	n.a.
4	Sulfate	1.0	0.120	9.63	0.022	0.079	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	1.480	13.31	0.438	2.034	FALSE	n.a.
6		1.0	n.a.	15.31	0.024	0.088	FALSE	n.a.

Injection Name:	*TZ84 A1*	Inject Number:	24
Vial Number:	*22*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 18:13*		



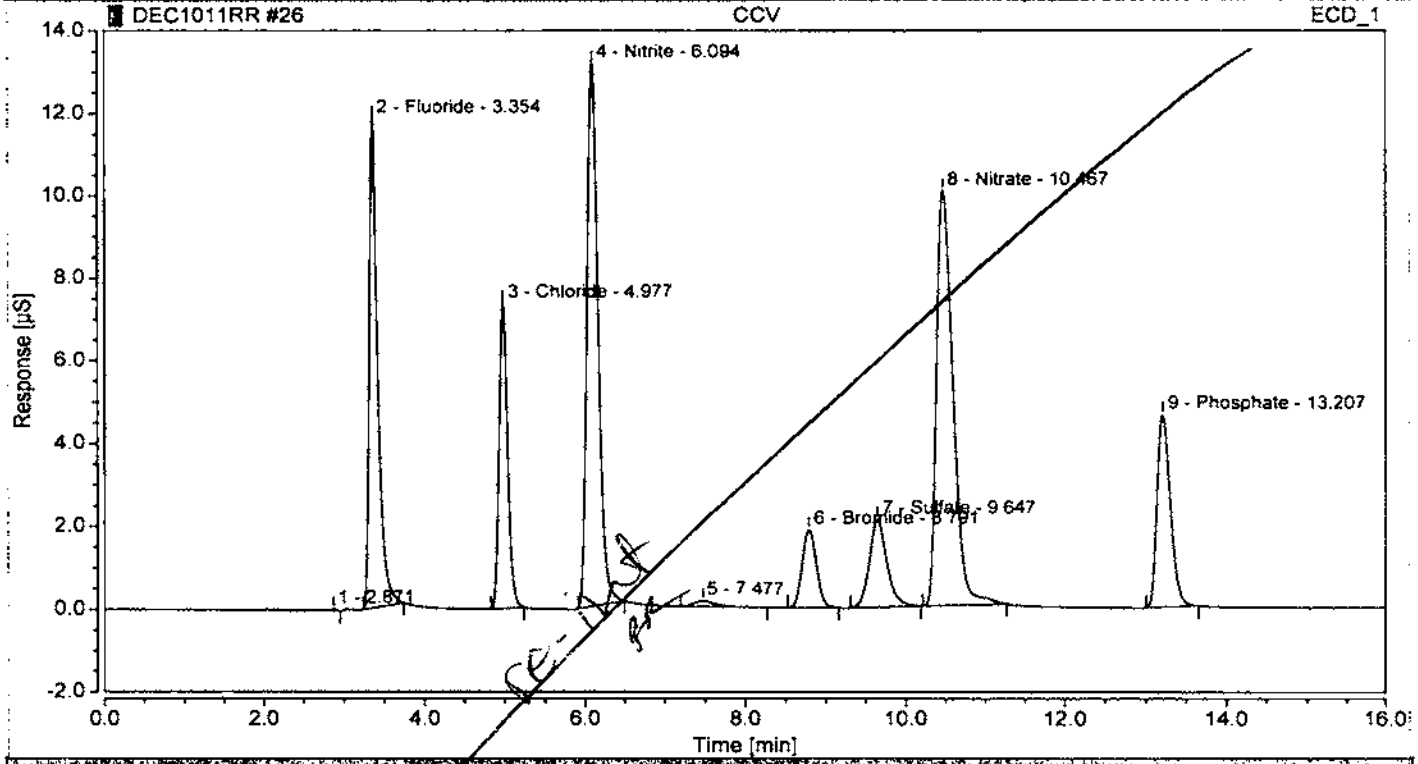
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	5.0	0.217	3.34	0.021	0.242	FALSE	n.a.
2	Chloride	5.0	10.438	4.98	0.632	5.253	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Sulfate	5.0	13.407	9.65	0.497	1.947	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 DUP*	Inject Number:	25
Vial Number:	*23*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 18:32*		



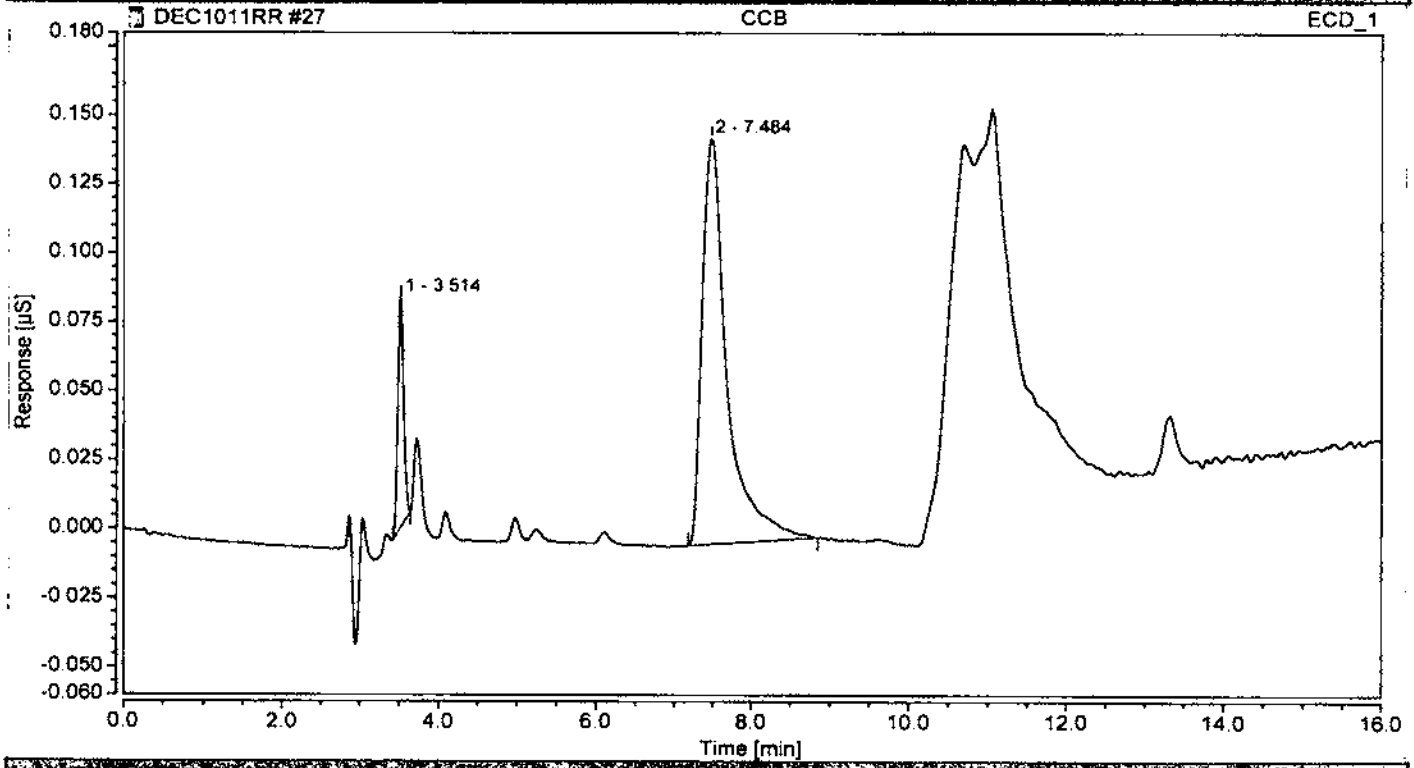
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.045	0.047	FALSE	n.a.
2	Fluoride	5.0	0.214	3.34	0.020	0.240	FALSE	n.a.
3	Chloride	5.0	10.366	4.98	0.628	5.204	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	5.0	13.233	9.65	0.491	1.914	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*CCV*	Inject Number:	26
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 18:52*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.045	FALSE	n.a.
2	Fluoride	1.0	3.045	3.35	1.443	11.843	FALSE	1.51
3	Chloride	1.0	2.949	4.98	0.893	7.361	FALSE	-1.71
4	Nitrite	1.0	3.030	6.09	2.109	13.131	FALSE	0.99
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.092	8.79	0.386	1.881	FALSE	0.07
7	Sulfate	1.0	2.901	9.65	0.538	2.118	FALSE	-3.29
8	Nitrate	1.0	3.187	10.47	2.418	10.021	FALSE	6.24
9	Phosphate	1.0	2.979	13.21	0.881	4.643	FALSE	-0.69

Injection Name:	*CCB*	Inject Number:	27
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:12*		

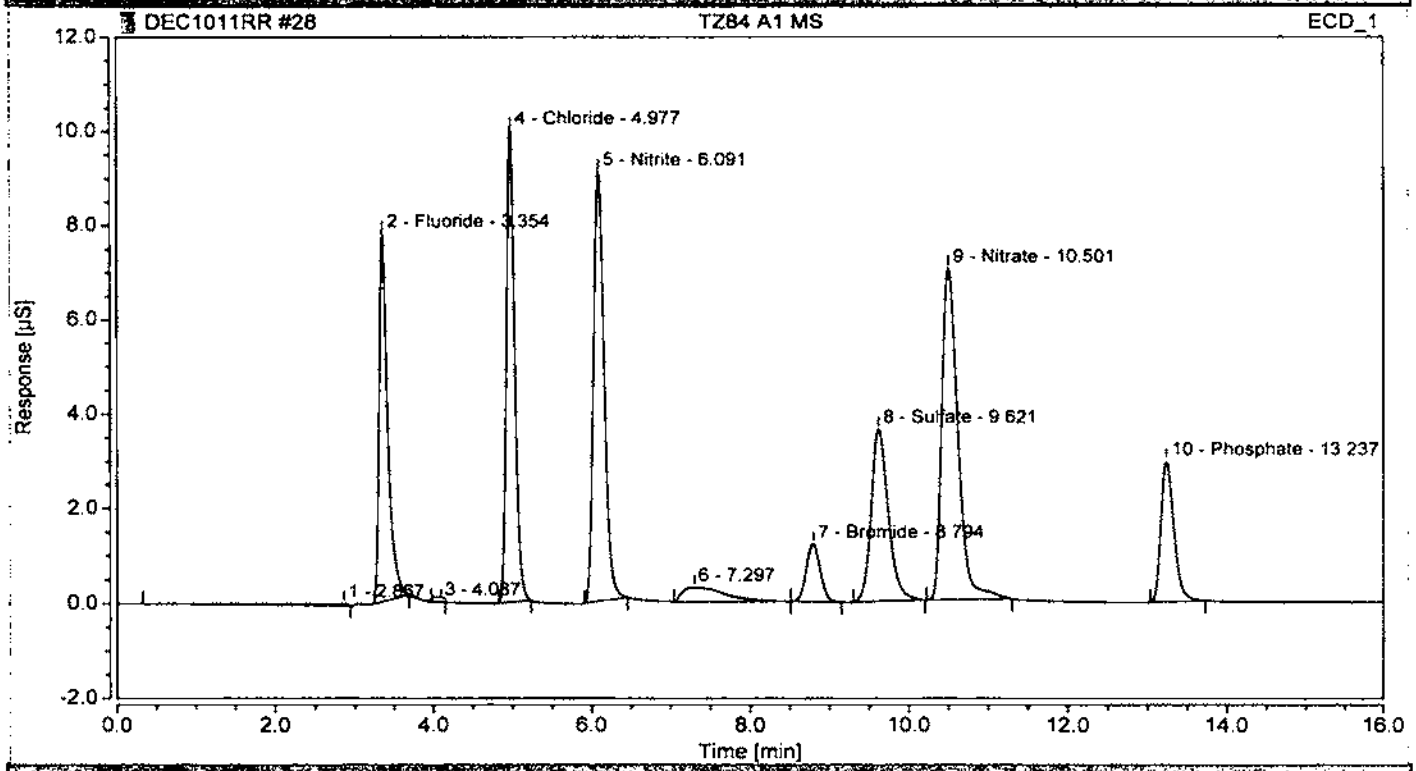


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	7.48	0.055	0.147	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*TZ84 A1 MS*	Inject Number:	28
Vial Number:	*24*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:33*		

[redacted]



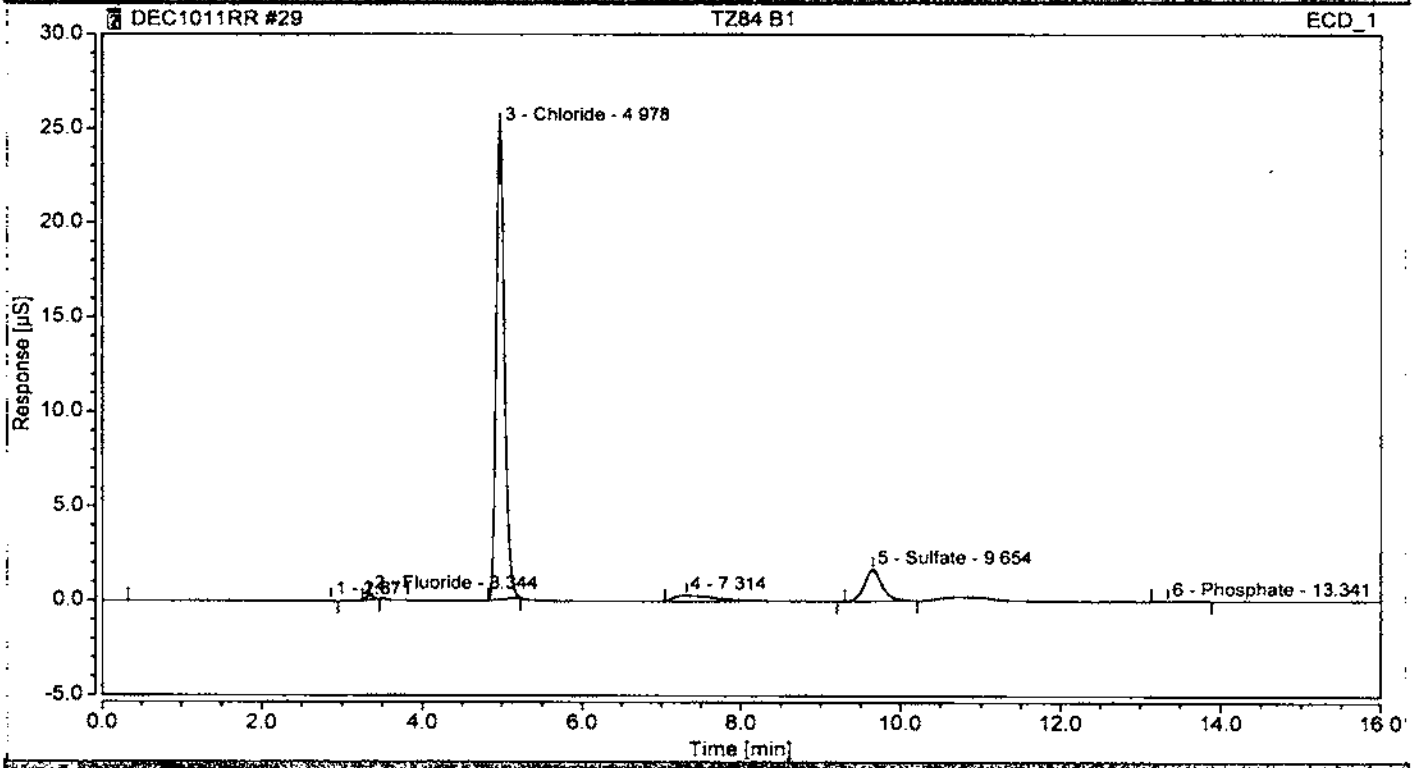
[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.046	0.046	FALSE	n.a.
2	Fluoride	5.0	10.194	3.35	0.966	7.787	FALSE	n.a.
3		5.0	n.a.	4.09	0.016	0.087	FALSE	n.a.
4	Chloride	5.0	19.964	4.98	1.209	9.992	FALSE	n.a.
5	Nitrite	5.0	10.129	6.09	1.410	9.094	FALSE	n.a.
6		5.0	n.a.	7.30	0.189	0.301	FALSE	n.a.
7	Bromide	5.0	9.553	8.79	0.246	1.205	FALSE	n.a.
8	Sulfate	5.0	24.259	9.62	0.899	3.636	FALSE	n.a.
9	Nitrate	5.0	10.827	10.50	1.643	7.009	FALSE	n.a.
10	Phosphate	5.0	9.403	13.24	0.556	2.963	FALSE	n.a.

[redacted]

Injection Name:	*TZ84 B1*	Inject Number:	29
Vial Number:	*25*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:53*		

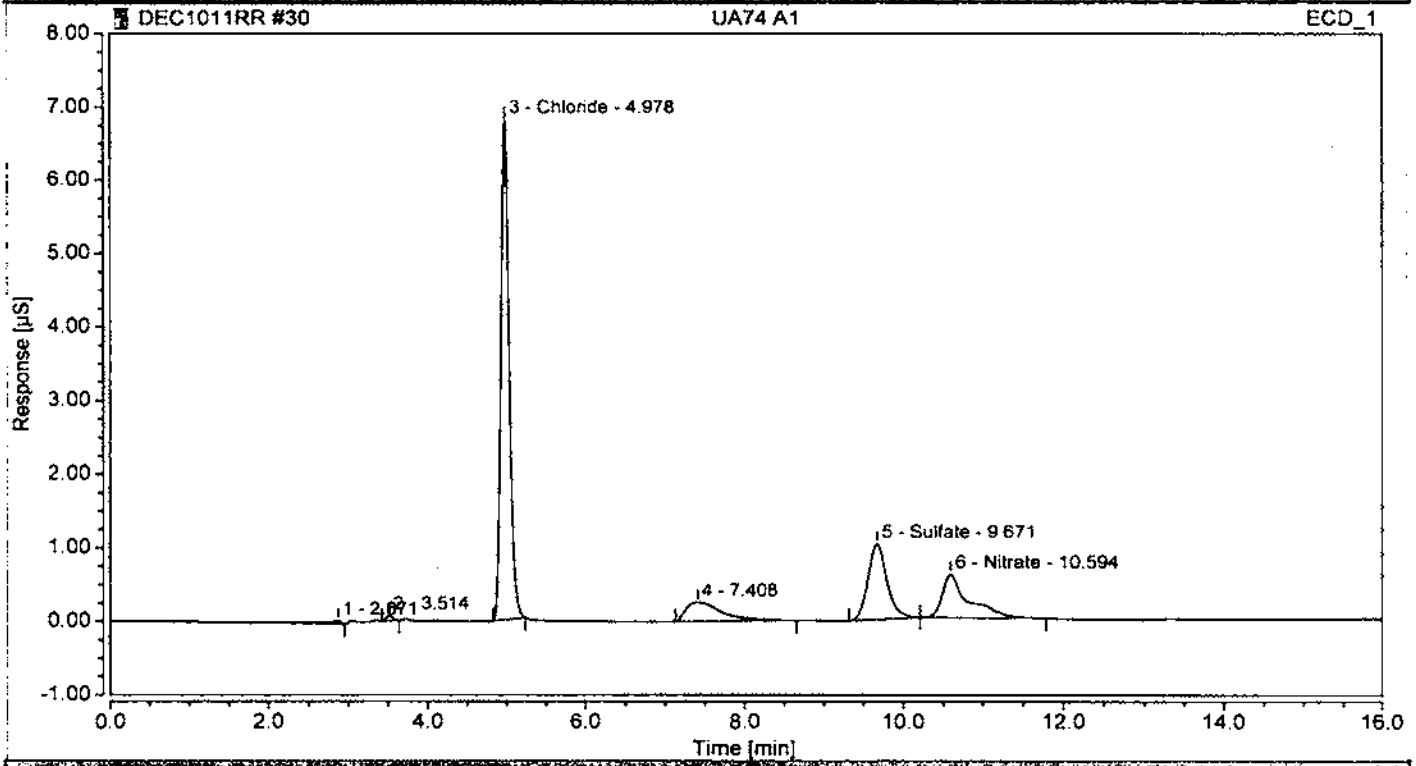
[redacted]



[redacted]

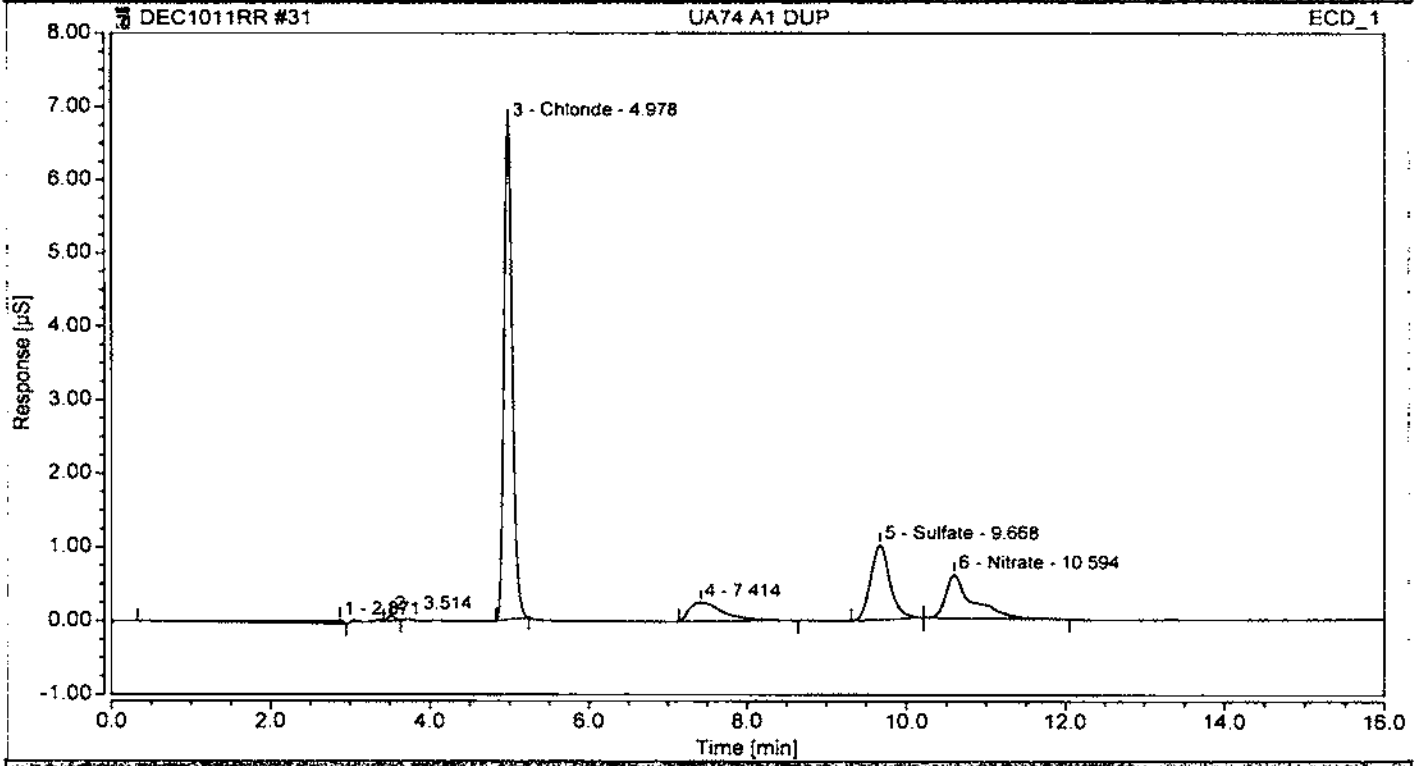
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.044	0.046	FALSE	n.a.
2	Fluoride	5.0	0.282	3.34	0.025	0.288	FALSE	n.a.
3	Chloride	5.0	50.158	4.98	3.038	25.046	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.31	0.216	0.310	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	11.635	9.65	0.431	1.650	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Phosphate	5.0	0.087	13.34	0.005	0.021	FALSE	n.a.

Injection Name:	*UA74 A1*	Inject Number:	30
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 20:13*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.047	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	54.420	4.98	0.824	6.816	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.136	0.258	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	30.725	9.67	0.285	1.028	FALSE	n.a.
6	Nitrate	20.0	5.985	10.59	0.227	0.591	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1 DUP*	Inject Number:	31
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 20:33*		

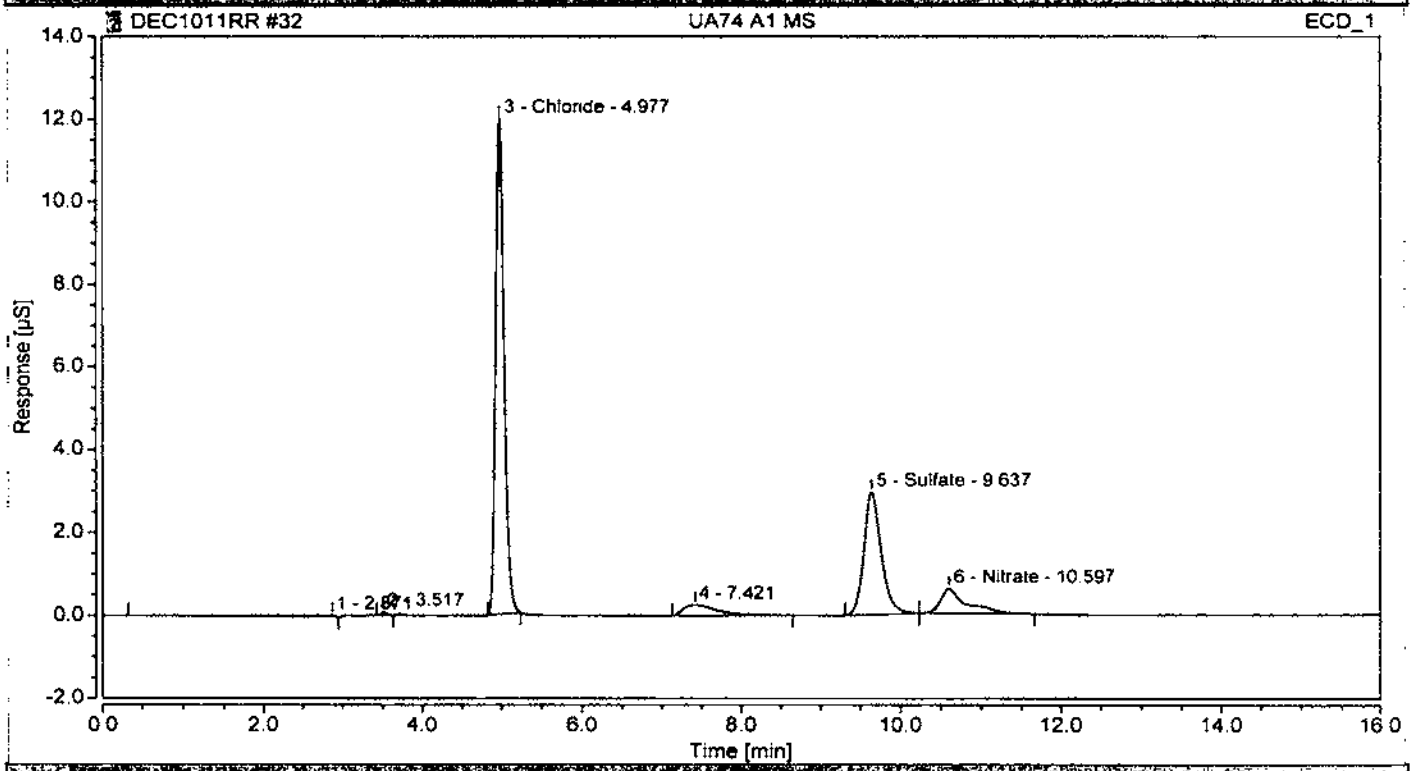


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.044	0.045	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.076	FALSE	n.a.
3	Chloride	20.0	54.138	4.98	0.820	6.777	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.132	0.255	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	30.456	9.67	0.282	1.013	FALSE	n.a.
6	Nitrate	20.0	6.149	10.59	0.233	0.589	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 A1 MS*	Inject Number:	32
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 20:53*		

[redacted]

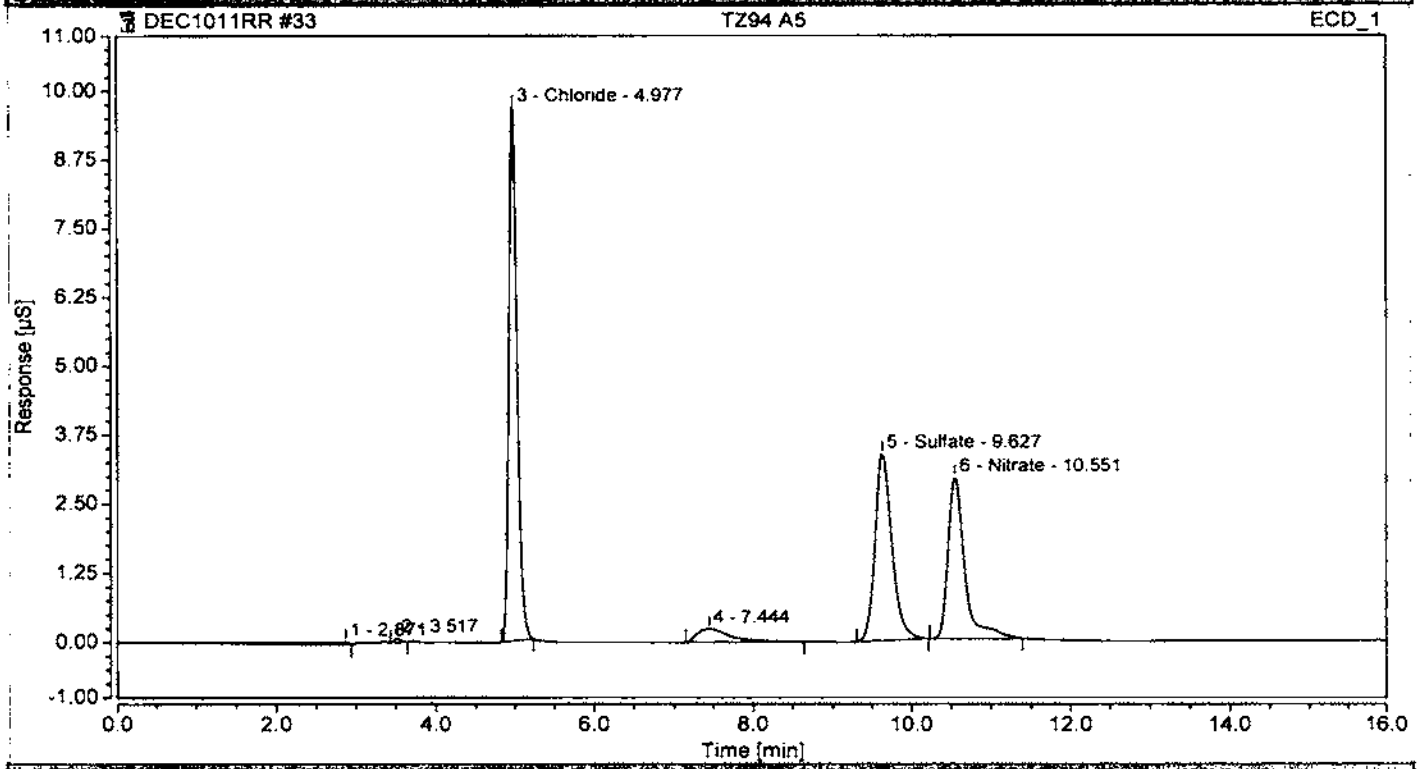


[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.045	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.52	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	95.863	4.98	1.451	11.979	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.42	0.130	0.254	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	79.363	9.64	0.736	2.949	FALSE	n.a.
6	Nitrate	20.0	5.896	10.60	0.224	0.590	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

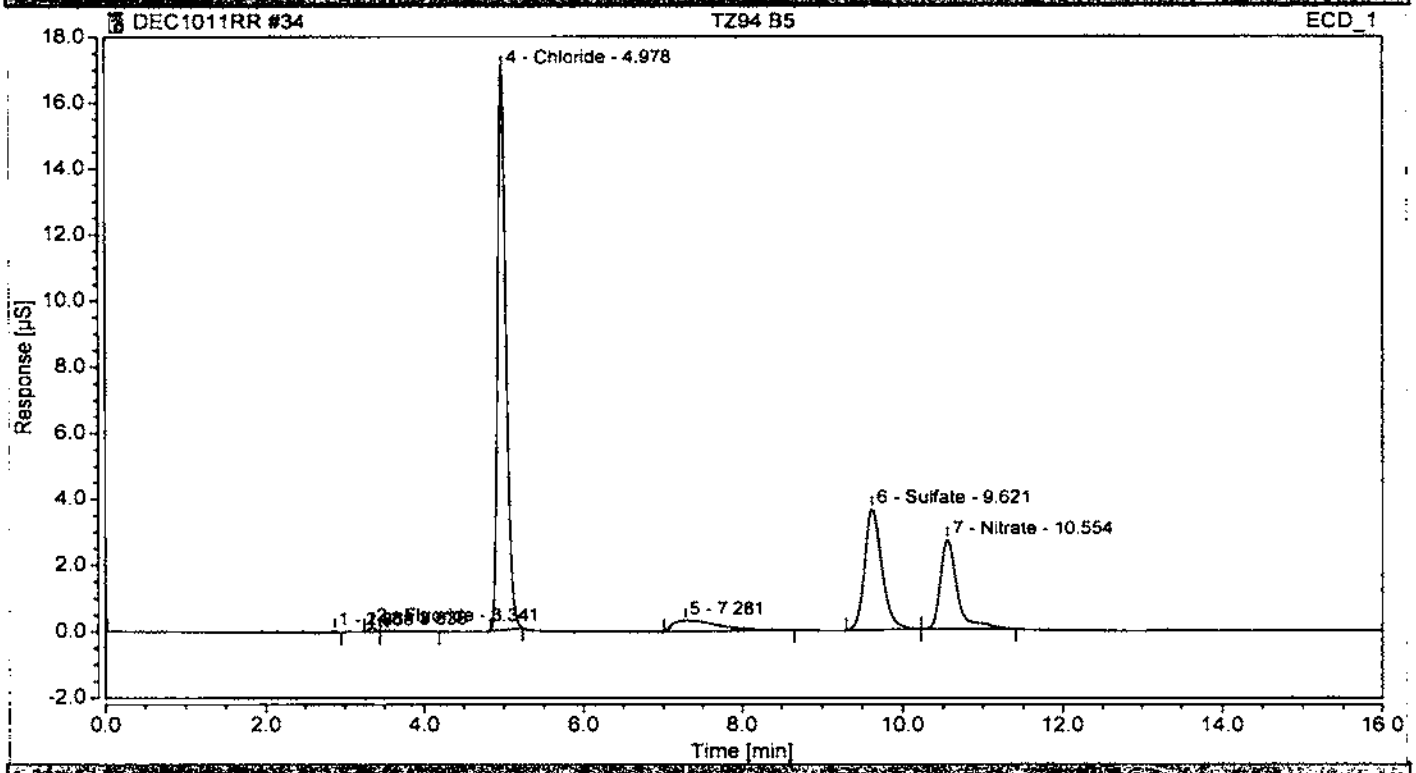
TZ84 : 00551

Injection Name:	*TZ94 A5*	Inject Number:	33
Vial Number:	*26*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 21:14*		



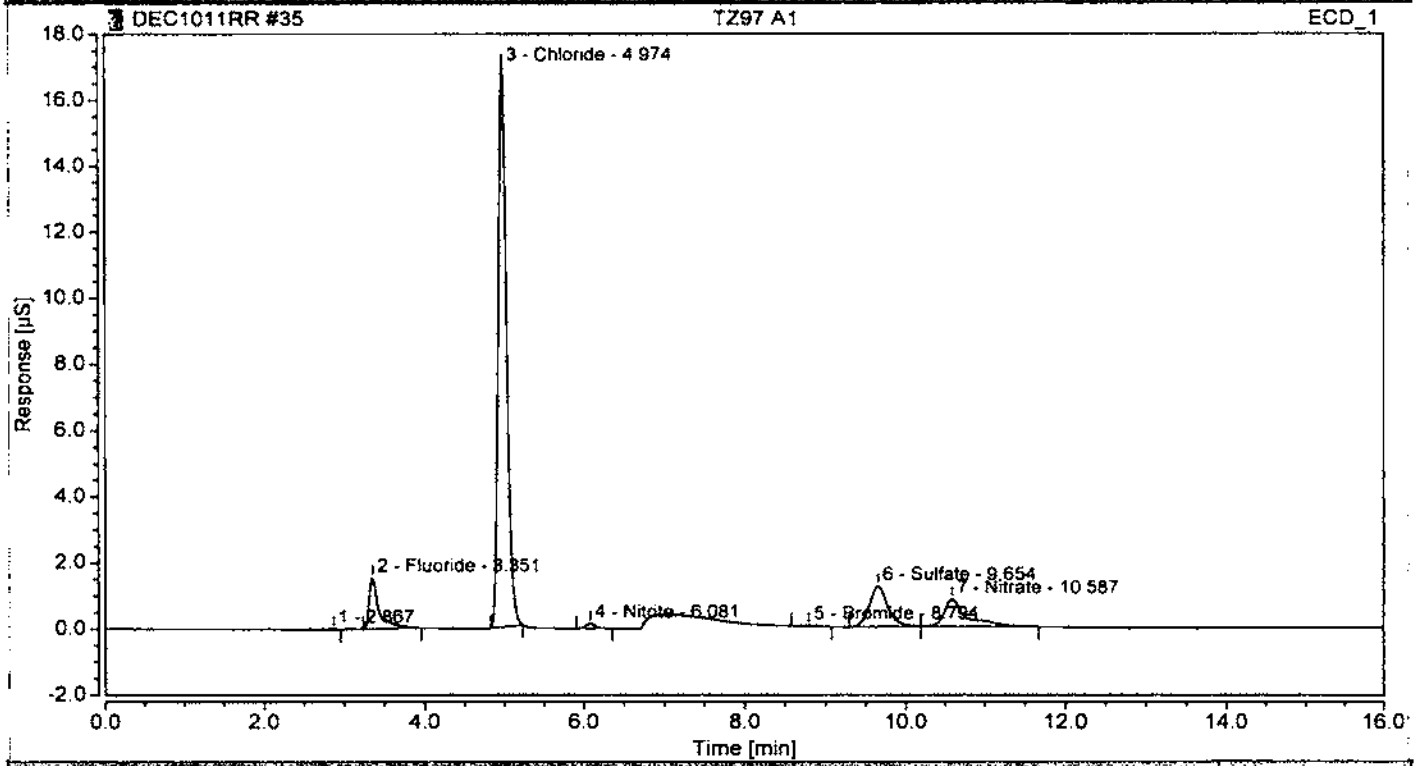
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.045	FALSE	n.a.
n.a.	Fluoride	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.0	n.a.	3.52	0.006	0.071	FALSE	n.a.
3	Chloride	5.0	19.341	4.98	1.171	9.676	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.44	0.114	0.237	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	22.507	9.63	0.835	3.375	FALSE	n.a.
6	Nitrate	5.0	4.648	10.55	0.705	2.908	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ94 B5*	Inject Number:	34
Vial Number:	*27*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 21:34*		



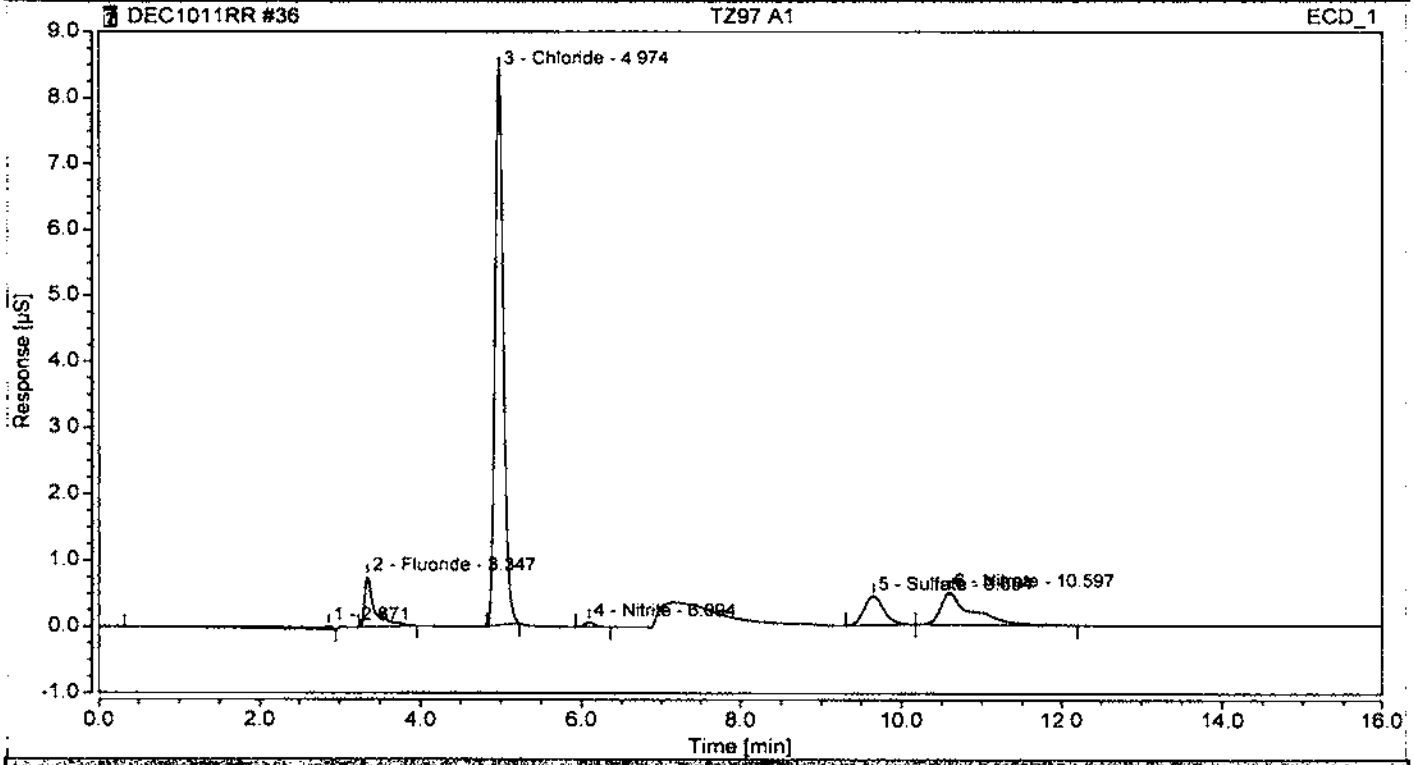
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.044	FALSE	n.a.
2	Fluoride	1.0	0.022	3.34	0.011	0.129	FALSE	n.a.
3		1.0	n.a.	3.54	0.006	0.025	FALSE	n.a.
4	Chloride	1.0	5.795	4.98	2.057	16.982	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.28	0.225	0.324	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	4.839	9.62	0.897	3.844	FALSE	n.a.
7	Nitrate	1.0	0.660	10.55	0.653	2.674	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 A1*	Inject Number:	35
Vial Number:	*28*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 21:55*		



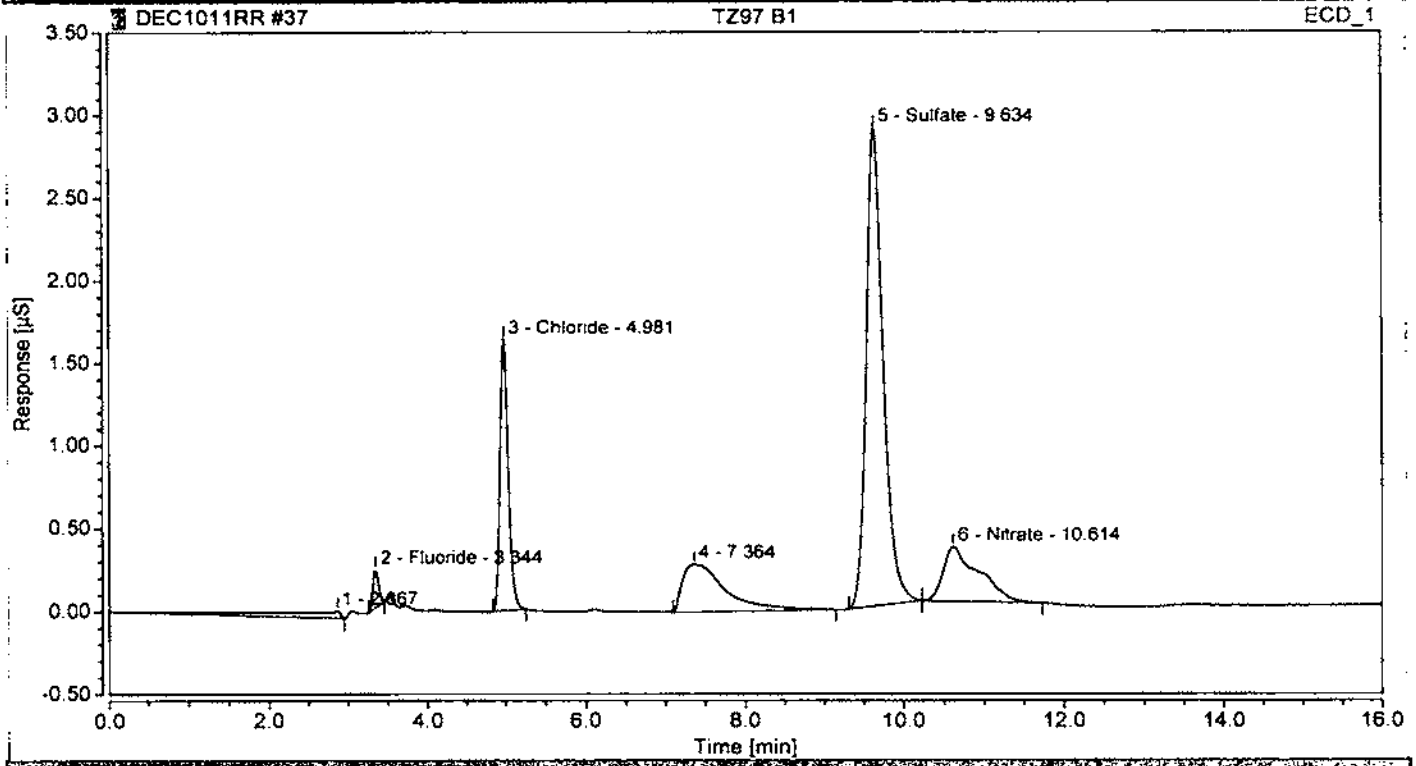
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.042	FALSE	n.a.
2	Fluoride	1.0	0.469	3.35	0.222	1.549	FALSE	n.a.
3	Chloride	1.0	6.770	4.97	2.050	16.959	FALSE	n.a.
4	Nitrite	1.0	0.029	6.08	0.020	0.144	FALSE	n.a.
5	Bromide	1.0	0.050	8.79	0.006	0.032	FALSE	n.a.
6	Sulfate	1.0	1.780	9.65	0.330	1.228	FALSE	n.a.
7	Nitrate	1.0	0.355	10.59	0.270	0.820	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 A1*	Inject Number:	36
Vial Number:	*29*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 22:15*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.87	0.045	0.043	FALSE	n.a.
2	Fluoride	2.0	0.474	3.35	0.112	0.761	FALSE	n.a.
3	Chloride	2.0	6.694	4.97	1.014	8.397	FALSE	n.a.
4	Nitrite	2.0	0.028	6.09	0.010	0.070	FALSE	n.a.
n.a.	Bromide	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	2.0	1.389	9.65	0.129	0.443	FALSE	n.a.
6	Nitrate	2.0	0.588	10.60	0.223	0.486	FALSE	n.a.
n.a.	Phosphate	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 B1*	Inject Number:	37
Vial Number:	*30*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 22:36*		

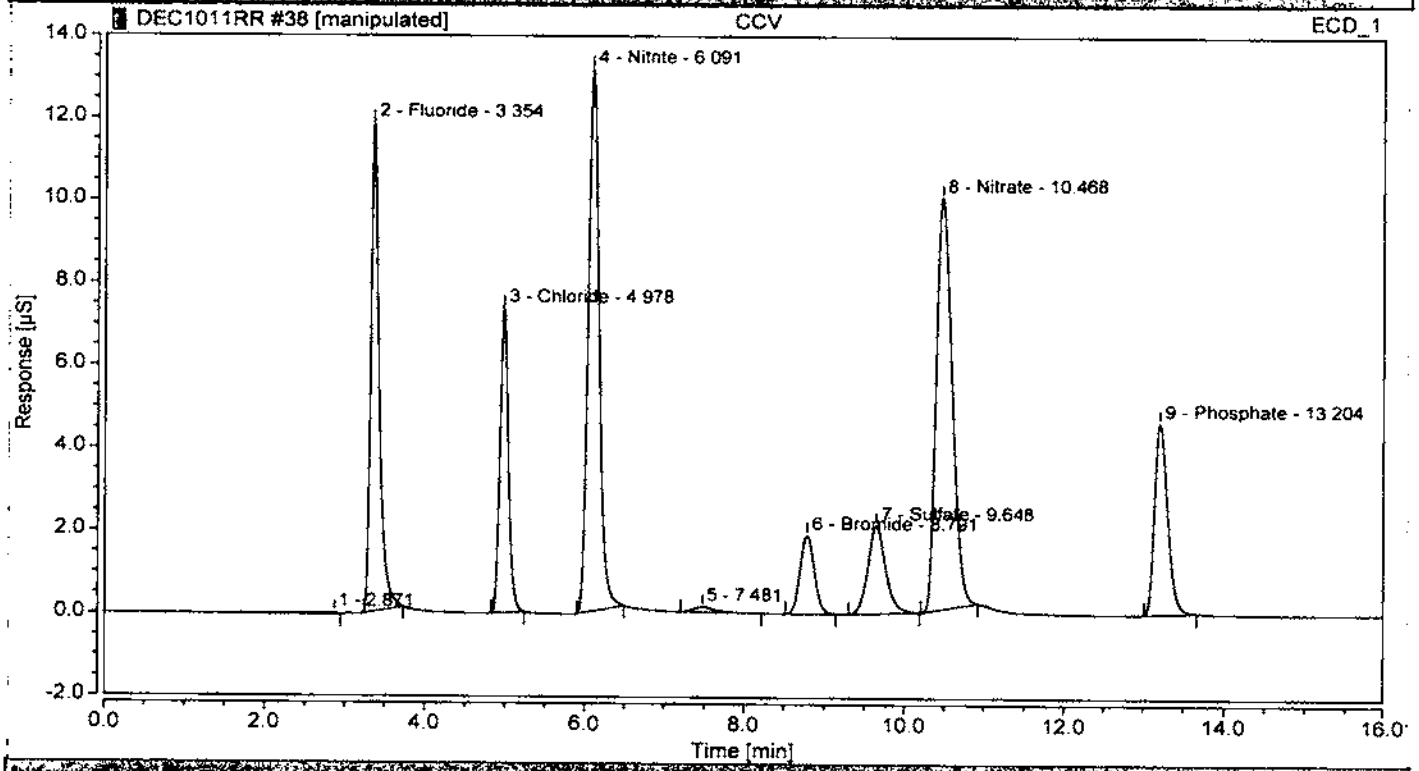


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	5.0	0.202	3.34	0.019	0.228	FALSE	n.a.
3	Chloride	5.0	3.248	4.98	0.197	1.636	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.182	0.288	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.374	9.63	0.718	2.890	FALSE	n.a.
6	Nitrate	5.0	1.100	10.61	0.167	0.327	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Details

Injection Name:	*CCV*	Inject Number:	38
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 22:56*		

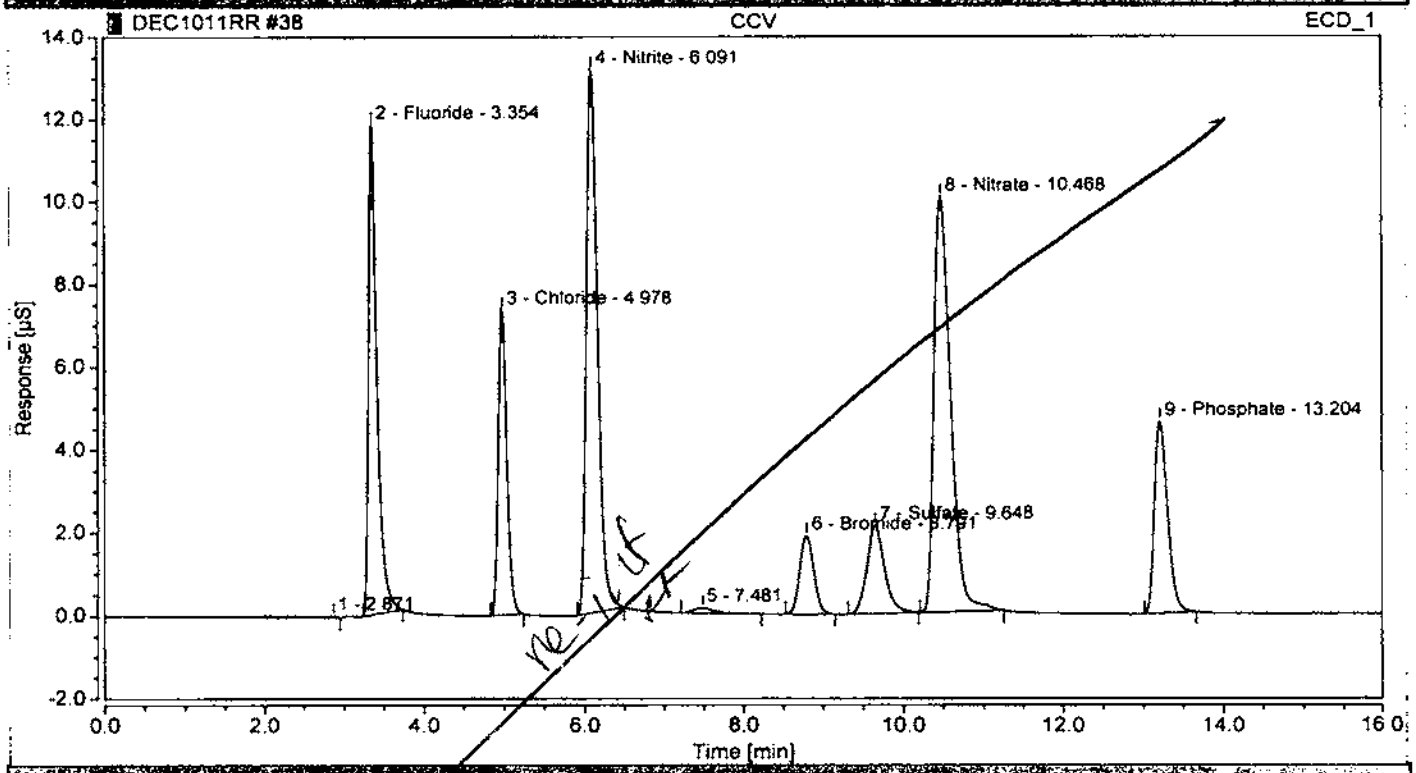
Chromatogram



Integration Results

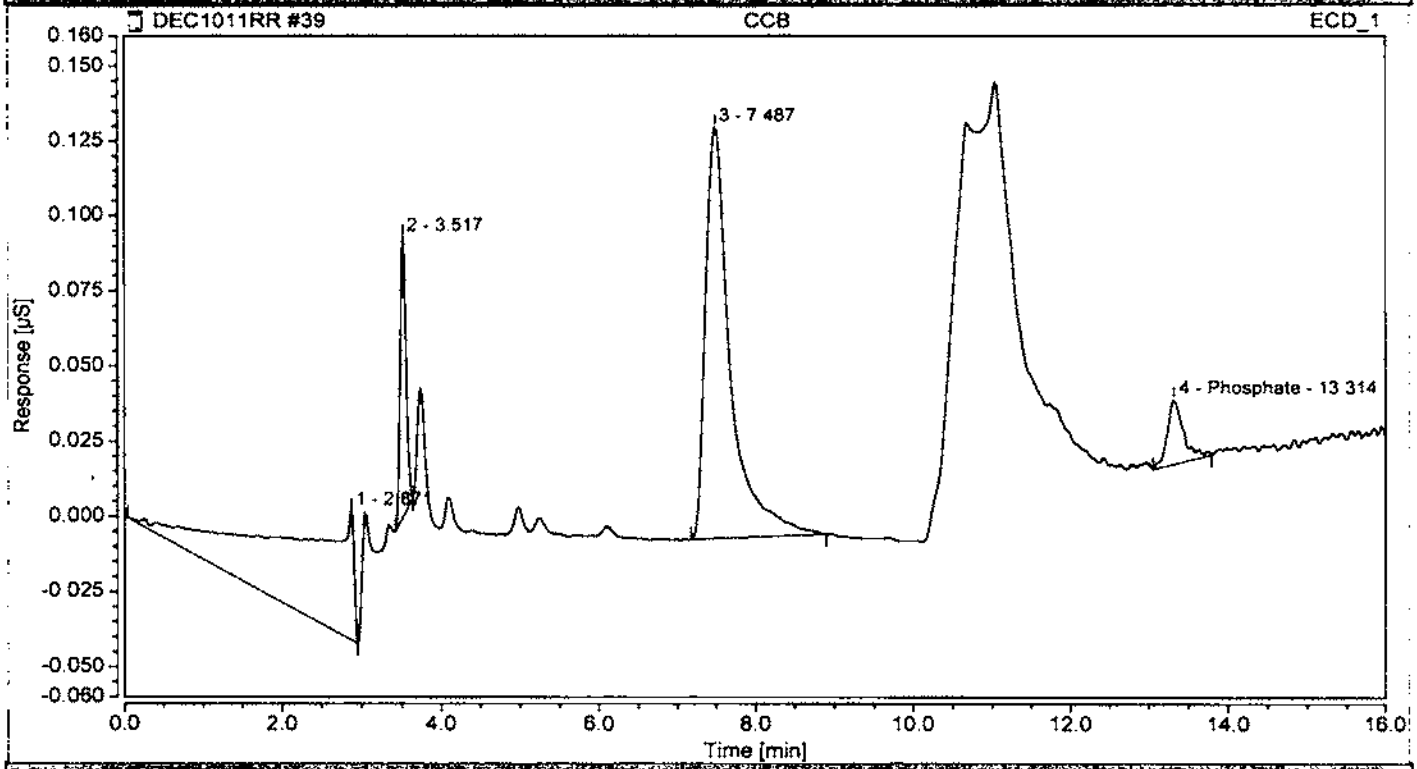
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	1.0	3.039	3.35	1.440	11.843	FALSE	1.30
3	Chloride	1.0	2.949	4.98	0.893	7.382	FALSE	-1.68
4	Nitrite	1.0	3.036	6.09	2.113	13.134	FALSE	1.19
5		1.0	n.a.	7.48	0.038	0.125	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.887	FALSE	0.32
7	Sulfate	1.0	2.908	9.65	0.539	2.123	FALSE	-3.06
8	Nitrate	1.0	3.054	10.47	2.317	9.940	TRUE	1.80
9	Phosphate	1.0	2.979	13.20	0.881	4.619	FALSE	-0.70

Injection Name:	*CCV*	Inject Number:	38
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 22:56*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	1.0	3.039	3.35	1.440	11.843	FALSE	1.30
3	Chloride	1.0	2.949	4.98	0.893	7.362	FALSE	-1.68
4	Nitrite	1.0	3.036	6.09	2.113	13.134	FALSE	1.19
5		1.0	n.a.	7.48	0.038	0.125	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.887	FALSE	0.32
7	Sulfate	1.0	2.908	9.65	0.539	2.123	FALSE	-3.06
8	Nitrate	1.0	3.188	10.47	2.419	10.012	FALSE	6.28
9	Phosphate	1.0	2.979	13.20	0.881	4.619	FALSE	-0.70

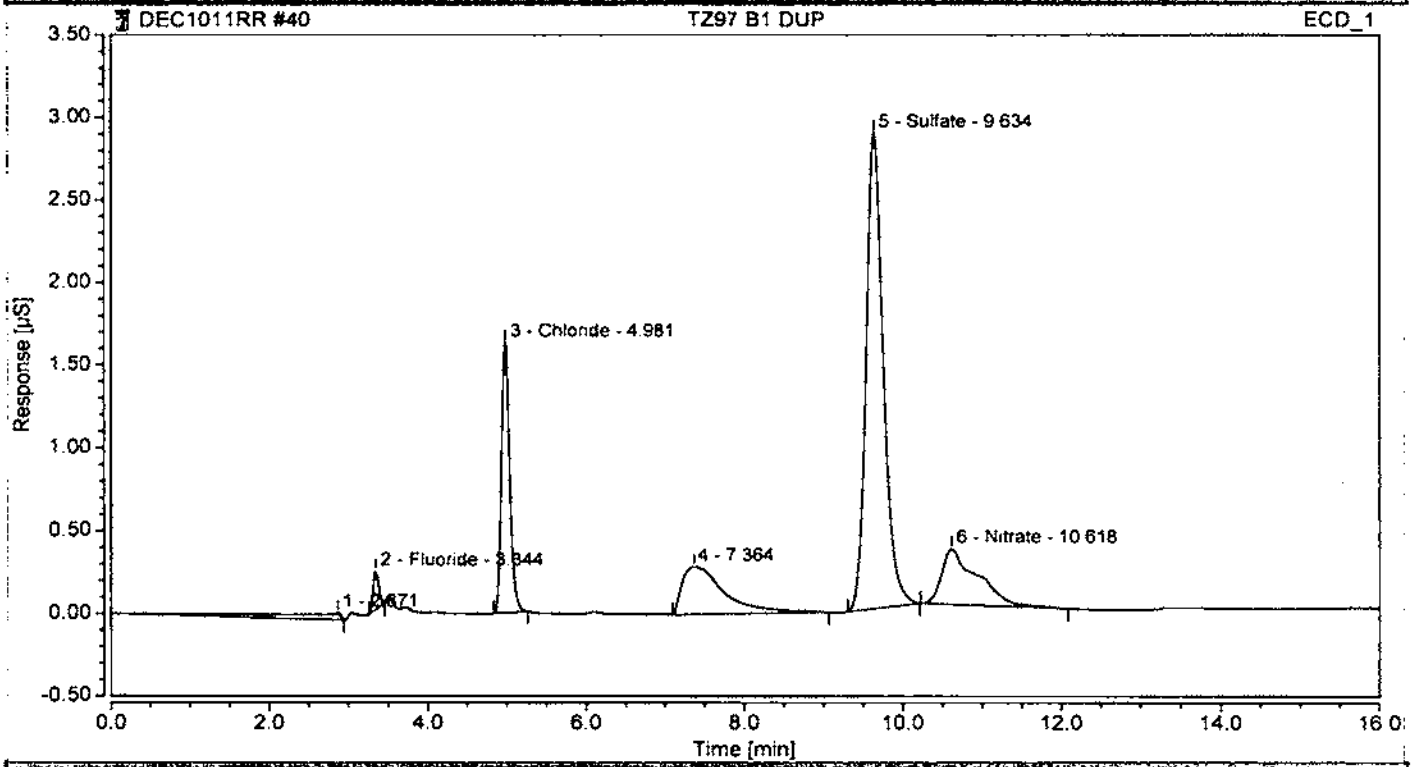
Injection Name:	*CCB*	Inject Number:	39
Vial Number:	*32*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 23:17*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.045	0.043	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.52	0.008	0.093	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.49	0.051	0.137	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Phosphate	1.0	0.017	13.31	0.005	0.021	FALSE	n.a.

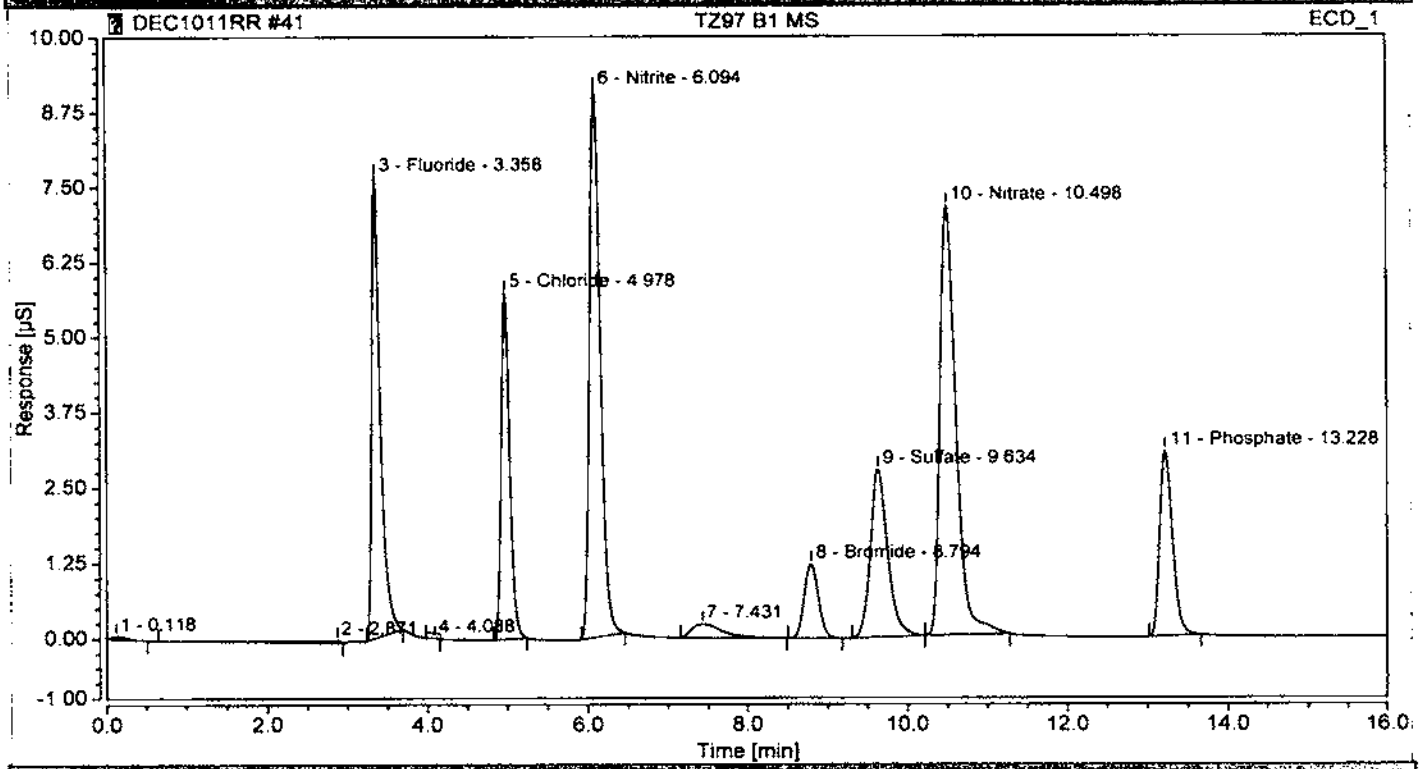
TZ84 : 00559

Injection Name:	*TZ97 B1 DUP*	Inject Number:	40
Vial Number:	*33*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 23:37*		



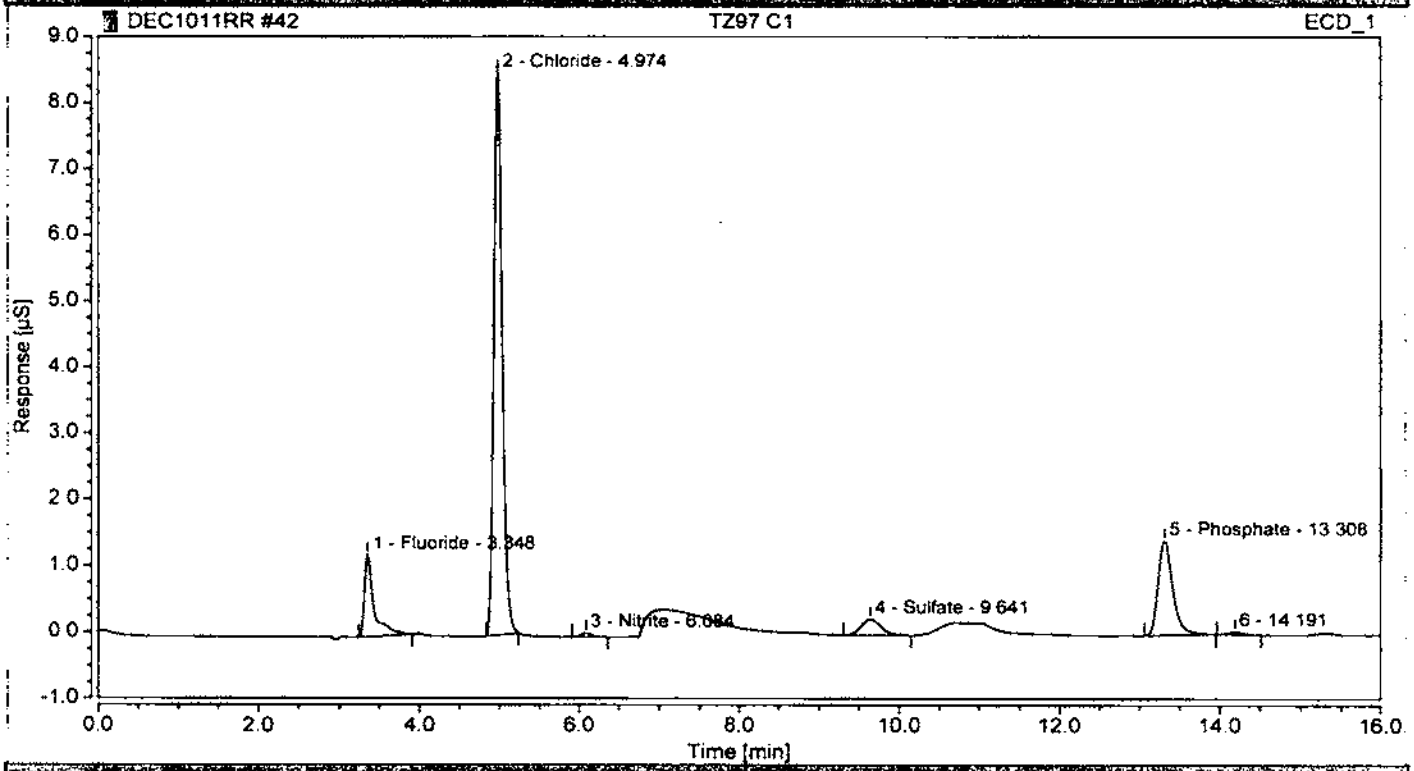
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.046	0.042	FALSE	n.a.
2	Fluoride	5.0	0.202	3.34	0.019	0.229	FALSE	n.a.
3	Chloride	5.0	3.239	4.98	0.196	1.631	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.179	0.287	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.278	9.63	0.715	2.874	FALSE	n.a.
6	Nitrate	5.0	1.151	10.62	0.175	0.336	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 B1 MS*	Inject Number:	41
Vial Number:	*34*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 23:58*		



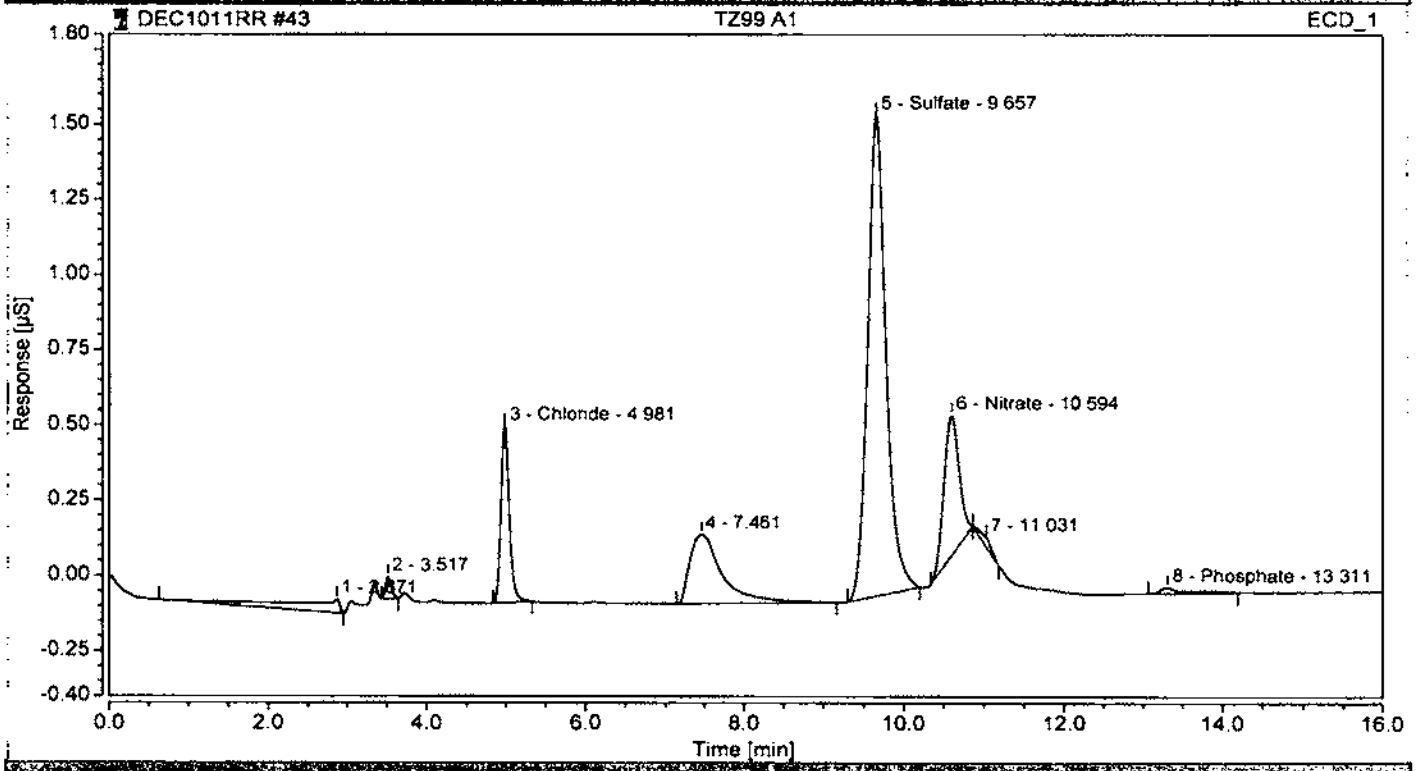
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	0.12	0.011	0.050	FALSE	n.a.
2		10.0	n.a.	2.87	0.035	0.045	FALSE	n.a.
3	Fluoride	10.0	20.125	3.36	0.953	7.866	FALSE	n.a.
4		10.0	n.a.	4.09	0.016	0.085	FALSE	n.a.
5	Chloride	10.0	23.038	4.98	0.898	5.753	FALSE	n.a.
6	Nitrite	10.0	20.445	6.09	1.423	9.099	FALSE	n.a.
7		10.0	n.a.	7.43	0.105	0.230	FALSE	n.a.
8	Bromide	10.0	19.597	8.79	0.252	1.228	FALSE	n.a.
9	Sulfate	10.0	37.545	9.63	0.696	2.782	FALSE	n.a.
10	Nitrate	10.0	22.066	10.50	1.674	7.124	FALSE	n.a.
11	Phosphate	10.0	19.094	13.23	0.565	3.064	FALSE	n.a.

Injection Name:	*TZ97 C1*	Inject Number:	42
Vial Number:	*35*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 00:17*		



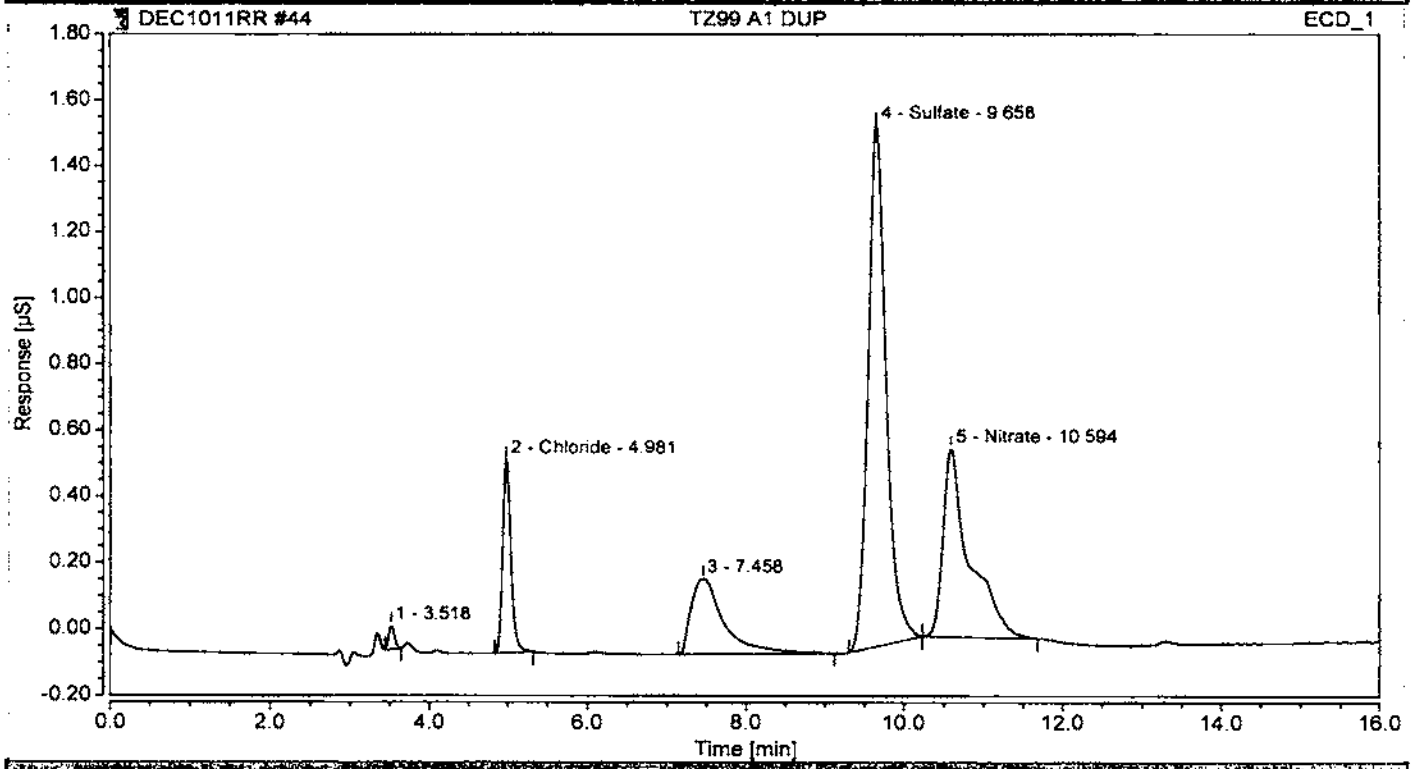
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.364	3.35	0.172	1.227	FALSE	n.a.
2	Chloride	1.0	3.393	4.97	1.027	8.499	FALSE	n.a.
3	Nitrite	1.0	0.012	6.08	0.008	0.058	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	0.376	9.64	0.070	0.242	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	1.031	13.31	0.305	1.416	FALSE	n.a.
6		1.0	n.a.	14.19	0.009	0.042	FALSE	n.a.

Injection Name:	*TZ99 A1*	Inject Number:	43
Vial Number:	*36*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 00:37*		



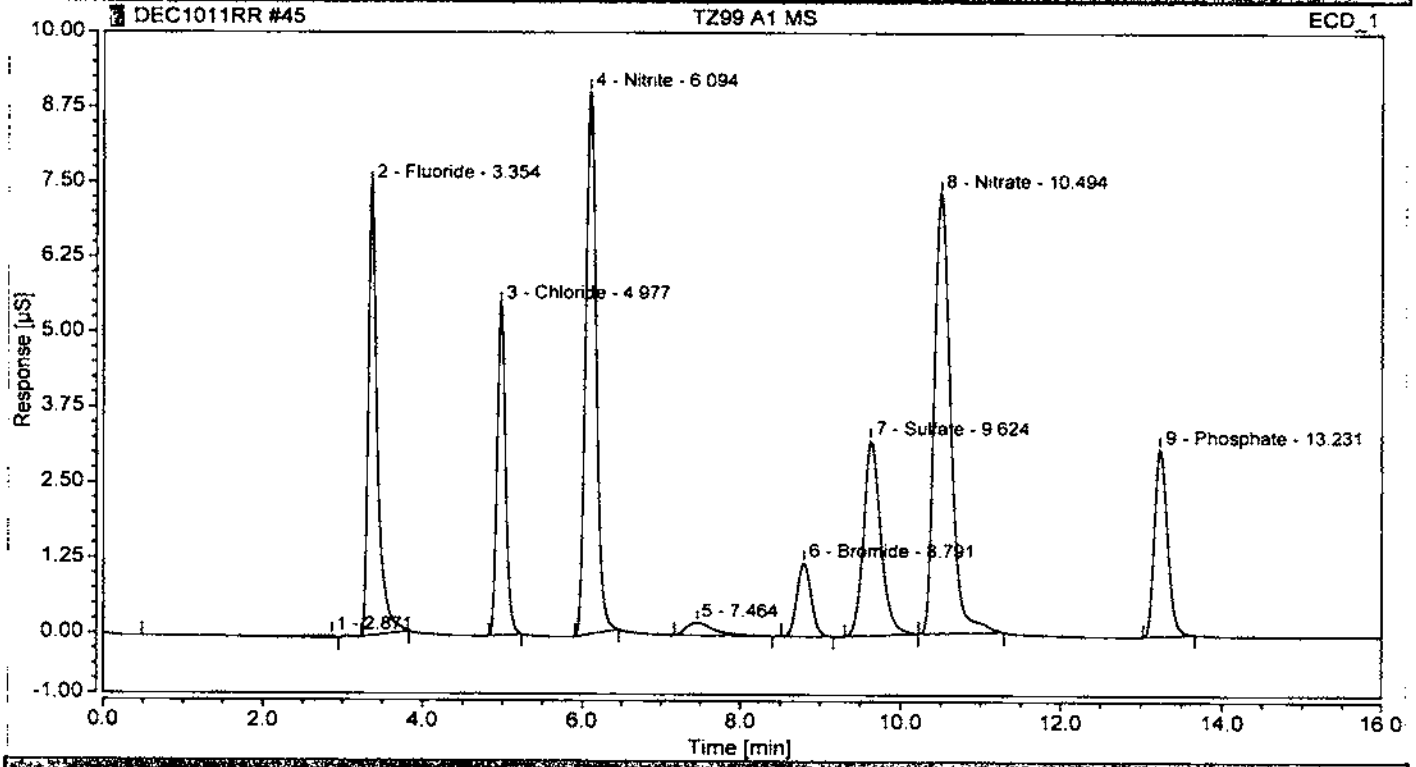
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.87	0.035	0.045	FALSE	n.a.
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		10.0	n.a.	3.52	0.006	0.071	FALSE	n.a.
3	Chloride	10.0	2.342	4.98	0.071	0.585	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		10.0	n.a.	7.46	0.110	0.227	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	10.0	22.857	9.66	0.420	1.598	FALSE	n.a.
6	Nitrate	10.0	1.330	10.59	0.101	0.465	FALSE	n.a.
7		10.0	n.a.	11.03	0.006	0.033	FALSE	n.a.
8	Phosphate	10.0	0.272	13.31	0.008	0.019	FALSE	n.a.

Injection Name:	*TZ99 A1 DUP*	Inject Number:	44
Vial Number:	*37*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 00:56*		



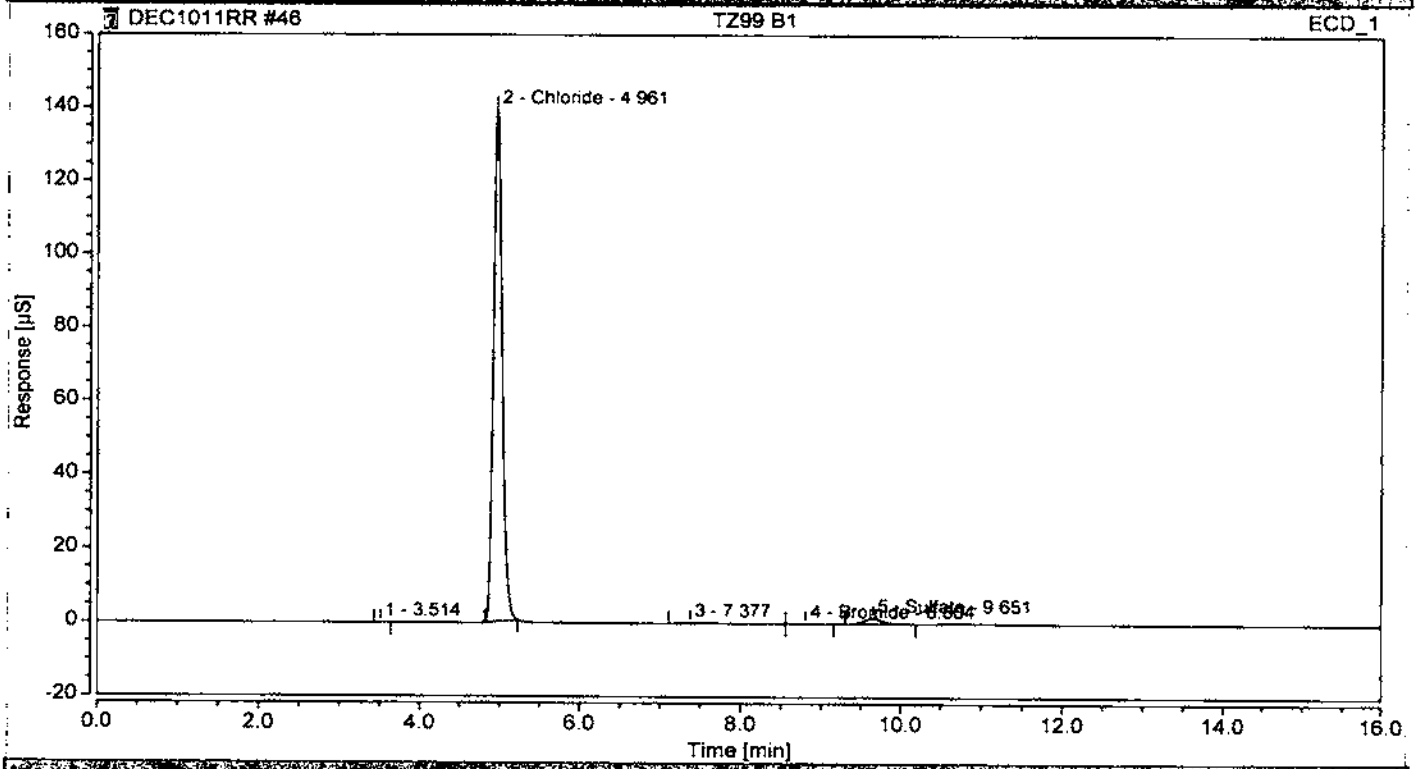
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		10.0	n.a.	3.52	0.006	0.072	FALSE	n.a.
2	Chloride	10.0	2.341	4.98	0.071	0.585	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		10.0	n.a.	7.46	0.110	0.228	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	10.0	22.526	9.66	0.418	1.577	FALSE	n.a.
5	Nitrate	10.0	2.689	10.59	0.219	0.569	FALSE	n.a.
n.a.	Phosphate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ99 A1 MS*	Inject Number:	45
Vial Number:	*38*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 01:15*		



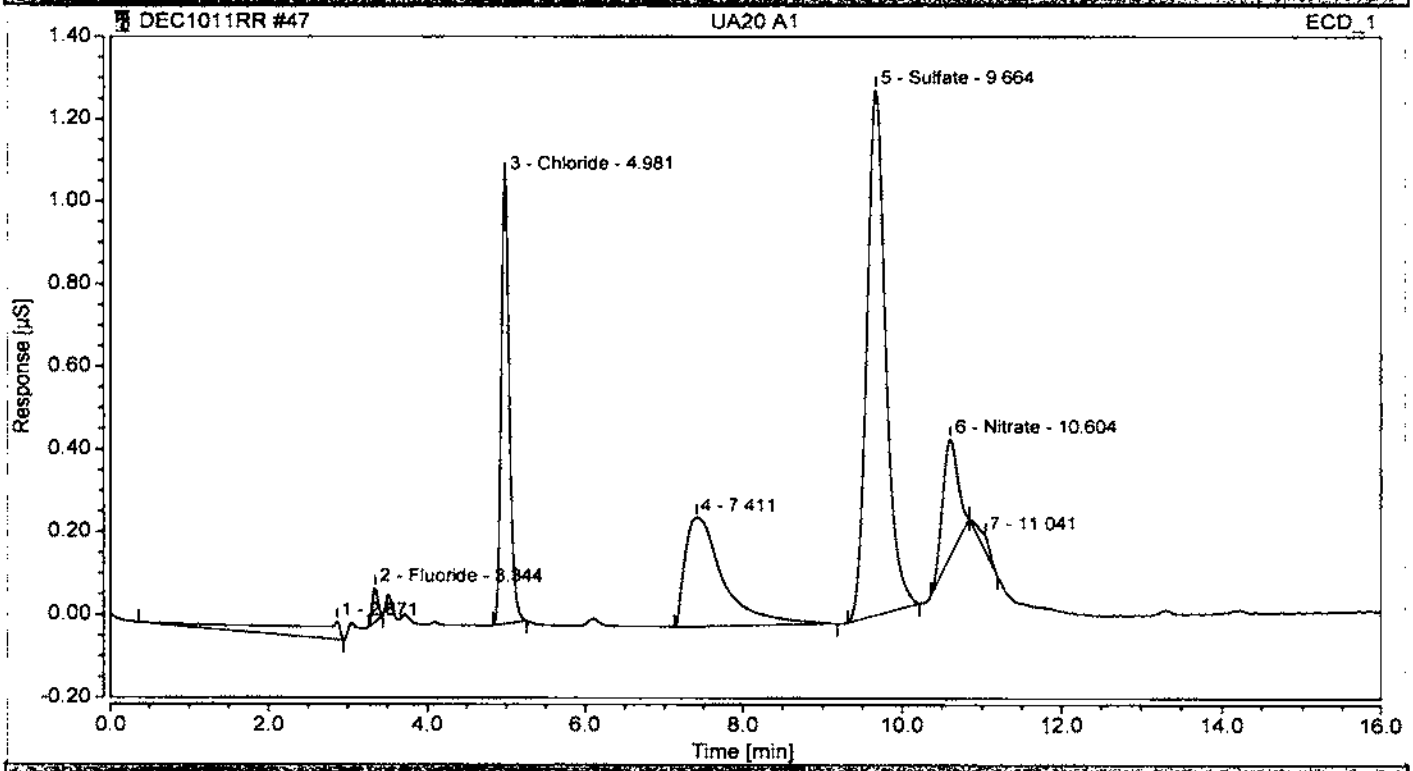
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.87	0.037	0.044	FALSE	n.a.
2	Fluoride	10.0	20.509	3.35	0.972	7.508	FALSE	n.a.
3	Chloride	10.0	21.988	4.98	0.866	5.492	FALSE	n.a.
4	Nitrite	10.0	20.249	6.09	1.410	9.007	FALSE	n.a.
5		10.0	n.a.	7.46	0.086	0.208	FALSE	n.a.
6	Bromide	10.0	19.428	8.79	0.250	1.219	FALSE	n.a.
7	Sulfate	10.0	43.303	9.62	0.803	3.236	FALSE	n.a.
8	Nitrate	10.0	22.755	10.49	1.726	7.306	FALSE	n.a.
9	Phosphate	10.0	19.203	13.23	0.568	3.098	FALSE	n.a.

Injection Name:	*TZ99 B1*	Inject Number:	46
Vial Number:	*39*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 01:35*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		10.0	n.a.	3.51	0.006	0.074	FALSE	n.a.
2	Chloride	10.0	571.775	4.96	17.313	139.396	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		10.0	n.a.	7.38	0.151	0.276	FALSE	n.a.
4	Bromide	10.0	1.701	8.80	0.022	0.106	FALSE	n.a.
5	Sulfate	10.0	23.966	9.65	0.444	1.692	FALSE	n.a.
n.a.	Nitrate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA20 A1*	Inject Number:	47
Vial Number:	*40*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 01:55*		

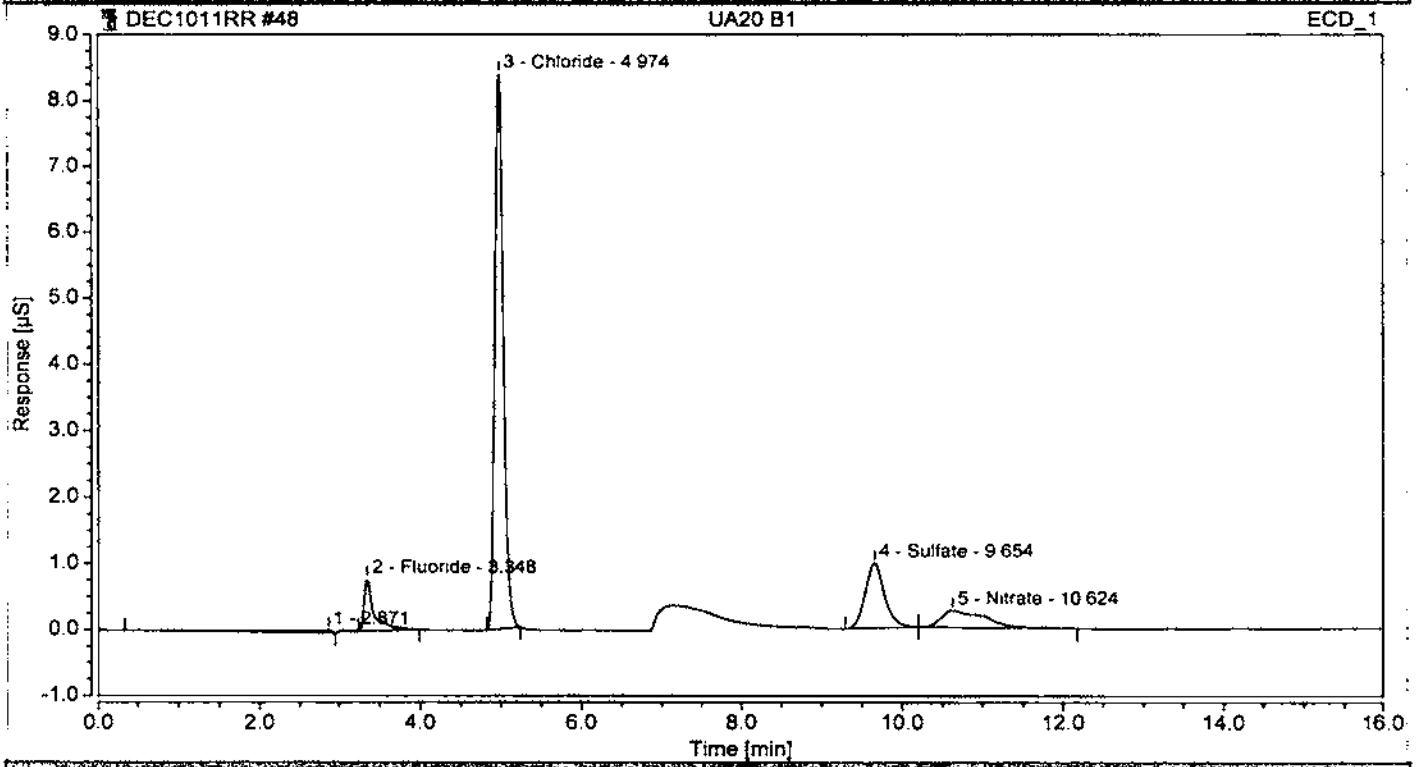


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.039	0.043	FALSE	n.a.
2	Fluoride	5.0	0.070	3.34	0.007	0.083	FALSE	n.a.
3	Chloride	5.0	2.158	4.98	0.131	1.085	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.41	0.149	0.263	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	9.372	9.66	0.347	1.272	FALSE	n.a.
6	Nitrate	5.0	0.414	10.60	0.063	0.284	FALSE	n.a.
7		5.0	n.a.	11.04	0.007	0.038	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA20 B1*	Inject Number:	48
Vial Number:	*41*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:14*		

Chro[redacted]



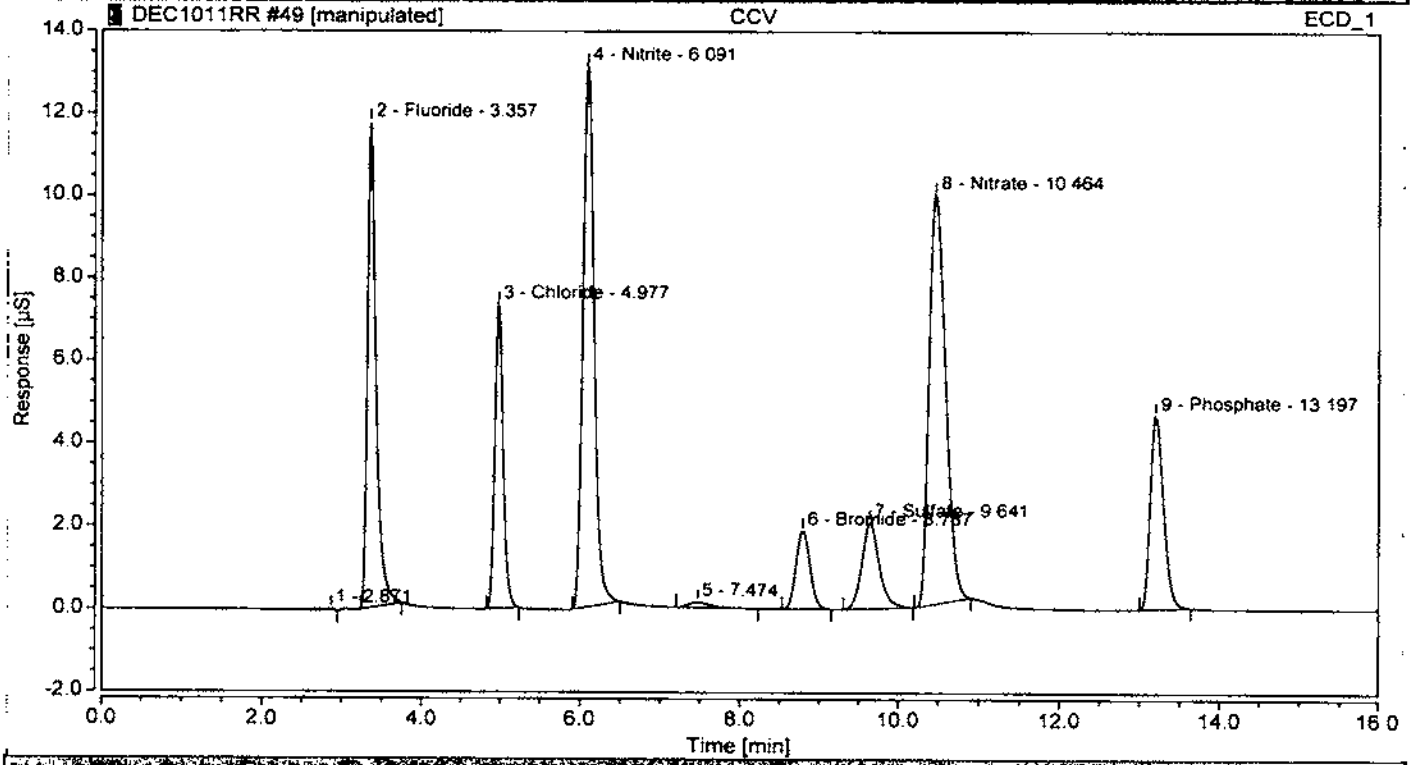
[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.041	0.042	FALSE	n.a.
2	Fluoride	1.0	0.240	3.35	0.114	0.784	FALSE	n.a.
3	Chloride	1.0	3.355	4.97	1.016	8.396	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	1.483	9.65	0.275	0.984	FALSE	n.a.
5	Nitrate	1.0	0.216	10.62	0.165	0.260	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Details

Injection Name:	*CCV*	Inject Number:	49
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:34*		

Chromatogram

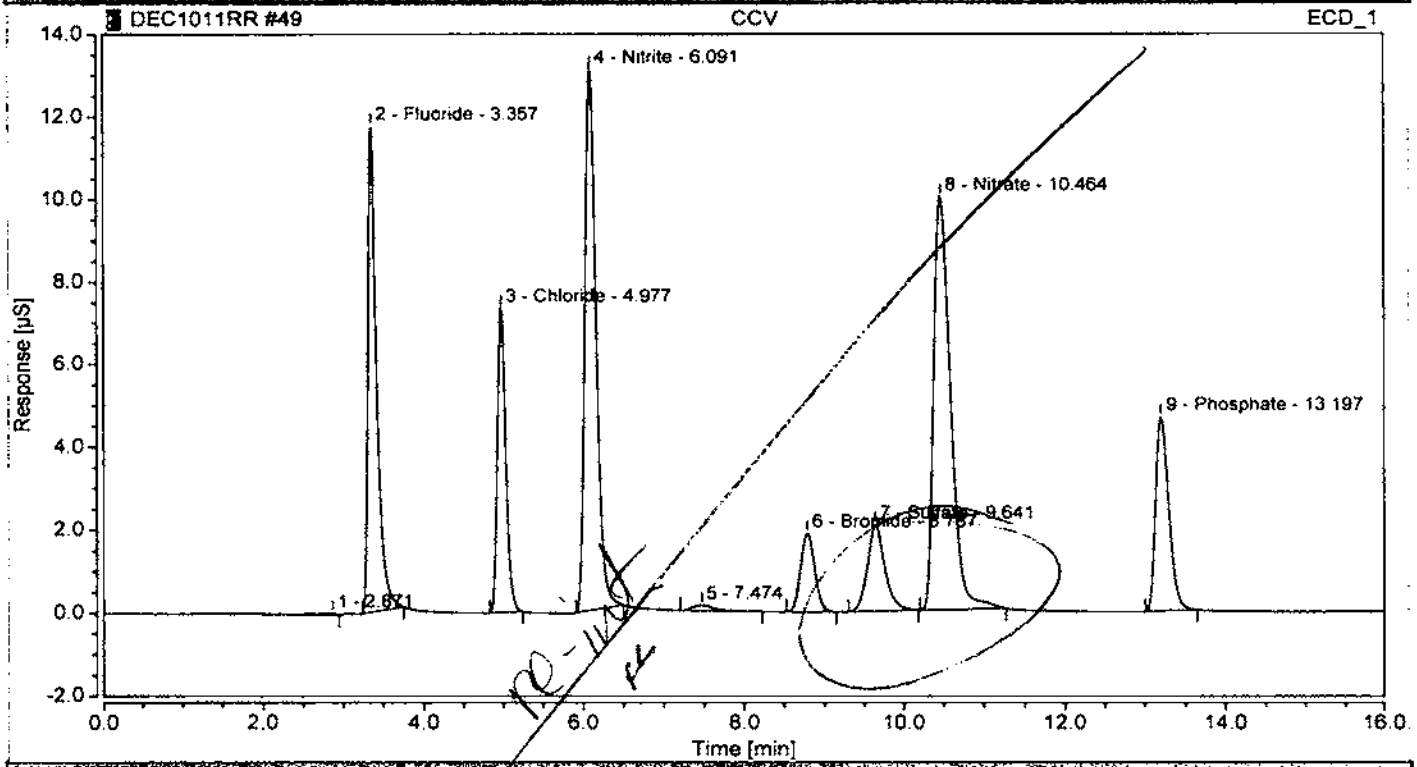


Integration Details

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
2	Fluoride	1.0	3.047	3.36	1.444	11.752	FALSE	1.58
3	Chloride	1.0	2.952	4.98	0.894	7.352	FALSE	-1.60
4	Nitrite	1.0	3.030	6.09	2.109	13.090	FALSE	1.00
5		1.0	n.a.	7.47	0.041	0.130	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.885	FALSE	0.31
7	Sulfate	1.0	2.868	9.64	0.532	2.078	FALSE	-4.40
8	Nitrate	1.0	3.041	10.46	2.307	9.897	TRUE	1.38
9	Phosphate	1.0	3.000	13.20	0.887	4.677	FALSE	-0.02

TZ84 · 00569

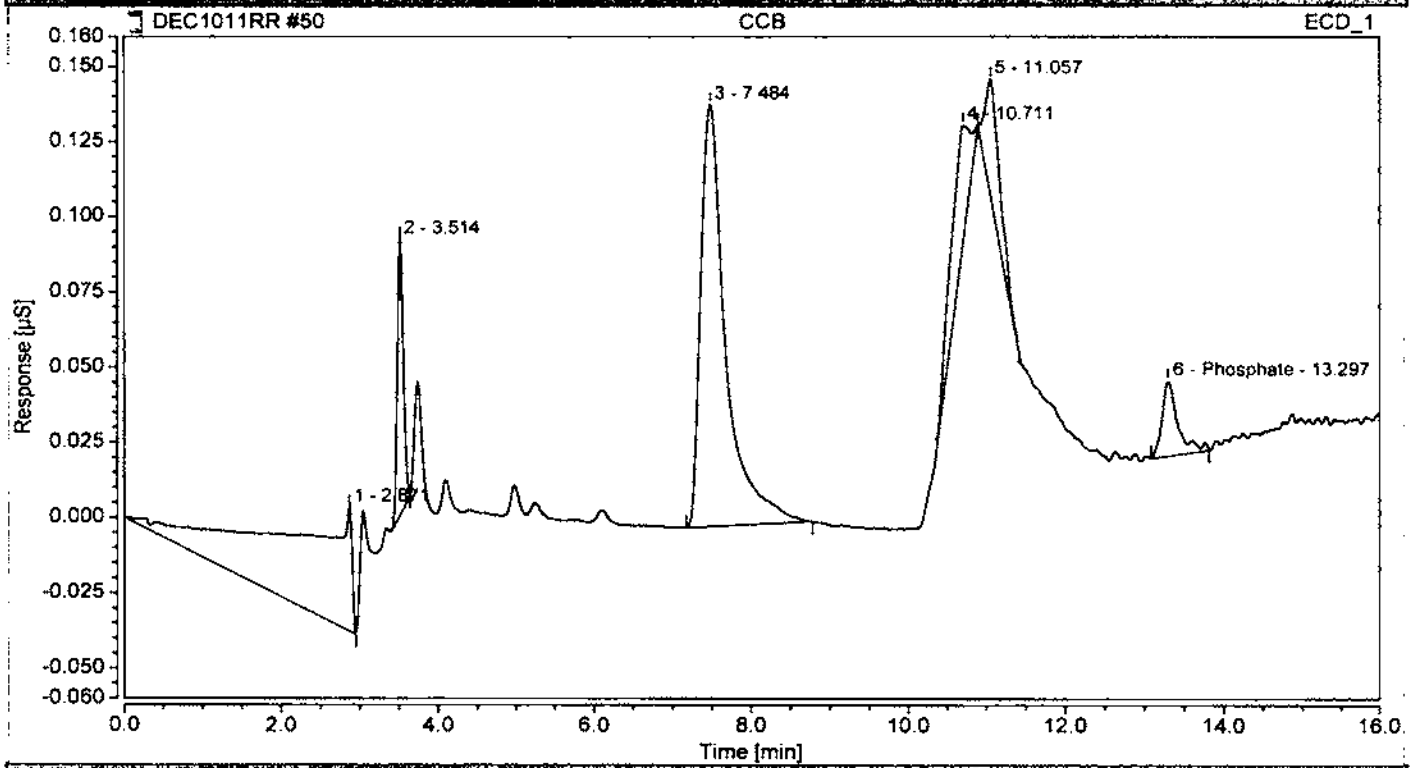
Injection Name:	*CCV*	Inject Number:	49
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:34*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
2	Fluoride	1.0	3.047	3.36	1.444	11.752	FALSE	1.58
3	Chloride	1.0	2.952	4.98	0.894	7.352	FALSE	-1.60
4	Nitrite	1.0	3.030	6.09	2.109	13.090	FALSE	1.00
5		1.0	n.a.	7.47	0.041	0.130	FALSE	n.a.
6	Bromide	1.0	3.008	8.79	0.387	1.885	FALSE	0.31
7	Sulfate	1.0	2.868	9.64	0.532	2.078	FALSE	-4.40
8	Nitrate	1.0	3.190	10.46	2.420	9.976	FALSE	6.34
9	Phosphate	1.0	3.000	13.20	0.887	4.677	FALSE	-0.02

TZ84 : 00570

Injection Name:	*CCB*	Inject Number:	50
Vial Number:	*32*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:54*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.51	0.008	0.092	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.48	0.052	0.140	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	10.71	0.012	0.038	FALSE	n.a.
5		1.0	n.a.	11.06	0.008	0.039	FALSE	n.a.
6	Phosphate	1.0	0.020	13.30	0.006	0.025	FALSE	n.a.

Injection Name:	*STOP*	Inject Number:	51
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 03:15*		

Can't read channel ECD_1 from injection #51 - STOP
Channel is not available

Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	matogram in con	matogram in		n.a.

LJ
12-6-11

TOTAL SUSPENDED SOLIDS / VOLATILE SUSPENDED SOLIDS (TSS / TVSS) DATE: 12/6/11 951

Methods : SM 2540 D-97, 2540 E-97 ANALYST: SM

Instrumentation ***Drying Ovens:*** 12 ***Analytical Balance:*** 1123230597

Muffle Furnace:

make no entries to shaded cells
they are calculated !!

TSS (mg/l) calculated as:
Final dry wt (mg) = (minimum Dry Wt - Tare Wt)*1000
TSS = [(Final Dry Wt)/ ml Sample] * 1000
if dy wt < 1mg, TSS = <1mg / mL sample * 1000
with "<" flag

Loss on ignition (LOI) = TVSS (mg/L) calculated as:
LOI (mg) = Dry wt(mg) -((min ash wt - tare wt) * 1000)
TVSS (mg/L) = LOI / mL sample * 1000
if LOI <1mg, TVSS = <1mg / mL sample * 1000
with "<" flag

LCS source: *Cellulose, MP Biomedicals Lot# 6399J* 0.05 grams to 1000 mL = **50** ***mg/L TSS***

SAMPLE ID	DISH #	filtered (mL)	TARE WT (grams)	DRY WT 104C (grams) 1	2	3	4	DryWT (mg)	TSS (mg/L)	ASH WT 550C (grams) 1	2	3	4	LOI (mg)	TVSS (mg/l)
Cal Weight ID			CV-02	CV-02	CV-02	CV-02	CV-02			CV-02	CV-02	CV-02	CV-02		
Date & Time				12/6/11 1230	12/6/11 1417										
Cal Wt (g) 10.0000				10.0000	10.0000										
record weights to 4 places				*Cal OK!*	*Cal OK!*										
BLANK		1000	0.1185	0.1185	0.1184	STOP		-0.1	**< 1**						
LCS # 586-5		1000	0.1167	0.1646	0.1647	STOP		47.9	**47.9**	95.8%	% Recovery				
TZ60 A5		910	0.1195	0.1203	0.1203	STOP		0.8	**< 1.1**						
TZ83 A5		926	0.1174	0.1190	0.1190	STOP		1.6	**1.7**						
TZ84 A13		930	0.1169	0.1288	0.1287	STOP		11.8	**12.7**						
TZ84 B11		940	0.1186	0.1400	0.1398	STOP		21.2	**22.6**						
TZ87 A2		945	0.1172	0.1209	0.1209	STOP		3.7	**3.9**						
TZ89A2		350	0.1144	0.1243	0.1242	STOP		9.8	**28.0**						
TZ89A2 dup		350	0.1193	0.1294	0.1294	STOP		10.1	**28.9**						
								RPD =	*3.2%*					*RPD =*	*NA*
TZ89 B2		950	0.1194	0.1194	0.1194	STOP		0.0	**< 1.1**						
TZ97 A11		930	0.1151	0.1227	0.1227	STOP		7.6	**8.2**						
TZ97 B20		950	0.1205	0.1216	0.1216	STOP		1.1	**1.2**						
TZ97 C5		960	0.1207	0.1352	0.1351	STOP		14.4	**15.0**						

EASOO : 1927

Analytical Resources, Incorporated
Analytical Chemists and Consultants

TOTAL SUSPENDED (TSS) / TOTAL VOLATILE SUSPENDED SOLID(TVSS) BENCHSHEET

Analyst:	SM	Date/Time:	12-6-11 951	Oven #:	012	Muffle Furnance:		Balance:	1123230597

Dry at 104 °C (12-24 hrs) then combust at 550 °C for 30 min. Record Weights to 4 places

TSS (mg/L) calculated as:
Final Dry Weight (mg) = (Min Dry Weight – Tare Weight) * 1000
TSS = (Final Dry Weight) / (mL Sample) * 1000
If dry wt < 1 mg / mL sample * 1000 use "<" flag

Loss on ignition (LOI) = TVSS (mg / L) is calculated as:
LOI (mg / L) = Dry Weight (mg) – [(Minimum Ash Weight – Tare Weight) * 1000]
TVSS (mg / L) = LOI / mL sample * 1,000
If LOI < 1 mg, TVSS = < 1 mg / mL sample * 1000 use "<" flag

LCS (Cellulose from MP Biochemicals) Lott # **6398J** — 0.0500 Gram to 1000 mL = **50 mg / L TSS**

Cal Weight ID	CV-02	CV-02	CV-02	CV-02	CV-02	[redacted]		CV-02	CV-02	[redacted]		
Date & Time:			12-6 11 1236	12-6 11 1417								
Cal Weight (10.0000g):			10.0000	10.0000								

Sample ID	Dish #	Filtered mL	Tare	Dry Weight 104°C (grams)			Dry Wt mg	TSS	Ash Weight 550°C		LOI - mg	TVSS mg/L
				1	2	3			1	2		
BLANK		1000	0.1185	0.1185	0.1184							
LCS 5865		1000	0.1167	0.1646	0.1647							
T260 A5	1	910	0.1195	0.1203	0.1203							
T283 A5	2	926	0.1174	0.1190	0.1190							
T284 A13	3	930	0.1169	0.1288	0.1287							
↓ B11	4	940	0.1136	0.1400	0.1398							
T287 A2	5	945	0.1172	0.1209	0.1209							
T289 A2	6	950	0.1144	0.1243	0.1242							
↓ A2 lab	7	950	0.1193	0.1294	0.1294							
↓ B2	8	950	0.1194	0.1194	0.1194							
T297 A11	9	930	0.1151	0.1228	0.1227							
↓ A20	10	950	0.1205	0.1216	0.1216							
↓ C5	11	960	0.1207	0.1352	0.1351							

T284 D0057

SM 6054F

① = SM 12-6-11

12-6-11

HEXAVALENT CHROMIUM BENCHSHEET

Diphenyl carbazide colorimetric (SW-846 7196A)

Date / Time: 12/5/11 16:21
Analyst: CDE

REAGENTS (ID)

Sulfuric Acid:	8072c
Acetone:	
Diphenylcarbazide:	8745c

pH METER

Meter ID: ACCUMET AR60
Electrode ID: 9154015P 18

CALIBRATION

Cr+6 Curve Standard — *ARI ID:* 00116-1 — *Date Prepared:* 5/2/2011

Stock	0.0709	*g K2Cr2O7 to*	500	*mL =*	50.1	*mg/L Cr+6*
Intermediate	5	*mL Stock to*	50	*mL =*	5.01	*mg/L Cr+6*

Standard Curve Data — *final volume of prepared standerds =* **50** *mL*

TIME: — *Instrument Used:* SPEC 2

ml Intermediate	Conc (mg/l)	Absorbance @ 540 nm 1	Absorbance @ 540 nm 2	Avg Blk Corr Abs	
0.0	0.00	0.000		0.000	*= blank abs*
0.1	0.01	0.008		0.008	*E 0.01*
0.5	0.05	0.042		0.042	*0.05*
1.0	0.10	0.088		0.088	*0.10*
5.0	0.50	0.425		0.425	*0.51*
10.0	1.00	0.827		0.827	*1.00*

Regression Data
Conc = (abs-intercept)/slope

intercept =	0.0032
slope =	0.8258
r =	1.000
Comment:	Calibration OK!
maxabs =	0.827

Calibration Verification Standard

Source	*ERA # 0504093*			*Stock Conc*	1,000	*mg/L Cr+6*
DQL Int.=	0.10	*ml stock to*	10	*mL pH2 =*	10.00	*mg/L Cr+6*
DQL =	0.40	*ml DQL Int. to*	100	*mL pH2 =*	0.04	*mg/L Cr+6*
CVS =	0.05	*ml stock to*	200	*mL pH2 =*	**0.25**	***mg/L Cr+6***

Prep Check Standard

Dilution	0.50	*ml stock to*	40.00	*mL DI =*	**0.63**	***mg/L Cr+6***

SAMPLE DATA — ***Sample pre-dilution assumes 40 mL of sample are pH adjusted then diluted to 50 mL***

mg/L = ((Abs - Blkabs -Bkgabs) - intercept) / slope NOTE: enter dilution factor as mLfinal/mLsample (e.g. 1mL diluted to 5mL = 5/1 = 2.0)

SAMPLE ID	Time of Analysis	Sample pre-dilution	Spectrophotometric Data: dilution	Background	ABS @ 540nm	(mg/L)	Corrected (mg/L)	NOTES
ICB		1.000	1		0.000	-0.004	**< 0.01**	*Blk OK*
ICV		1.000	1		0.211	0.252	**0.252**	*100.68%*
Prep Blk		1.250	1		0.000	-0.005	**< 0.01**	*Blk OK*
Prep Chk		1.250	1		0.404	0.607	**0.607**	*96.84%*
DQL		1.250	1		0.026	0.035	**0.035**	
TZ97 B2		1.250	1		0.000	-0.005	**< 0.01**	
TZ97 B3 dup		1.250	1		0.000	-0.005	**< 0.01**	*RPD NA*
TZ97 B4 trip		1.250	1		-0.001	-0.006	**< 0.01**	*RSD NA*
TZ97 B2 ms		1.250	1		0.023	0.030	**0.030**	*% Rec= 47.9*
Spike at	0.050	*mL stock to*		40	*mLsample=*	0.063	*mg/L*	*Error, dilute*
TZ97 B2 msd		1.250	1		0.016	0.019	**0.019**	*% Rec= 31*
Spike at	0.050	*mL stock to*		40	*mLsample=*	0.063	*mg/L*	*Error, dilute*
TZ97 B2		1.250	1	0.000	0.000	-0.005	**< 0.01**	
TZ97 B2 ver		1.000	1	0.000	0.005	0.002	**< 0.01**	*#VALUE!*
desired spike =	0.03	*mg/L by adding*	0.060	*mL intstd to 10 mL adjusted sample*		0.03	*mg/L*	*interference*
CCB		1.000	1		-0.002	-0.006	**< 0.01**	*Blk OK*
CCV		1.000	1		0.210	0.250	**0.250**	*100.20%*

HEXAVALENT CHROMIUM BENCHSHEET

Diphenyl carbazide colorimetric (SW-846 7196A)

Date / Time: 12-5-11 16:21

Analyst: CMC

REAGENTS — ID

Sulfuric Acid: 8072 C

Acetone:

Diphenylcarbazide: 8745 C

pH METER

Meter ID: ACCUMET AR60

Electrode ID: 91540151P 18

CALIBRATION

Cr+6 Curve Standard — ARI ID: 00116-1 — Date Prepared: 5-2-11

Stock	0.0709	g K2Cr2O7 to	500	mL =	50.1	mg/L Cr+6
Intermediate	5	mL Stock to	50	mL =	5.01	mg/L Cr+6

Standard Curve Data — final volume of prepared standards = 50 mL

TIME: — Instrument Used: SPEC 2

ml Intermediate	Conc (mg/l)	Absorbance @ 540 nm 1	Absorbance @ 540 nm 2	Avg Blk Corr Abs	
0.0	0.00	0.000			= blank abs
0.1	0.01	0.008			
0.5	0.05	0.042			
1.0	0.10	0.088			
5.0	0.50	0.425			
10.0	1.00	0.827			

Regression Data

Conc = (abs-intercept)/slope

intercept =

slope =

r =

Comment:

mexabs =

Calibration Verification Standard

Source	ERA # 0504093			Stock Conc	1,000	mg/L Cr+6
DQL Int.=	0.10	ml stock to	10	mL pH2 =	10.00	mg/L Cr+6
DQL =	0.40	ml DQL Int. to	100	mL pH2 =	0.04	mg/L Cr+6
CVS =	0.05	ml stock to	200	mL pH2 =	**0.25**	mg/L Cr+6

Prep Check Standard

Dilution	0.50	ml stock to	40.00	mL DI =	**0.63** mg/L Cr+6

SAMPLE DATA — ***Sample pre-dilution assumes 40 mL of sample are pH adjusted then diluted to 50 mL***

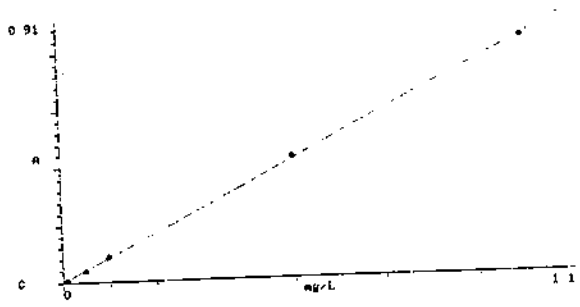
mg/L = ((Abs - Blkabs -Bkgabs) - intercept) / slope NOTE: enter dilution factor as mLfinal/mLsample (e.g. 1mL diluted to 5mL = 5/1 = 2.0)

SAMPLE ID	Time of Analysis	Sample pre-dilution	Spectrophotometric Data: dilution	Background	ABS @ 540nm	(mg/L)	Corrected (mg/L)	NOTES
ICB		1.000	1		0.000			
ICV		1.000	1		0.211			
Prep Blk		1.250	1		0.000			
Prep Chk		1.250	1		0.404			
DQL		1.250	1		0.026			
11297 B2		1.250	1		0.000			
B2lab		1.250	1		0.000			
B4lab		1.250	1		-0.001			
B3		1.250	1		0.023			0.5ml stk to 40mL sample
B2		1.250	1		0.016			↓
B2 wet		1.250	1		0.005			0.06 ml stk to 40 mL sample
CCB		1.250	1		-0.002			
CCV		1.250	1		0.210			
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					

12-5-11 CMC

TEST SETUP
GENESYS 10 v3.001 2D7H048001

Standard Curve	6:39pm 5Dec11
Test Name	CHROME 6
Date Standards Measured	5Dec11
Wavelength	540nm
Ref. Wavelength Correction	Off
Curve Fit	Linear
Number of Standards	6
Units	mg/L
ID# (0=OFF)	1
Low/High Limits	-9999/9999
Statistics	Off
Auto Print	On



Curve Fit	Linear
Slope	0.829
Intercept	0.00233
Std Dev	0.005
Corr Coeff	1.000

Std #	Conc. mg/L	Abs 540nm
1	0.000	0.000
2	0.010	0.008
3	0.050	0.042
4	0.100	0.088
5	0.500	0.425
6	1.000	0.827

12-5-11
CAE

2	0.211
3	0.000
4	0.404
5	0.026
6	0.000
7	0.000
8	-0.001
9	0.023
10	0.016
11	0.005
12	-0.002
13	0.210

TEST SETUP
GENESYS 10 v3.001 2D7H048001

Advanced A-%T-C	6:40pm 5Dec11
Test Name	CHROME 6[Saved]
Measurement Mode	Absorbance
Wavelength	540nm
Ref. Wavelength Correction	Off
Delay Time (min:sec)	0:00
ID# (0=OFF)	1
Low/High Limits	-9999/9999
Statistics	Off
Auto Print	On

ID#	Abs 540nm
1	0.000

TOC, Aqueous Data Summary (Apollo 9000) DATE: 12/6/2011
EPA 9060 A, SM 5310 B-00 ANALYST: UW
Analysis Mode: **NPOC** *Instrument:* ***Apollo 9000***

Detection Limits (mgC/L)
MRL = 1.5 **upper blank =** 1.5 **lower blank =** -1.5

Calibration Data

Stock ID:	ARI 00121-6	factor (m):	1.442E+05	r^2:	0.99994
Curve Date:	11/28/2011	intercept (b_{cal}):	30905	sys blk (b_{sys})	21111

Curve ID: 112811X 0-50ppm

LCS, Verification Standard and Inorganic Sparge Check

	Organic Carbon			Inorganic carbon		
Source:	ERA 0523-11-05			ARI # 0104-9		
Conc:	5,000	*mg/L*		1,000	*mg/L*	
dilution:	1.00	*mL to*	mg C/ L	5.00	*mL to*	mg C/ L
Volume:	250	*mL =*	**20.0**	250	*mL =*	**20**

Sample Data

SAMPLE ID	Dilution Factor	Carbon (mg C/L) *enter Form as TC, TIC, NPOC* Form	# reps	mean	stdev	Measured	Report as	Notes: *will flag if RSD >5%*
~~ICV~~	~~1~~	~~NPOC~~	~~3~~	~~22.0661~~	~~0.08~~	~~22.07~~	~~22.1~~	~~*CVS Err @ 110.5%*~~
ICB	1	NPOC	3	0.0987	0.06	0.10	<1.5	*OK !*
CCV	1	NPOC	3	21.6060	0.16	21.61	21.6	*108.00%*
1.5 ppm	1	NPOC	3	1.6602	0.05	1.66	1.66	110.68%
IC Sparge Check	1	NPOC	3	21.2891	0.11	21.29	21.3	*106.50%*
TZ94 A4	1	NPOC	3	0.8668	0.03	0.87	<1.5	
TZ94 A4dup	1	NPOC	3	0.7365	0.04	0.74	<1.5	
TZ94 A4ms	1	NPOC	3	23.5923	0.87	23.59	23.6	*117.96%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ94 B4	1	NPOC	3	0.8231	0.03	0.82	<1.5	
TZ97 A7	1	NPOC	3	4.7426	0.42	4.74	4.74	RSD > 5% chk value
TZ97 A7dup	1	NPOC	3	5.0680	0.29	5.07	5.07	*RPD =6.7%*
TZ97 A7ms	1	NPOC	3	25.7432	1.37	25.74	25.7	*105.00%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ97 B16	1	NPOC	3	3.5984	0.23	3.60	3.6	RSD > 5% chk value
~~CCV~~	~~1~~	~~NPOC~~	~~3~~	~~22.8843~~	~~0.21~~	~~22.88~~	~~22.9~~	~~*CVS Err @ 114.5%*~~
CCB	1	NPOC	3	0.1151	0.07	0.12	<1.5	*OK !*
CCV	1	NPOC	3	20.7708	0.34	20.77	20.8	*104.00%*
TZ97 C2	1	NPOC	3	10.4334	0.32	10.43	10.4	
UA03 A1	1	NPOC	3	1.6813	0.02	1.68	1.68	
UA03 A1dup	1	NPOC	3	1.4449	0.07	1.44	<1.5	
UA03 A1ms	1	NPOC	3	23.2637	0.21	23.26	23.3	*107.91%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
UA03 B1	1	NPOC	3	0.8017	0.22	0.80	<1.5	
UA03 C1	1	NPOC	3	0.8878	0.13	0.89	<1.5	
CCV	1	NPOC	3	20.8438	0.15	20.84	20.8	*104.00%*
CCB	1	NPOC	3	0.2971	0.09	0.30	<1.5	*OK !*

12-7-11

Detailed Analysis Report Print Date/Time: 2011/12/07 9:15:29

Sample ID: ICV/CCV Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 10:14
Operator ID: UW Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	21.9726	10.9863	1614877	9.655	10.654	211
2	22.1599	11.0800	1628380	9.715	10.714	205
3	22.0657	11.0329	1621590	9.769	10.765	200

Last Message: Out of Calibration
<<<Statistics>>> Mean: 22.0661 Std Dev: 0.0937 RSD: 0.42

Sample ID: ICB / CCB Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 10:36
Operator ID: UW Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1438	0.0719	41271	9.427	10.426	108
2	0.0345	0.0173	33393	9.445	9.689	120
3	0.1179	0.0590	39404	9.396	9.644	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.0987 Std Dev: 0.0571 RSD: 57.85

Sample ID: ICV/CCV Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 11:02
Operator ID: UW Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	21.7886	10.8943	1601612	9.409	10.408	208
2	21.5416	10.7708	1583807	9.605	10.604	201
3	21.4877	10.7439	1579920	9.708	10.704	201

<<<Statistics>>> Mean: 21.6060 Std Dev: 0.1604 RSD: 0.74

Sample ID: 1.5 ppm Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 11:24
Operator ID: UW Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.7201	0.8600	154901	9.398	10.392	125
2	1.6435	0.8218	149382	9.414	10.409	125
3	1.6170	0.8085	147468	9.403	10.398	125

<<<Statistics>>> Mean: 1.6602 Std Dev: 0.0535 RSD: 3.22

Sample ID: CHECK Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 11:49
Operator ID: UW Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	21.3577	10.6788	1570546	9.375	10.373	193
2	21.1661	10.5831	1556739	9.455	10.453	188
3	21.3436	10.6718	1569530	9.395	10.395	190

<<<Statistics>>> Mean: 21.2891 Std Dev: 0.1068 RSD: 0.50

TZ84 : 00579

Sample ID: TZ94 A4 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 12:11
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.8396	0.4198	60522	9.335	10.329	112
2	0.8704	0.4352	62746	9.329	10.328	114
3	0.8904	0.4452	64190	9.357	10.354	114

<<<Statistics>>> Mean: 0.8668 Std Dev: 0.0256 RSD: 2.95

Sample ID: TZ94 A4 DUP Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 12:32
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.6897	0.3449	49720	9.384	10.379	111
2	0.7688	0.3844	55420	9.328	10.326	112
3	0.7509	0.3755	54134	9.333	10.329	111

<<<Statistics>>> Mean: 0.7365 Std Dev: 0.0415 RSD: 5.63

Sample ID: TZ94 A4 MS Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 12:58
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	24.5975	12.2987	1773195	9.375	10.374	193
2	23.0653	11.5326	1662738	9.533	10.529	184
3	23.1140	11.5570	1666250	9.524	10.518	184

<<<Statistics>>> Mean: 23.5923 Std Dev: 0.8709 RSD: 3.69

Sample ID: TZ94 B4 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 13:19
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.8554	0.4277	61665	9.324	10.320	115
2	0.8258	0.4129	59528	9.345	10.341	115
3	0.7880	0.3940	56803	9.344	10.339	115

<<<Statistics>>> Mean: 0.8231 Std Dev: 0.0338 RSD: 4.10

Sample ID: TZ97 A7 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 13:43
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	5.1880	2.5940	373992	9.339	10.334	148
2	4.6956	2.3478	338497	9.414	10.412	148
3	4.3443	2.1722	313176	9.354	10.352	144

<<<Statistics>>> Mean: 4.7426 Std Dev: 0.4238 RSD: 8.94

Sample ID: TZ97 A7 DUP Mode: TOC

Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Filename: 12060949
Timestamp: 2011/12/06 14:06
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	5.4016	2.7008	389395	9.307	10.304	150
2	4.8610	2.4305	350419	9.328	10.324	148
3	4.9415	2.4707	356223	9.284	10.282	150

<<<Statistics>>> Mean: 5.0680 Std Dev: 0.2917 RSD: 5.76

Sample ID: TA97 A7 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12060949
Timestamp: 2011/12/06 14:31
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	26.5738	13.2869	1915666	9.369	10.368	197
2	24.1590	12.0795	1741583	9.467	10.466	180
3	26.4967	13.2484	1910108	9.487	10.484	192

<<<Statistics>>> Mean: 25.7432 Std Dev: 1.3725 RSD: 5.33

Sample ID: TZ97 B16
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12060949
Timestamp: 2011/12/06 14:54
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	3.8574	1.9287	278074	9.290	10.283	142
2	3.5144	1.7572	253351	9.292	10.289	141
3	3.4233	1.7117	246781	9.284	10.280	141

<<<Statistics>>> Mean: 3.5984 Std Dev: 0.2289 RSD: 6.36

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12060949
Timestamp: 2011/12/06 15:20
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	23.1264	11.5632	1698051	9.336	10.334	207
2	22.7192	11.3596	1668695	9.440	10.440	200
3	22.8073	11.4037	1675048	9.483	10.481	203

Last Message: Out of Calibration
<<<Statistics>>> Mean: 22.8843 Std Dev: 0.2142 RSD: 0.94

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12060949
Timestamp: 2011/12/06 15:42
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1983	0.0991	45197	9.250	10.244	109
2	0.0617	0.0308	35351	9.445	9.602	120
3	0.0853	0.0426	37053	9.247	9.529	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.1151 Std Dev: 0.0730 RSD: 63.43

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Mode: TOC
Filename: 12060949

Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 16:08
Operator ID: UW Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	21.1589	10.5795	1556219	9.299	10.298	208
2	20.5101	10.2551	1509448	9.492	10.490	199
3	20.6433	10.3216	1519046	9.487	10.487	202

<<<Statistics>>> Mean: 20.7708 Std Dev: 0.3427 RSD: 1.65

Sample ID: TZ97 C2 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 16:32
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	10.8021	5.4011	778709	9.218	10.218	159
2	10.2636	5.1318	739886	9.315	10.310	160
3	10.2345	5.1172	737786	9.347	10.343	160

<<<Statistics>>> Mean: 10.4334 Std Dev: 0.3196 RSD: 3.06

Sample ID: UA03 A1 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 16:54
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.6967	0.8484	122315	9.250	10.249	126
2	1.6665	0.8332	120132	9.216	10.215	129
3	1.6808	0.8404	121165	9.196	10.191	126

<<<Statistics>>> Mean: 1.6813 Std Dev: 0.0151 RSD: 0.90

Sample ID: UA03 A1 DUP Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 17:16
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.4054	0.7027	101312	9.202	10.197	122
2	1.5203	0.7602	109598	9.147	10.147	126
3	1.4089	0.7045	101568	9.203	10.198	126

<<<Statistics>>> Mean: 1.4449 Std Dev: 0.0654 RSD: 4.52

Sample ID: UA03 A1 MS Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 17:42
Operator ID: UW Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	23.5116	11.7558	1694912	9.254	10.249	195
2	23.1296	11.5648	1667378	9.385	10.384	187
3	23.1500	11.5750	1668850	9.405	10.403	186

<<<Statistics>>> Mean: 23.2637 Std Dev: 0.2149 RSD: 0.92

Sample ID: UA03 B1 Mode: TOC
Method: TOC 0 to 50 ppm Filename: 12060949
Cal. Curve: 112811X 0-50ppm Timestamp: 2011/12/06 18:03
Operator ID: UW Sample Type: Sample

TZ84 : 00582

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.0607	0.5303	76463	9.149	10.143	114
2	0.6861	0.3431	49462	9.218	10.217	112
3	0.6583	0.3292	47459	9.192	10.186	111

<<<Statistics>>> Mean: 0.8017 Std Dev: 0.2247 RSD: 28.03

Sample ID: UA03 Cl
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12060949
Timestamp: 2011/12/06 18:25
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.0302	0.5151	74263	9.164	10.159	112
2	0.8496	0.4248	61244	9.148	10.143	110
3	0.7837	0.3919	56497	9.171	10.166	110

<<<Statistics>>> Mean: 0.8878 Std Dev: 0.1276 RSD: 14.37

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12060949
Timestamp: 2011/12/06 18:50
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	21.0215	10.5107	1546309	9.244	10.242	200
2	20.7498	10.3749	1526727	9.370	10.366	195
3	20.7601	10.3801	1527470	9.389	10.387	194

<<<Statistics>>> Mean: 20.8438 Std Dev: 0.1540 RSD: 0.74

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12060949
Timestamp: 2011/12/06 19:12
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.2722	0.1361	50526	9.116	10.116	110
2	0.2247	0.1124	47104	9.145	10.142	109
3	0.3943	0.1972	59330	9.136	10.133	113

<<<Statistics>>> Mean: 0.2971 Std Dev: 0.0875 RSD: 29.45

Calibration Report Print Date/Time: 2011/11/28 12:48:57

Cal. Curve ID: 112811X 0-50ppm
Created: 2011/11/28 12:48
Calibration Factor (m): 1.442e+05
Y Intercept (b): 30905
r-squared: 0.99994

Standard ID	Y Raw Data	X Expected ug C	Measured ug C	Message	Date & Time
BLK	41742	0.000	0.075	Low Sample De	2011/11/28 10:44
1.5	129933	0.750	0.687		2011/11/28 11:06
5.0	376619	2.500	2.398		2011/11/28 11:29
10.0	760027	5.000	5.057		2011/11/28 11:53
25.0	1842433	12.500	12.565		2011/11/28 12:19
50.0	3630767	25.000	24.968		2011/11/28 12:45

TZ84 : 00584

Original Run Filename: OM_12-8-2011_03-52-51PM.OMN Created: 12/8/2011 3:52:51 PM
Original Run Author's Signature: [Ursula Walter]
Current Run Filename: 120811NH3C.omn Last Modified: 12/8/2011 6:57:44 PM
Current Run Author's Signature: [Ursula Walter]
Description: LACHAT1
ARI In-House Standards:00117-5

Sample	Cup No.	Channel 1		Detection Time	MANUAL DILUTION FACTOR	
STD 1.0	S1	1	36.3795	12/8/2011@3:53:51 PM		
STD 0.8	S2	0.8	28.4636	12/8/2011@3:55:01 PM		
STD 0.5	S3	0.5	17.7943	12/8/2011@3:56:11 PM		
STD 0.2	S4	0.2	6.6334	12/8/2011@3:57:22 PM		
STD 0.05	S5	0.05	2.6908	12/8/2011@3:58:32 PM		
STD 0.02	S6	0.02	0.3943	12/8/2011@3:59:42 PM		
STD 0.01	S7	0.01	0.2603	12/8/2011@4:00:53 PM		
BLANK	S8	0	-0.1156	12/8/2011@4:02:04 PM		
ICV ERA 130611	9	0.4591	16.4913	12/8/2011@4:03:14 PM		% R = 91.82
Known Conc:		0.5				
Calibration:		Table/Fig. : 1				
ICB	10	0.0043	0.0796	12/8/2011@4:09:22 PM		
Known Conc:		0				
LOW	11	0.0068	0.1682	12/8/2011@4:15:30 PM		% R = 68.00
Known Conc:		0.01				
FILTER BLK	12	-0.001	-0.113	12/8/2011@4:22:07 PM		
TZ60 A4	13	0.0166	0.5246	12/8/2011@4:23:18 PM		
TZ46 A3	14	0.0014	-0.0236	12/8/2011@4:24:28 PM		% RPD = NA
TZ46 A3 DUP	15	0.0066	0.161	12/8/2011@4:25:38 PM		
TZ46 A3 MS	16	0.5243	18.8454	12/8/2011@4:26:50 PM		% R = 104.86
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml

TZ46 B3	19	0.0106	0.3071	12/8/2011@4:28:00 PM		
TZ46 C3	20	0.0127	0.3813	12/8/2011@4:29:11 PM		
TZ46 D3	21	0.0094	0.2654	12/8/2011@4:30:22 PM		
TZ46 E3	22	0.0071	0.1794	12/8/2011@4:31:33 PM		
~~CCV~~	~~17~~	~~0.3976~~	~~14.2727~~	12/8/2011@4:32:44 PM		~~% R = 79.52~~
Known Conc:		0.5				
CCB	18	-0.0052	-0.2648	12/8/2011@4:38:55 PM		
Known Conc:		0				
CCV	17	0.5359	19.2635	12/8/2011@4:45:03 PM		% R = 107.18
Known Conc:		0.5				
~~LOW~~	~~11~~	~~0.0046~~	~~0.0918~~	12/8/2011@4:49:57 PM		
~~Known Conc:~~		~~0.01~~				
~~TZ46 F3~~	~~23~~	~~-0.0025~~	~~-0.1667~~	12/8/2011@4:51:36 PM		
TZ47 A4	24	0.0457	1.5722	12/8/2011@4:52:47 PM		
TA47 B4	25	0.0094	0.2625	12/8/2011@4:53:57 PM		
TZ47 C4	26	0.0094	0.2641	12/8/2011@4:55:09 PM		
TZ47 D4	27	0.0126	0.3804	12/8/2011@4:56:20 PM		
TZ47 E4	28	0.0279	0.9328	12/8/2011@4:57:31 PM		
TZ47 F4	29	-7.97E-05	-0.0784	12/8/2011@4:58:42 PM		
TZ47 G4	30	0.0073	0.1862	12/8/2011@4:59:53 PM		
CCV	17	0.5252	18.8757	12/8/2011@5:01:04 PM		% R = 105.04
Known Conc:		0.5				
CCB	18	0.0028	0.0255	12/8/2011@5:07:13 PM		
Known Conc:		0				
TZ46 F3	31	0.0092	0.2559	12/8/2011@5:13:22 PM		
TZ84 A12	32	0.3597	12.905	12/8/2011@5:14:34 PM		

TZ84 A12 DUP	33	0.3737	13.4106	12/8/2011@5:15:45 PM		% RPD = 3.82
TZ84 A12 MS	34	0.8157	29.3611	12/8/2011@5:16:56 PM		% R = 91.20
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml
~~TZ84 B8~~	~~35~~	~~1.923~~	~~69.3194~~	12/8/2011@5:18:07 PM		
~~TZ97 A9~~	~~36~~	~~2.2813~~	~~82.2514~~	12/8/2011@5:19:19 PM		
TZ97 B17	37	0.4707	16.9113	12/8/2011@5:20:31 PM		
UA20 A5	38	0.0403	1.3799	12/8/2011@5:21:43 PM		
UA20 B4	39	0.2068	7.3883	12/8/2011@5:22:54 PM		
UA20 C2	40	0.074	2.5938	12/8/2011@5:24:05 PM		
CCV	17	0.5391	19.379	12/8/2011@5:25:16 PM		% R = 107.82
Known Conc:		0.5				
CCB	18	0.0004	-0.0624	12/8/2011@5:31:25 PM		
Known Conc:		0				
TZ84 B8	41	1.8195	13.0566	12/8/2011@5:37:35 PM	5	
TZ97 A9	42	2.056	14.7633	12/8/2011@5:38:46 PM	5	
TZ87 A1	43	0.2016	7.1981	12/8/2011@5:39:58 PM		
TZ87 A1 DUP	44	0.1943	6.9372	12/8/2011@5:41:10 PM		% RPD = 3.69
TZ87 A1 MS	45	0.7293	26.2433	12/8/2011@5:42:22 PM		% R = 105.54
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml
UA03 A2	46	0.6979	25.1115	12/8/2011@5:43:33 PM		
UA03 A2 DUP	47	0.7411	26.6702	12/8/2011@5:44:45 PM		% RPD = 6.00
~~UA03 A2 MS~~	~~48~~	~~1.2195~~	~~43.9334~~	12/8/2011@5:45:57 PM		
~~Spiking Conc:~~		~~0.5~~				
UA03 B2	49	0.0088	0.2434	12/8/2011@5:47:09 PM		
UA03 C2	50	0.0199	0.641	12/8/2011@5:48:21 PM		
CCV	17	0.5357	19.2565	12/8/2011@5:49:32 PM		% R = 107.14

Known Conc:		0.5				
CCB	18	0.0045	0.086	12/8/2011@5:55:40 PM		
Known Conc:		0				
UA03 A2 MS @ 2.5 PPM	51	3.2925	23.6881	12/8/2011@6:01:51 PM	5	% R = 103.78
						0.25 ml * 20 ppm / 10 ml
UA31 A3	52	0.0182	0.582	12/8/2011@6:03:02 PM		
UA31 A3 DUP	53	0.0193	0.6201	12/8/2011@6:04:15 PM		% RPD = 5.87
UA31 A3 MS	54	0.5435	19.5361	12/8/2011@6:05:26 PM		% R = 105.06
Spiking Conc:		0.5				0.25 ml * 20 ppm / 10 ml
~~UA31 B3~~	~~55~~	~~0.0247~~	~~0.8176~~	12/8/2011@6:06:38 PM		
UA31 C3	56	0.0456	1.5695	12/8/2011@6:07:51 PM		
UA31 D3	57	0.023	0.7558	12/8/2011@6:09:03 PM		
UA43 A4	58	0.0099	0.2823	12/8/2011@6:10:15 PM		
UA43 B4	59	0.0248	0.8189	12/8/2011@6:11:27 PM		
UA43 C4	60	0.0284	0.9506	12/8/2011@6:12:39 PM		
CCV	17	0.529	19.0153	12/8/2011@6:13:50 PM		% R = 105.80
Known Conc:		0.5				
CCB	18	0.0095	0.2688	12/8/2011@6:19:58 PM		
Known Conc:		0				
UA43 D4	19	0.0294	0.9848	12/8/2011@6:26:07 PM		
UA43 E4	20	0.017	0.5378	12/8/2011@6:27:17 PM		
UA43 F4	21	-0.0031	-0.1882	12/8/2011@6:28:29 PM		
~~UA60 A2~~	~~22~~	~~19.2323~~	~~693.9603~~	12/8/2011@6:29:40 PM		
~~UA31 B3~~	~~23~~	~~-0.0286~~	~~-1.1069~~	12/8/2011@6:30:51 PM		
~~DI WATER~~	~~8~~	~~-0.0029~~	~~-0.1793~~	12/8/2011@6:32:01 PM		
~~DI WATER~~	~~8~~	~~0.0012~~	~~-0.0323~~	12/8/2011@6:36:30 PM		

UA50 A2	24	24.185	8.6522	12/8/2011@6:37:41 PM	100
UA31 B3	23	0.0068	0.1714	12/8/2011@6:38:51 PM	
~~1 PPM~~	~~1~~	~~0.9948~~	~~35.8255~~	12/8/2011@6:40:02 PM	
CCV	17	0.5176	18.6014	12/8/2011@6:46:11 PM	
Known Conc:		0.5			
CCB	18	0.0061	0.144	12/8/2011@6:52:19 PM	
Known Conc:		0			

% R = 103.52

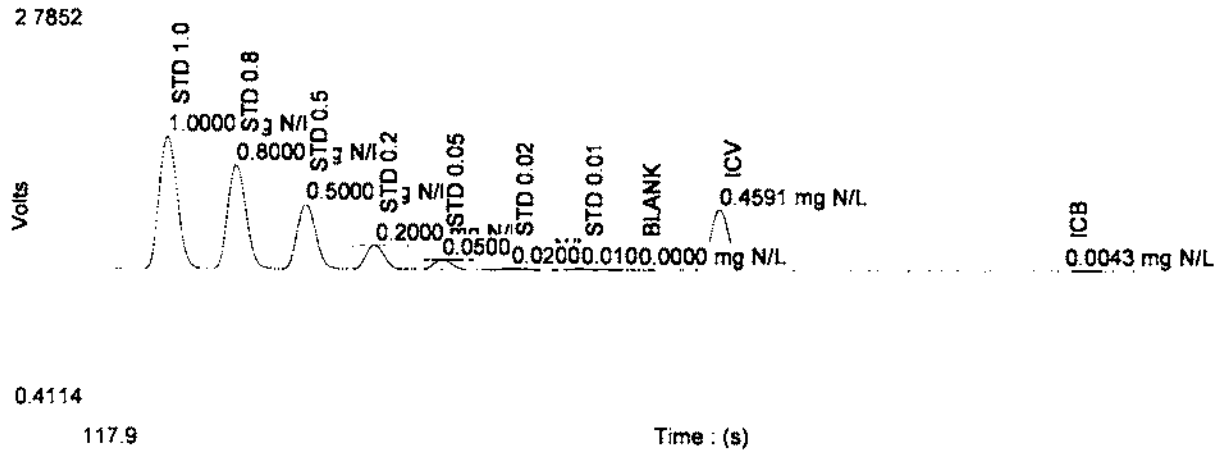
Original Run Filename: OM_12-8-2011_03-52-51PM.OMN Created: 12/8/2011 3:52:51 PM
Original Run Author's Signature: [Ursula Walter]
Current Run Filename: 120811NH3C.omn Last Modified: 12/8/2011 6:57:44 PM
Current Run Author's Signature: [Ursula Walter]
Description: Default New Run

Sample	Cup No.	Channel 1 NH3 Conc. (mg N/L)	Area (V.s)	Detection Time	MDF
STD 1.0	S1	1.0000	36.3795	12/8/2011@3:53:51 PM	
STD 0.8	S2	0.8000	28.4636	12/8/2011@3:55:01 PM	
STD 0.5	S3	0.5000	17.7943	12/8/2011@3:56:11 PM	
STD 0.2	S4	0.2000	6.6334	12/8/2011@3:57:22 PM	
STD 0.05	S5	0.0500	2.6908	12/8/2011@3:58:32 PM	
STD 0.02	S6	0.0200	0.3943	12/8/2011@3:59:42 PM	
STD 0.01	S7	0.0100	0.2603	12/8/2011@4:00:53 PM	
BLANK	S8	0.0000	-0.1156	12/8/2011@4:02:04 PM	
ICV	9	0.4591	16.4913	12/8/2011@4:03:14 PM	
	Known Conc:	0.5000			
	Calibration:	Table/Fig. : 1			
ICB	10	0.0043	0.0796	12/8/2011@4:09:22 PM	
	Known Conc:	0.0000			
LOW	11	0.0068	0.1682	12/8/2011@4:15:30 PM	
	Known Conc:	0.0100			
FILTER BLK	12	-0.0010	-0.1130	12/8/2011@4:22:07 PM	
TZ60 A4	13	0.0166	0.5246	12/8/2011@4:23:18 PM	
TZ46 A3	14	0.0014	-0.0236	12/8/2011@4:24:28 PM	
TZ46 A3 DUP	15	0.0066	0.1610	12/8/2011@4:25:38 PM	
TZ46 A3 MS	16	0.5243	18.8454	12/8/2011@4:26:50 PM	
	Spiking Conc:	0.5000			
TZ46 B3	19	0.0106	0.3071	12/8/2011@4:28:00 PM	
TZ46 C3	20	0.0127	0.3813	12/8/2011@4:29:11 PM	
TZ46 D3	21	0.0094	0.2654	12/8/2011@4:30:22 PM	
TZ46 E3	22	0.0071	0.1794	12/8/2011@4:31:33 PM	
CCV	17	0.3976	14.2727	12/8/2011@4:32:44 PM	
	Known Conc:	0.5000			
CCB	18	-0.0052	-0.2648	12/8/2011@4:38:55 PM	
	Known Conc:	0.0000			
CCV	17	0.5359	19.2635	12/8/2011@4:45:03 PM	
	Known Conc:	0.5000			
LOW	11	0.0046	0.0918	12/8/2011@4:49:57 PM	
	Known Conc:	0.0100			
TZ46 F3	23	-0.0025	-0.1667	12/8/2011@4:51:36 PM	
TZ47 A4	24	0.0457	1.5722	12/8/2011@4:52:47 PM	
TA47 B4	25	0.0094	0.2625	12/8/2011@4:53:57 PM	
TZ47 C4	26	0.0094	0.2641	12/8/2011@4:55:09 PM	
TZ47 D4	27	0.0126	0.3804	12/8/2011@4:56:20 PM	
TZ47 E4	28	0.0279	0.9328	12/8/2011@4:57:31 PM	
TZ47 F4	29	-7.9664e-5	-0.0784	12/8/2011@4:58:42 PM	
TZ47 G4	30	0.0073	0.1862	12/8/2011@4:59:53 PM	
CCV	17	0.5252	18.8757	12/8/2011@5:01:04 PM	
	Known Conc:	0.5000			
CCB	18	0.0028	0.0255	12/8/2011@5:07:13 PM	
	Known Conc:	0.0000			
TZ46 F3	31	0.0092	0.2559	12/8/2011@5:13:22 PM	
TZ84 A12	32	0.3597	12.9050	12/8/2011@5:14:34 PM	
TZ84 A12 DUP	33	0.3737	13.4106	12/8/2011@5:15:45 PM	
TZ84 A12 MS	34	0.8157	29.3611	12/8/2011@5:16:56 PM	
	Spiking Conc:	0.5000			
TZ84 B8	35	1.9230	69.3194	12/8/2011@5:18:07 PM	
TZ97 A9	36	2.2813	82.2514	12/8/2011@5:19:19 PM	
TZ97 B17	37	0.4707	16.9113	12/8/2011@5:20:31 PM	
UA20 A5	38	0.0403	1.3799	12/8/2011@5:21:43 PM	
UA20 B4	39	0.2068	7.3883	12/8/2011@5:22:54 PM	
UA20 C2	40	0.0740	2.5938	12/8/2011@5:24:05 PM	
CCV	17	0.5391	19.3790	12/8/2011@5:25:16 PM	
	Known Conc:	0.5000			

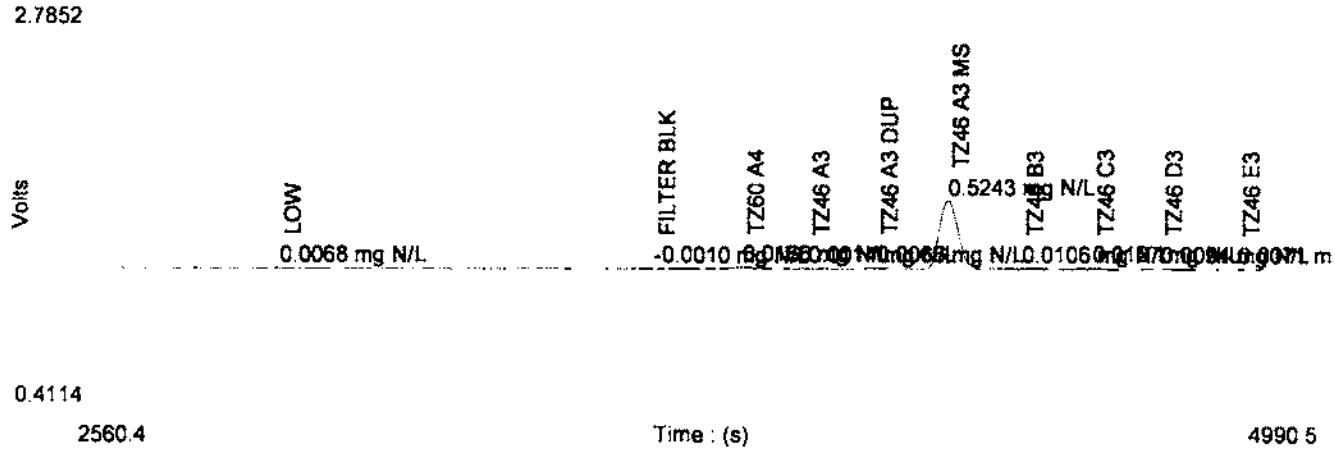
TZ84 : 005990

CCB	18	0.0004	-0.0624	12/8/2011@5:31:25 PM	
Known Conc:		0.0000			
TZ84 B8	41	1.8195	13.0566	12/8/2011@5:37:35 PM	5.00
TZ97 A9	42	2.0560	14.7633	12/8/2011@5:38:46 PM	5.00
TZ87 A1	43	0.2016	7.1981	12/8/2011@5:39:58 PM	
TZ87 A1 DUP	44	0.1943	6.9372	12/8/2011@5:41:10 PM	
TZ87 A1 MS	45	0.7293	26.2433	12/8/2011@5:42:22 PM	
Spiking Conc:		0.5000			
UA03 A2	46	0.6979	25.1115	12/8/2011@5:43:33 PM	
UA03 A2 DUP	47	0.7411	26.6702	12/8/2011@5:44:45 PM	
UA03 A2 MS	48	1.2195	43.9334	12/8/2011@5:45:57 PM	
Spiking Conc:		0.5000			
UA03 B2	49	0.0088	0.2434	12/8/2011@5:47:09 PM	
UA03 C2	50	0.0199	0.6410	12/8/2011@5:48:21 PM	
CCV	17	0.5357	19.2565	12/8/2011@5:49:32 PM	
Known Conc:		0.5000			
CCB	18	0.0045	0.0860	12/8/2011@5:55:40 PM	
Known Conc:		0.0000			
UA03 A2 MS @ 2.5 PPM	51	3.2925	23.6881	12/8/2011@6:01:51 PM	5.00
UA31 A3	52	0.0182	0.5820	12/8/2011@6:03:02 PM	
UA31 A3 DUP	53	0.0193	0.6201	12/8/2011@6:04:15 PM	
UA31 A3 MS	54	0.5435	19.5361	12/8/2011@6:05:26 PM	
Spiking Conc:		0.5000			
UA31 B3	55	0.0247	0.8176	12/8/2011@6:06:38 PM	
UA31 C3	56	0.0456	1.5695	12/8/2011@6:07:51 PM	
UA31 D3	57	0.0230	0.7558	12/8/2011@6:09:03 PM	
UA43 A4	58	0.0099	0.2823	12/8/2011@6:10:15 PM	
UA43 B4	59	0.0248	0.8189	12/8/2011@6:11:27 PM	
UA43 C4	60	0.0284	0.9506	12/8/2011@6:12:39 PM	
CCV	17	0.5290	19.0153	12/8/2011@6:13:50 PM	
Known Conc:		0.5000			
CCB	18	0.0095	0.2688	12/8/2011@6:19:58 PM	
Known Conc:		0.0000			
UA43 D4	19	0.0294	0.9848	12/8/2011@6:26:07 PM	
UA43 E4	20	0.0170	0.5378	12/8/2011@6:27:17 PM	
UA43 F4	21	-0.0031	-0.1882	12/8/2011@6:28:29 PM	
UA50 A2	22	19.2323	693.9603	12/8/2011@6:29:40 PM	
UA31 B3	23	-0.0286	-1.1059	12/8/2011@6:30:51 PM	
DI WATER	8	-0.0029	-0.1793	12/8/2011@6:32:01 PM	
DI WATER	8	0.0012	-0.0323	12/8/2011@6:36:30 PM	
UA50 A2	24	24.1850	8.6522	12/8/2011@6:37:41 PM	100.00
UA31 B3	23	0.0068	0.1714	12/8/2011@6:38:51 PM	
Sample81	1	0.9948	35.8255	12/8/2011@6:40:02 PM	
CCV	17	0.5176	18.6014	12/8/2011@6:46:11 PM	
Known Conc:		0.5000			
CCB	18	0.0061	0.1440	12/8/2011@6:52:19 PM	
Known Conc:		0.0000			

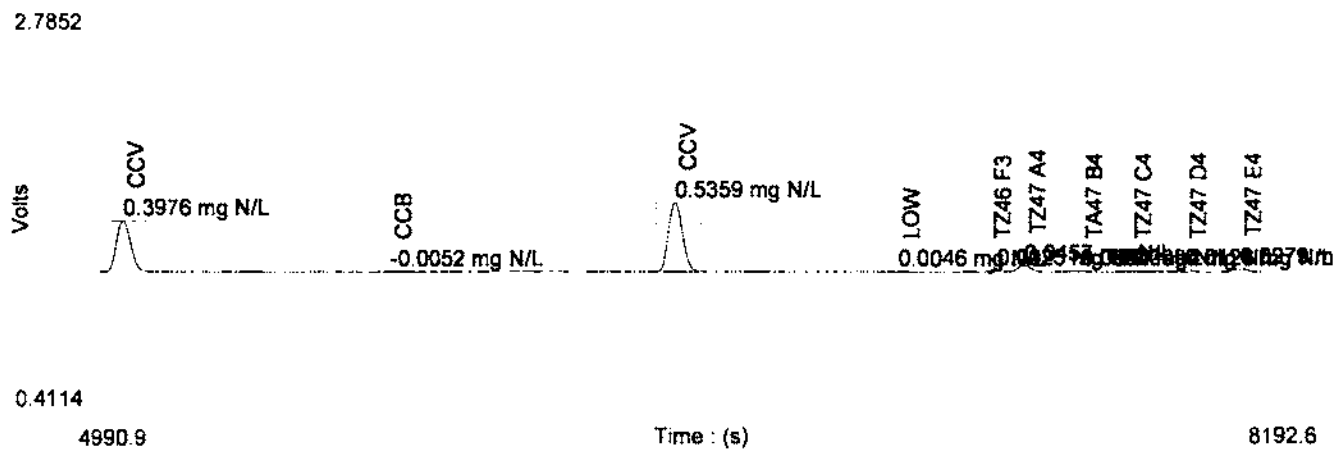
Channel 1 - Set: 1 / 9



Channel 1 - Set: 2 / 9

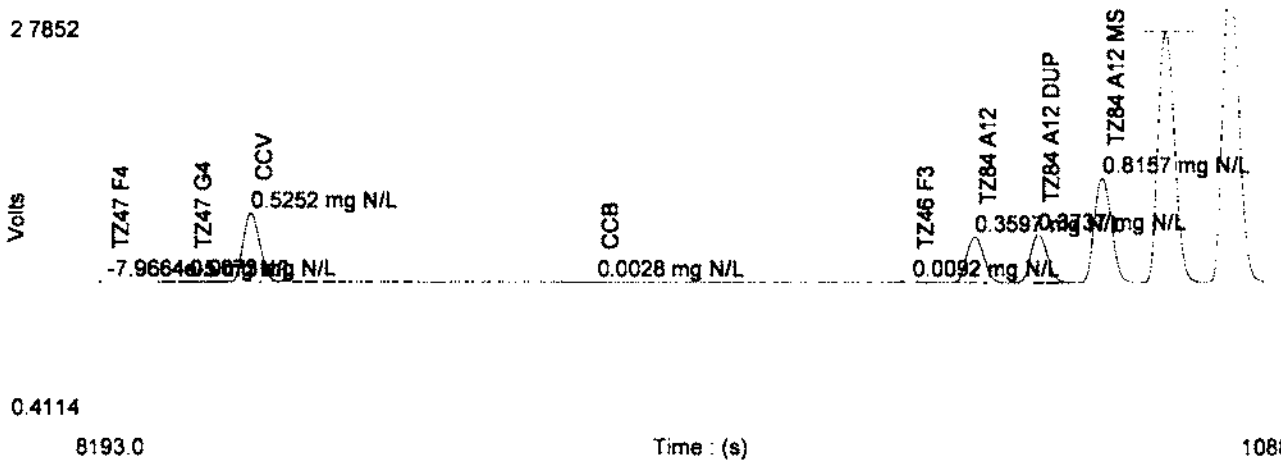


Channel 1 - Set: 3 / 9

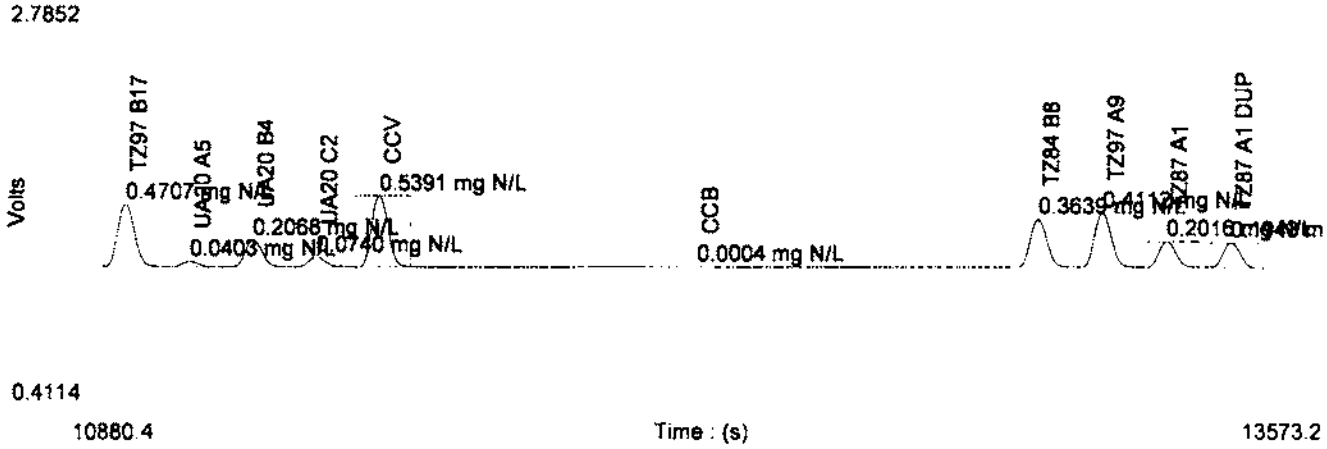


TZ84 : 005592

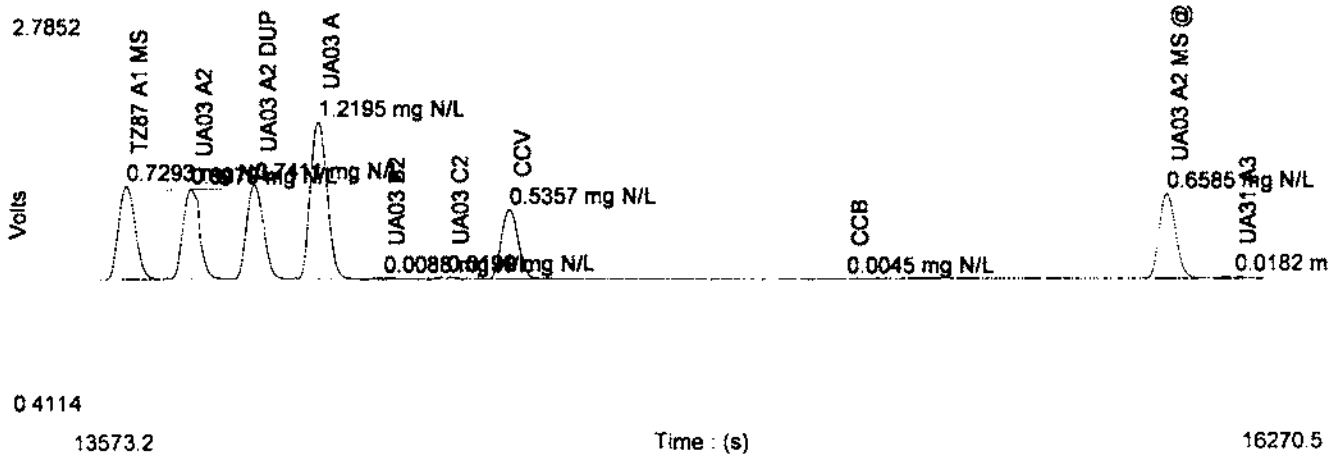
Channel 1 - Set: 4 / 9



Channel 1 - Set: 5 / 9

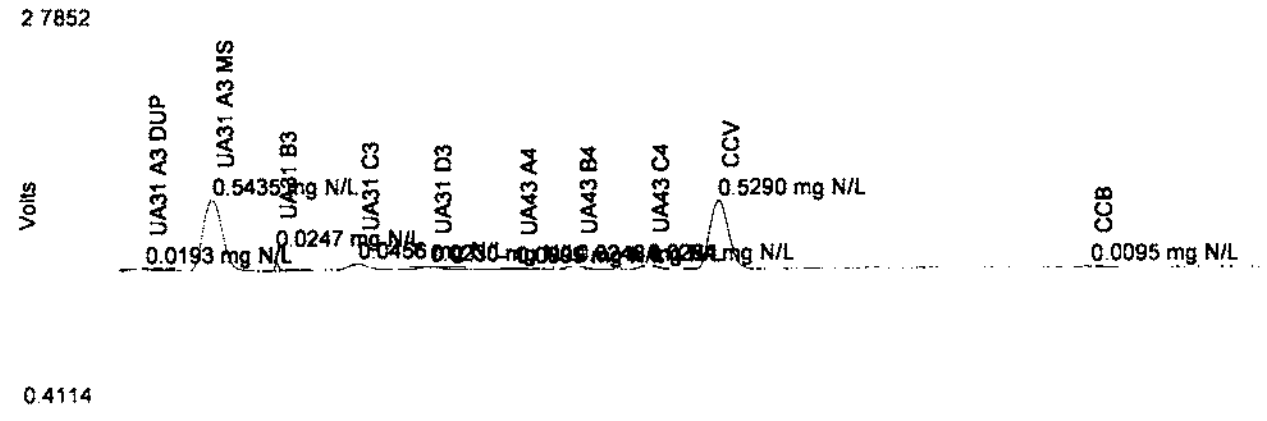


Channel 1 - Set: 6 / 9

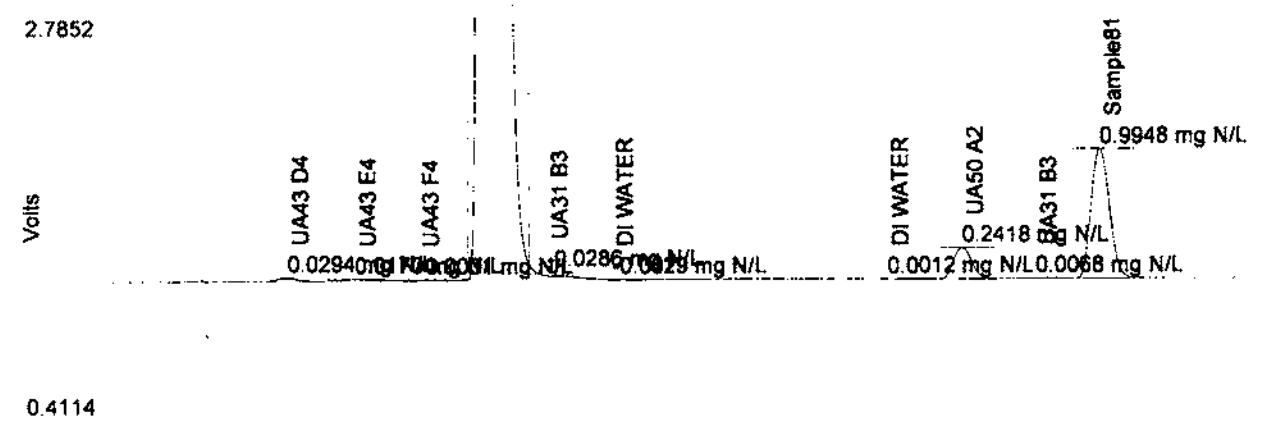


TZ84 : 00593

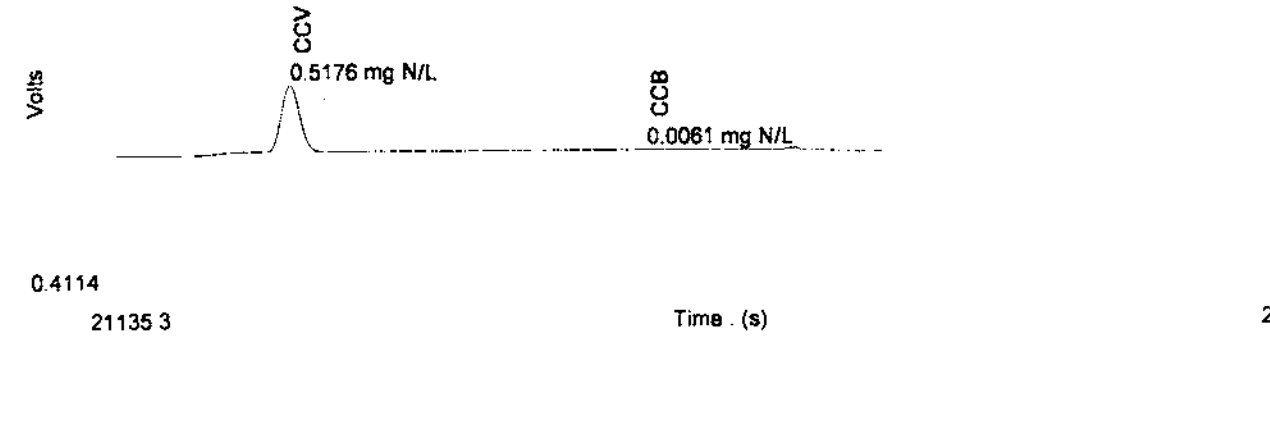
Channel 1 - Set: 7 / 9



Channel 1 - Set: 8 / 9



Channel 1 - Set: 9 / 9

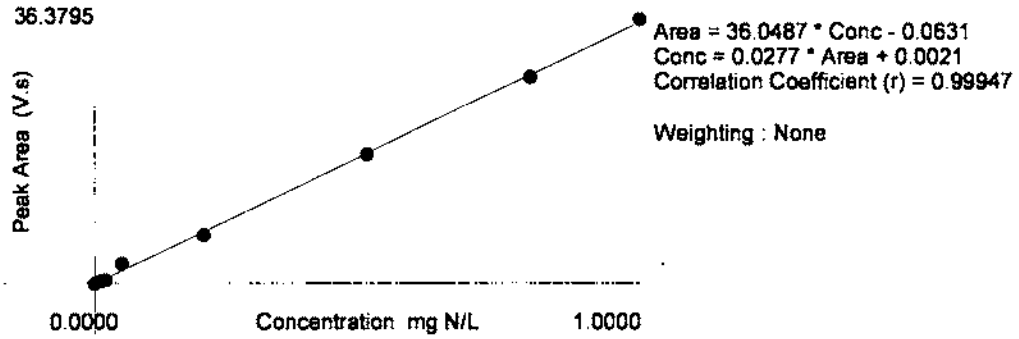


TZ84 : 00594

Table : 1 (NH3)

	Known Conc. (mg N/L)	Rep.	Peak Area (V.s)	Peak Height (V)	% RSD	% Residual	Det. Conc (mg N/L)	Detection Date	Detection Time
1	1.0000	1	36.3795	0.8251	0.0	-1.1	1.0102	12/8/2011	3:53:51 PM
2	0.8000	1	28.4636	0.6461	0.0	1.1	0.7908	12/8/2011	3:55:01 PM
3	0.5000	1	17.7943	0.4019	0.0	0.9	0.4952	12/8/2011	3:56:11 PM
4	0.2000	1	6.6334	0.1494	0.0	7.2	0.1859	12/8/2011	3:57:22 PM
5	0.0500	1	2.6908	0.0613	0.0	-54.7	0.0767	12/8/2011	3:58:32 PM
6	0.0200	1	0.3943	0.0098	0.0	40.1	0.0130	12/8/2011	3:59:42 PM
7	0.0100	1	0.2603	0.0067	0.0	12.5	0.0093	12/8/2011	4:00:53 PM
8	0.0000	1	-0.1156	-0.0021			-0.0011	12/8/2011	4:02:04 PM

Figure : 1 (NH3)



TZ84 : 00595

[redacted]

Name:	**DEC0611RR**	*Calibration:*	**OCT0611RR** **ARI # 581-9**
Directory:	**Instrument Data\DEC 2011**	*Calibration exp:*	**1/6/2012**
Data Vault:	**ChromeleonLocal**	*Queue Start:*	12/6/2011 11:37
No. of Injections:	**23.000**	*User:*	**RR**

[redacted]

		ERA 161110	ERA 411010	ERA 401010	ERA 111109	ERA 160111	ERA 230511	ERA 200610
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a. Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ICV	1.0	2.997	3.039	3.173	3.010	2.540	3.033	2.923
%R=		**99.9%**	**101.3%**	**105.8%**	**100.3%**	**84.7%**	**101.1%**	**97.4%**
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
[redacted]		0.020	20.296	n.a.	n.a.	n.a.	[redacted]	0.027
		0.023	6.959	n.a.	n.a.	4.095		0.019
		0.272	6.965	0.032	0.051	1.485		n.a.
		0.398	[redacted]	0.013	n.a.	19.087		n.a.
		0.398		0.013	n.a.	19.076		n.a.
%RPD=		**0.02%**	**0.11%**	**2.93%**		**0.06%**	**0.96%**	
[redacted]		2.395	[redacted]	2.004	1.875	n.a.	[redacted]	1.933
%R=		**99.8%**	**102.6%**	**99.5%**	**93.8%**		**107.0%**	**96.6%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
[redacted]		0.218	[redacted]	0.011	n.a.	0.167	[redacted]	1.158
		0.211	2.516	n.a	n.a.	n.a.		0.037
		0.211	2.519	n.a.	n.a.	n.a.		0.020
%RPD=		**0.14%**	**0.10%**				**0.49%**	
[redacted]		2.211	4.571	1.996	1.916	n.a.	[redacted]	1.828
%R=		**100.0%**	**102.7%**	**99.8%**	**95.8%**		**108.0%**	**91.4%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
CCV	1.0	2.995	3.051	3.157	3.019	2.453	3.064	2.954
%R=		**99.8%**	**101.7%**	**105.2%**	**100.6%**	**81.8%**	**102.1%**	**98.5%**
CCB	1.0	n.a	n.a.	n.a.	n.a.	n.a.	n.a.	0.020
[redacted]		0.193	577.803	n.a.	1.795	n.a.	[redacted]	n.a.
MIKE PRE	1.0	0.709	4.931	n.a.	n.a.	1.371	0.054	n.a.
MIKE POST	1.0	0.670	4.655	n.a.	n.a.	1.328	n.a.	n.a.
[redacted]		0.150	[redacted]	0.015	n.a.	10.547	[redacted]	n.a.
[redacted]		0.232	[redacted]	n.a.	n.a.	1.236	[redacted]	n.a
CCV	1.0	2.996	3.050	3.157	3.023	2.464	3.185	2.907
%R=		**99.9%**	**101.7%**	**105.2%**	**100.8%**	**82.1%**	**106.2%**	**96.9%**
CCB	1.0	n.a.	n.a.	n.a	n.a.	n.a.	n.a	0.018
STOP	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a.

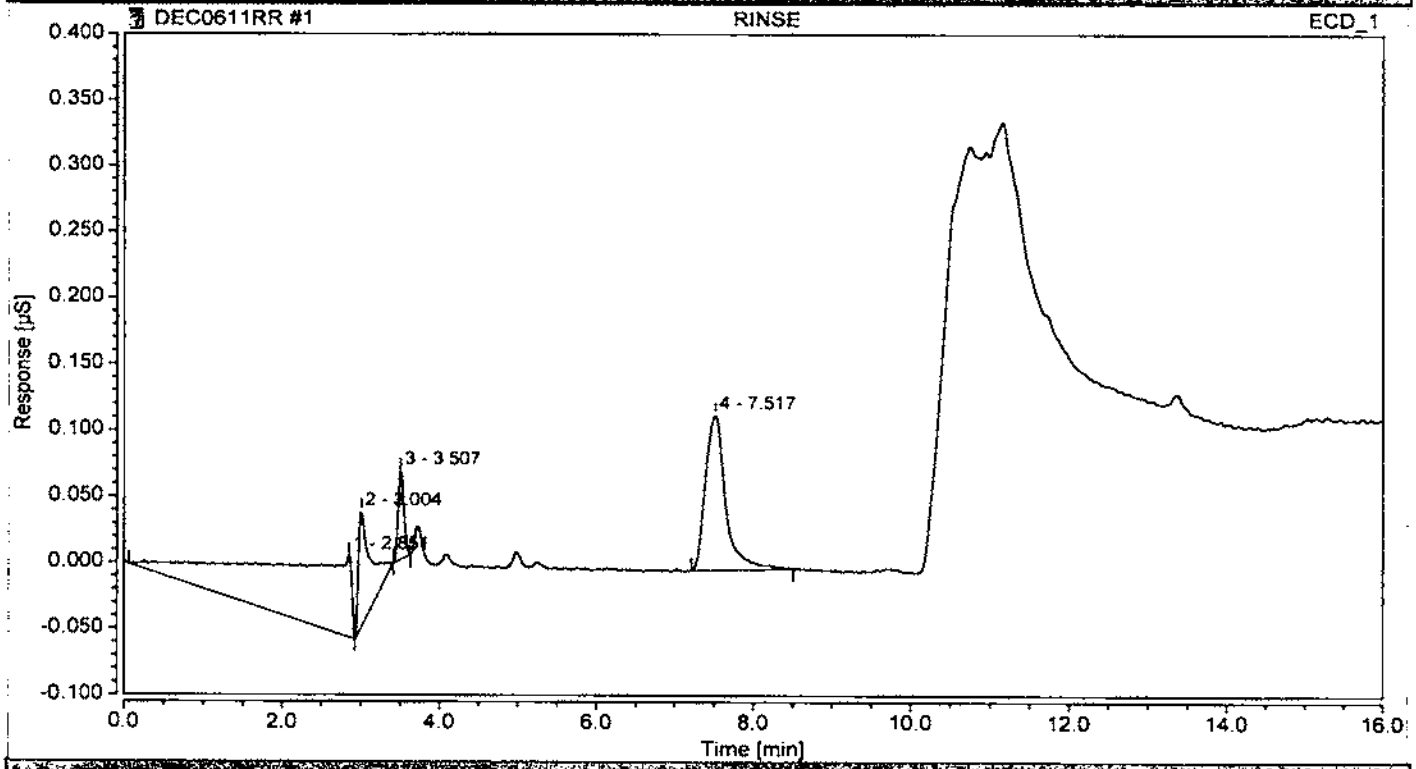
Name:	**DEC0611RR**	*Queue Start:*	**2011-12-06T11:37:27-**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**23**		

No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	06/Dec/11 11:37:27
2	ICV	2	Check Standard	06	1.0	06/Dec/11 11:56:21
3	ICB	3	Blank		1.0	06/Dec/11 12:15:32
4	TZ94 A5	4	Unknown		1.0	06/Dec/11 12:34:48
5	TZ94 B5	5	Unknown		1.0	06/Dec/11 12:54:11
6	TZ97 A1	6	Unknown		1.0	06/Dec/11 13:13:37
7	TZ97 B1	7	Unknown		1.0	06/Dec/11 13:33:08
8	TZ97 B1 DUP	8	Unknown		1.0	06/Dec/11 13:52:46
9	TZ97 B1 MS	9	Unknown		1.0	06/Dec/11 14:12:29
10	TZ97 C1	10	Unknown		1.0	06/Dec/11 14:32:18
11	TZ99 A1	11	Unknown		1.0	06/Dec/11 14:52:13
12	TZ99 A1 DUP	12	Unknown		1.0	06/Dec/11 15:12:13
13	TZ99 A1 MS	13	Unknown		1.0	06/Dec/11 15:32:20
14	CCV	2	Check Standard	06	1.0	06/Dec/11 15:52:32
15	CCB	3	Blank		1.0	06/Dec/11 16:13:07
16	TZ99 B1	14	Unknown		1.0	06/Dec/11 16:33:49
17	MIKE PRE	15	Unknown		1.0	06/Dec/11 16:54:17
18	MIKE POST	16	Unknown		1.0	06/Dec/11 17:14:50
19	UA20 A1	17	Unknown		1.0	06/Dec/11 17:35:28
20	UA20 B1	18	Unknown		1.0	06/Dec/11 17:56:10
21	CCV	2	Check Standard	06	1.0	06/Dec/11 18:16:58
22	CCB	3	Blank		1.0	06/Dec/11 18:36:59
23	STOP	1	Unknown		1.0	06/Dec/11 18:57:10

Chromeleon (c) Dionex
Version 7.0.1.272

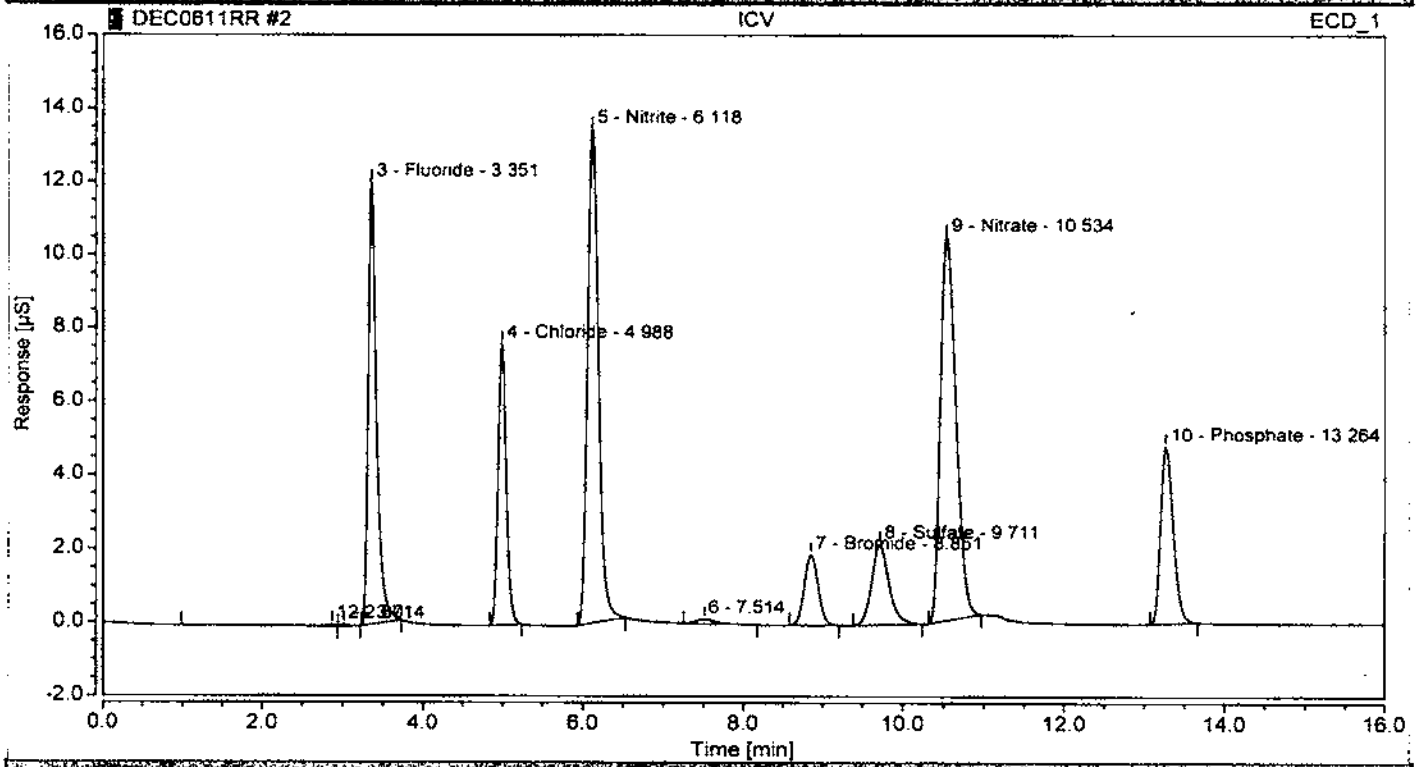
TZ84 : 00597

Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 11:37*		



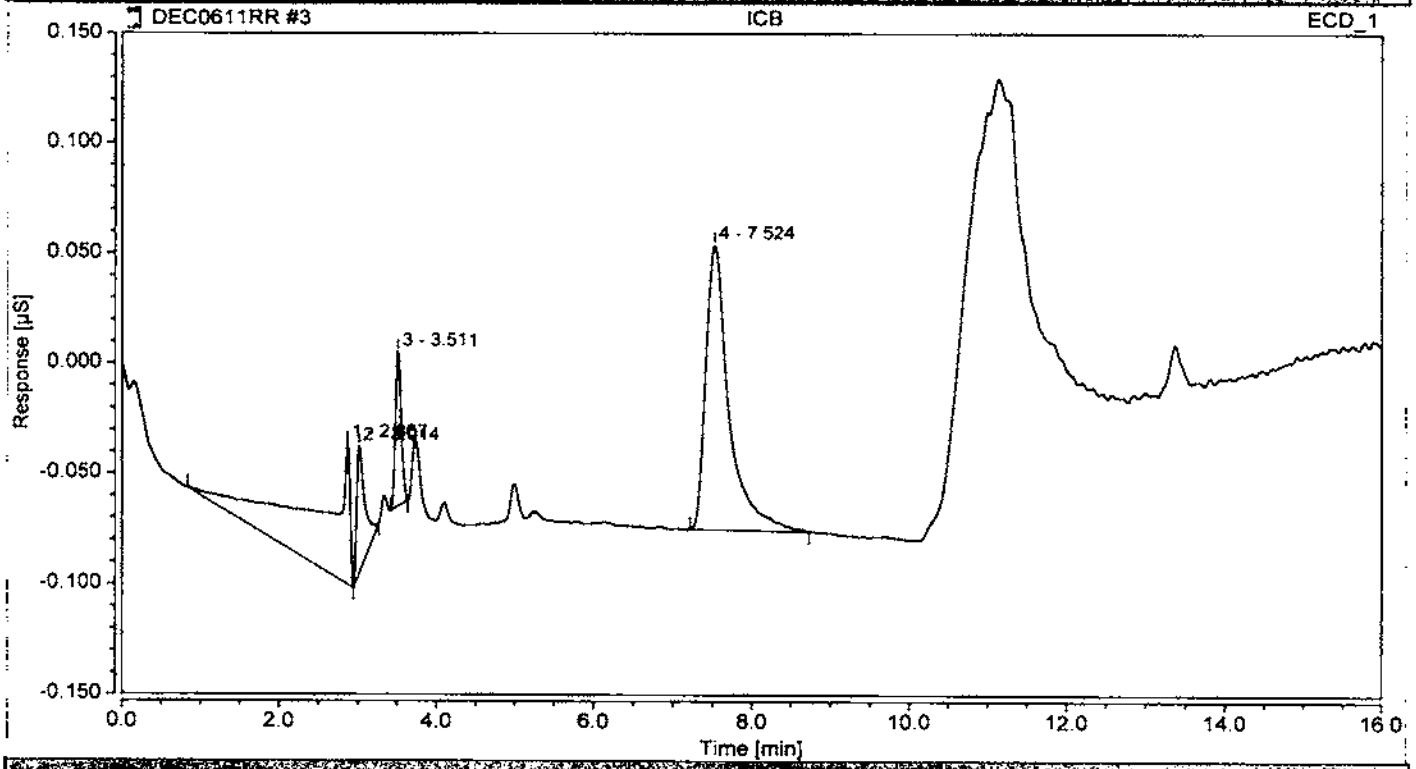
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.85	0.079	0.062	FALSE	n.a.
2		1.0	n.a.	3.00	0.015	0.088	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.006	0.067	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.52	0.035	0.117	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 11:56*		



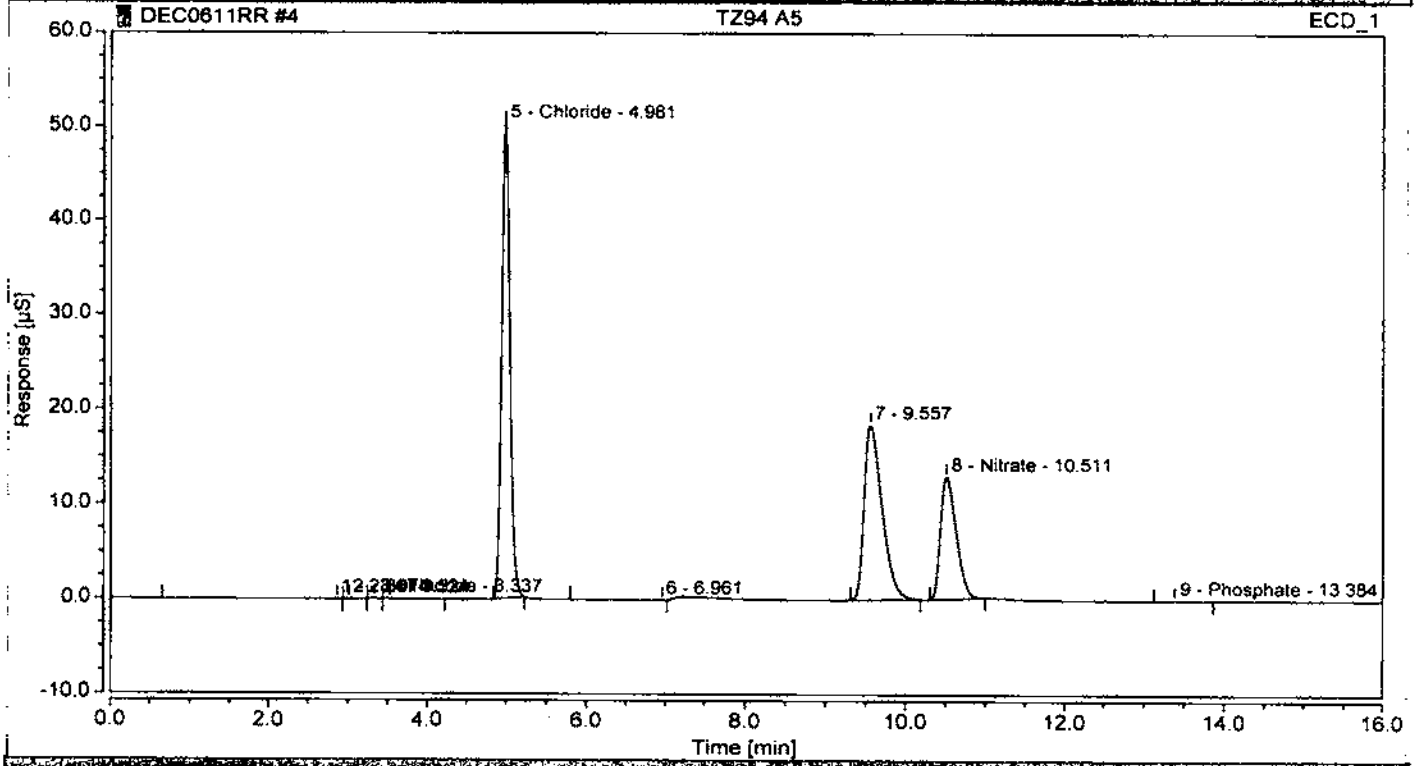
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.029	0.063	FALSE	n.a.
2		1.0	n.a.	3.01	0.006	0.055	FALSE	n.a.
3	Fluoride	1.0	2.997	3.35	1.439	12.033	FALSE	-0.11
4	Chloride	1.0	3.039	4.99	0.899	7.633	FALSE	1.32
5	Nitrite	1.0	3.173	6.12	2.121	13.458	FALSE	5.77
6		1.0	n.a.	7.51	0.034	0.117	FALSE	n.a.
7	Bromide	1.0	3.010	8.85	0.384	1.906	FALSE	0.35
8	Sulfate	1.0	2.540	9.71	0.554	2.189	FALSE	-15.34
9	Nitrate	1.0	3.033	10.53	2.295	10.436	FALSE	1.11
10	Phosphate	1.0	2.923	13.26	0.883	4.799	FALSE	-2.57

Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 12:15*		



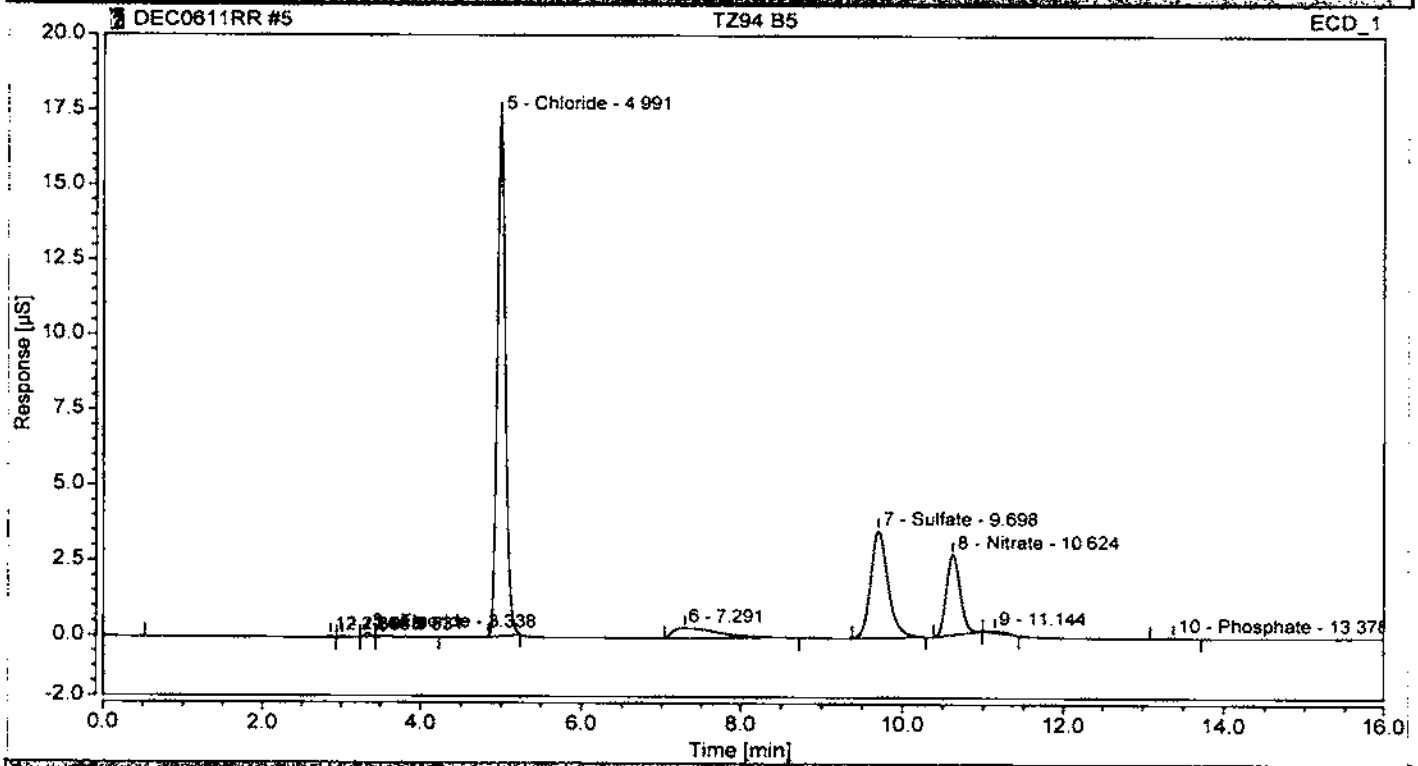
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.033	0.064	FALSE	n.a.
2		1.0	n.a.	3.01	0.007	0.057	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.006	0.070	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.52	0.044	0.129	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ94 A5*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 12:34*		



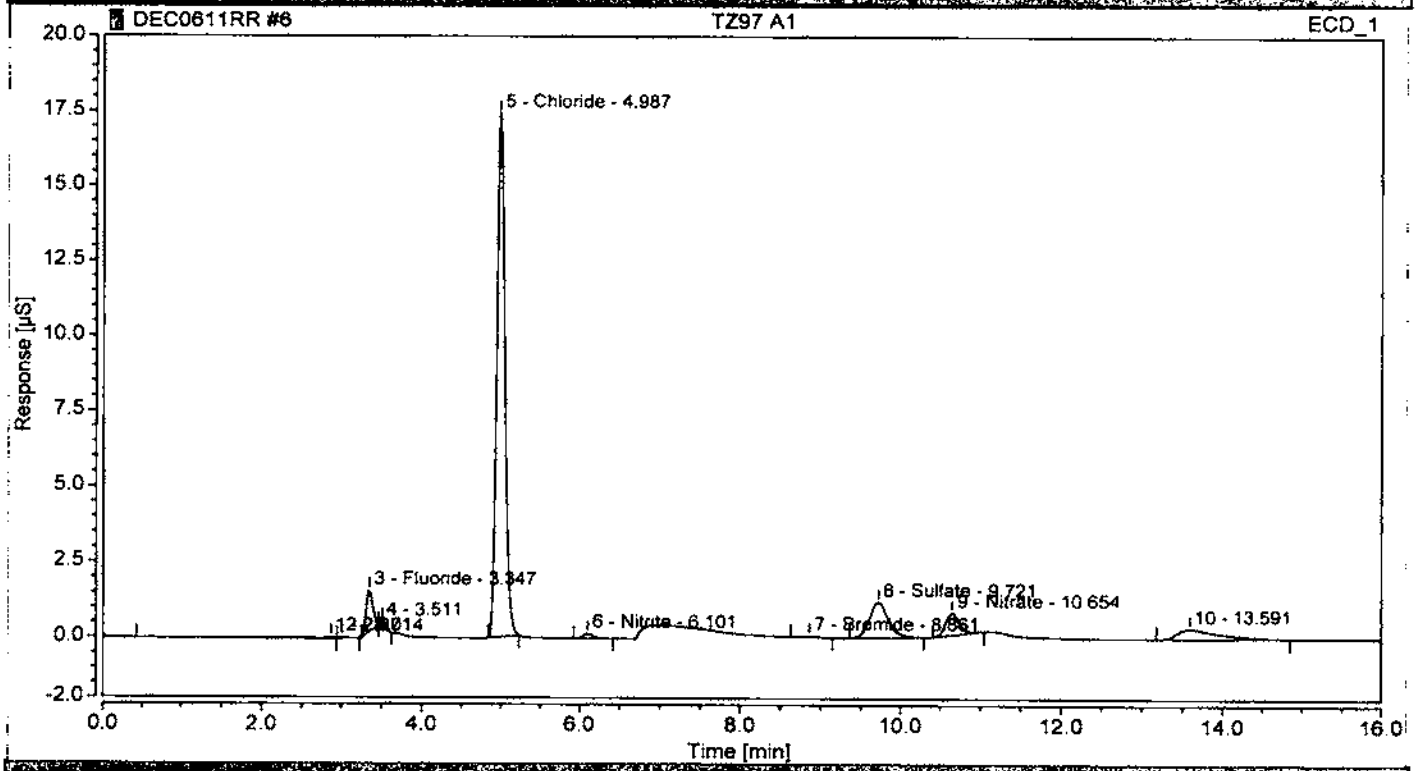
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.038	0.062	FALSE	n.a.
2		1.0	n.a.	3.01	0.006	0.057	FALSE	n.a.
3	Fluoride	1.0	0.020	3.34	0.009	0.113	FALSE	n.a.
4		1.0	n.a.	3.52	0.007	0.031	FALSE	n.a.
5	Chloride	1.0	20.296	4.98	6.006	50.288	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	6.96	0.005	0.010	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7		1.0	n.a.	9.56	4.783	18.476	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Nitrate	1.0	3.912	10.51	2.960	12.915	FALSE	n.a.
9	Phosphate	1.0	0.027	13.38	0.008	0.036	FALSE	n.a.

Injection Name:	*TZ94 B5*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 12:54*		



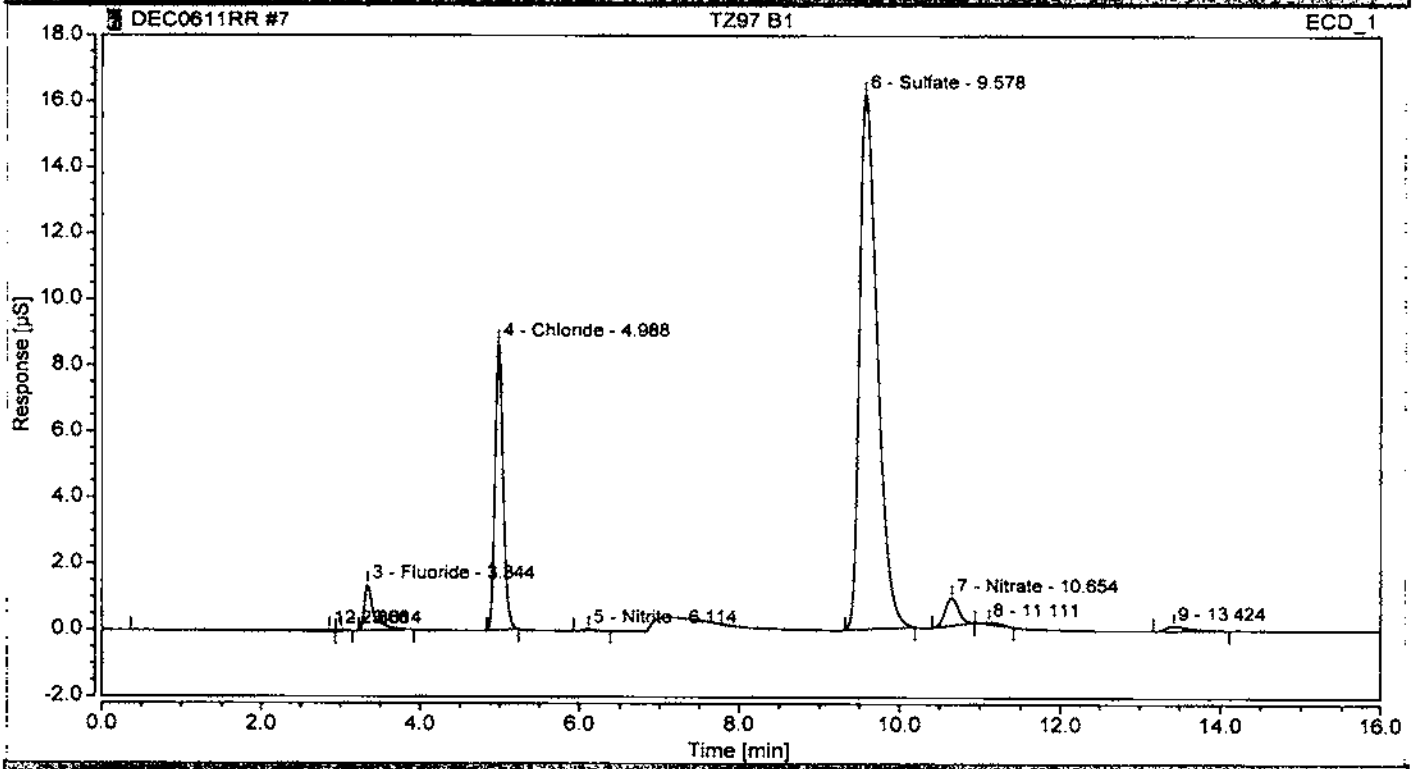
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.042	0.064	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.058	FALSE	n.a.
3	Fluoride	1.0	0.023	3.34	0.011	0.133	FALSE	n.a.
4		1.0	n.a.	3.53	0.008	0.034	FALSE	n.a.
5	Chloride	1.0	6.959	4.99	2.080	17.345	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	7.29	0.235	0.336	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Sulfate	1.0	1.005	9.70	0.893	3.544	FALSE	n.a.
8	Nitrate	1.0	0.692	10.62	0.524	2.855	FALSE	n.a.
9		1.0	n.a.	11.14	0.016	0.055	FALSE	n.a.
10	Phosphate	1.0	0.019	13.38	0.006	0.028	FALSE	n.a.

Injection Name:	*TZ97 A1*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 13:13*		



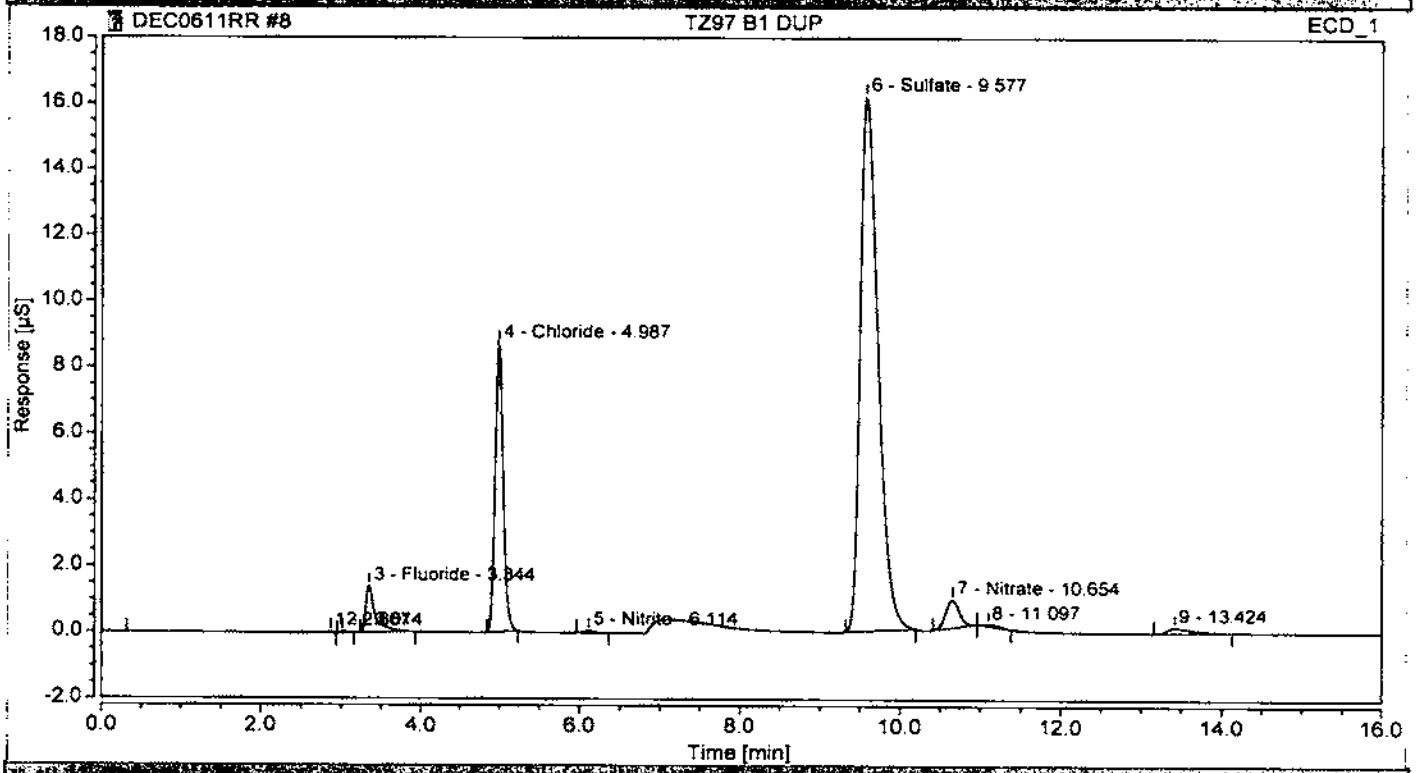
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.044	0.058	FALSE	n.a.
2		1.0	n.a.	3.01	0.006	0.055	FALSE	n.a.
3	Fluoride	1.0	0.272	3.35	0.131	1.353	FALSE	n.a.
4		1.0	n.a.	3.51	0.013	0.182	FALSE	n.a.
5	Chloride	1.0	6.985	4.99	2.061	17.415	FALSE	n.a.
6	Nitrite	1.0	0.032	6.10	0.022	0.160	FALSE	n.a.
7	Bromide	1.0	0.051	8.86	0.006	0.032	FALSE	n.a.
8	Sulfate	1.0	1.485	9.72	0.324	1.180	FALSE	n.a.
9	Nitrate	1.0	0.192	10.66	0.145	0.725	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10		1.0	n.a.	13.59	0.205	0.332	FALSE	n.a.

Injection Name:	*TZ97 B1*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 13:33*		



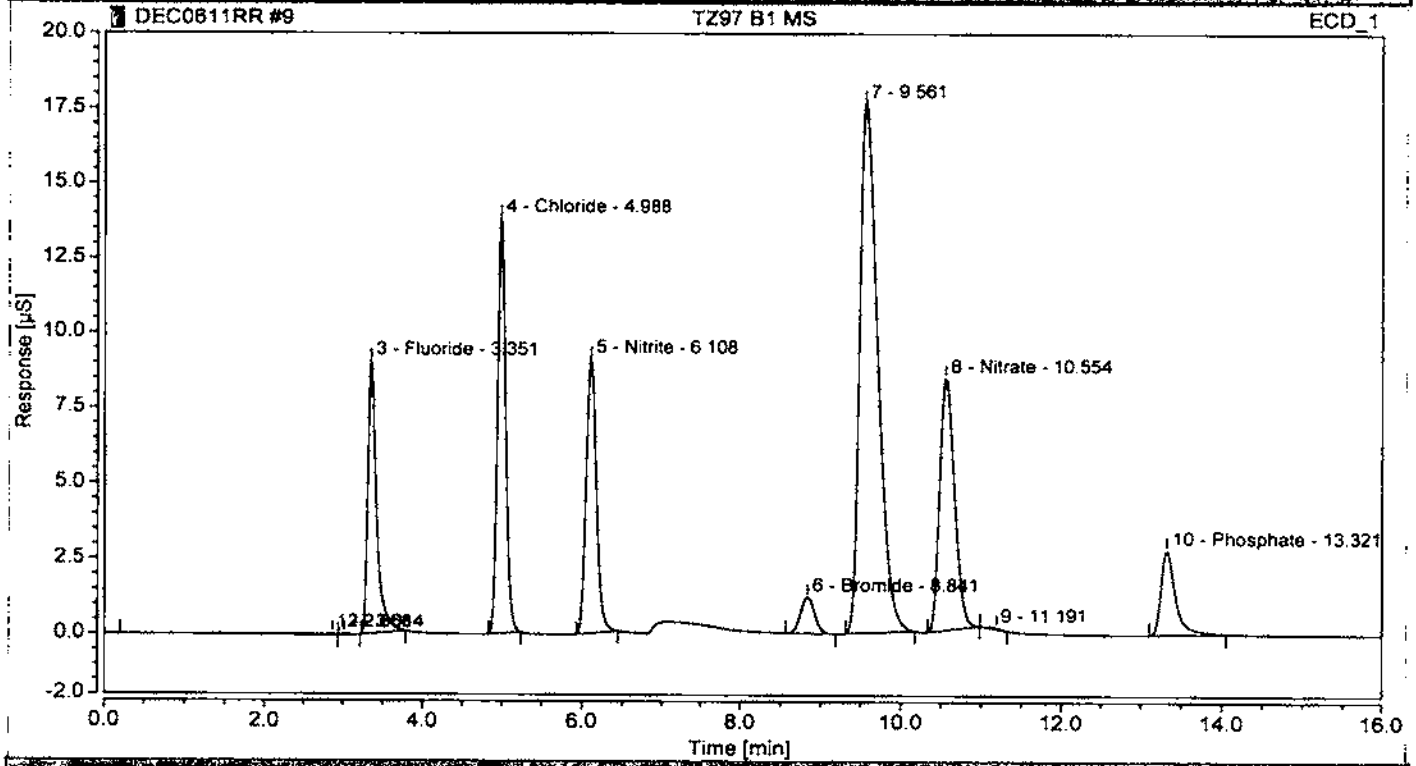
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.045	0.060	FALSE	n.a.
2		1.0	n.a.	3.01	0.005	0.052	FALSE	n.a.
3	Fluoride	1.0	0.398	3.34	0.191	1.391	FALSE	n.a.
4	Chloride	1.0	3.498	4.99	1.026	8.692	FALSE	n.a.
5	Nitrite	1.0	0.013	6.11	0.009	0.065	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	16.097	9.58	4.161	18.170	FALSE	n.a.
7	Nitrate	1.0	0.216	10.65	0.164	0.839	FALSE	n.a.
8		1.0	n.a.	11.11	0.019	0.064	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.42	0.050	0.149	FALSE	n.a.

Injection Name:	*TZ97 B1 DUP*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 13:52*		



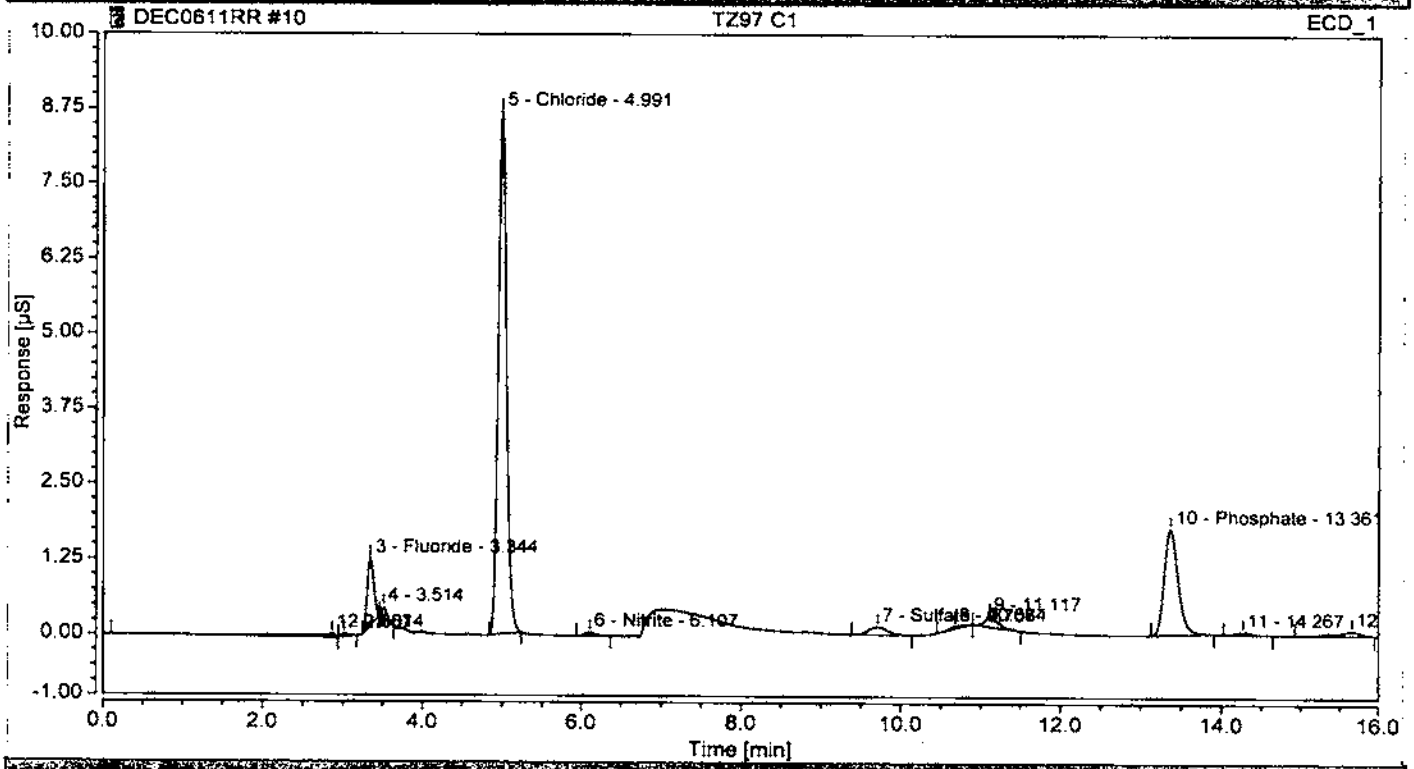
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.049	0.060	FALSE	n.a.
2		1.0	n.a.	3.01	0.005	0.053	FALSE	n.a.
3	Fluoride	1.0	0.398	3.34	0.191	1.394	FALSE	n.a.
4	Chloride	1.0	3.472	4.99	1.027	8.706	FALSE	n.a.
5	Nitrite	1.0	0.013	6.11	0.009	0.064	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	19.076	9.58	4.158	16.161	FALSE	n.a.
7	Nitrate	1.0	0.218	10.85	0.165	0.842	FALSE	n.a.
8		1.0	n.a.	11.10	0.015	0.051	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.42	0.058	0.165	FALSE	n.a.

Injection Name:	*TZ97 B1 MS*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 14:12*		



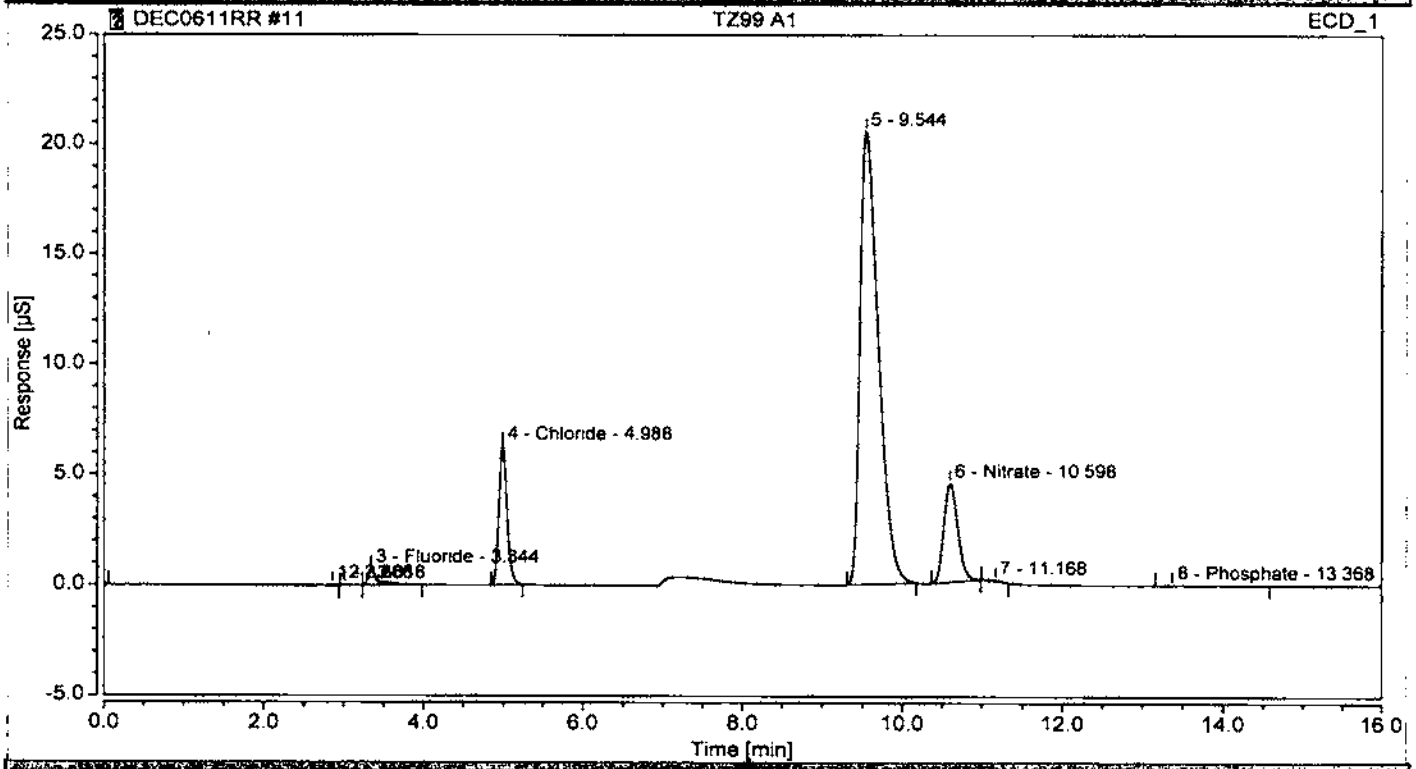
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.050	0.060	FALSE	n.a.
2		1.0	n.a.	3.01	0.007	0.056	FALSE	n.a.
3	Fluoride	1.0	2.385	3.35	1.151	9.040	FALSE	n.a.
4	Chloride	1.0	5.520	4.99	1.633	13.801	FALSE	n.a.
5	Nitrite	1.0	2.004	6.11	1.339	9.087	FALSE	n.a.
6	Bromide	1.0	1.875	8.84	0.239	1.207	FALSE	n.a.
7		1.0	n.a.	9.56	4.573	17.592	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Nitrate	1.0	2.357	10.55	1.763	8.341	FALSE	n.a.
9		1.0	n.a.	11.19	0.009	0.047	FALSE	n.a.
10	Phosphate	1.0	1.933	13.32	0.584	2.787	FALSE	n.a.

Injection Name:	*TZ97 C1*	Inject Number:	10
Vial Number:	*10*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 14:32*		



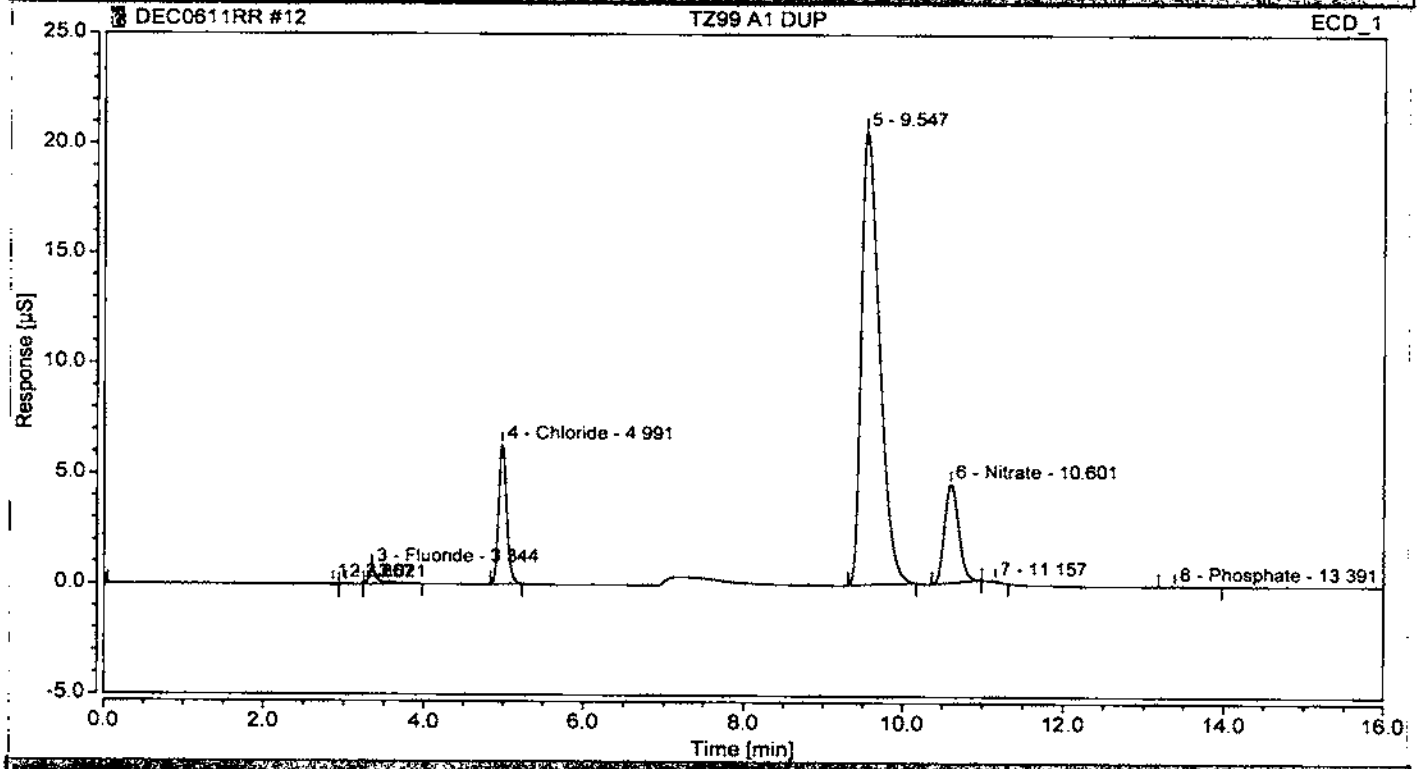
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.051	0.057	FALSE	n.a.
2		1.0	n.a.	3.01	0.005	0.053	FALSE	n.a.
3	Fluoride	1.0	0.218	3.34	0.105	1.110	FALSE	n.a.
4		1.0	n.a.	3.51	0.015	0.186	FALSE	n.a.
5	Chloride	1.0	3.485	4.99	1.025	8.882	FALSE	n.a.
6	Nitrite	1.0	0.011	6.11	0.008	0.056	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Sulfate	1.0	0.167	9.71	0.036	0.130	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	10.68	0.008	0.036	FALSE	n.a.
9		1.0	n.a.	11.12	0.034	0.181	FALSE	n.a.
10	Phosphate	1.0	1.158	13.36	0.350	1.749	FALSE	n.a.
11		1.0	n.a.	14.27	0.009	0.042	FALSE	n.a.
12		1.0	n.a.	15.65	0.025	0.070	FALSE	n.a.

Injection Name:	*TZ99 A1*	Inject Number:	11
Vial Number:	*11*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 14:52*		



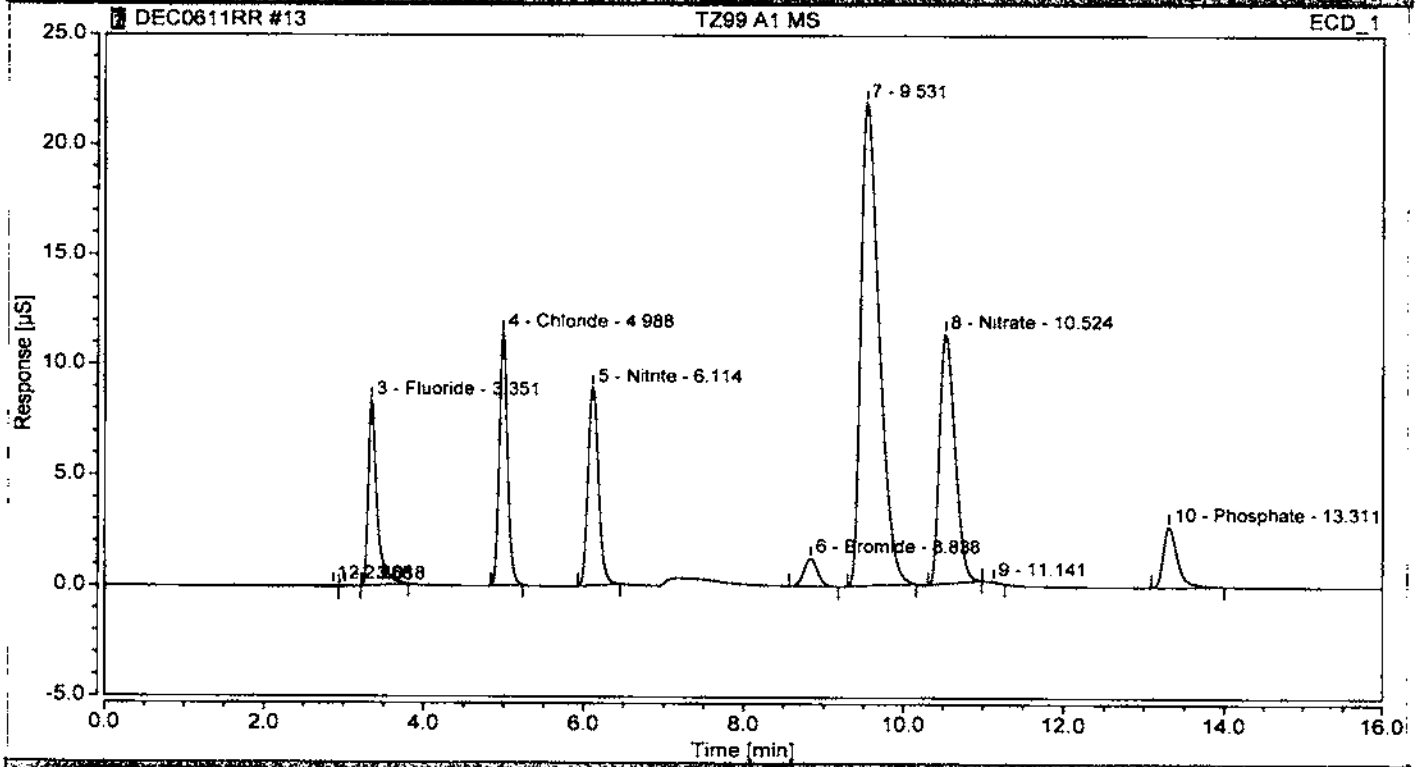
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.053	0.060	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.057	FALSE	n.a.
3	Fluoride	1.0	0.211	3.34	0.101	0.732	FALSE	n.a.
4	Chloride	1.0	2.516	4.99	0.745	6.305	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	9.54	5.430	20.531	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	1.197	10.60	0.905	4.454	FALSE	n.a.
7		1.0	n.a.	11.17	0.008	0.047	FALSE	n.a.
8	Phosphate	1.0	0.037	13.37	0.011	0.026	FALSE	n.a.

Injection Name:	*TZ99 A1 DUP*	Inject Number:	12
Vial Number:	*12*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 15:12*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.054	0.060	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.056	FALSE	n.a.
3	Fluoride	1.0	0.211	3.34	0.101	0.731	FALSE	n.a.
4	Chloride	1.0	2.519	4.99	0.745	6.312	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	9.55	5.439	20.567	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	1.203	10.60	0.910	4.463	FALSE	n.a.
7		1.0	n.a.	11.16	0.008	0.046	FALSE	n.a.
8	Phosphate	1.0	0.020	13.39	0.006	0.021	FALSE	n.a.

Injection Name:	*TZ99 A1 MS*	Inject Number:	13
Vial Number:	*13*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 15:32*		

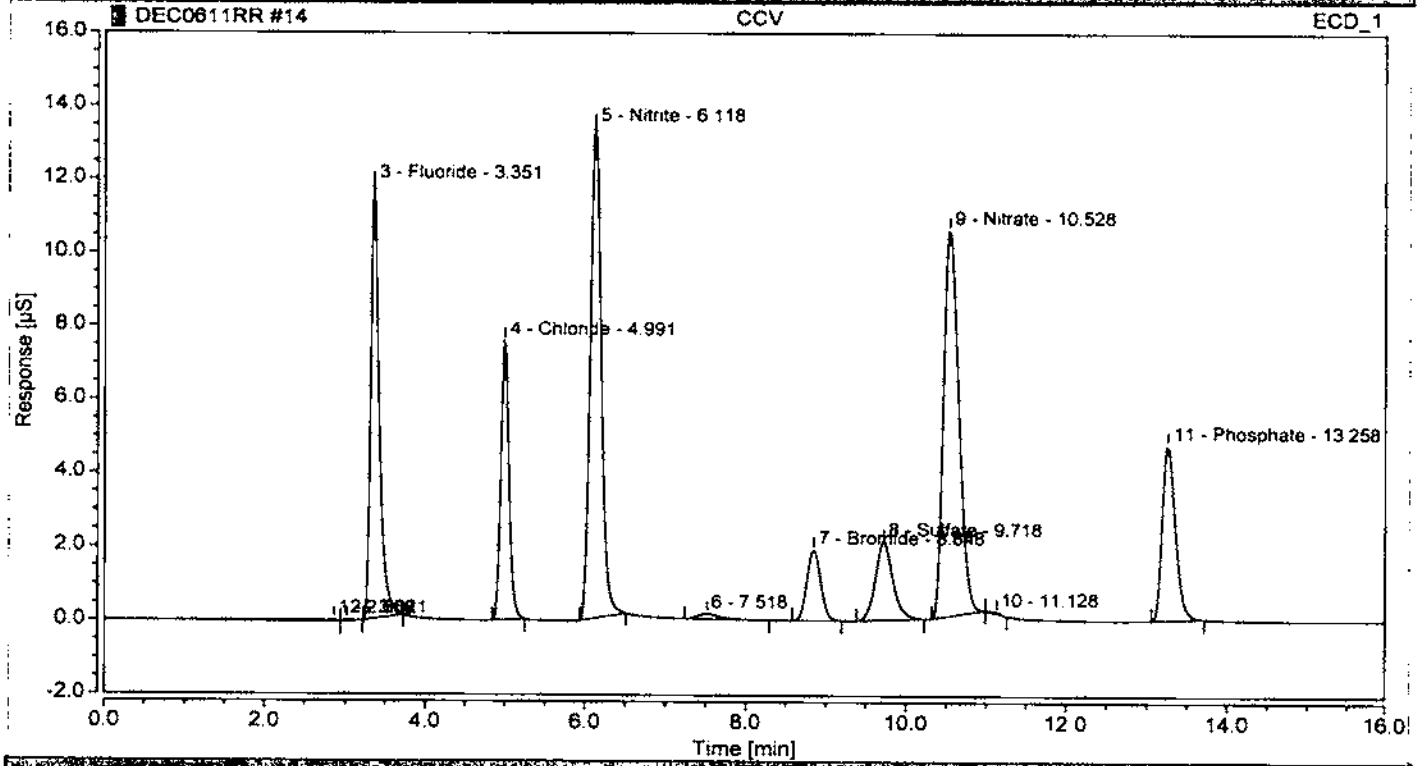


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.057	0.060	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.056	FALSE	n.a.
3	Fluoride	1.0	2.211	3.35	1.062	8.346	FALSE	n.a.
4	Chloride	1.0	4.571	4.99	1.353	11.410	FALSE	n.a.
5	Nitrite	1.0	1.996	6.11	1.334	8.917	FALSE	n.a.
6	Bromide	1.0	1.916	8.84	0.244	1.239	FALSE	n.a.
7		1.0	n.a.	9.53	5.837	21.859	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Nitrate	1.0	3.356	10.52	2.539	11.266	FALSE	n.a.
9		1.0	n.a.	11.14	0.006	0.042	FALSE	n.a.
10	Phosphate	1.0	1.828	13.31	0.552	2.720	FALSE	n.a.

[redacted]

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 15:52*		

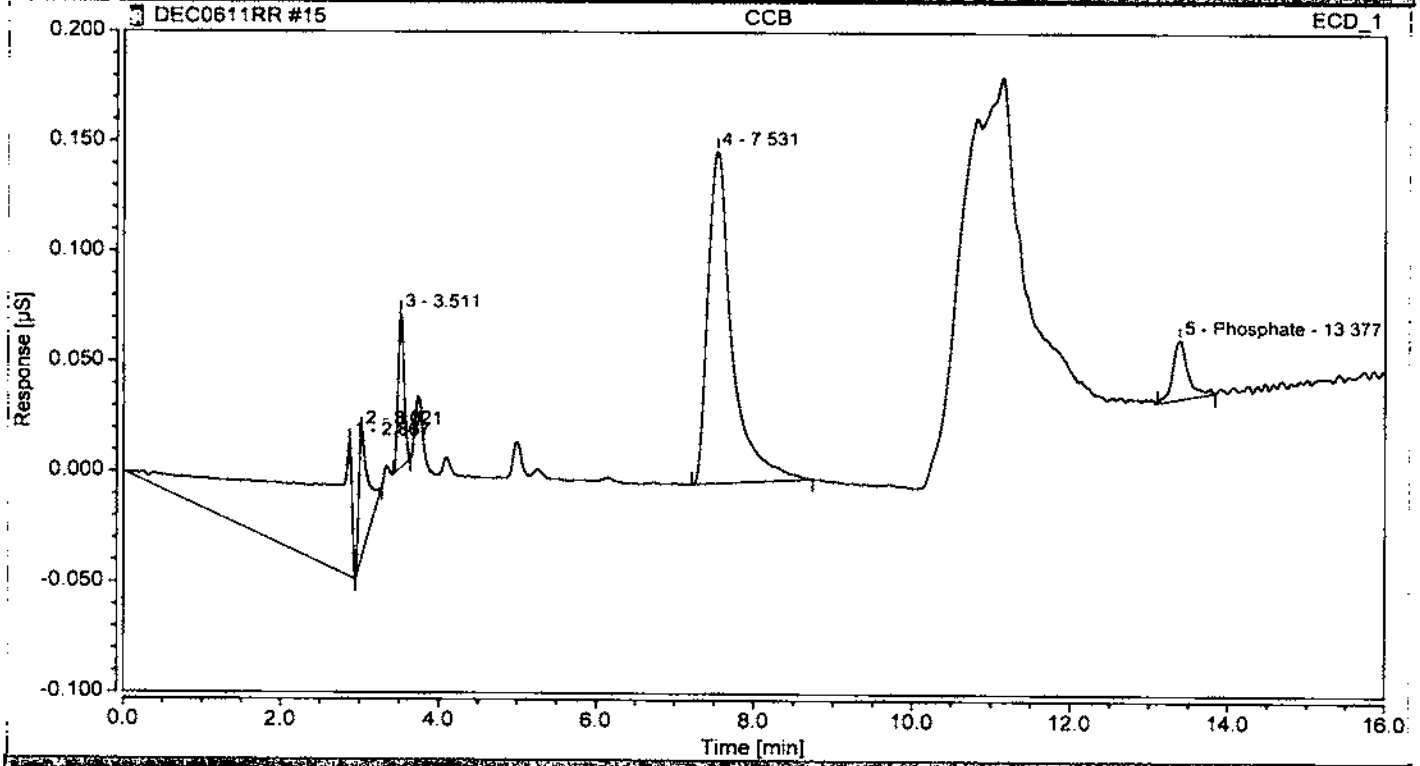
[redacted]



[redacted]

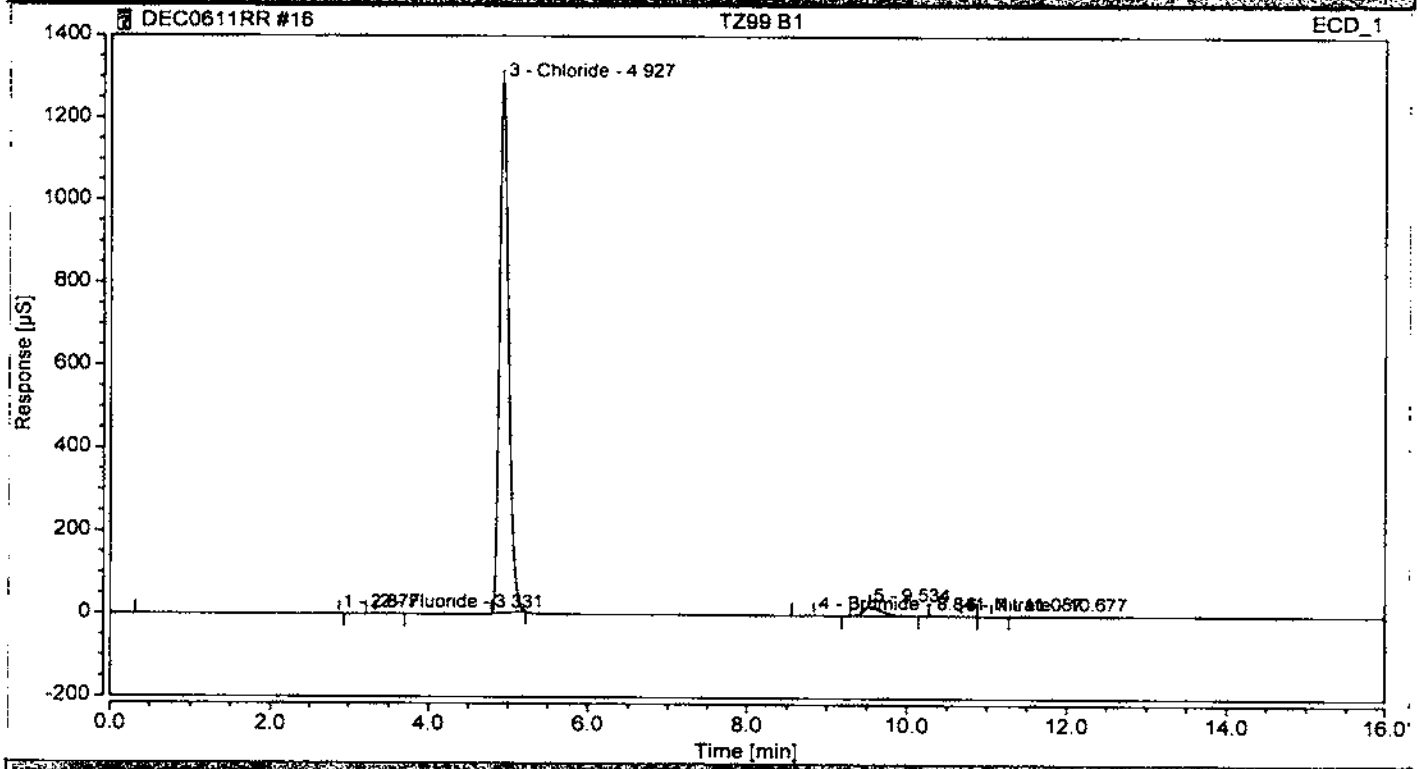
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.058	0.060	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.057	FALSE	n.a.
3	Fluoride	1.0	2.995	3.35	1.438	11.824	FALSE	-0.17
4	Chloride	1.0	3.051	4.99	0.903	7.576	FALSE	1.71
5	Nitrite	1.0	3.157	6.12	2.110	13.352	FALSE	5.24
6		1.0	n.a.	7.52	0.044	0.143	FALSE	n.a.
7	Bromide	1.0	3.019	8.85	0.385	1.906	FALSE	0.65
8	Sulfate	1.0	2.463	9.72	0.535	2.125	FALSE	-18.25
9	Nitrate	1.0	3.064	10.53	2.318	10.490	FALSE	2.14
10		1.0	n.a.	11.13	0.006	0.043	FALSE	n.a.
11	Phosphate	1.0	2.954	13.26	0.892	4.733	FALSE	-1.53

Injection Name:	*CCB*	Inject Number:	15
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 16:13*		



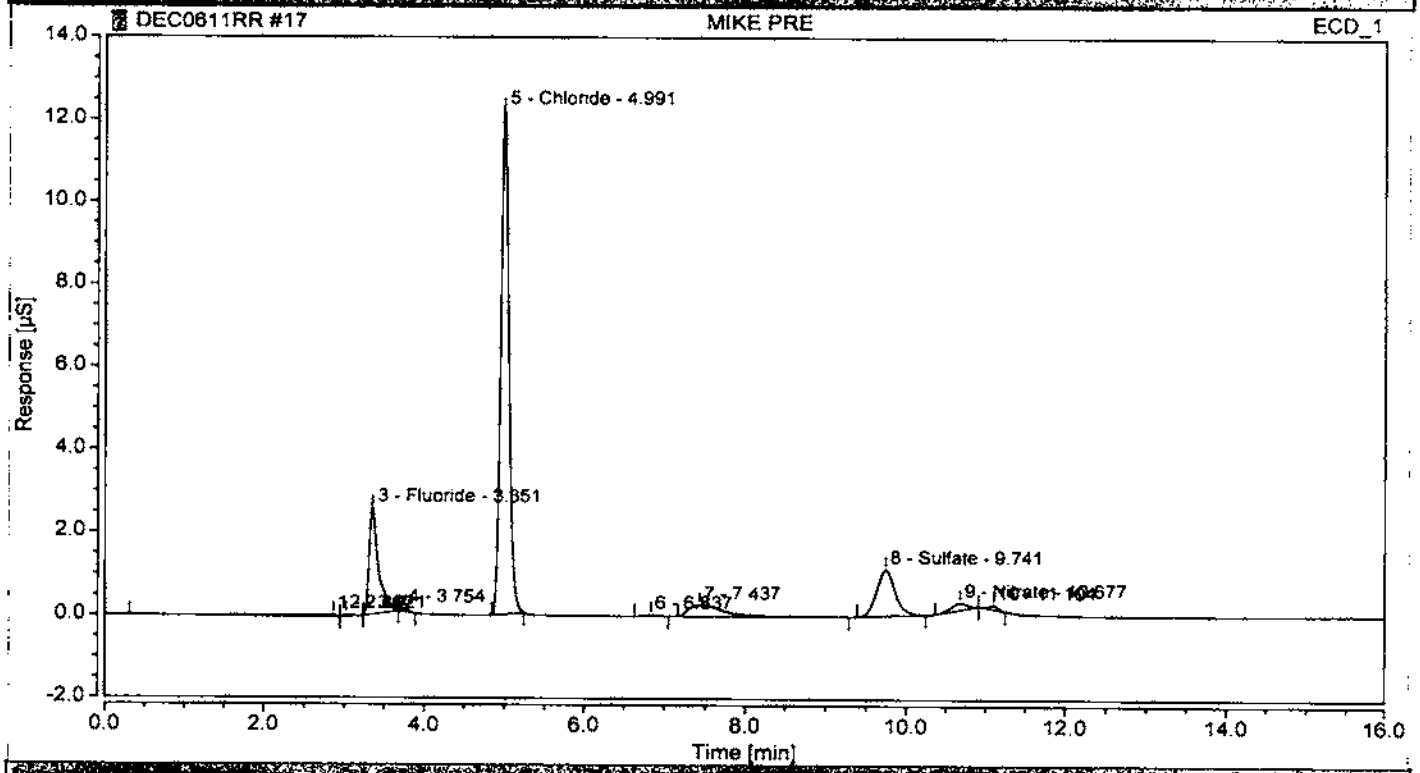
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.060	0.061	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.058	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.006	0.070	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.53	0.054	0.151	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	0.020	13.38	0.006	0.027	FALSE	n.a.

Injection Name:	*TZ99 B1*	Inject Number:	16
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 16:33*		



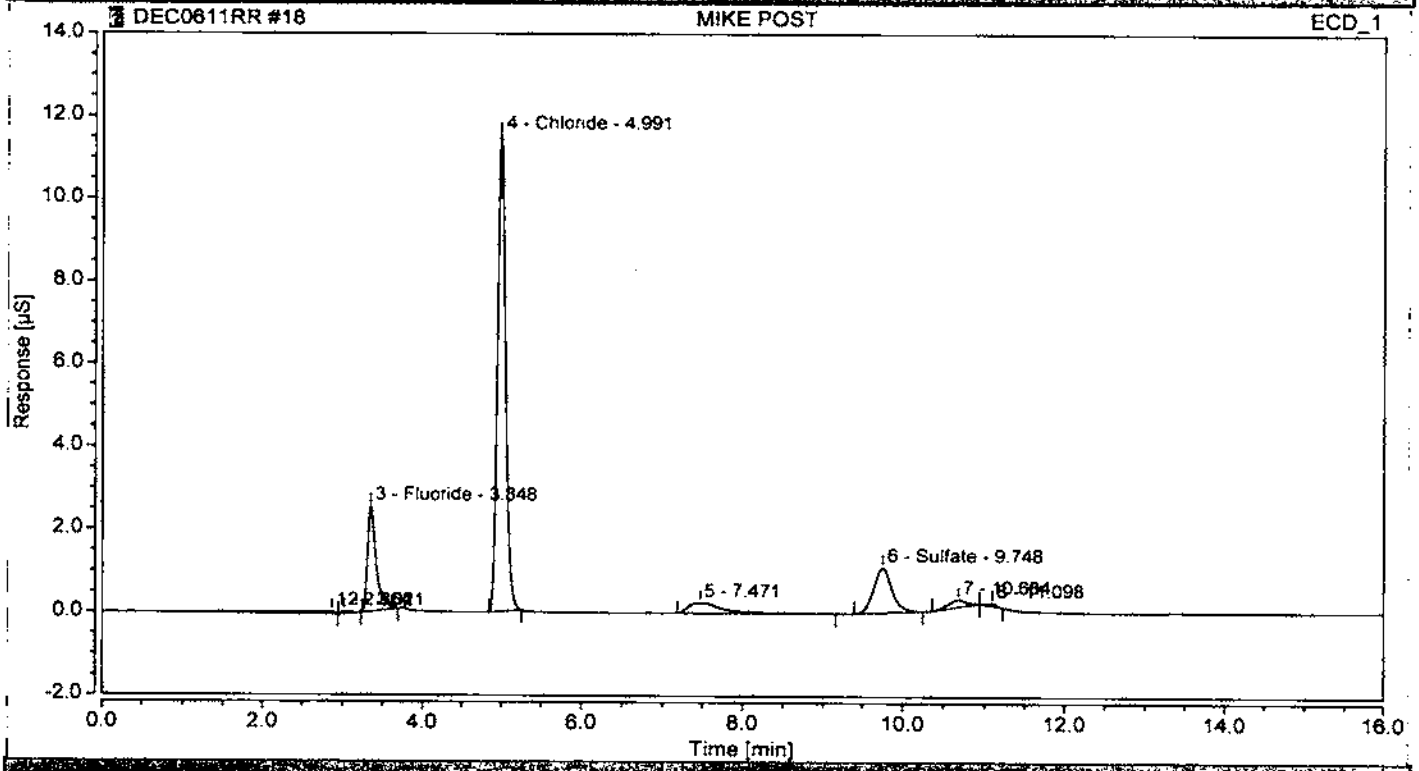
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.026	0.026	FALSE	n.a.
2	Fluoride	1.0	0.193	3.33	0.093	0.661	FALSE	n.a.
3	Chloride	1.0	577.803	4.93	170.992	1284.884	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	1.795	8.84	0.229	1.152	FALSE	n.a.
5		1.0	n.a.	9.53	5.805	21.505	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	0.048	10.68	0.037	0.122	FALSE	n.a.
7		1.0	n.a.	11.06	0.006	0.035	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*MIKE PRE*	Inject Number:	17
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 16:54*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.058	0.061	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.056	FALSE	n.a.
3	Fluoride	1.0	0.709	3.35	0.340	2.563	FALSE	n.a.
4		1.0	n.a.	3.75	0.007	0.081	FALSE	n.a.
5	Chloride	1.0	4.931	4.99	1.459	12.206	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	6.84	0.005	0.032	FALSE	n.a.
7		1.0	n.a.	7.44	0.149	0.271	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Sulfate	1.0	1.371	9.74	0.299	1.121	FALSE	n.a.
9	Nitrate	1.0	0.054	10.68	0.040	0.170	FALSE	n.a.
10		1.0	n.a.	11.10	0.014	0.104	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*MIKE POST*	Inject Number:	18
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 17:14*		



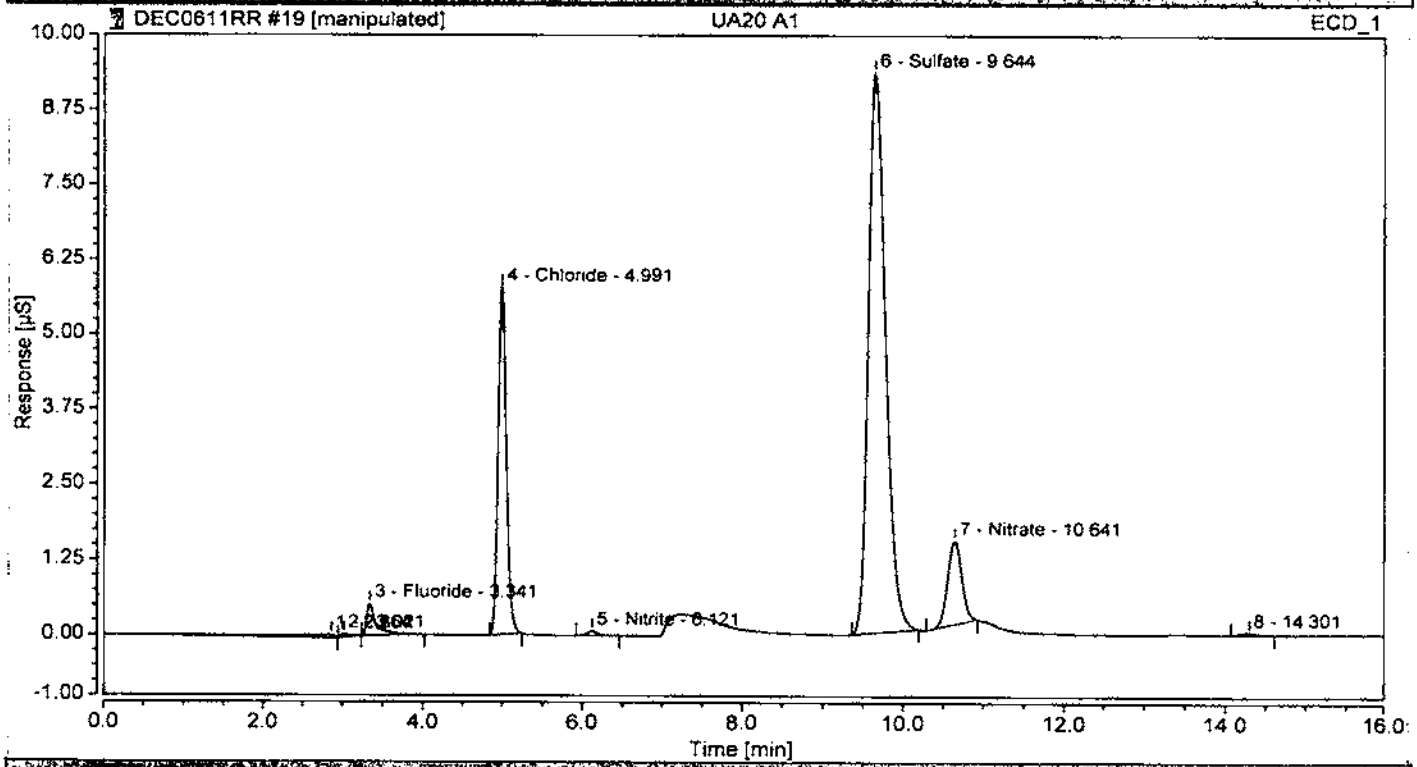
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.064	0.061	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.056	FALSE	n.a.
3	Fluoride	1.0	0.670	3.35	0.322	2.535	FALSE	n.a.
4	Chloride	1.0	4.655	4.99	1.377	11.519	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.47	0.130	0.253	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	1.328	9.75	0.290	1.085	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7		1.0	n.a.	10.68	0.046	0.177	FALSE	n.a.
8		1.0	n.a.	11.10	0.009	0.071	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

TZ84 : 00619

[redacted]

Injection Name:	*UA20 A1*	Inject Number:	19
Vial Number:	*17*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 17:35*		

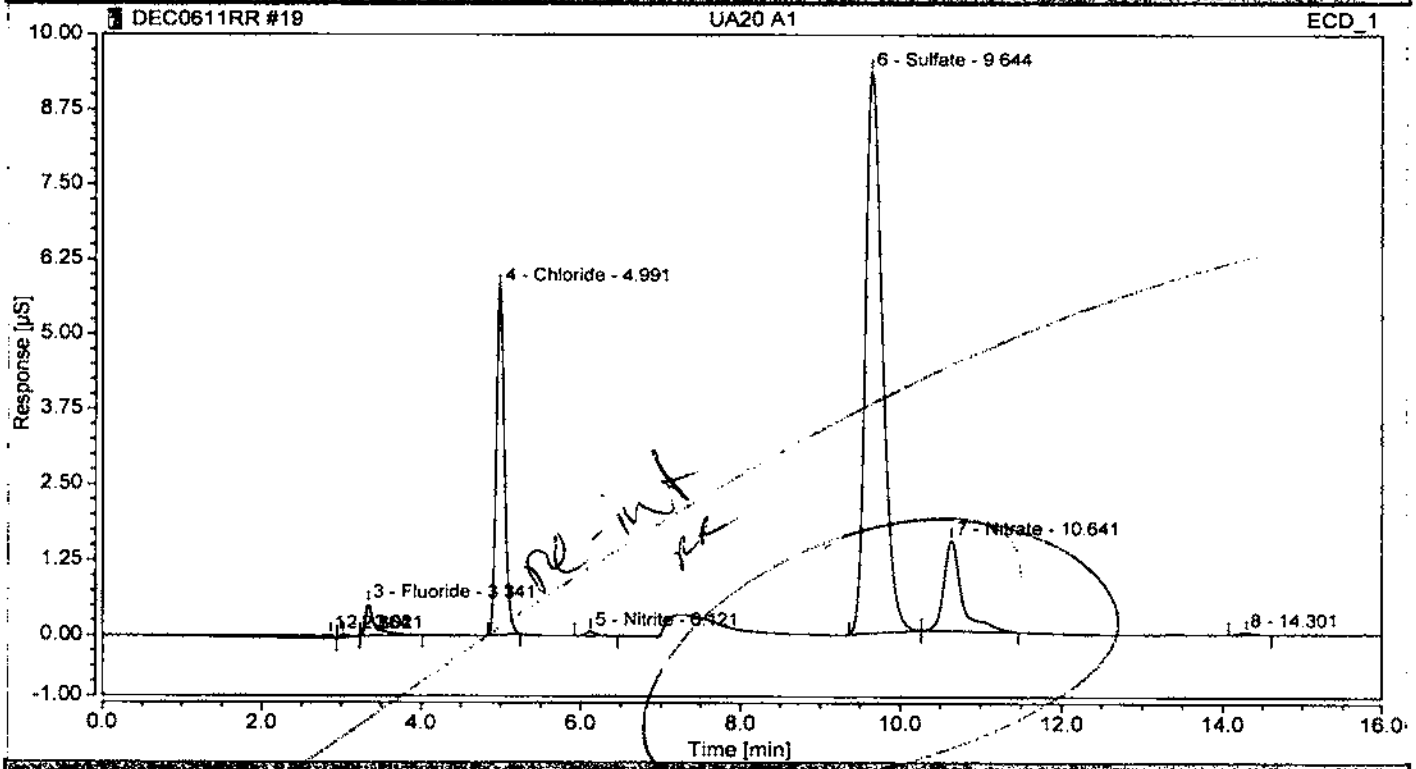
[redacted]



[redacted]

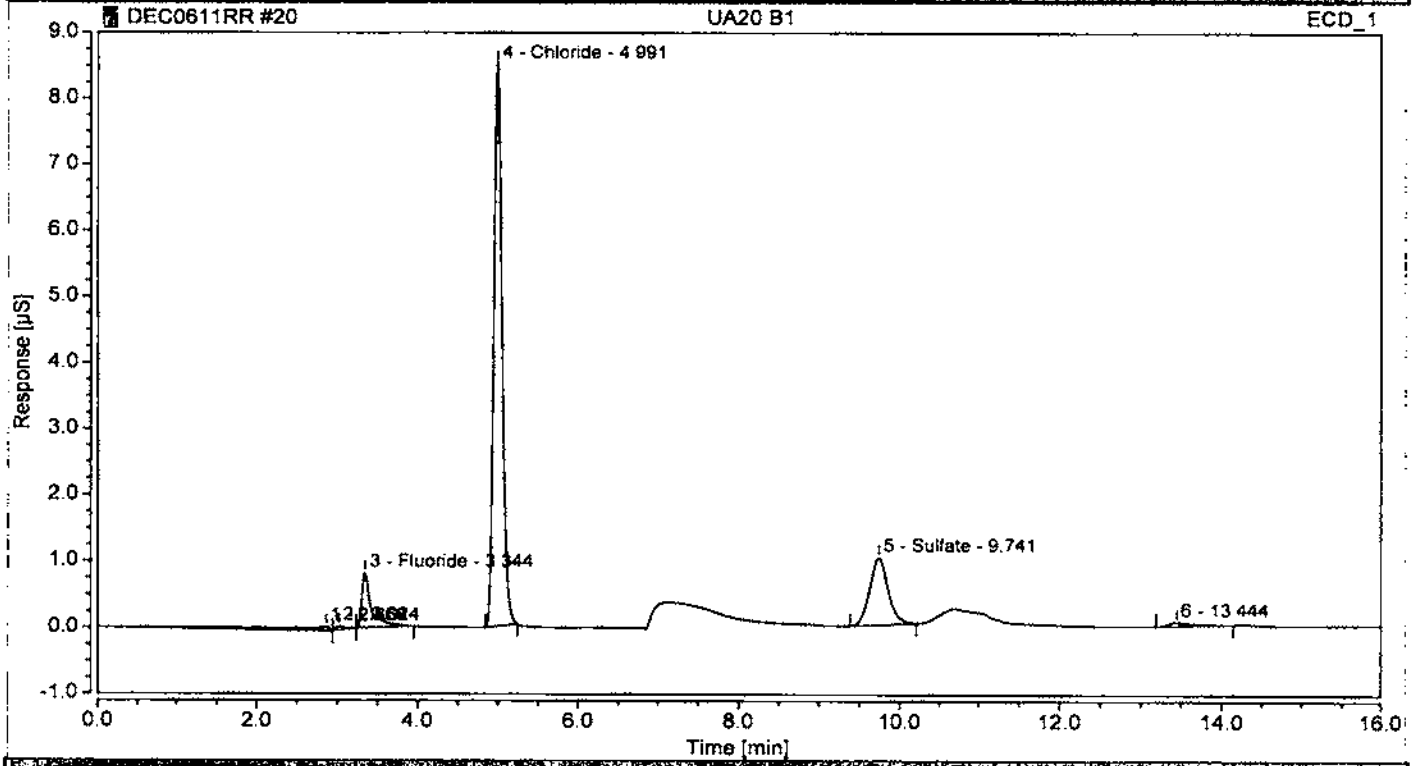
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.065	0.059	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.055	FALSE	n.a.
3	Fluoride	1.0	0.150	3.34	0.072	0.531	FALSE	n.a.
4	Chloride	1.0	2.315	4.99	0.685	5.779	FALSE	n.a.
5	Nitrite	1.0	0.015	6.12	0.010	0.072	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	10.520	9.64	2.293	9.330	TRUE	n.a.
7	Nitrate	1.0	0.371	10.64	0.281	1.390	TRUE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	14.30	0.007	0.035	FALSE	n.a.

Injection Name:	*UA20 A1*	Inject Number:	19
Vial Number:	*17*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 17:35*		



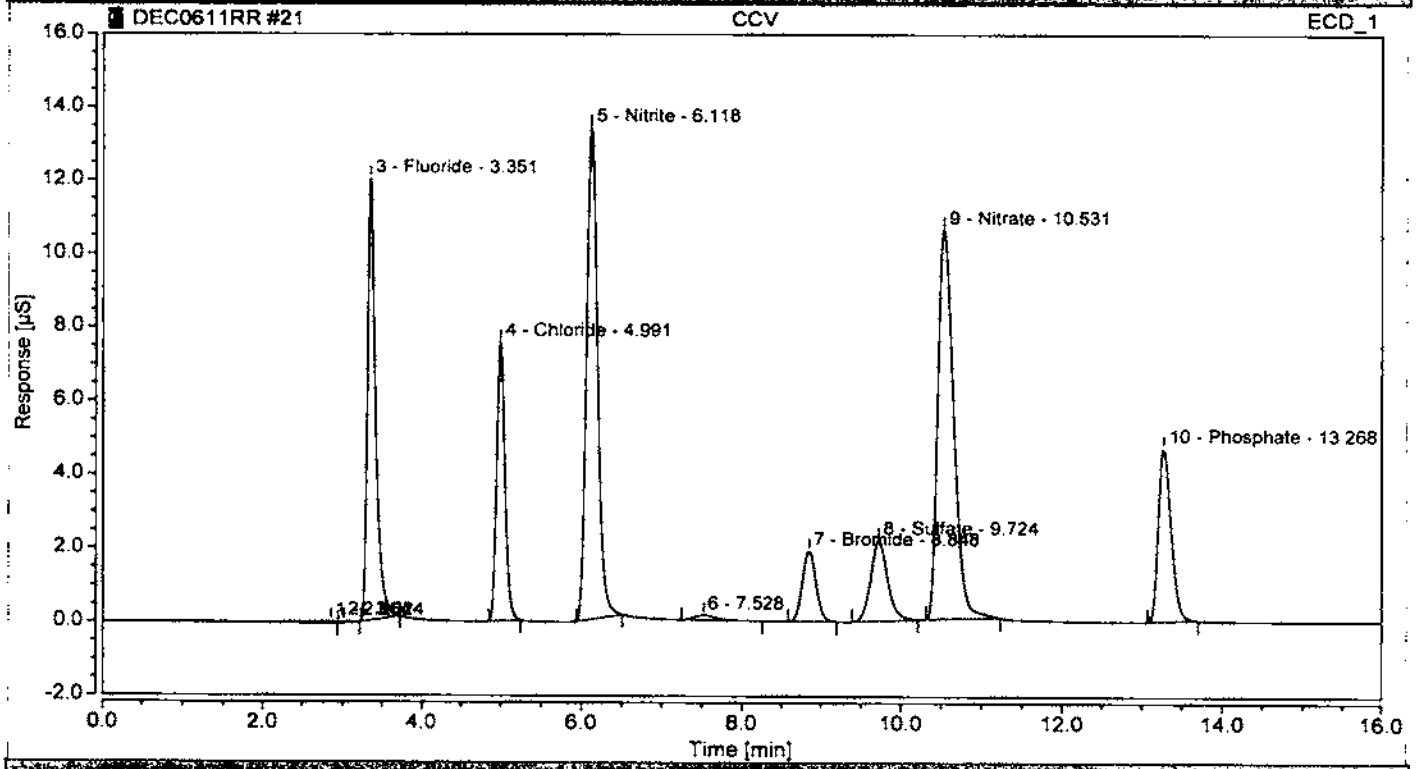
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.065	0.059	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.055	FALSE	n.a.
3	Fluoride	1.0	0.160	3.34	0.072	0.531	FALSE	n.a.
4	Chloride	1.0	2.315	4.99	0.665	5.779	FALSE	n.a.
5	Nitrite	1.0	0.015	6.12	0.010	0.072	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	10.547	9.64	2.298	9.334	FALSE	n.a.
7	Nitrate	1.0	0.512	10.64	0.387	1.497	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	14.30	0.007	0.035	FALSE	n.a.

Injection Name:	*UA20 B1*	Inject Number:	20
Vial Number:	*18*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodel*		
Injection Date/Time:	*06/12/11 17:56*		



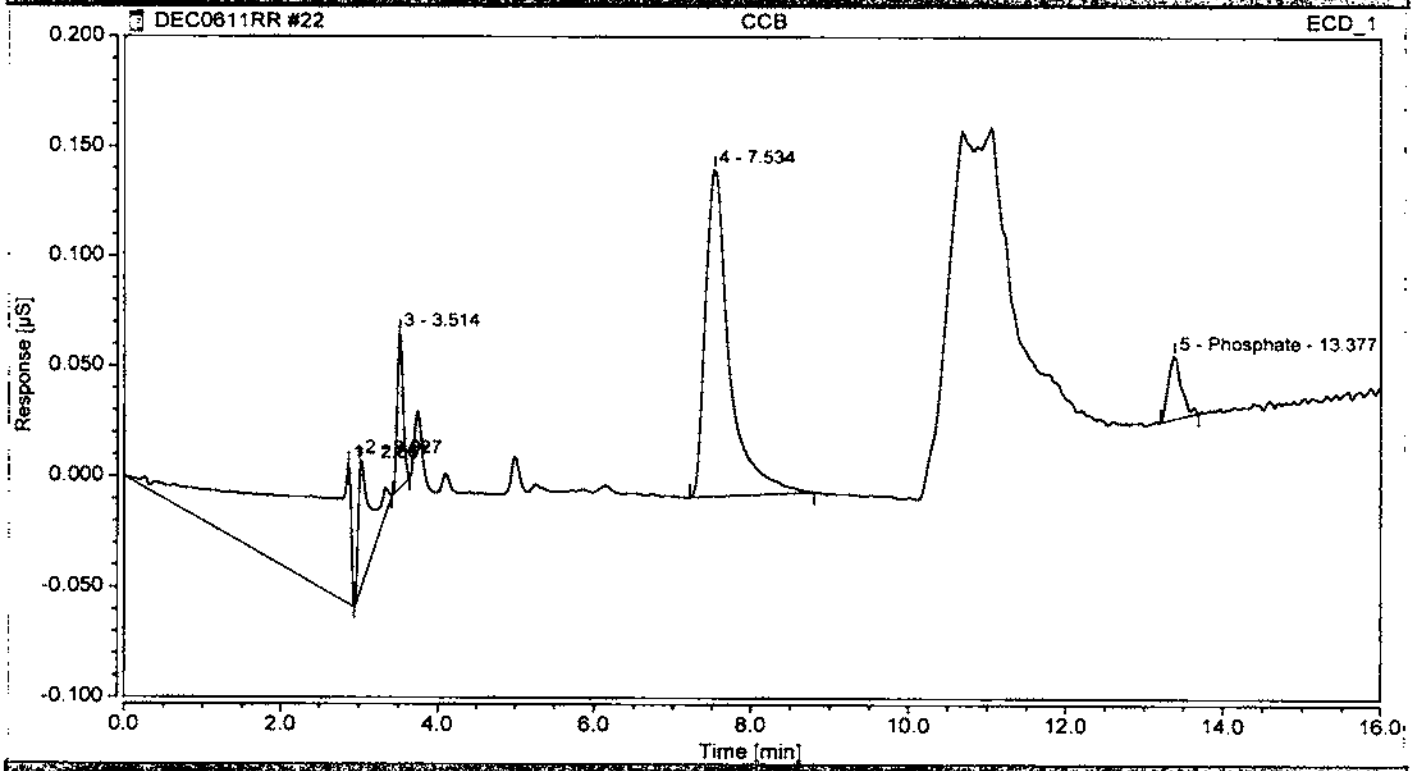
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.066	0.059	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.056	FALSE	n.a.
3	Fluoride	1.0	0.232	3.34	0.112	0.820	FALSE	n.a.
4	Chloride	1.0	3.695	4.99	1.005	8.499	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	1.0	1.236	9.74	0.289	1.914	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	13.44	0.020	0.055	FALSE	n.a.

Injection Name:	*CCV*	Inject Number:	21
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*06/12/11 18:16*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.066	0.063	FALSE	n.a.
2		1.0	n.a.	3.02	0.007	0.055	FALSE	n.a.
3	Fluoride	1.0	2.996	3.35	1.439	12.007	FALSE	-0.14
4	Chloride	1.0	3.060	4.99	0.903	7.575	FALSE	1.67
5	Nitrite	1.0	3.157	6.12	2.110	13.377	FALSE	5.22
6		1.0	n.a.	7.53	0.042	0.137	FALSE	n.a.
7	Bromide	1.0	3.023	8.85	0.386	1.910	FALSE	0.76
8	Sulfate	1.0	2.464	9.72	0.537	2.192	FALSE	-17.85
9	Nitrate	1.0	3.165	10.53	2.410	10.564	FALSE	6.17
10	Phosphate	1.0	2.907	13.27	0.878	4.704	FALSE	-3.09

Injection Name:	*CCB*	Inject Number:	22
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 18:36*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.066	0.063	FALSE	n.a.
2		1.0	n.a.	3.03	0.010	0.058	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.006	0.070	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.53	0.053	0.149	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	0.018	13.38	0.006	0.029	FALSE	n.a.

Injection Name:	*STOP*	Inject Number:	23
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0611RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*06/12/11 18:57*		

Can't read channel ECD_1 from injection #23 - STOP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	natogram in con	natogram in		n.a.

W

12-1741

ALKALINITY BENCHSHEET methods: **SM 2320 B-97**

Date/Time: 12/12/11 10:34

pH meter verification **pH meter ID: ACCUMET AR60** **Buret ID: 01G30627**

Analyst: KE

Buffer pH 7.00 **pH Probe ID : AR60**

Measured pH 7.01 *Calibration OK* **LOW CURVE**

Standardization of acid titrant ***(titration to pH 4.5)***

ARI ID: ***00122 - 1***

grams Na2CO3 = **0.6250** *to* **250** *ml DI*

Normality Na2CO3 = 0.0472

Assumed Acid Normality = **0.02**

Standardized Acid Normality= 0.0198 ***OK!***

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.08	5	12.02	0.020
2	0.08	5	11.98	0.020
3	0.09	5	12.01	0.020
AVERAGE	0.08			0.020

Partitioning Calculations

T=Total, P=Phenolphthalein

Obs	*HCO3*	*CO3*	*OH*
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: ***00133 - 2***

grams Na2CO3 = **0.6260** *grams in* **250** *mL =* **2363** *mg/L CaCO3*

dilution: **5.0** *mL to* **100** *CVS =* **118.1**

DQL Std (2ppm) *dilute* **0.085** *mL stock to 100 mL DI =* **2.0**

Laboratory Control Standard (LCS)

Source: ***P194 - 506*** **49.20** *mg/L CaCO3*

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample *(shaded cells are calculated, make no entries)*

low level = ((((2 X mL4.5)-mL4.2] X Nacid) X 50,000] / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.44	100	20.9	5.89	12.00	0.00	58.3	117.9		*99.8%*	*OK!*		
ICB		5.04	100	20.8	0.00	0.09	0.17	0.0		0.1	0.1	0.0	0.0	1.8
DQL Std (2ppm)		6.98	100	20.5	0.00	0.26	0.36	0.0		1.6				
LCS		8.88	50	19.8	1.18	2.48	0.00	23.4	49.1		*99.7%*	*OK!*		
TZ47 A2		6.44	100	18.9	0.00	8.22	0.00	0.0	81.3		81.3	0.0	0.0	59.1
TZ47 A2 dup		6.46	100	19.0	0.00	8.20	0.00	0.0	81.1		81.1	0.0	0.0	56.3
RPD =									*0.2%*		*0.2%*			*4.8%*
TZ47 B2		6.52	100	19.2	0.00	3.78	0.00	0.0	37.4		37.4	0.0	0.0	22.6
TZ47 C2		6.44	100	19.5	0.00	5.55	0.00	0.0	54.9		54.9	0.0	0.0	39.9
TZ47 D2		6.38	100	19.8	0.00	16.94	0.00	0.0	167.6		167.6	0.0	0.0	139.7
TZ47 E2		6.50	100	19.4	0.00	6.08	0.00	0.0	60.2		60.2	0.0	0.0	38.0
TZ47 F2		6.54	100	19.4	0.00	7.46	0.00	0.0	73.8		73.8	0.0	0.0	42.6
TZ47 G2		6.72	100	19.6	0.00	3.42	0.00	0.0	33.8		33.8	0.0	0.0	12.9
TZ84 B10		6.65	100	19.0	0.00	19.26	0.00	0.0	190.6		190.6	0.0	0.0	85.3
TZ97 A10		6.52	100	21.2	0.00	21.88	0.00	0.0	216.5		216.5	0.0	0.0	130.8
CCV		10.48	100	20.6	5.84	12.01	0.00	57.8	118.0		*99.9%*	*OK!*		0.0
TZ97 B19		6.48	100	20.7	0.00	14.27	0.00	0.0	141.2		141.2	0.0	0.0	93.5
TZ97 B19 dup		6.52	100	20.6	0.00	14.22	0.00	0.0	140.7		140.7	0.0	0.0	85.0
RPD =									*0.4%*		*0.4%*			*9.6%*
UA20 A6		6.84	100	20.4	0.00	9.44	0.00	0.0	93.4		93.4	0.0	0.0	27.0
UA20 B5		6.36	100	20.5	0.00	12.23	0.00	0.0	121.0		121.0	0.0	0.0	105.6
UA31 C4		6.90	100	20.7	0.00	4.50	0.00	0.0	44.5		44.5	0.0	0.0	11.2
UA31 C4 dup		6.92	100	20.7	0.00	4.53	0.00	0.0	44.8		44.8	0.0	0.0	10.8
RPD =									*0.7%*		*0.7%*			*3.9%*

T94 : 090222

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample *(shaded cells are calculated, make no entries)*

low level = {{[(2 X mL4.5)-mL4.2] X Nacid) X 50,000} / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4			ALK (mg CaCO3/l)			Partitioning (mg/l CaCO3)			(mg/l)
					pH=8.3	pH =4.5	pH=4.2	Phenolph	TOT HIGH	TOT LOW	HCO3	CO3	OH	FREE CO2
UA31 D4		7.68	100	20.6	0.00	23.76	0.00	0.0	235.1		235.1	0.0	0.0	9.8
UA43 C5		6.68	100	20.2	0.00	3.90	0.00	0.0	38.6		38.6	0.0	0.0	16.1
UA43 D5		7.24	100	20.4	0.00	19.09	0.00	0.0	188.9		188.9	0.0	0.0	21.7
UA67 B3		7.21	100	20.1	0.00	15.70	0.00	0.0	155.3		155.3	0.0	0.0	19.2
CCV		10.48	100	20.7	5.85	12.03	0.00	57.9	118.2		*100.1%*	*OK!*		0.0
UA74 C5		6.64	100	20.0	0.00	8.12	0.00	0.0	80.3		80.3	0.0	0.0	36.8
UA74 D2		7.46	100	20.2	0.00	17.02	0.00	0.0	168.4		168.4	0.0	0.0	11.7
UA61 A1		8.09	50	21.1	0.00	8.28	0.00	0.0	163.8		163.8	0.0	0.0	2.7
UA61 B1		11.95	50	21.1	42.55	48.15	0.00	842.0	952.8		0.0	221.6	731.2	0.0
UA61 C1		6.83	50	21.2	0.00	4.82	0.00	0.0	95.4		95.4	0.0	0.0	28.2
UA37 A2		6.54	25	20.9	0.00	2.57	0.00	0.0	101.7		101.7	0.0	0.0	58.7
UA42 A3		7.06	100	20.8	0.00	7.82	0.00	0.0	77.4		77.4	0.0	0.0	13.5
UA42 A3 dup		7.08	100	20.7	0.00	7.77	0.00	0.0	76.9		76.9	0.0	0.0	12.8
RPD =									*0.6%*		*0.6%*			*5.2%*
UA42 B3		6.46	100	20.5	0.00	10.26	0.00	0.0	101.5		101.5	0.0	0.0	70.4
CCV		10.44	100	20.0	5.79	12.01	0.00	57.3	118.0		*99.9%*	*OK!*		0.0

T26H : 00623

(1) -12-12-11 (2)

ALKALINITY BENCHSHEET

methods: **SM 2320 B-97**

Date/Time: 12-12-11

Analyst: (4) 10:34

pH meter verification — **pH meter ID:** ACCUMET AR60 — **Buret ID:** 01G30627

Buffer pH: 7.00 — Measured pH: 7.01 (must agree within 0.1 pH unit) — **pH Probe ID:** AR60 — **LOW CURVE**

Standardization of acid titrant *(titration to pH 4.5)*

ARI ID: 00122 - 1

grams Na2CO3 =	0.6250	to	250 ml DI
Normality Na2CO3 =	0.0472		
Assumed Acid Normality =	0.02		
Standardized Acid Normality=			

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.08	5	12.02	
2	0.08	5	11.98	
3	0.09	5	12.01	
AVERAGE				

Partitioning Calculations (T=Total, P=Phenolphthalein)			
Obs	HCO3	CO3	OH
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: 00133 - 2

grams Na2CO3 =	0.6260	grams in	250	mL =	2363
dilution:	5.0	mL to	100	CVS =	118.1
DQL Std (2ppm)	dilute	0.085	mL stock to 100 mL DI =		2.0

Laboratory Control Standard (LCS)

Source: P194 - 506 — mg/L CaCO3: 49.20

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample (shaded cells are calculated, make no entries)

low level = [(((2 X mL4.5)-mL4.2] X Nacid) X 50,000] / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.44	100	20.9	5.89	12.00	0.00							
ICB		5.04	100	20.8	0.00	0.09	0.17							
DQL Std (2ppm)		6.98	100	20.5	0.00	0.36	0.36							
LCS		8.89	50	19.8	1.19	2.88	0.02							
T247 A2		6.94	100	18.9	0.00	8.22	0.00							
UA2		6.96	100	19.0	0.00	8.20	0.00							
B2		6.52	100	19.2	0.00	3.78	0.00							
C2		6.94	100	19.5	0.00	5.66	0.00							
D2		6.38	100	19.8	0.00	16.94	0.00							
E2		6.50	100	19.4	0.00	6.08	0.00							
(1) F2		6.54	100	19.4	0.00	7.46	0.00							
G2		6.72	100	19.6	0.00	3.42	0.00							
T254 B10		6.65	100	19.0	0.00	19.26	0.00							
T247 A10		6.52	100	21.2	0.00	21.88	0.00							
CCV		10.48	100	20.6	5.89	12.01	0.00							
T247 B9		6.48	100	20.7	0.00	14.27	0.00							
UB9		6.52	100	20.6	0.00	14.22	0.00							
(3) UA10 A6		6.84	100	20.4	0.00	9.44	0.00							
G5		6.32	100	20.5	0.00	12.23	0.00							
UA3 C4		6.90	100	20.7	0.00	4.50	0.00							
D4		6.92	100	20.7	0.00	4.53	0.00							
T247 C5		7.03	100	20.6	0.00	23.76	0.00							
D5		6.68	100	20.2	0.00	3.70	0.00							
UA4 B3		7.24	100	20.4	0.00	19.09	0.00							
CCV		7.21	100	20.1	0.00	15.70	0.00							
		10.48	100	20.2	5.85	12.03	0.00							

T284 : 09624

① 12-12-11 (w) ② 25-12-12-11 (L) ③ 20.8 12-12-11 (4)

ALKALINITY BENCHSHEET methods: **SM 2320 B-97** Date/Time: 12-12-11

pH meter verification **pH meter ID:** **ACCUMET AR60** **Buret ID:** **01G30627** Analyst: (L)

Buffer pH **7.00** **pH Probe ID :** **AR60**

Measured pH 7.01 *must agree within 0.1 pH unit*

Partitioning Calculations

T=Total, P=Phenolphthalein

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	(mg/l CaCO3) HCO3	(mg/l CaCO3) CO3	(mg/l CaCO3) OH	(mg/l) FREE CO2
UA24 C5		6.64	100	20.0	0.00	8.12	0.00							
UA24 B2		7.46	100	20.2	0.00	17.02	0.00							
UA41 A1		8.09	~~50~~ 100	21.1	0.00	9.28	0.00							
B1		11.95	50	21.1	42.55	48.15	0.00							
C1		6.83	~~50~~ 100	21.2	0.00	4.82	0.00							
UA37 A2	6.54	~~6.55~~	~~50~~ 100	20.9	0.00	2.97	0.00							
UA42 A3		7.14	100	~~20.5~~ (3)	0.00	7.82	0.00							
A3		7.08	100	20.7	0.00	7.77	0.00							
B3		6.46	100	20.5	0.00	10.26	0.00							
C3		6.70	100	20.9	0.00		0.00	high						
CCV		10.44	100	20.0	5.79	12.01	0.00							
CCV														
CCV														

12-12 (L)

120625 : tab 1

ALKALINITY BENCHSHEET

methods: **SM 2320 B-97**

Date/Time: 12/12/11 18:02

pH meter verification — **pH meter ID:** **ACCUMET AR60** — **Buret ID:** **01G30627** — Analyst: KE

Buffer pH **7.00** — **pH Probe ID :** **AR60**

Measured pH 7.01 — *Calibration OK* — **HIGH CURVE**

Partitioning Calculations
T=Total, P=Phenolphthalein

Obs	HCO3	CO3	OH
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Standardization of acid titrant ***(titration to pH 4.5)***

ARI ID: ***00122 - 1***

grams Na2CO3 = **0.6250** *to* **250** *ml DI*

Normality Na2CO3 = 0.0472

Assumed Acid Normality = **0.1**

Standardized Acid Normality= 0.1004 ***OK!***

BLANK	BLANK	ml ACID
1	0.03	
2	0.03	
3	0.03	
AVERAGE	0.03	

STANDARD TITRATION		
ml Na2CO3	ml ACID	N H2SO4
5	2.40	0.100
5	2.36	0.101
5	2.38	0.100
		0.100

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: ***00133 - 2*** — *mg/L CaCO3*

grams Na2CO3 = **0.6260** *grams in* **250** *mL =* 2363

dilution: **5.0** *mL to* **100** *CVS =* **118.1**

DQL Std (2ppm) *dilute* **0.085** *mL stock to 100 mL DI =* **2.0**

Laboratory Control Standard (LCS)

Source: ***P194 - 506*** — *mg/L CaCO3* **49.20**

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample — *(shaded cells are calculated, make no entries)*

low level = {{{(2 X mL4.5)-mL4.2] X Nacid) X 50,000} / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.46	100	20.1	1.13	2.38	0.00	56.7	117.9		*99.8%*	*OK!*		
ICB		5.41	100	21.3	0.00	0.03	0.06	0.0		0.0	0.0	0.0	0.0	0.0
LCS		8.90	50	21.0	0.28	0.51	0.54	28.1	51.2		*104.0%*	*OK!*		
TZ83 A4		6.74	100	21.2	0.00	8.61	0.00	0.0	432.1		432.1	0.0	0.0	157.3
TZ84 A8		6.52	100	20.8	0.00	5.04	0.00	0.0	253.0		253.0	0.0	0.0	152.8
TZ84 A8 dup		6.55	100	20.8	0.00	5.07	0.00	0.0	254.5		254.5	0.0	0.0	143.4
RPD =									*0.6%*		*0.6%*			*6.3%*
TZ97 A3		6.74	100	21.0	0.00	4.34	0.00	0.0	217.8		217.8	0.0	0.0	79.3
UA17 A3		6.50	100	21.0	0.00	5.79	0.00	0.0	290.6		290.6	0.0	0.0	183.8
UA31 A4		7.22	100	20.9	0.00	9.39	0.00	0.0	471.3		471.3	0.0	0.0	56.8
UA31 A4 dup		7.20	100	20.8	0.00	9.32	0.00	0.0	467.8		467.8	0.0	0.0	59.0
RPD =									*0.7%*		*0.7%*			*3.9%*
UA31 B4		7.36	100	20.8	0.00	6.26	0.00	0.0	314.2		314.2	0.0	0.0	27.4
UA43 A5		7.12	100	20.8	0.00	5.61	0.00	0.0	281.6		281.6	0.0	0.0	42.7
UA43 B5		7.28	100	20.8	0.00	5.50	0.00	0.0	276.0		276.0	0.0	0.0	29.0
CCV		10.46	100	20.2	1.15	2.41	0.00	57.7	119.4		*101.1%*	*OK!*		0.0
UA43 E5		6.92	100	20.7	0.00	10.51	0.00	0.0	527.5		527.5	0.0	0.0	126.8
UA43 F5		7.04	100	20.6	0.00	10.58	0.00	0.0	531.0		531.0	0.0	0.0	96.9
UA67 A3		7.46	100	20.6	0.00	6.03	0.00	0.0	302.6		302.6	0.0	0.0	21.0
UA67 C3		7.24	100	20.5	0.00	7.93	0.00	0.0	398.0		398.0	0.0	0.0	45.8
UA74 A5		6.72	100	20.4	0.00	6.47	0.00	0.0	324.7		324.7	0.0	0.0	123.7
UA74 B5		7.28	100	20.5	0.00	4.40	0.00	0.0	220.8		220.8	0.0	0.0	23.2
UA42 C3		6.74	100	20.9	0.00	12.56	0.00	0.0	630.4		630.4	0.0	0.0	229.4
CCV		10.44	100	20.0	1.15	2.39	0.00	57.7	118.4		*100.3%*	*OK!*		0.0

ALKALINITY BENCHSHEET methods: **SM 2320 B-97** Date/Time: 12-12-11

pH meter verification **pH meter ID:** **ACCUMET AR60** **Buret ID:** **01G30627** Analyst: KE 1802

Buffer pH 7.00 **pH Probe ID :** **AR60**

Measured pH 7.01 *must agree within 0.1 pH unit* **HIGH CURVE**

Standardization of acid titrant ***(titration to pH 4.5)***

ARI ID: ***00122 - 1***

grams Na2CO3 =	**0.6250**	*to*	**250**	*ml DI*
Normality Na2CO3 =	0.0472			
Assumed Acid Normality =	**0.1**			
Standardized Acid Normality=				

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.03	5	2.40	
2	0.03	5	2.36	
3	0.03	5	2.38	
AVERAGE				

Partitioning Calculations T=Total, P=Phenolphthalein			
Obs	*HCO3*	*CO3*	*OH*
P =0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P =T	0	0	T

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: ***00133 - 2*** *mg/L CaCO3*

grams Na2CO3 =	**0.6260**	*grams in*	**250**	*mL =*	**2363**	
dilution:	**5.0**	*mL to*	**100**	*CVS =*	**118.1**	
DQL Std (2ppm)	*dilute*	**0.085**	*mL stock to 100 mL DI =*		**2.0**	

Laboratory Control Standard (LCS)

Source: ***P194 - 506*** *mg/L CaCO3* **49.20**

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample *(shaded cells are calculated, make no entries)*

low level = ((((2 X mL4.5)-mL4.2] X Nacid) X 50,000) / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.46	100	20.1	1.13	2.38	0.00							
ICB		5.41	100	21.3	0.00	0.03	0.06							
~~DQL Std (2ppm)~~								12-12-11 (2)						
LCS		8.90	50	21.0	0.28	0.98 (1)	0.54							
T283 A4		6.74	100	21.2	0.00	8.01	0.00							
T284 B3		6.52	100	20.8	0.00	5.04	0.00							
" DUP B3		6.55	100	20.8	0.00	5.07	0.00							
T297 C1		6.74	100	21.0	0.00	4.34	0.00							
AU17 A3		6.50	100	21.0	0.00	5.79	0.00							
U973i A4		7.22	100	20.9	0.00	9.39	0.00							
" DUP A4		7.20	100	20.8	0.00	9.32	0.00							
B4		7.36	100	20.8	0.00	6.26	0.00							
UA43 A5		7.12	100	20.8	0.00	5.61	0.00							
" B5		7.28	100	20.8	0.00	5.50	0.00							
CCV		10.46	100	20.2	1.15	2.41	0.00							
UAU3 E5		6.92	100	20.7	0.00	10.61	0.00							
" F5		7.04	100	20.6	0.00	10.58	0.00							
UA67 A3		7.46	100	20.6	0.00	6.03	0.00							
" C3		7.34	100	20.5	0.00	7.93	0.00							
UA74 A5		6.72	100	20.4	0.00	6.47	0.00							
" B5		7.28	100	20.5	0.00	6.40	0.00							
UA42 C3		6.74	100	20.9	0.00	12.56	0.00							
CCV		10.49	100	20.0	1.15	2.39	0.00							
						12-17-11 (2)								
CCV														

T284 00627

(2) 0.51 12-12-11 (W)

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.4803
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9996

No.	Injection Name	Calibration Level	X Value Fluoride	Y Value Fluoride	Amount mg/l Fluoride	Area µS*min Fluoride	Height µS Fluoride
1	STD1	01	0.1000	0.0478	0.0991	0.048	0.532
2	STD2	02	0.5000	0.2412	0.5022	0.241	2.740
3	STD3	03	1.0000	0.4992	1.0394	0.499	5.679
4	STD4	04	2.5000	1.2284	2.5577	1.228	13.746
5	STD5	05	5.0000	2.3817	4.9831	2.384	25.998

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2959
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Chloride	Y Value Chloride	Amount mg/l Chloride	Area µS*min Chloride	Height µS Chloride
1	STD1	01	0.1000	0.0295	0.0996	0.029	0.246
2	STD2	02	0.5000	0.1390	0.4696	0.139	1.172
3	STD3	03	1.0000	0.2864	0.9678	0.286	2.426
4	STD4	04	2.5000	0.7316	2.4721	0.732	6.232
5	STD5	05	5.0000	1.4866	5.0234	1.487	12.625

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.6684
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9996

No.	Injection Name	Calibration Level	X Value Nitrite	Y Value Nitrite	Amount mg/l Nitrite	Area µS*min Nitrite	Height µS Nitrite
1	STD1	01	0.1000	0.0614	0.0918	0.061	0.405
2	STD2	02	0.5000	0.3342	0.5000	0.334	2.240
3	STD3	03	1.0000	0.6968	1.0427	0.697	4.634
4	STD4	04	2.5000	1.7087	2.5564	1.709	10.970
5	STD5	05	5.0000	3.3174	4.9634	3.317	20.325

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1276
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9995

No.	Injection Name	Calibration Level	X Value Bromide	Y Value Bromide	Amount mg/l Bromide	Area µS*min Bromide	Height µS Bromide
1	STD1	01	0.1000	0.0118	0.0905	0.012	0.052
2	STD2	02	0.5000	0.0576	0.4515	0.058	0.262
3	STD3	03	1.0000	0.1212	0.9496	0.121	0.553
4	STD4	04	2.5000	0.3135	2.4568	0.313	1.449
5	STD5	05	5.0000	0.6427	5.0367	0.643	3.000

TZ84 : 00628

Chromeleon(c) Dionex
Version 7.0 1.272

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2180
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Sulfate	Y Value Sulfate	Amount mg/l Sulfate	Area µS*min Sulfate	Height µS Sulfate
1	STD1	01	0.1000	0.0248	0.1137	0.025	0.147
2	STD2	02	0.5000	0.1078	0.4948	0.108	0.692
3	STD3	03	1.0000	0.2182	0.9916	0.216	1.430
4	STD4	04	2.5000	0.5378	2.4673	0.538	3.653
5	STD5	05	5.0000	1.0938	5.0183	1.094	7.341

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.7566
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Nitrate	Y Value Nitrate	Amount mg/l Nitrate	Area µS*min Nitrate	Height µS Nitrate
1	STD1	01	0.1000	0.0781	0.1032	0.078	0.427
2	STD2	02	0.5000	0.3541	0.4691	0.354	2.154
3	STD3	03	1.0000	0.7404	0.9786	0.740	4.473
4	STD4	04	2.5000	1.8749	2.4781	1.875	10.705
5	STD5	05	5.0000	3.7987	5.0183	3.797	19.625

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.3019
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Phosphate	Y Value Phosphate	Amount mg/l Phosphate	Area µS*min Phosphate	Height µS Phosphate
1	STD1	01	0.1000	0.0247	0.0818	0.025	0.120
2	STD2	02	0.5000	0.1414	0.4683	0.141	0.687
3	STD3	03	1.0000	0.2933	0.9712	0.293	1.464
4	STD4	04	2.5000	0.7448	2.4666	0.745	3.618
5	STD5	05	5.0000	1.5175	5.0259	1.518	6.679

Name:	DEC1011RR	*Calibration:*	DEC0811RR ARI # 586-7
Directory:	Instrument Data\DEC 2011	*Calibration exp.*	3/8/2011
Data Vault:	ChromeleonLocal	*Queue Start:*	12/10/2011 9:53
No. of Injections:	51.000	*User:*	RR

		ERA 161110	ERA 411010	ERA 401010	ERA 111109	ERA 160111	ERA 230511	ERA 200610
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a. Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ICV	1.0	3.044	2.944	3.042	3.005	2.999	3.039	2.995
%R=		101.5%	98.1%	101.4%	100.2%	100.0%	101.3%	99.8%
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
			55.640	n.a.	0.139	n.a.		
			55.722	n.a.	0.139	n.a.		
%RPD=		2.23%	0.16%		0.41%		0.40%	
			57.184	2.038	1.978	n.a.		
%R=		96.7%	77.2%	101.9%	92.0%		102.1%	81.0%
SPK=	0.05mL*200ppm/5mL		=2ppm					
			16.580	n.a.	0.052	n.a.		
			8.418	n.a.	n.a.	20.898	9.279	
			14.589	n.a.	0.060	22.492		
		0.198		n.a.	n.a.	20.612	1.266	n.a.
		0.200		n.a.	n.a.	20.718	1.279	n.a.
%RPD=		1.12%	0.09%			0.51%	1.01%	
		10.355		9.933	9.446	30.928	11.766	9.181
%R=		101.6%	88.7%	99.3%	94.5%	103.2%	105.0%	91.8%
SPK=	0.25mL*200ppm/5mL		=10ppm					
		0.035		n.a.	0.099	20.064		n.a.
CCV	1.0	3.047	2.947	3.025	3.008	2.909	3.034	2.987
%R=		101.6%	98.2%	100.8%	100.3%	97.0%	101.1%	99.6%
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a
UA74 A1	20.0	1.750	54.533	n.a.	n.a.	41.649	2.243	n.a.
UA74 A1 DUP	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
UA74 A1 MS	20.0	n.a.	96.018	n.a.	n.a.	82.702	5.651	n.a.
		0.066		n.a.	n.a.	48.504	1.162	n.a.
		n.a.	15.781	n.a.	n.a.		4.379	n.a
		n.a.	8.198	n.a.	n.a.		9.936	n.a.
		0.118		n.a.	n.a.		n.a.	n.a.
		0.696	40.173	n.a.	0.306		n.a.	1.480
		0.217	10.436	n.a.	n.a.		n.a.	n.a.
		0.214	10.366	n.a.	n.a.		n.a.	n.a.
%RPD=		1.27%	0.69%			1.31%		
CCV	1.0	3.045	2.949	3.030	3.002	2.901	3.187	2.979
%R=		101.5%	98.3%	101.0%	100.1%	96.7%	106.2%	99.3%
CCB	1.0	n.a	n.a.	n.a.	n.a	n.a.	n.a.	n.a.
		10.194	19.964	10.129	9.553		10.827	9.403
%R=		99.8%	95.3%	101.3%	95.5%	108.5%	108.3%	94.0%
SPK=	0.05mL*200ppm/5mL		=2ppm					
		0.262	50.158	n.a.	n.a.		n.a.	0.087
		n.a.		n.a.	n.a.		5.985	n.a.
		n.a.		n.a.	n.a.		6.149	n.a.
%RPD=			0.52%			0.88%		
		n.a.		n.a.	n.a.		5.896	n.a.
%R=			103.6%			121.6%		
SPK=	0.05mL*200ppm/5mL		=2ppm					
		n.a.	19.341	n.a.	n.a.		4.648	n.a.
		0.022	6.795	n.a	n.a.		0.860	n.a.
		0.469	6.770	0.029	0.050		0.355	n a

[redacted]		0.474	[redacted]	0.028	n.a.	1.389	0.588	n.a.
		0.202	3.248	n.a.	n.a.	[redacted]	1.100	n.a.
CCV	1.0	3.039	2.949	3.036	3.009	2.908	3.054	2.979
%R=		**101.3%**	**98.3%**	**101.2%**	**100.3%**	**96.9%**	**101.8%**	**99.3%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.017
[redacted]		0.202	3.239	n.a.	n.a.	[redacted]	1.151	n.a.
%RPD=		**0.02%**	**0.27%**			**0.50%**	**4.53%**	
[redacted]		20.125	23.038	20.445	19.597	[redacted]	22.066	19.094
%R=		**99.6%**	**98.0%**	**102.2%**	**98.0%**	**90.9%**	**104.8%**	**95.5%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
[redacted]		0.364	3.393	0.012	n.a.	[redacted]	n.a.	1.031
		n.a.	2.342	n.a.	n.a.		1.330	0.272
		n.a.	2.341	n.a.	n.a		2.889	n.a.
%RPD=			**0.07%**			**0.58%**	**73.92%**	
[redacted]		20.509	21.988	20.249	19.428	[redacted]	22.755	19.203
%R=		**102.5%**	**98.2%**	**101.2%**	**97.1%**	**103.2%**	**107.1%**	**94.7%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
[redacted]		n.a.	571.775	n.a.	1.701	[redacted]	n.a.	n.a.
		0.070	2.158	n.a.	n.a.		0.414	n.a.
		0.240	3.355	n.a.	n.a.		0.218	n.a.
CCV	1.0	3.047	2.952	3.030	3.009	2.868	3.041	3.000
%R=		**101.6%**	**98.4%**	**101.0%**	**100.3%**	**95.6%**	**101.4%**	**100.0%**
CCB	1.0	n.a.	n.a	n.a.	n.a.	n.a.	n.a.	0.020
STOP	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sequence Overview

Sequence Details

Name:	**DEC1011RR**	*Queue Start:*	**2011-12-10T09:53:23-**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**51**		

Injection Details

No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	10/Dec/11 09:53:23
2	ICV	2	Check Standard	06	1.0	10/Dec/11 10:12:17
3	ICB	3	Blank		1.0	10/Dec/11 10:31:26
4	UA74 A1	4	Unknown		1.0	10/Dec/11 10:50:41
5	UA74 A1 DUP	5	Unknown		1.0	10/Dec/11 11:10:37
6	UA74 A1 MS	6	Unknown		1.0	10/Dec/11 11:30:05
7	UA74 B1	7	Unknown		1.0	10/Dec/11 11:49:36
8	UA74 C1	8	Unknown		1.0	10/Dec/11 12:09:14
9	UA74 D1	9	Unknown		1.0	10/Dec/11 12:28:56
10	UA09 B4	10	Unknown		5.0	10/Dec/11 12:48:45
11	UA09 B4 DUP	11	Unknown		5.0	10/Dec/11 13:08:41
12	UA09 B4 MS	12	Unknown		5.0	10/Dec/11 13:28:41
13	UA74 C1	13	Unknown		2.0	10/Dec/11 13:48:48
14	CCV	2	Check Standard	06	1.0	10/Dec/11 14:08:59
15	CCB	3	Blank		1.0	10/Dec/11 14:29:35
16	UA74 A1	14	Unknown		20.0	10/Dec/11 15:52:19
17	UA74 A1 DUP	15	Unknown		20.0	10/Dec/11 14:53:26
18	UA74 A1 MS	16	Unknown		20.0	10/Dec/11 16:12:32
19	UA74 B1	17	Unknown		5.0	10/Dec/11 16:33:10
20	UA74 B1	18	Unknown		20.0	10/Dec/11 16:53:54
21	UA74 C1	19	Unknown		5.0	10/Dec/11 17:14:43
22	UA74 D1	20	Unknown		5.0	10/Dec/11 17:34:04
23	TZ83 A3	21	Unknown		1.0	10/Dec/11 17:53:30
24	TZ84 A1	22	Unknown		5.0	10/Dec/11 18:13:01
25	TZ84 A1 DUP	23	Unknown		5.0	10/Dec/11 18:32:37
26	CCV	2	Check Standard	06	1.0	10/Dec/11 18:52:18
27	CCB	3	Blank		1.0	10/Dec/11 19:12:43
28	TZ84 A1 MS	24	Unknown		5.0	10/Dec/11 19:33:17
29	TZ84 B1	25	Unknown		5.0	10/Dec/11 19:53:17
30	UA74 A1	14	Unknown		20.0	10/Dec/11 20:13:17
31	UA74 A1 DUP	15	Unknown		20.0	10/Dec/11 20:33:42
32	UA74 A1 MS	16	Unknown		20.0	10/Dec/11 20:53:52
33	TZ94 A5	26	Unknown		5.0	10/Dec/11 21:14:24
34	TZ94 B5	27	Unknown		1.0	10/Dec/11 21:34:45
35	TZ97 A1	28	Unknown		1.0	10/Dec/11 21:55:06
36	TZ97 A1	29	Unknown		2.0	10/Dec/11 22:15:31
37	TZ97 B1	30	Unknown		5.0	10/Dec/11 22:36:00
38	CCV	31	Check Standard	06	1.0	10/Dec/11 22:56:32
39	CCB	32	Blank		1.0	10/Dec/11 23:17:08
40	TZ97 B1 DUP	33	Unknown		5.0	10/Dec/11 23:37:49
41	TZ97 B1 MS	34	Unknown		10.0	10/Dec/11 23:58:34
42	TZ97 C1	35	Unknown		1.0	11/Dec/11 00:17:49
43	TZ99 A1	36	Unknown		10.0	11/Dec/11 00:37:09

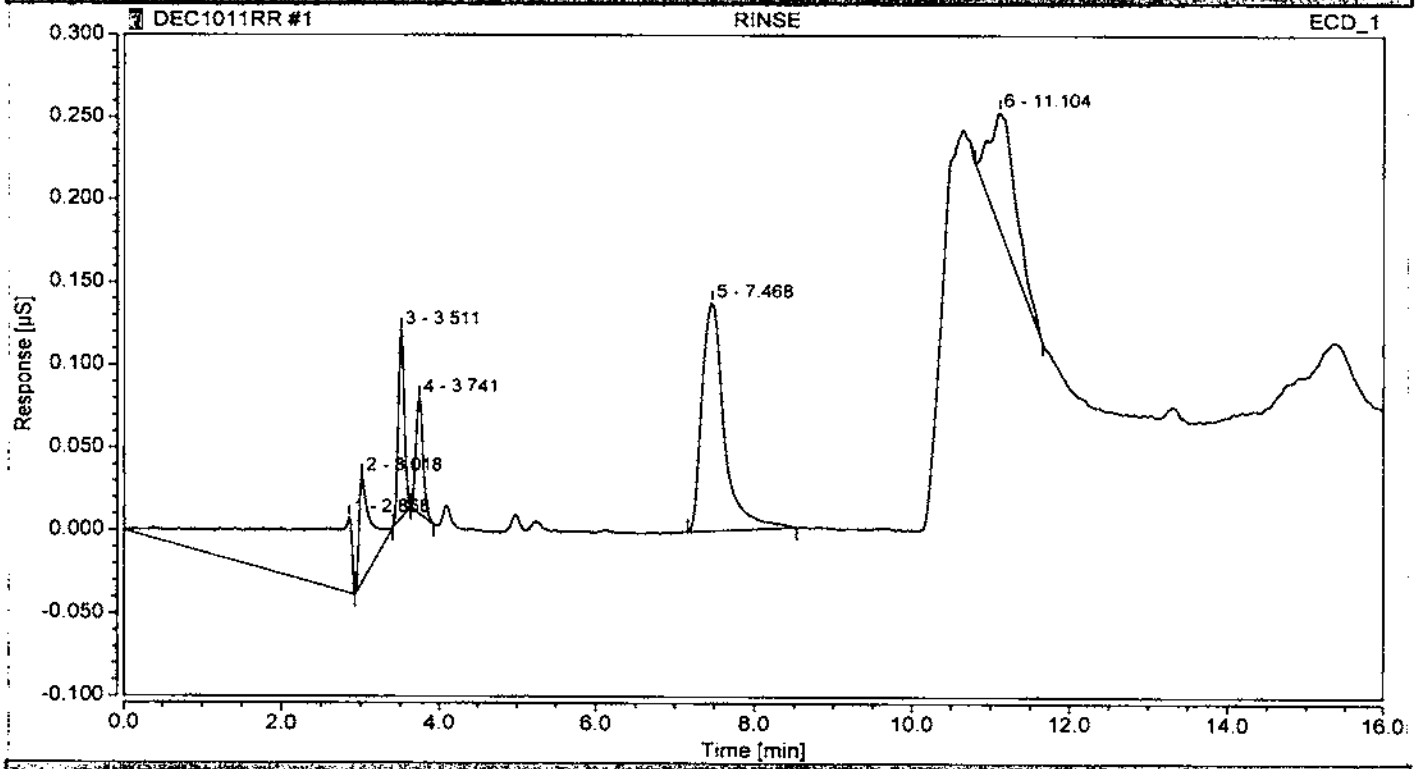
44	TZ99 A1 DUP	37	Unknown		10.0	11/Dec/11 00:56:31
45	TZ99 A1 MS	38	Unknown		10.0	11/Dec/11 01:15:59
46	TZ99 B1	39	Unknown		10.0	11/Dec/11 01:35:30
47	UA20 A1	40	Unknown		5.0	11/Dec/11 01:55:06
48	UA20 B1	41	Unknown		1.0	11/Dec/11 02:14:45
49	CCV	31	Check Standard	06	1.0	11/Dec/11 02:34:27
50	CCB	32	Blank		1.0	11/Dec/11 02:54:41
51	STOP	1	Unknown		1.0	11/Dec/11 03:15:10

TZ84 : 00653

Injection Details

Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodai*		
Injection Date/Time:	*10/12/11 09:53*		

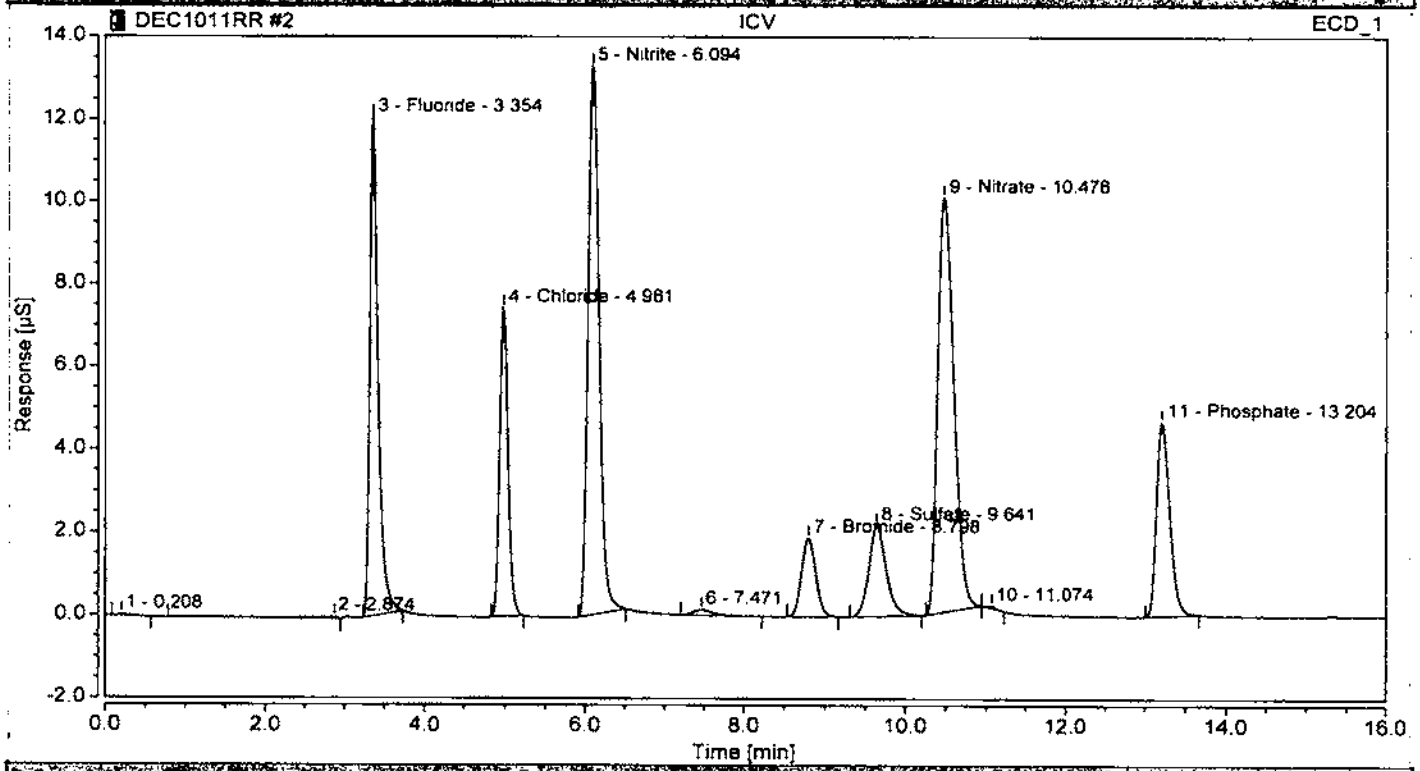
Chromatogram



Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.057	0.045	FALSE	n.a.
2		1.0	n.a.	3.02	0.011	0.064	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.010	0.114	FALSE	n.a.
4		1.0	n.a.	3.74	0.007	0.070	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.47	0.045	0.138	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	11.10	0.028	0.070	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

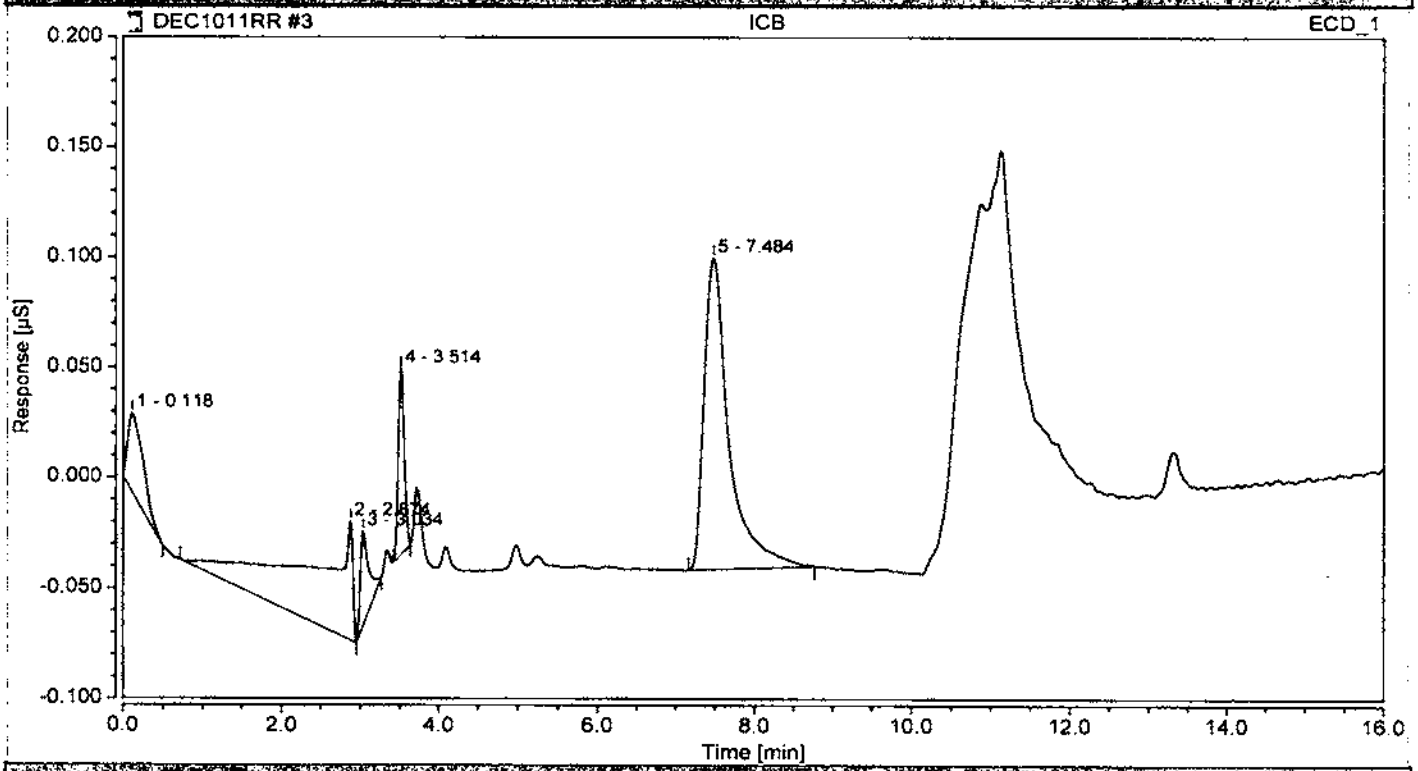
Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 10:12*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.21	0.007	0.032	FALSE	n.a.
2		1.0	n.a.	2.87	0.037	0.053	FALSE	n.a.
3	Fluoride	1.0	3.044	3.35	1.442	12.058	FALSE	1.48
4	Chloride	1.0	2.944	4.98	0.892	7.443	FALSE	-1.86
5	Nitrite	1.0	3.042	6.09	2.118	13.261	FALSE	1.39
6		1.0	n.a.	7.47	0.039	0.128	FALSE	n.a.
7	Bromide	1.0	3.005	8.80	0.386	1.890	FALSE	0.16
8	Sulfate	1.0	2.999	9.64	0.556	2.185	FALSE	-0.03
9	Nitrate	1.0	3.039	10.48	2.306	9.997	FALSE	1.31
10		1.0	n.a.	11.07	0.006	0.045	FALSE	n.a.
11	Phosphate	1.0	2.995	13.20	0.886	4.671	FALSE	-0.16

TZ84 : 00635

Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 10:31*		

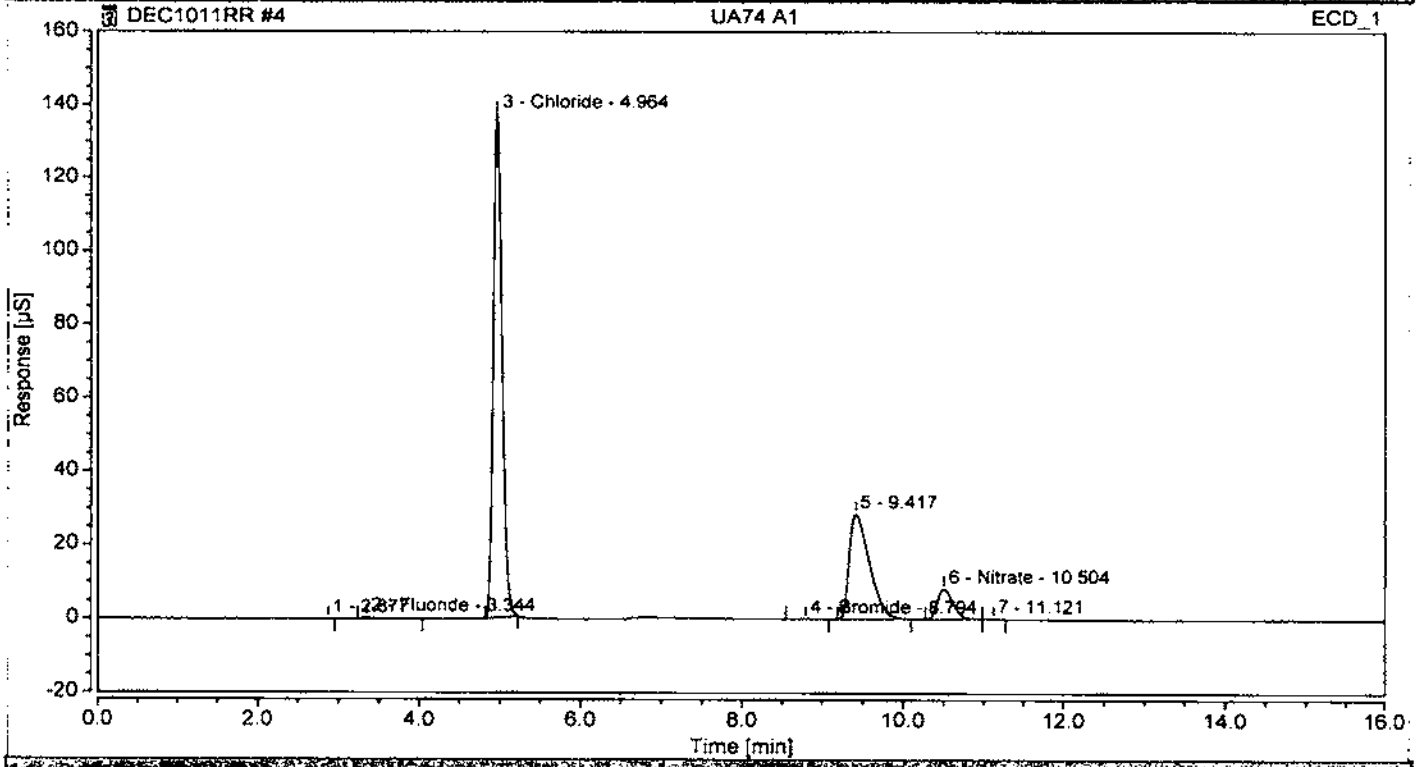


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.12	0.008	0.036	FALSE	n.a.
2		1.0	n.a.	2.87	0.037	0.054	FALSE	n.a.
3		1.0	n.a.	3.03	0.005	0.042	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.48	0.051	0.141	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 A1*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 10:50*		

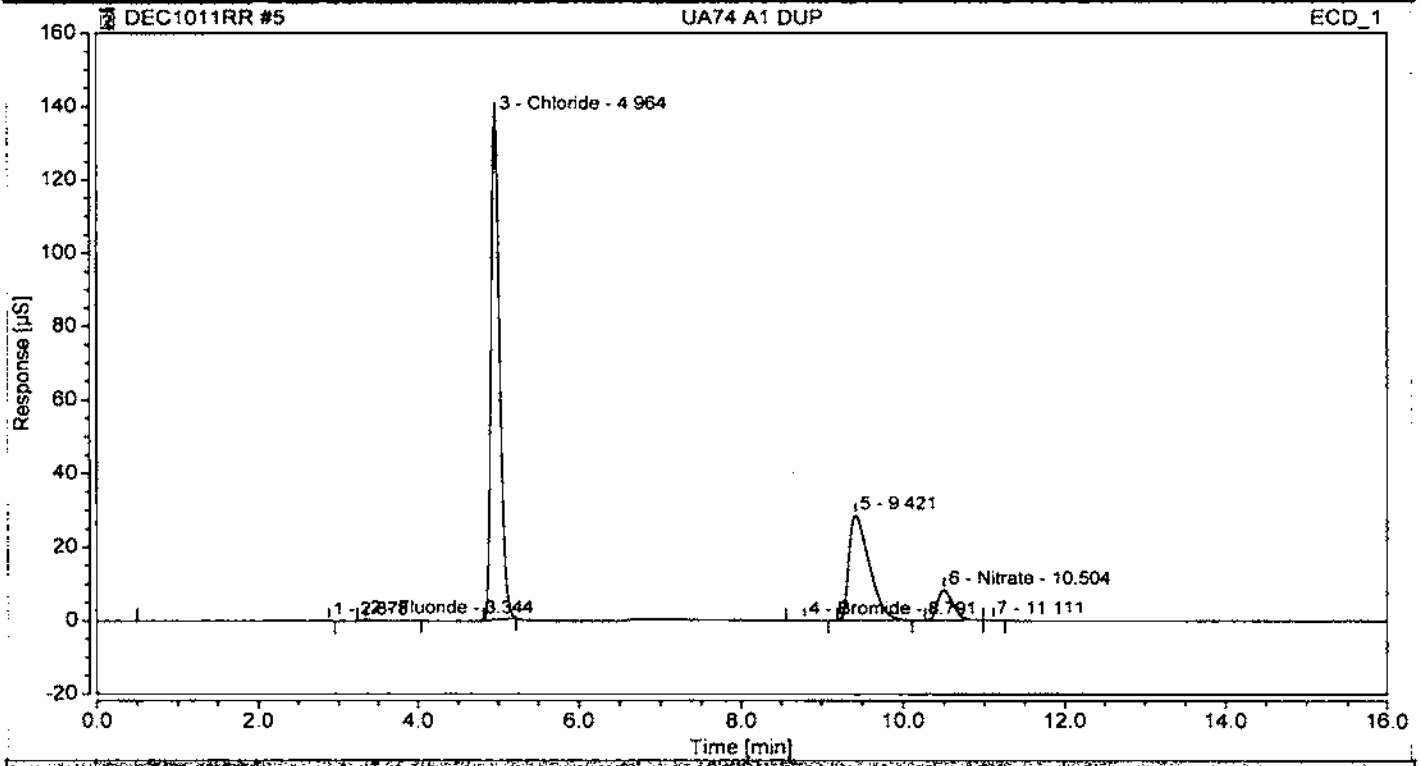
[redacted]



[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.049	0.044	FALSE	n.a.
2	Fluoride	1.0	0.125	3.34	0.059	0.408	FALSE	n.a.
3	Chloride	1.0	55.640	4.96	16.848	137.278	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.139	8.79	0.018	0.091	FALSE	n.a.
5		1.0	n.a.	9.42	8.179	28.520	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	2.425	10.50	1.840	8.211	FALSE	n.a.
7		1.0	n.a.	11.12	0.006	0.045	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

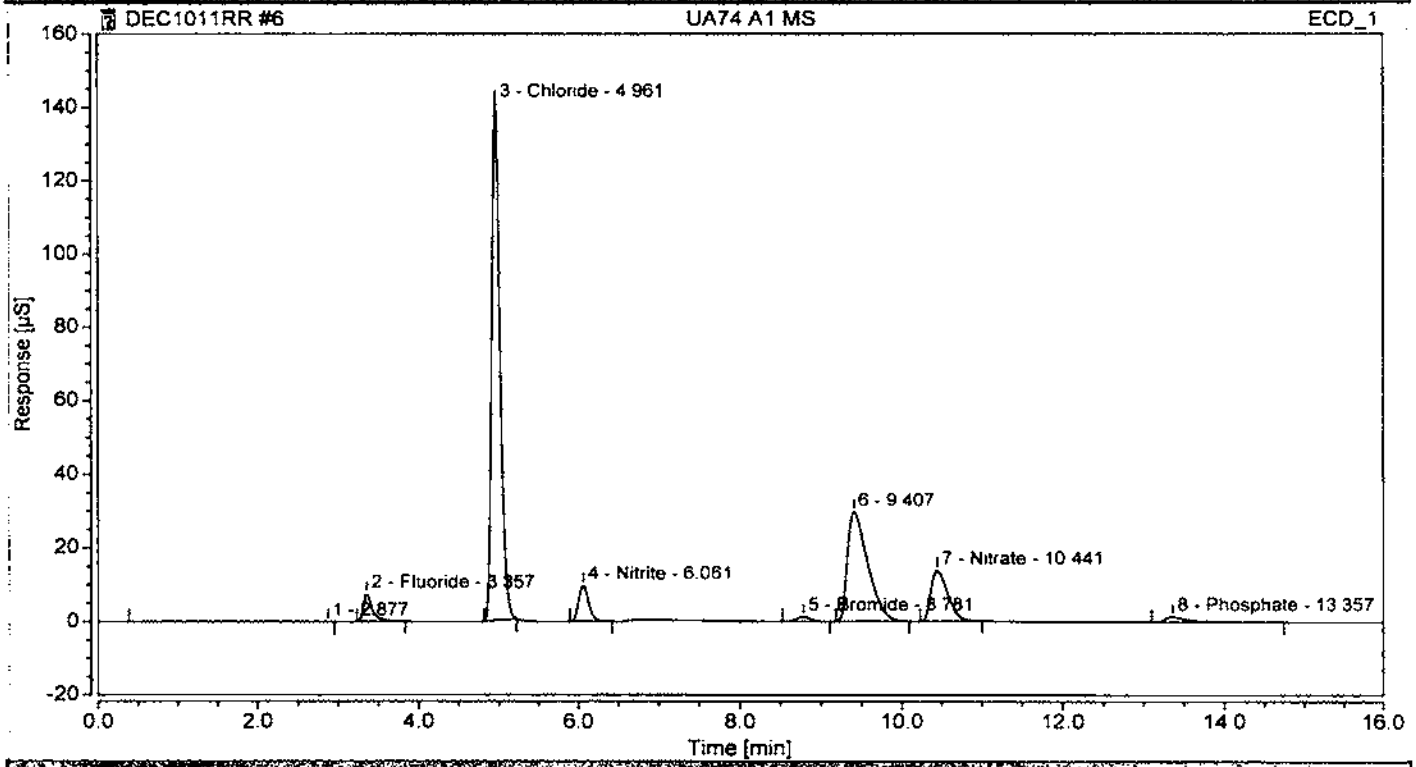
Injection Name:	*UA74 A1 DUP*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 11:10*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.042	0.045	FALSE	n.a.
2	Fluoride	1.0	0.122	3.34	0.058	0.395	FALSE	n.a.
3	Chloride	1.0	55.722	4.96	16.873	137.325	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.139	8.79	0.018	0.090	FALSE	n.a.
5		1.0	n.a.	9.42	8.190	28.526	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	2.435	10.50	1.847	8.238	FALSE	n.a.
7		1.0	n.a.	11.11	0.005	0.042	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sample Name and Results

Injection Name:	*UA74 A1 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:30*		

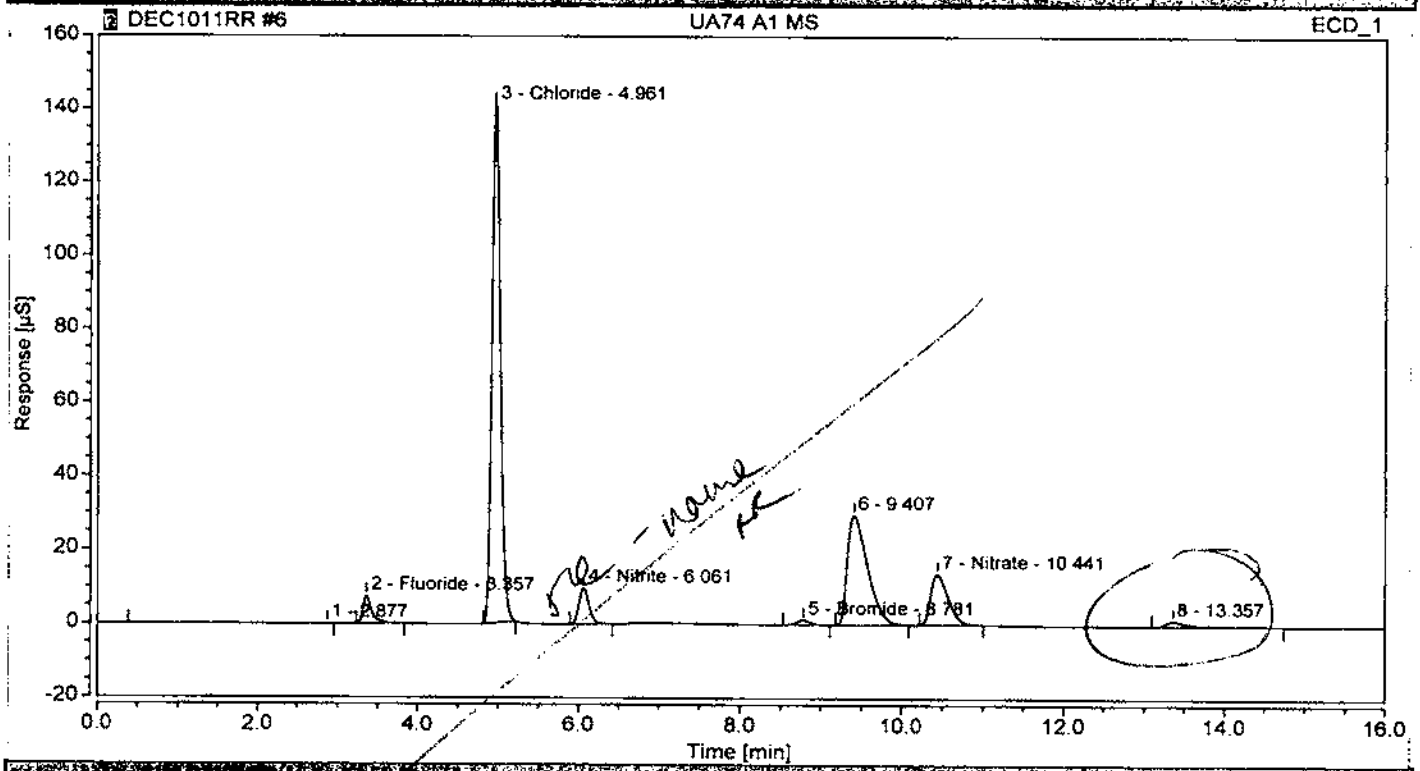


Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.041	0.044	FALSE	n.a.
2	Fluoride	1.0	2.060	3.36	0.976	7.443	FALSE	n.a.
3	Chloride	1.0	57.184	4.96	17.315	140.867	FALSE	n.a.
4	Nitrite	1.0	2.038	6.06	1.419	9.749	FALSE	n.a.
5	Bromide	1.0	1.978	8.78	0.254	1.302	FALSE	n.a.
6		1.0	n.a.	9.41	8.563	29.641	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Nitrate	1.0	4.467	10.44	3.388	13.720	FALSE	n.a.
8	Phosphate	1.0	1.619	13.36	0.479	1.444	FALSE	n.a.

T284 : 00639

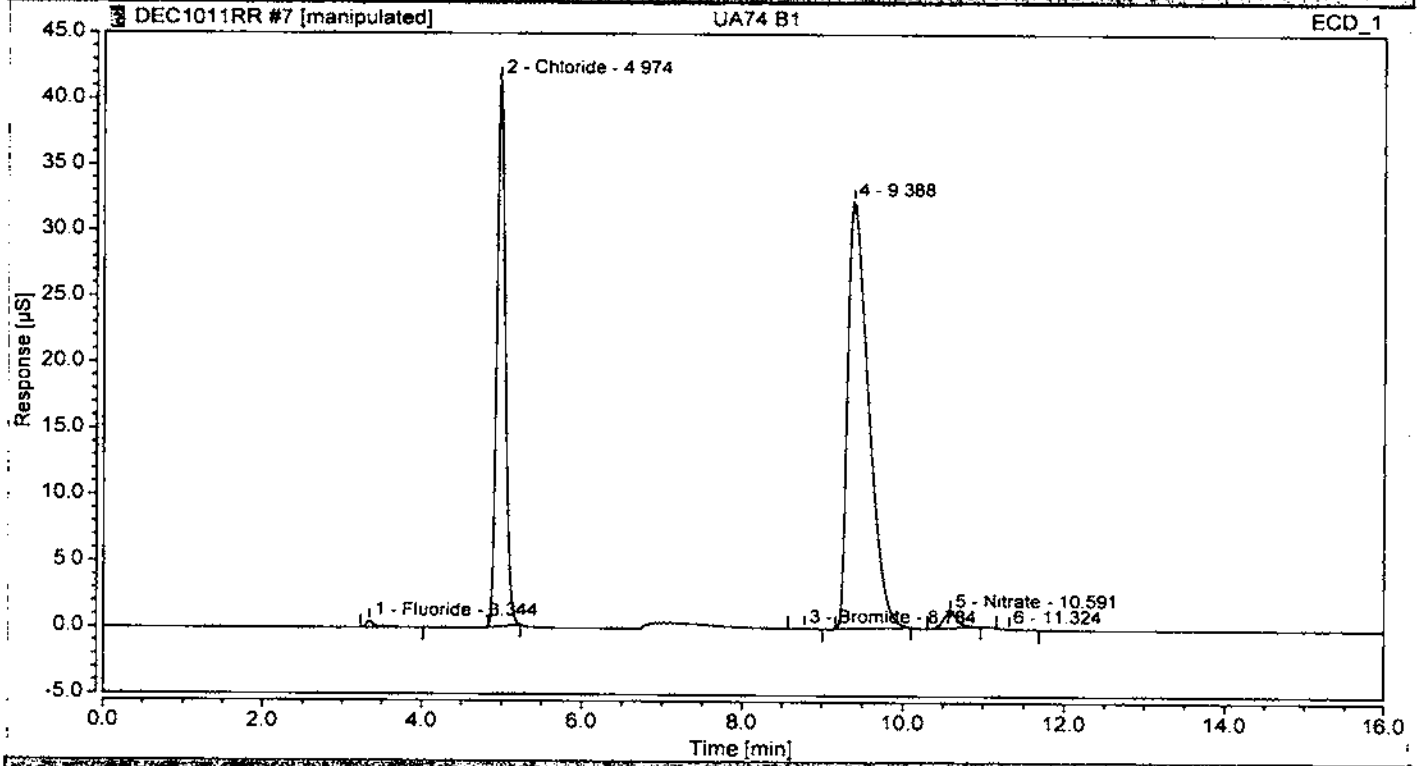
Injection Name:	*UA74 A1 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:30*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.041	0.044	FALSE	n.a.
2	Fluoride	1.0	2.060	3.36	0.976	7.443	FALSE	n.a.
3	Chloride	1.0	57.184	4.96	17.315	140.867	FALSE	n.a.
4	Nitrite	1.0	2.038	6.06	1.419	9.749	FALSE	n.a.
5	Bromide	1.0	1.978	8.78	0.254	1.302	FALSE	n.a.
6		1.0	n.a.	9.41	8.563	29.641	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Nitrate	1.0	4.467	10.44	3.388	13.720	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	13.36	0.479	1.444	FALSE	n.a.

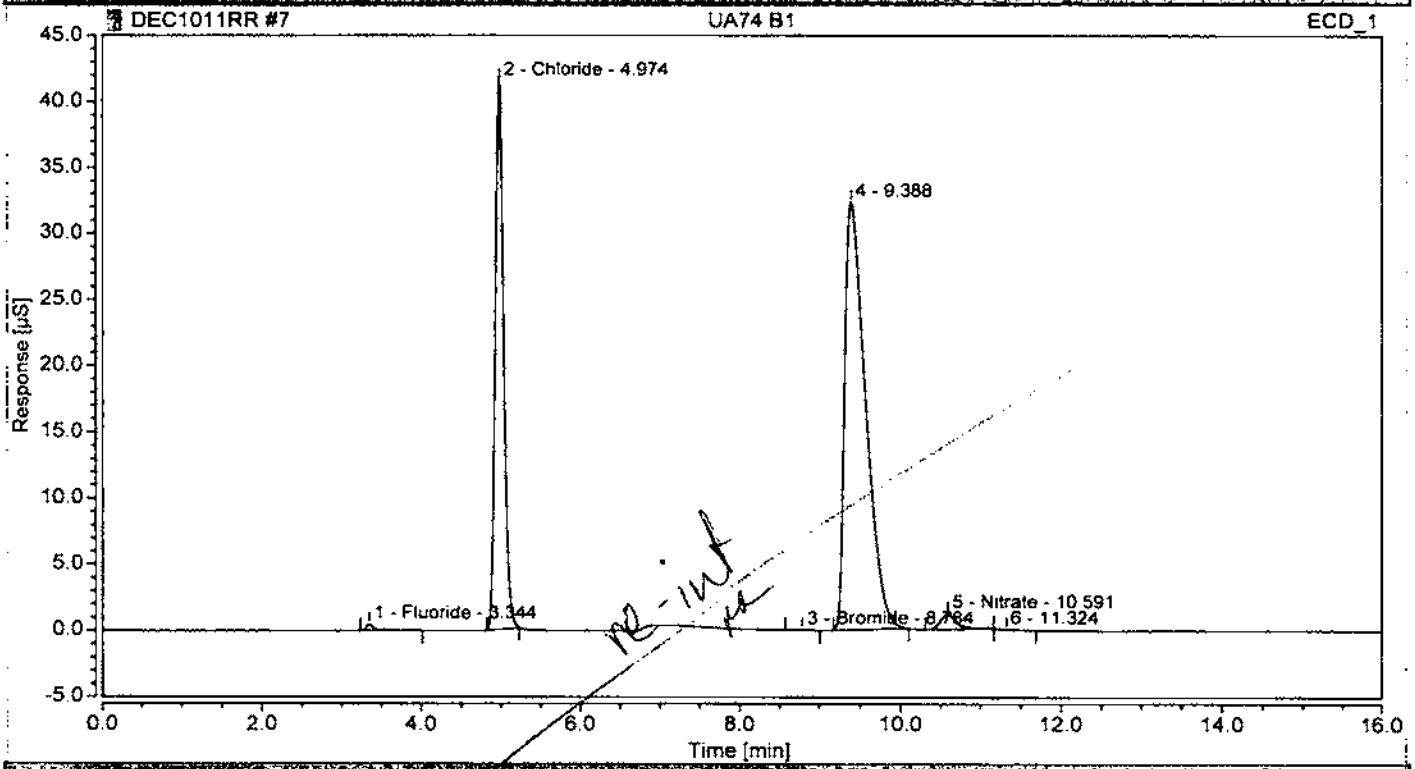
Chromatogram and Results

Injection Name:	*UA74 B1*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:49*		



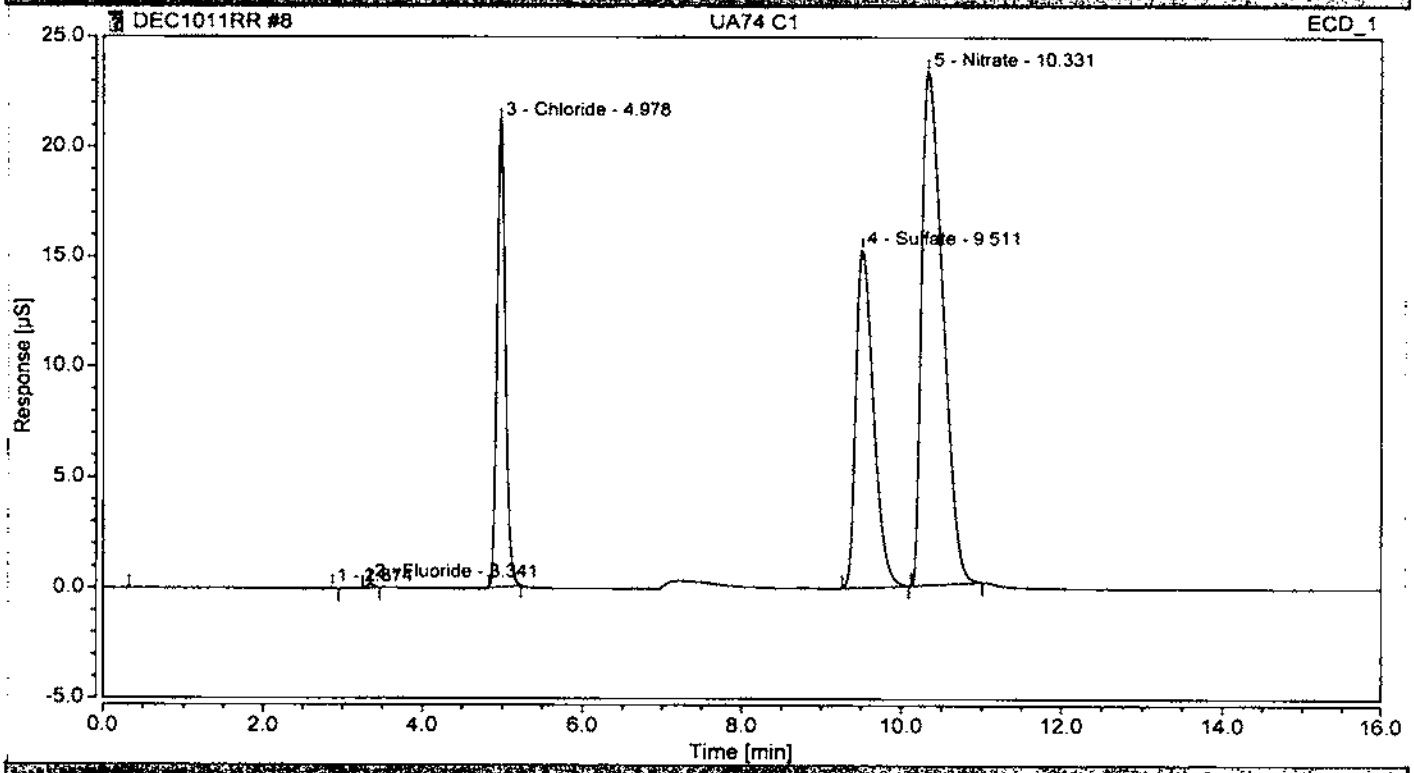
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.134	3.34	0.064	0.449	FALSE	n.a.
2	Chloride	1.0	16.580	4.97	5.020	41.454	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.052	8.78	0.007	0.035	FALSE	n.a.
4		1.0	n.a.	9.39	9.597	32.258	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.319	10.59	0.242	1.127	TRUE	n.a.
6		1.0	n.a.	11.32	0.016	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 B1*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:49*		



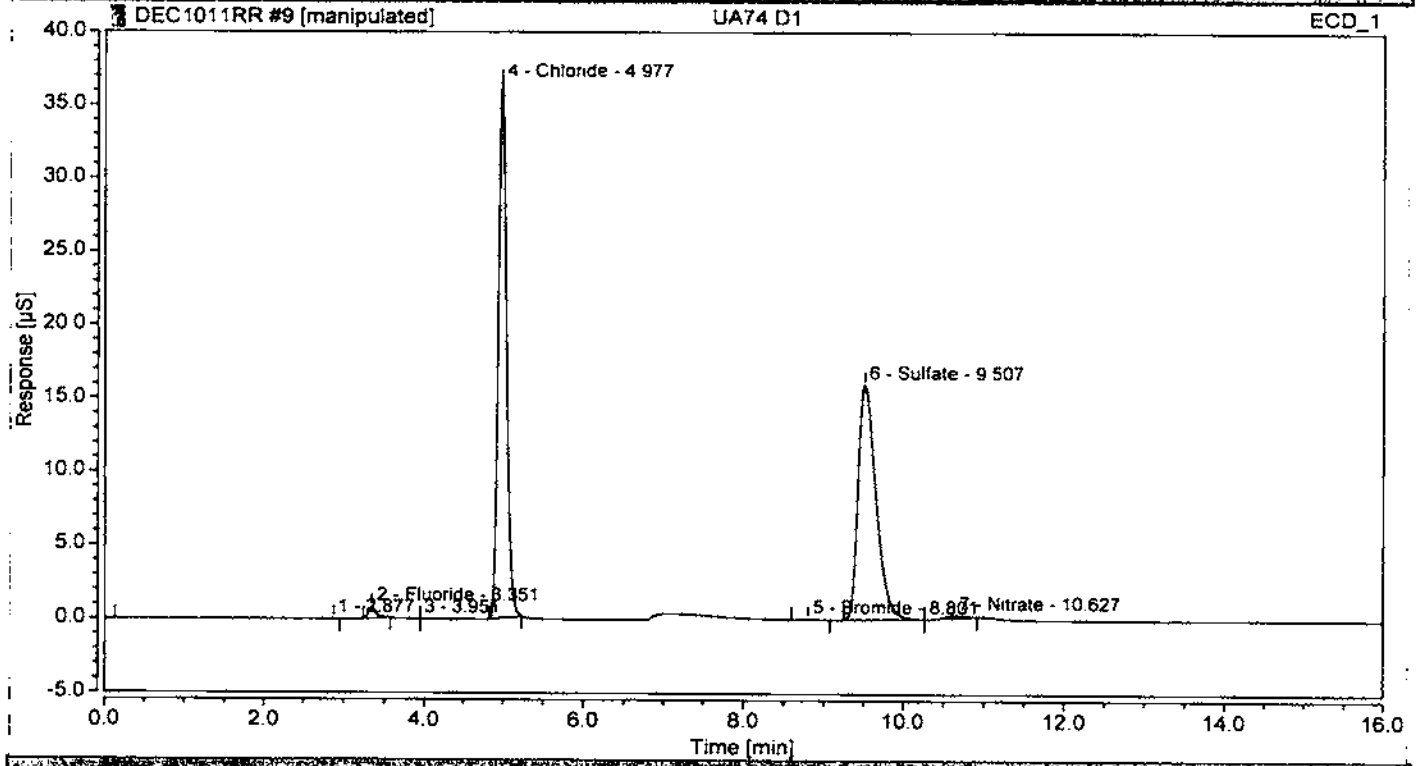
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.134	3.34	0.064	0.449	FALSE	n.a.
2	Chloride	1.0	16.580	4.97	5.020	41.454	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.052	8.78	0.007	0.035	FALSE	n.a.
4		1.0	n.a.	9.39	9.597	32.258	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.380	10.59	0.288	1.170	FALSE	n.a.
6		1.0	n.a.	11.32	0.016	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 C1*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 12:09*		



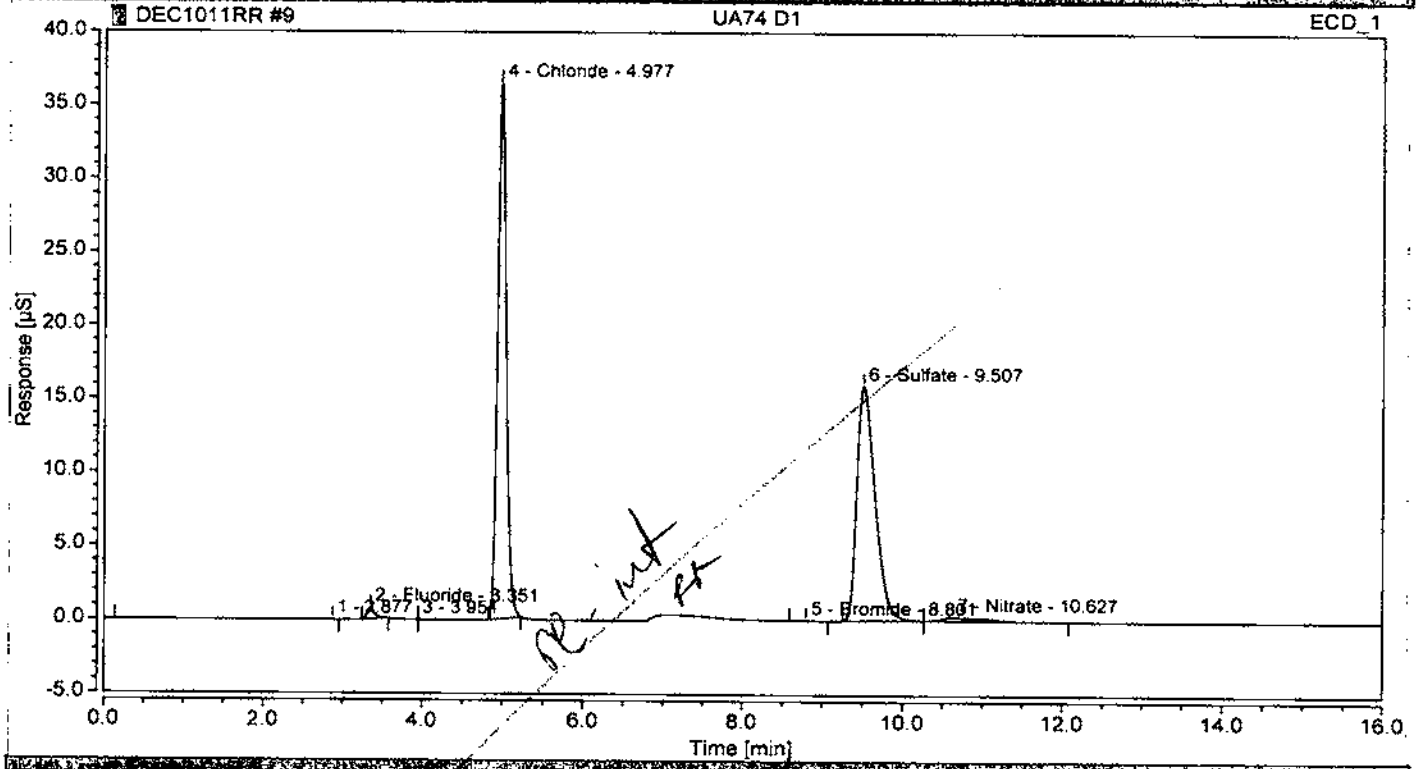
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.044	0.049	FALSE	n.a.
2	Fluoride	1.0	0.037	3.34	0.017	0.205	FALSE	n.a.
3	Chloride	1.0	8.418	4.98	2.549	21.107	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	20.898	9.51	3.874	15.268	FALSE	n.a.
5	Nitrate	1.0	9.279	10.33	7.039	23.275	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 D1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 12:28*		



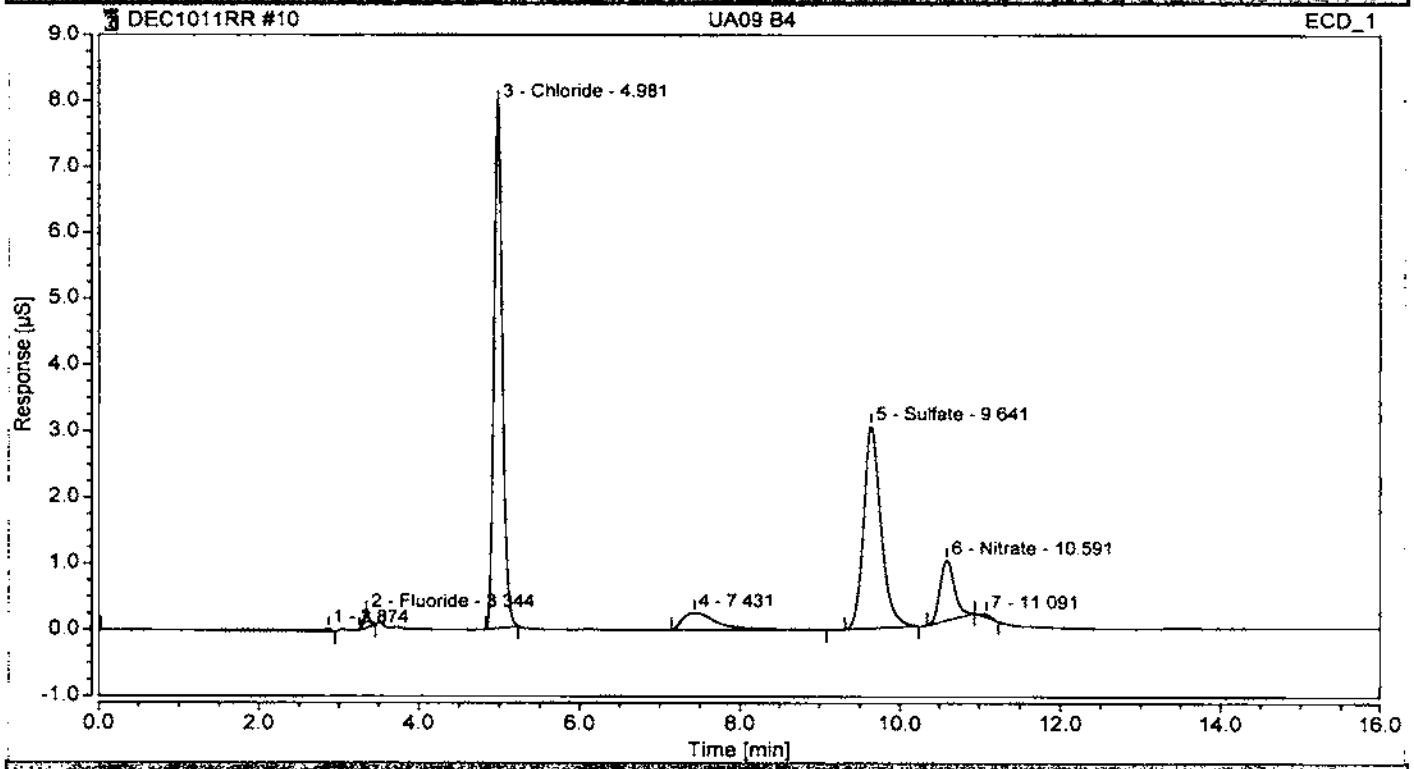
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.046	0.047	FALSE	n.a.
2	Fluoride	1.0	0.183	3.35	0.087	0.787	FALSE	n.a.
3		1.0	n.a.	3.95	0.000	0.057	FALSE	n.a.
4	Chloride	1.0	14.589	4.98	4.417	36.453	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.060	8.80	0.008	0.039	FALSE	n.a.
6	Sulfate	1.0	22.492	9.51	4.170	15.938	FALSE	n.a.
7	Nitrate	1.0	0.054	10.63	0.041	0.167	TRUE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 D1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 12:28*		



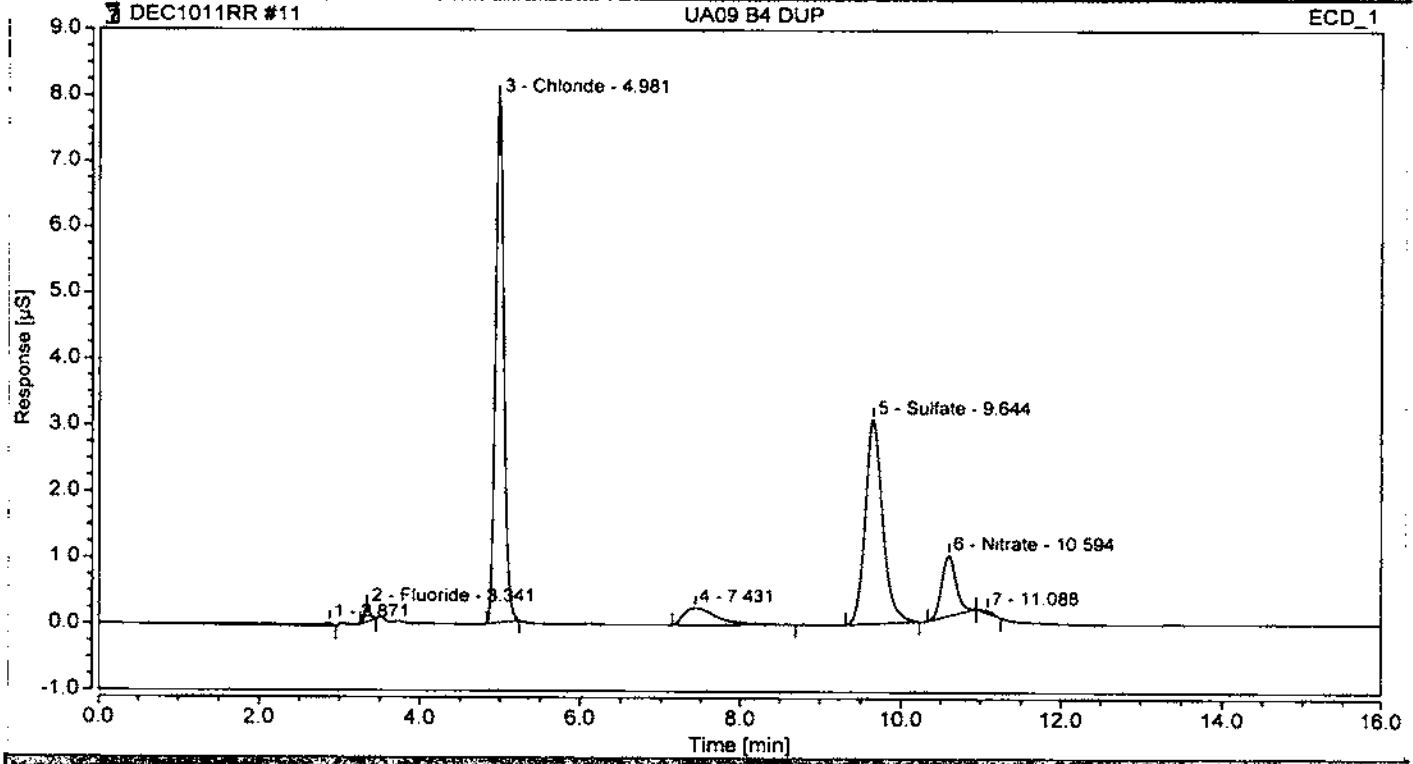
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.046	0.047	FALSE	n.a.
2	Fluoride	1.0	0.183	3.35	0.087	0.787	FALSE	n.a.
3		1.0	n.a.	3.95	0.000	0.057	FALSE	n.a.
4	Chloride	1.0	14.589	4.98	4.417	36.453	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.060	8.80	0.008	0.039	FALSE	n.a.
6	Sulfate	1.0	22.492	9.51	4.170	15.938	FALSE	n.a.
7	Nitrate	1.0	0.221	10.63	0.168	0.275	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA09 B4*	Inject Number:	10
Vial Number:	*10*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 12:48*		



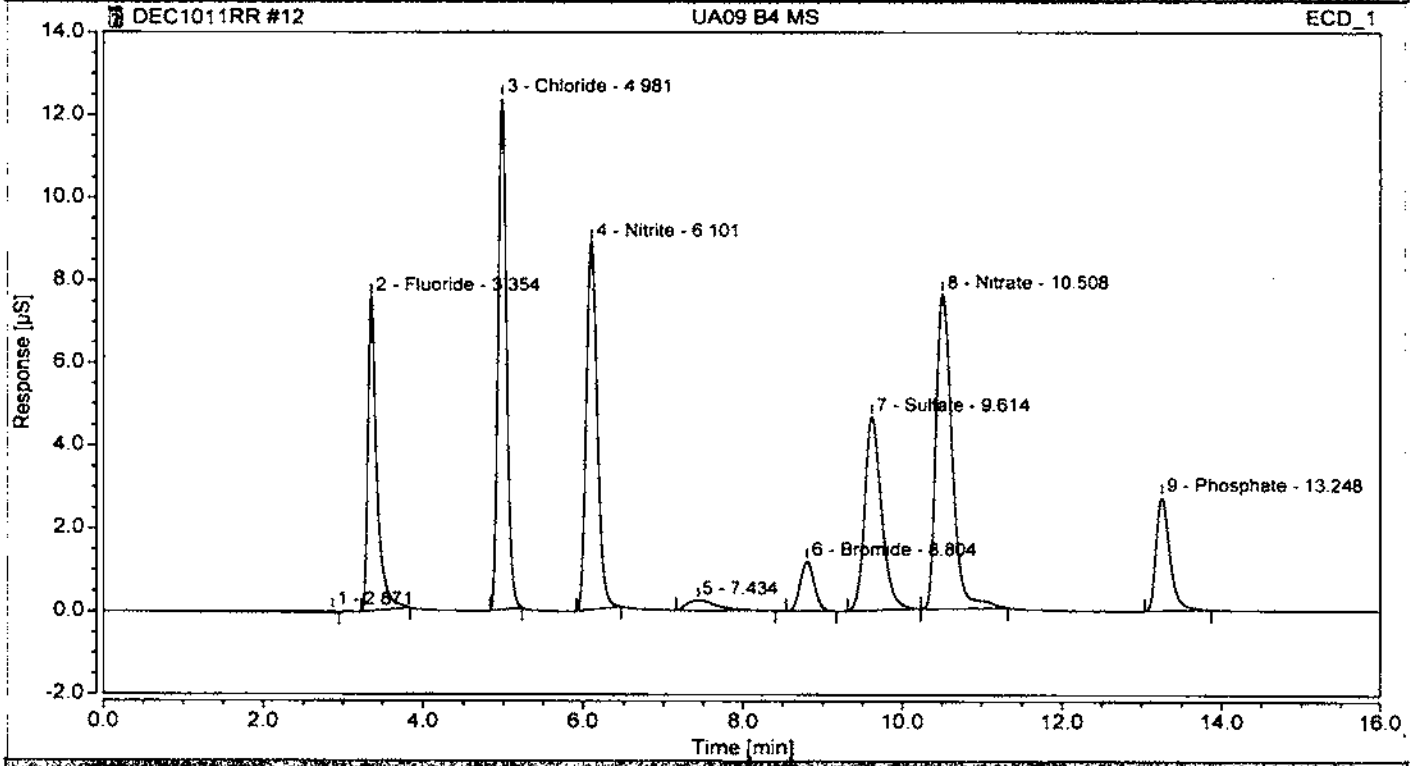
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.047	0.049	FALSE	n.a.
2	Fluoride	5.0	0.198	3.34	0.019	0.223	FALSE	n.a.
3	Chloride	5.0	15.852	4.98	0.960	7.943	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.43	0.134	0.257	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	20.812	9.64	0.764	3.057	FALSE	n.a.
6	Nitrate	5.0	1.266	10.59	0.192	0.908	FALSE	n.a.
7		5.0	n.a.	11.09	0.007	0.049	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA09 B4 DUP*	Inject Number:	11
Vial Number:	*11*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 13:08*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.049	FALSE	n.a.
2	Fluoride	5.0	0.200	3.34	0.019	0.226	FALSE	n.a.
3	Chloride	5.0	15.838	4.98	0.959	7.940	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.43	0.127	0.257	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	20.718	9.64	0.766	3.076	FALSE	n.a.
6	Nitrate	5.0	1.279	10.59	0.194	0.911	FALSE	n.a.
7		5.0	n.a.	11.09	0.006	0.046	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

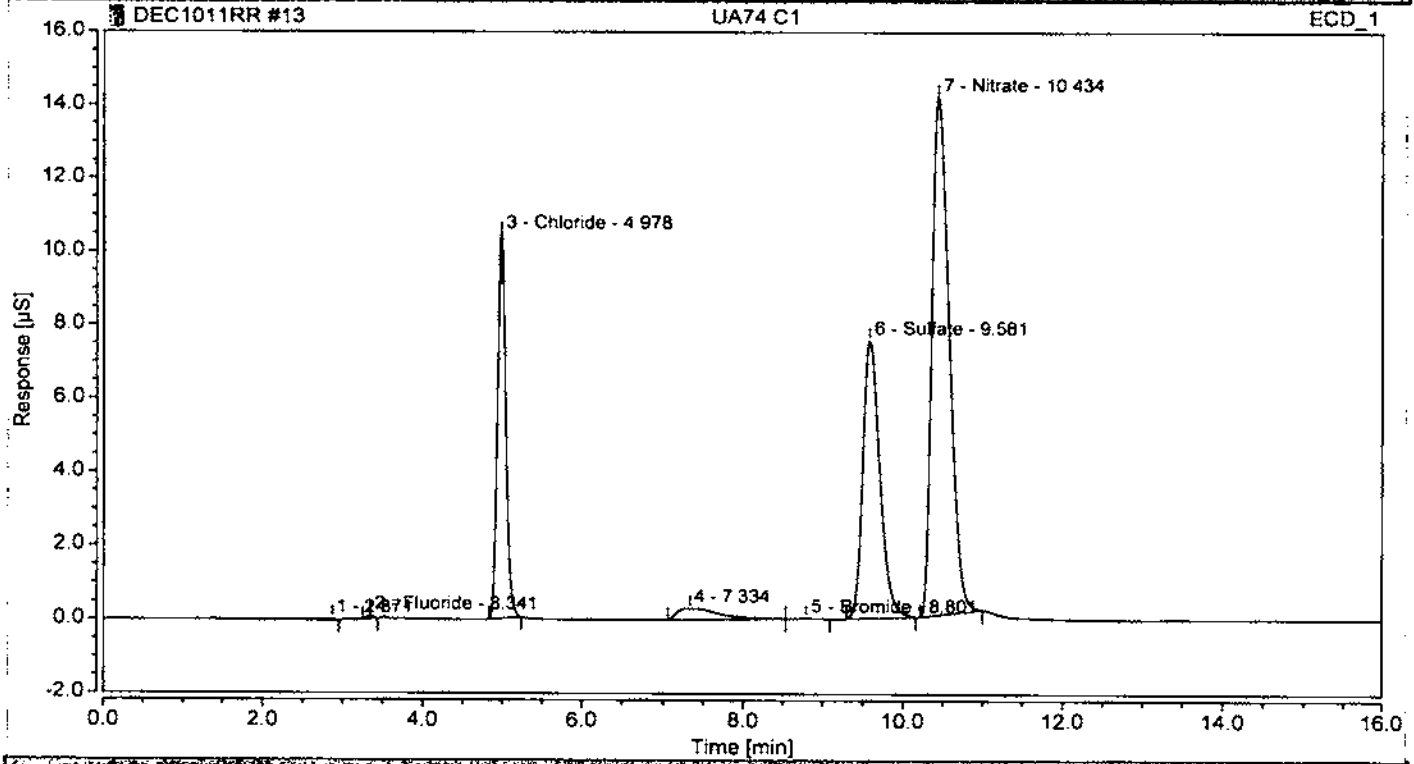
Injection Name:	*UA09 B4 MS*	Inject Number:	12
Vial Number:	*12*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 13:28*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.049	0.048	FALSE	n.a.
2	Fluoride	5.0	10.355	3.35	0.981	7.590	FALSE	n.a.
3	Chloride	5.0	24.723	4.98	1.497	12.366	FALSE	n.a.
4	Nitrite	5.0	9.933	6.10	1.383	8.871	FALSE	n.a.
5		5.0	n.a.	7.43	0.107	0.239	FALSE	n.a.
6	Bromide	5.0	9.446	8.80	0.243	1.188	FALSE	n.a.
7	Sulfate	5.0	30.928	9.61	1.147	4.647	FALSE	n.a.
8	Nitrate	5.0	11.766	10.51	1.785	7.588	FALSE	n.a.
9	Phosphate	5.0	9.181	13.25	0.543	2.737	FALSE	n.a.

TZ84 : 00648

Injection Name:	*UA74 C1*	Inject Number:	13
Vial Number:	*13*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 13:48*		

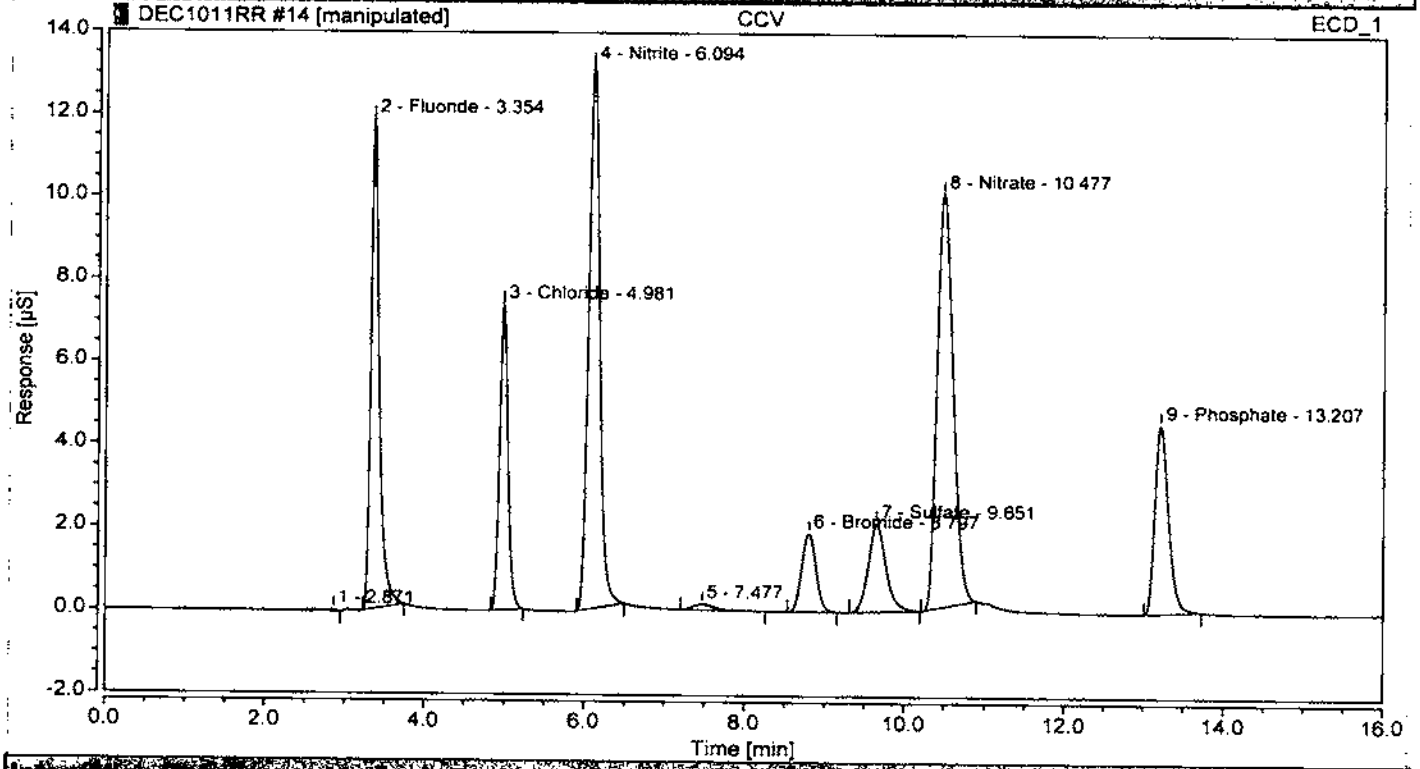


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.87	0.049	0.047	FALSE	n.a.
2	Fluoride	2.0	0.035	3.34	0.008	0.103	FALSE	n.a.
3	Chloride	2.0	8.332	4.98	1.262	10.435	FALSE	n.a.
n.a.	Nitrite	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		2.0	n.a.	7.33	0.190	0.310	FALSE	n.a.
5	Bromide	2.0	0.099	8.80	0.006	0.025	FALSE	n.a.
6	Sulfate	2.0	20.064	9.58	1.660	7.550	FALSE	n.a.
7	Nitrate	2.0	9.296	10.43	3.527	14.084	FALSE	n.a.
n.a.	Phosphate	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Info

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 14:08*		

Chromatogram

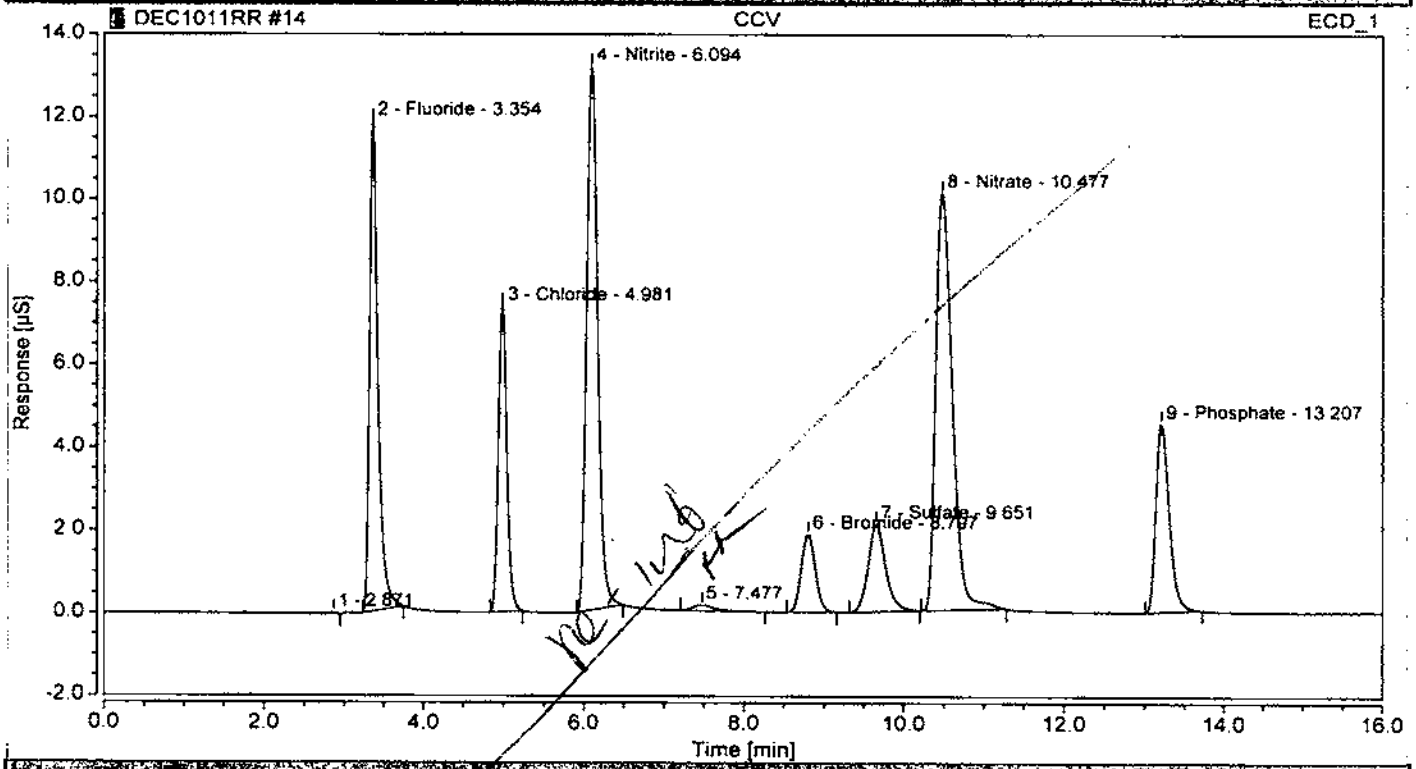


Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.049	0.046	FALSE	n.a.
2	Fluoride	1.0	3.047	3.35	1.443	11.858	FALSE	1.56
3	Chloride	1.0	2.947	4.98	0.892	7.378	FALSE	-1.76
4	Nitrite	1.0	3.025	6.09	2.106	13.148	FALSE	0.85
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.008	8.80	0.387	1.883	FALSE	0.26
7	Sulfate	1.0	2.909	9.65	0.539	2.120	FALSE	-3.02
8	Nitrate	1.0	3.034	10.48	2.301	9.987	TRUE	1.13
9	Phosphate	1.0	2.987	13.21	0.884	4.545	FALSE	-0.42

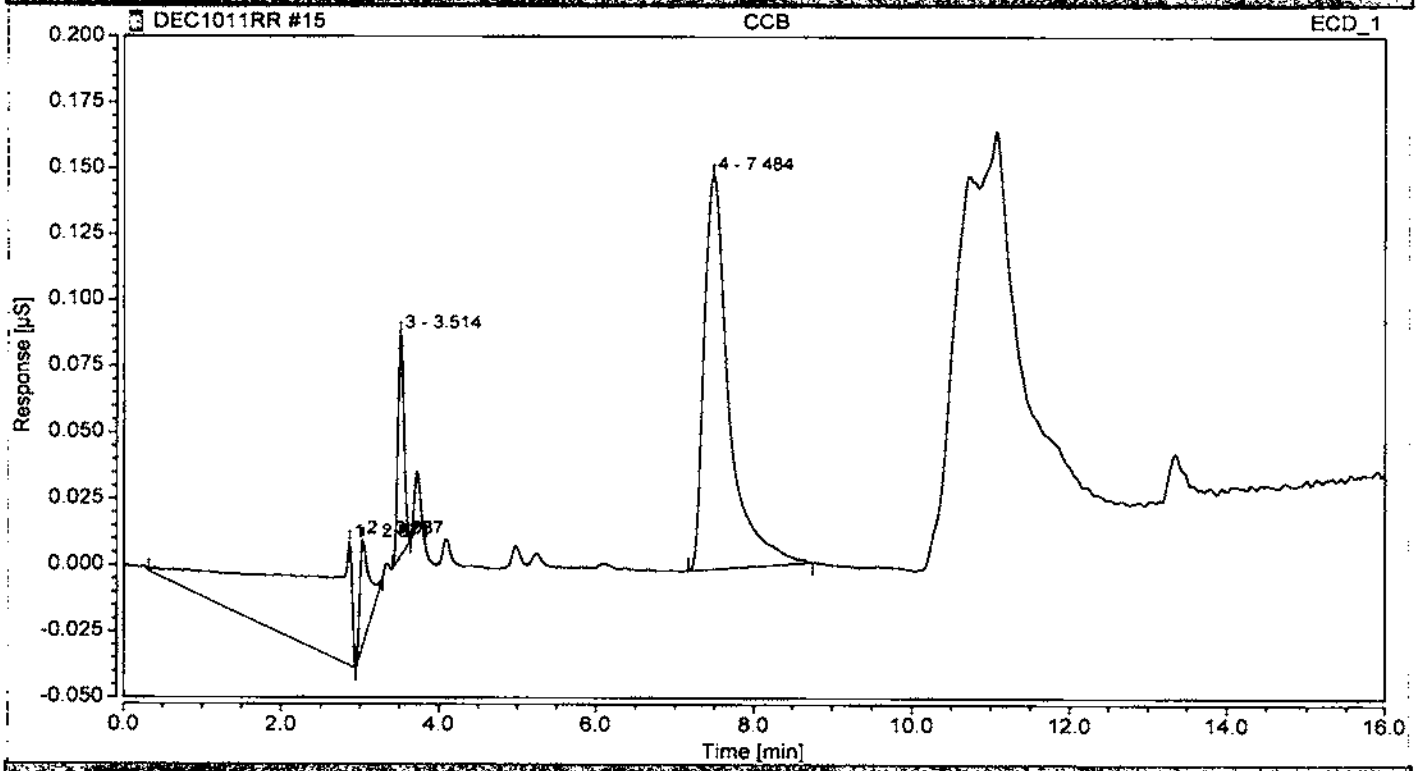
TZ84 : 00650

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 14:08*		



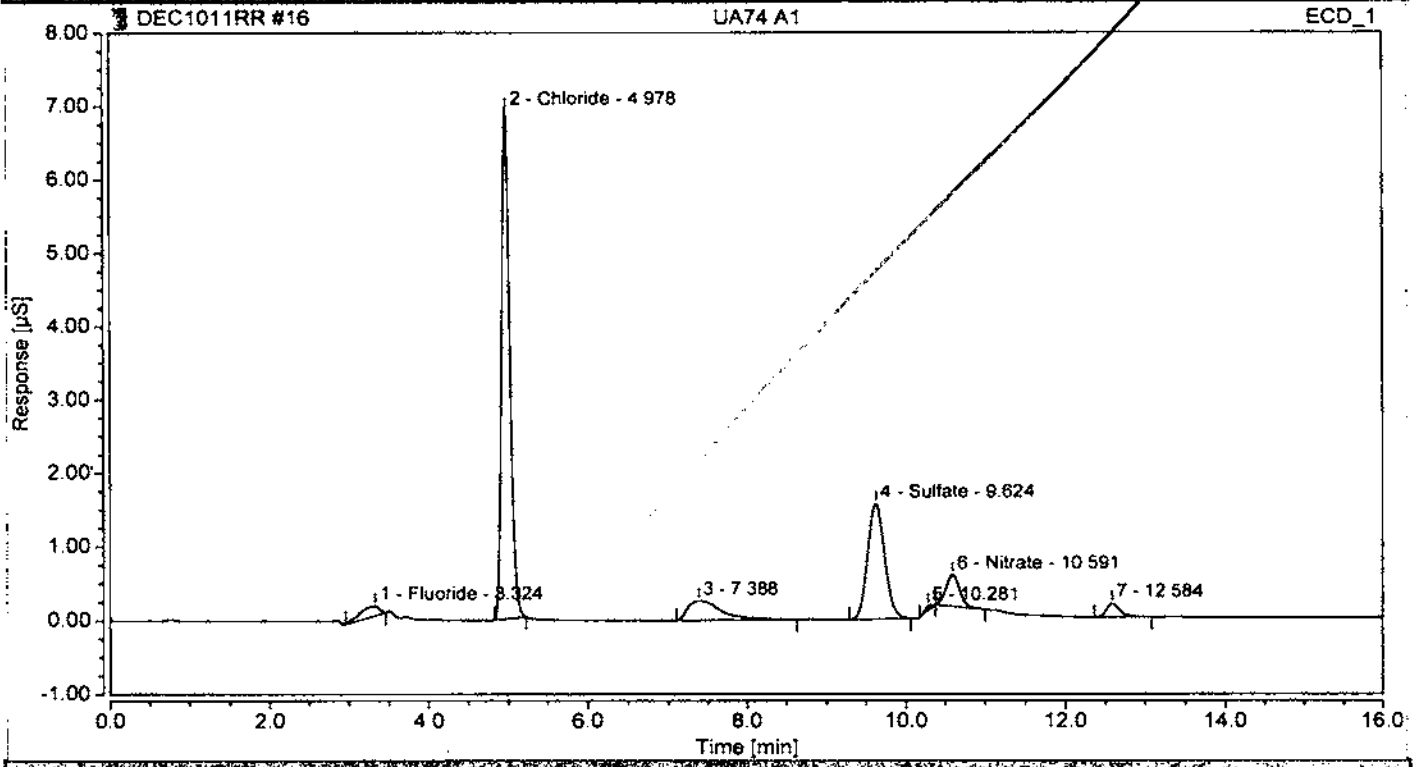
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.049	0.046	FALSE	n.a.
2	Fluoride	1.0	3.047	3.35	1.443	11.858	FALSE	1.56
3	Chloride	1.0	2.947	4.98	0.892	7.378	FALSE	-1.76
4	Nitrite	1.0	3.025	6.09	2.106	13.148	FALSE	0.85
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.008	8.80	0.387	1.883	FALSE	0.26
7	Sulfate	1.0	2.909	9.65	0.539	2.120	FALSE	-3.02
8	Nitrate	1.0	3.191	10.48	2.421	10.071	FALSE	6.36
9	Phosphate	1.0	2.987	13.21	0.884	4.545	FALSE	-0.42

Injection Name:	*CCB*	Inject Number:	15
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 14:29*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.045	0.046	FALSE	n.a.
2		1.0	n.a.	3.04	0.005	0.040	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.48	0.055	0.149	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1*	Inject Number:	16
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodai*		
Injection Date/Time:	*10/12/11 15:52*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	20.0	1.750	3.32	0.041	0.135	FALSE	n.a.
2	Chloride	20.0	54.533	4.98	0.826	6.915	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		20.0	n.a.	7.39	0.132	0.263	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	20.0	41.649	9.62	0.386	1.564	FALSE	n.a.
5		20.0	n.a.	10.28	0.006	0.058	FALSE	n.a.
6	Nitrate	20.0	2.243	10.59	0.085	0.423	FALSE	n.a.
7		20.0	n.a.	12.58	0.037	0.189	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 A1 DUP*	Inject Number:	17
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 14:53*		

[redacted]

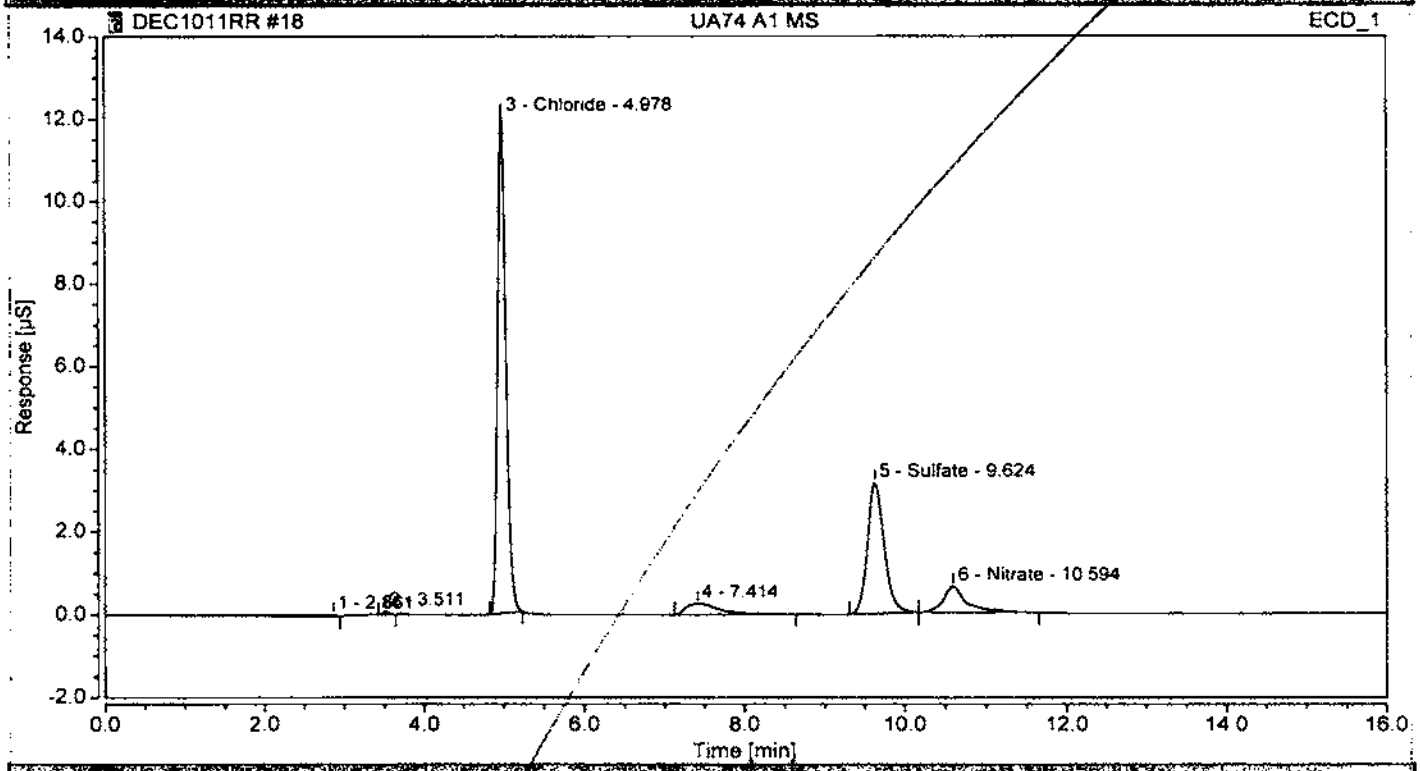
Can't read channel ECD_1 from injection #17 - UA74 A1 DUP
Channel is not available

[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	natogram in con	matogram in		n.a.

TZ84 : 00654

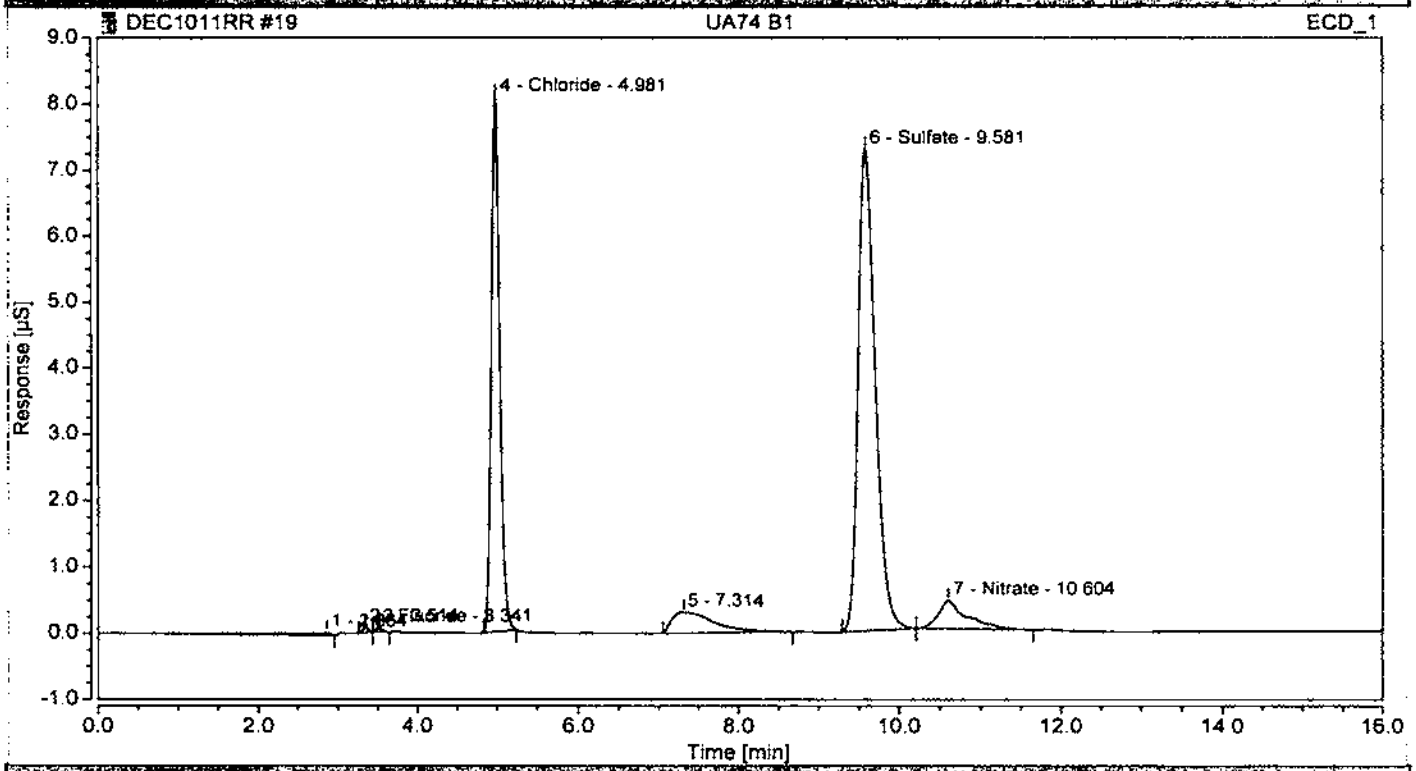
Injection Name:	*UA74 A1 MS*	Inject Number:	18
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 16:12*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.86	0.052	0.046	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.077	FALSE	n.a.
3	Chloride	20.0	96.018	4.98	1.454	12.027	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.131	0.263	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	82.702	9.62	0.787	3.157	FALSE	n.a.
6	Nitrate	20.0	5.651	10.59	0.214	0.631	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

TZ84 : 00655

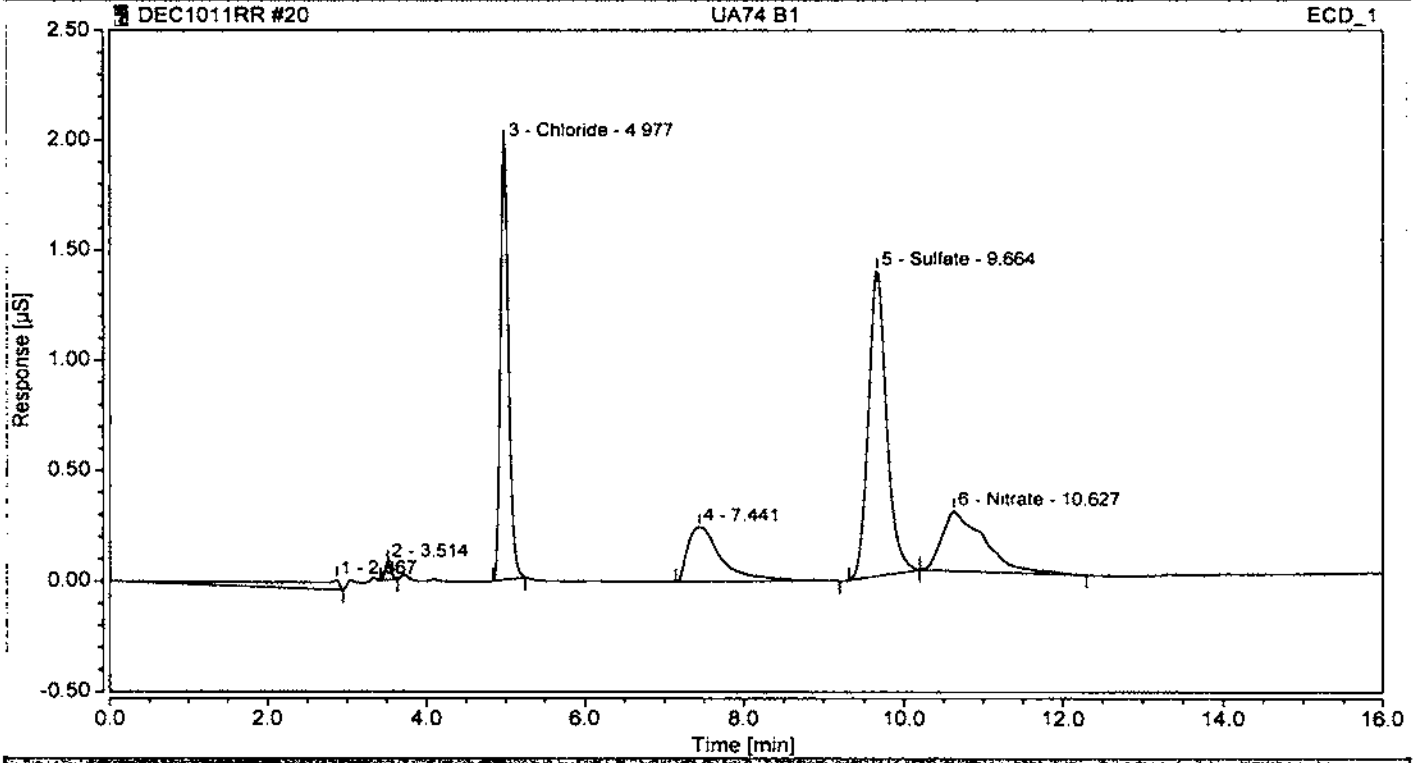
Injection Name:	*UA74 B1*	Inject Number:	19
Vial Number:	*17*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 16:33*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.86	0.050	0.044	FALSE	n.a.
2	Fluoride	5.0	0.066	3.34	0.006	0.078	FALSE	n.a.
3		5.0	n.a.	3.51	0.005	0.063	FALSE	n.a.
4	Chloride	5.0	16.108	4.98	0.975	8.081	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		5.0	n.a.	7.31	0.199	0.318	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	5.0	48.504	9.58	1.798	7.276	FALSE	n.a.
7	Nitrate	5.0	1.182	10.60	0.176	0.428	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

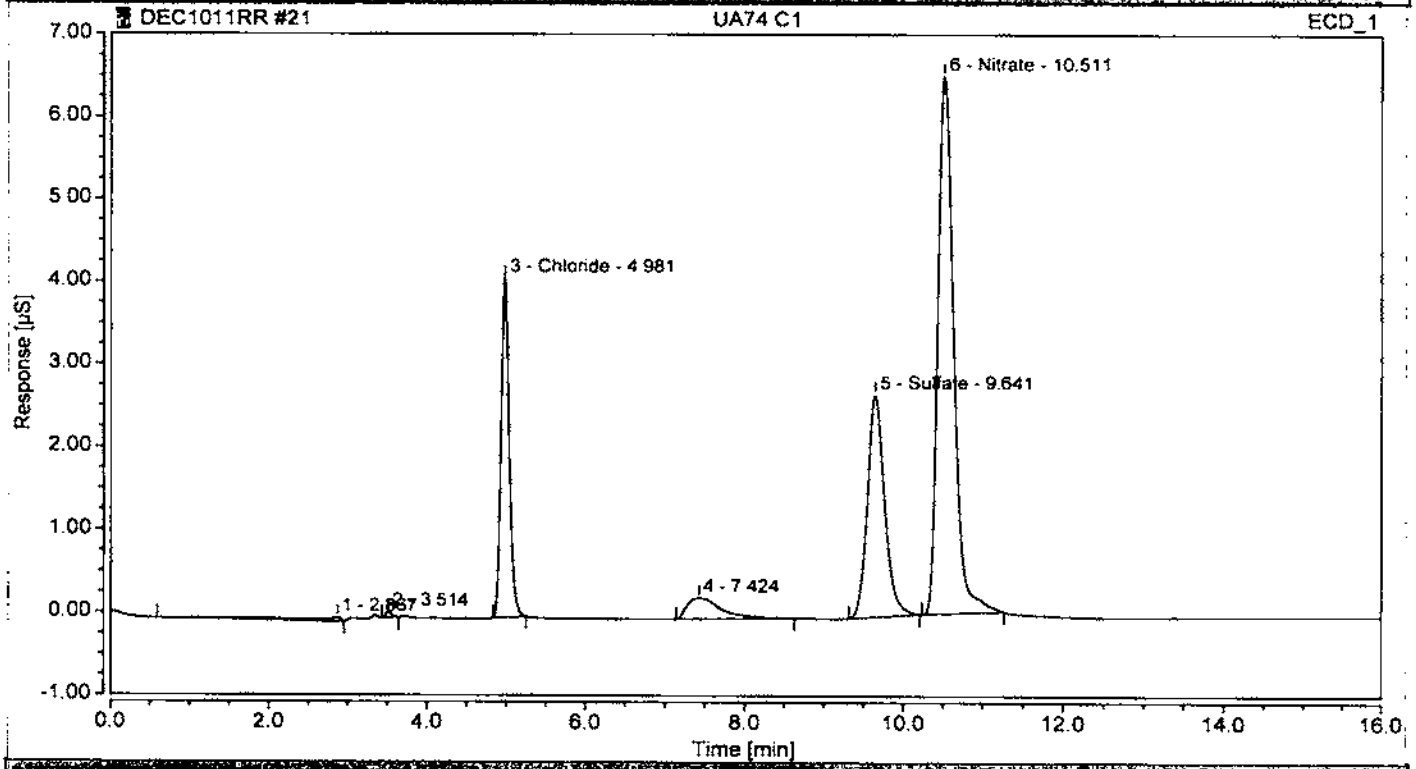
Chromeleon (c) Dionex
Version 7 0 1 272
TZ84 : 00655

Injection Name:	*UA74 B1*	Inject Number:	20
Vial Number:	*18*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 16:53*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.048	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	15.781	4.98	0.239	1.984	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.44	0.122	0.245	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	39.310	9.66	0.364	1.383	FALSE	n.a.
6	Nitrate	20.0	4.379	10.63	0.166	0.269	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

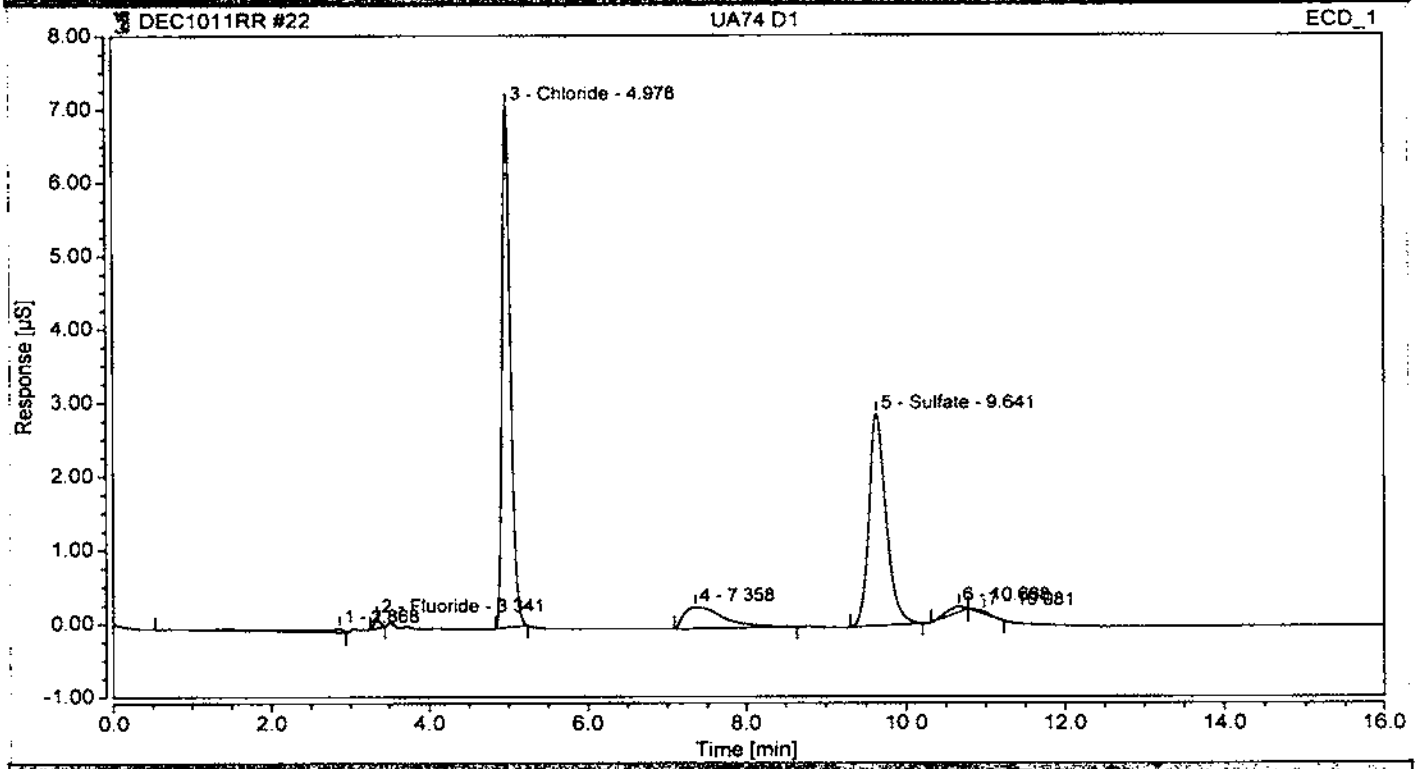
Injection Name:	*UA74 C1*	Inject Number:	21
Vial Number:	*19*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 17:14*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.042	0.049	FALSE	n.a.
n.a.	Fluoride	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.0	n.a.	3.51	0.006	0.069	FALSE	n.a.
3	Chloride	5.0	8.198	4.98	0.496	4.106	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.42	0.128	0.254	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	17.999	9.64	0.667	2.688	FALSE	n.a.
6	Nitrate	5.0	9.936	10.51	1.508	6.504	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 D1*	Inject Number:	22
Vial Number:	*20*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 17:34*		

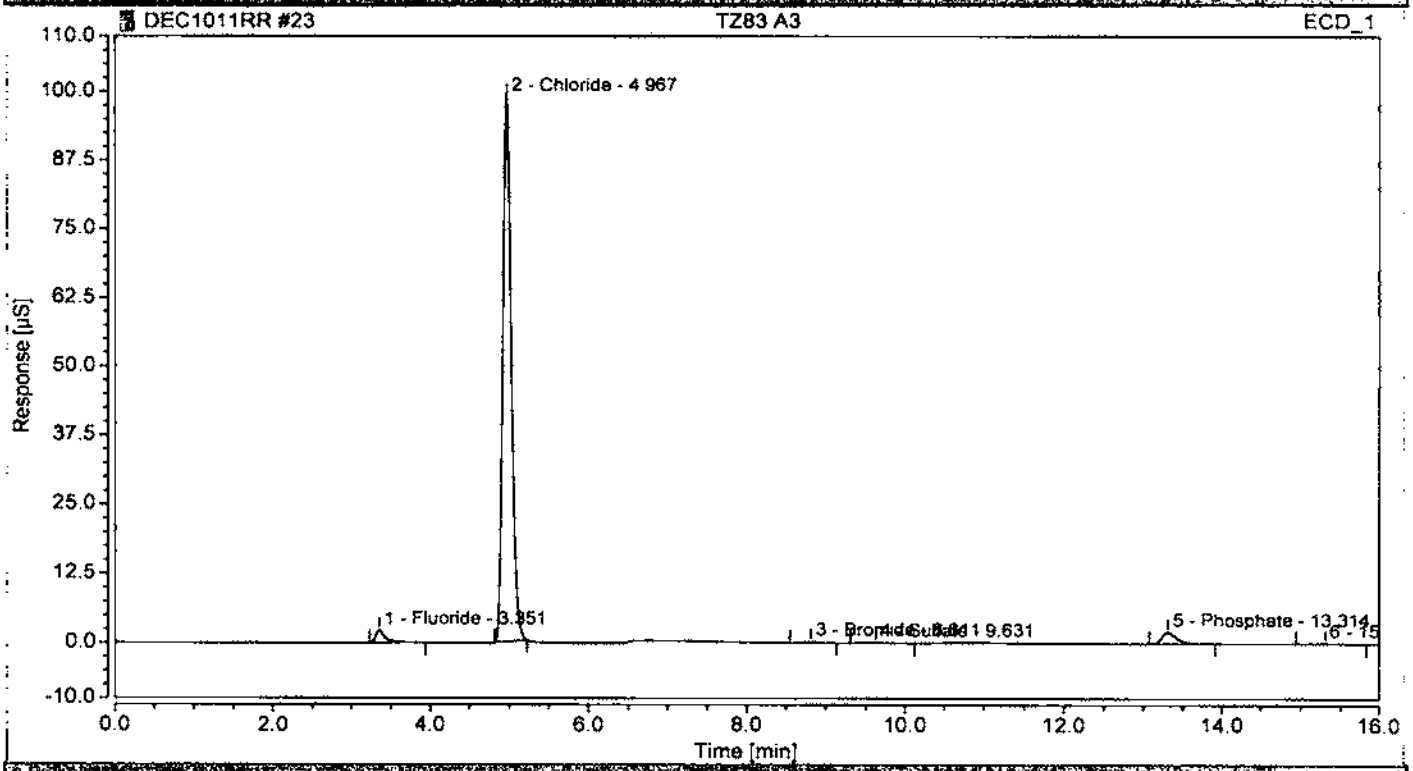


[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.049	FALSE	n.a.
2	Fluoride	5.0	0.118	3.34	0.011	0.137	FALSE	n.a.
3	Chloride	5.0	14.153	4.98	0.857	7.099	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.172	0.290	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.196	9.64	0.712	2.865	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		5.0	n.a.	10.67	0.021	0.076	FALSE	n.a.
7		5.0	n.a.	10.98	0.007	0.034	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

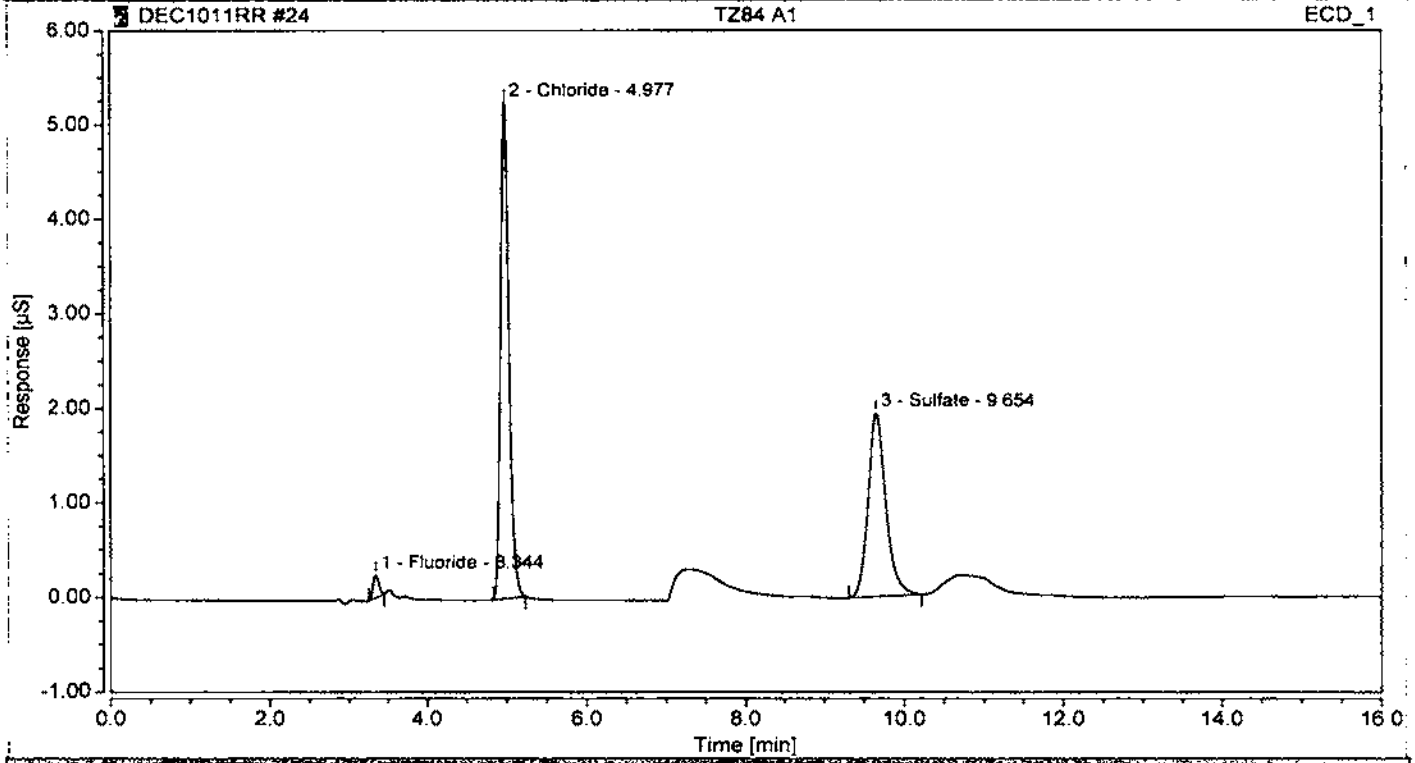
TZ64 : 00659

Injection Name:	*TZ83 A3*	Inject Number:	23
Vial Number:	*21*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 17:53*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.696	3.35	0.330	2.244	FALSE	n.a.
2	Chloride	1.0	40.173	4.97	12.164	98.782	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.306	8.81	0.039	0.193	FALSE	n.a.
4	Sulfate	1.0	0.120	9.63	0.022	0.079	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	1.480	13.31	0.438	2.034	FALSE	n.a.
6		1.0	n.a.	15.31	0.024	0.088	FALSE	n.a.

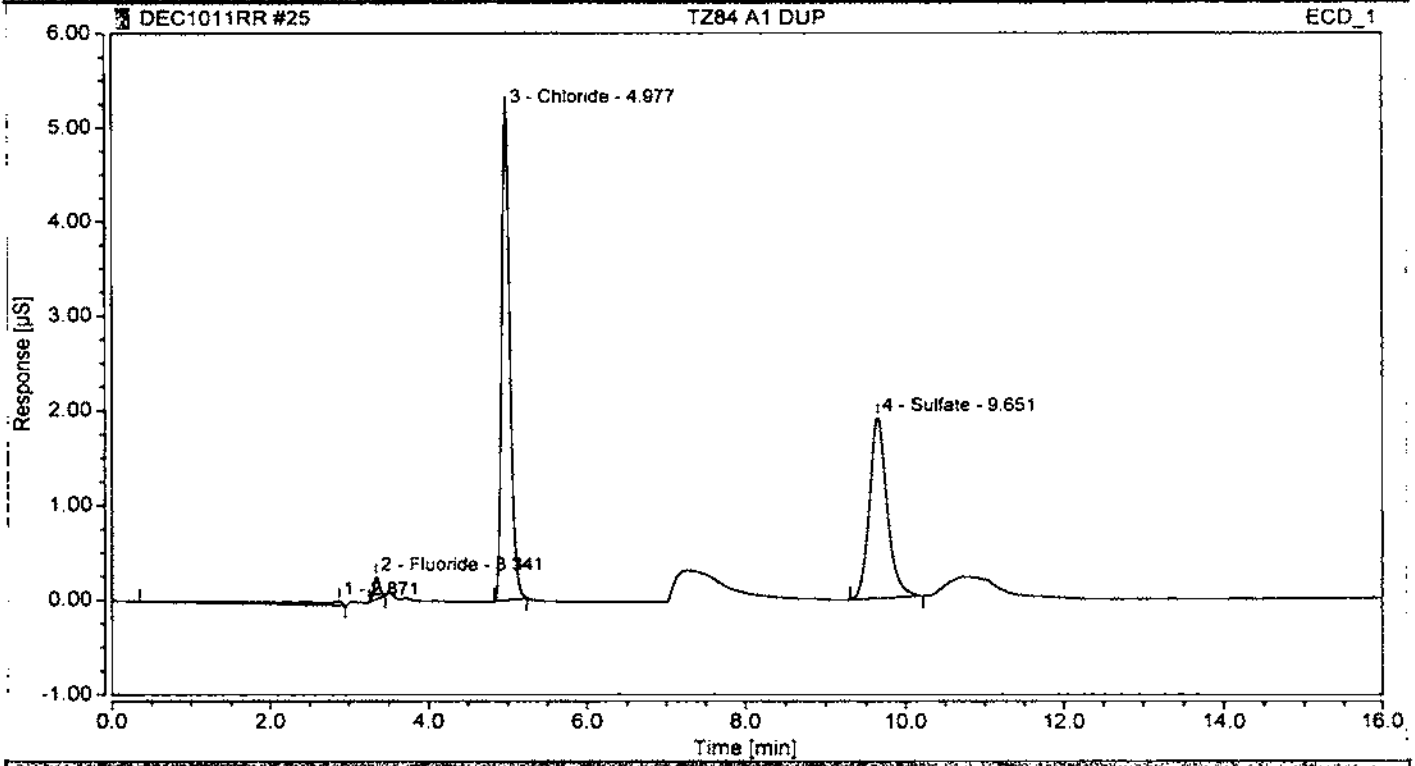
Injection Name:	*TZ84 A1*	Inject Number:	24
Vial Number:	*22*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 18:13*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	5.0	0.217	3.34	0.021	0.242	FALSE	n.a.
2	Chloride	5.0	10.438	4.98	0.632	5.253	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Sulfate	5.0	13.407	9.65	0.497	1.947	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

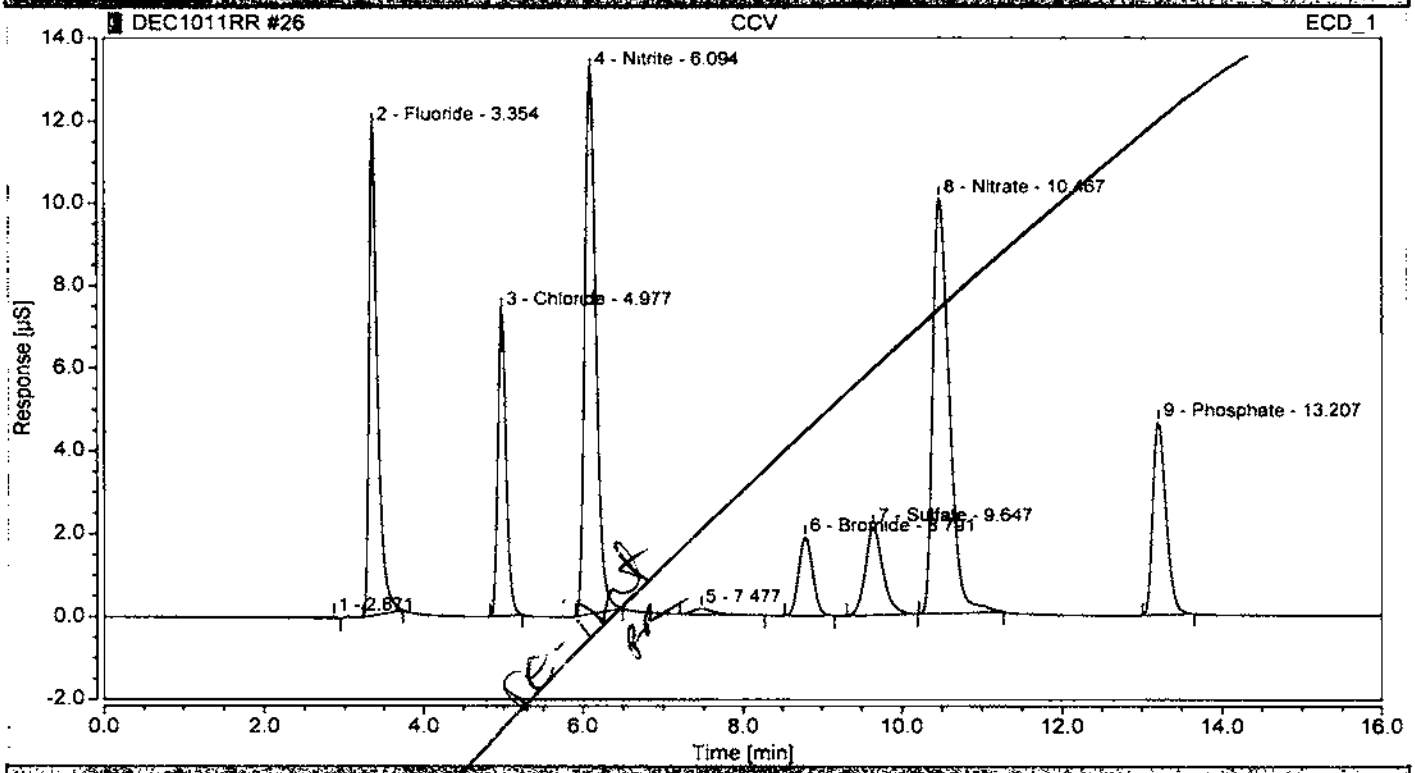
Injection Name:	*TZ84 A1 DUP*	Inject Number:	25
Vial Number:	*23*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 18:32*		



[redacted]

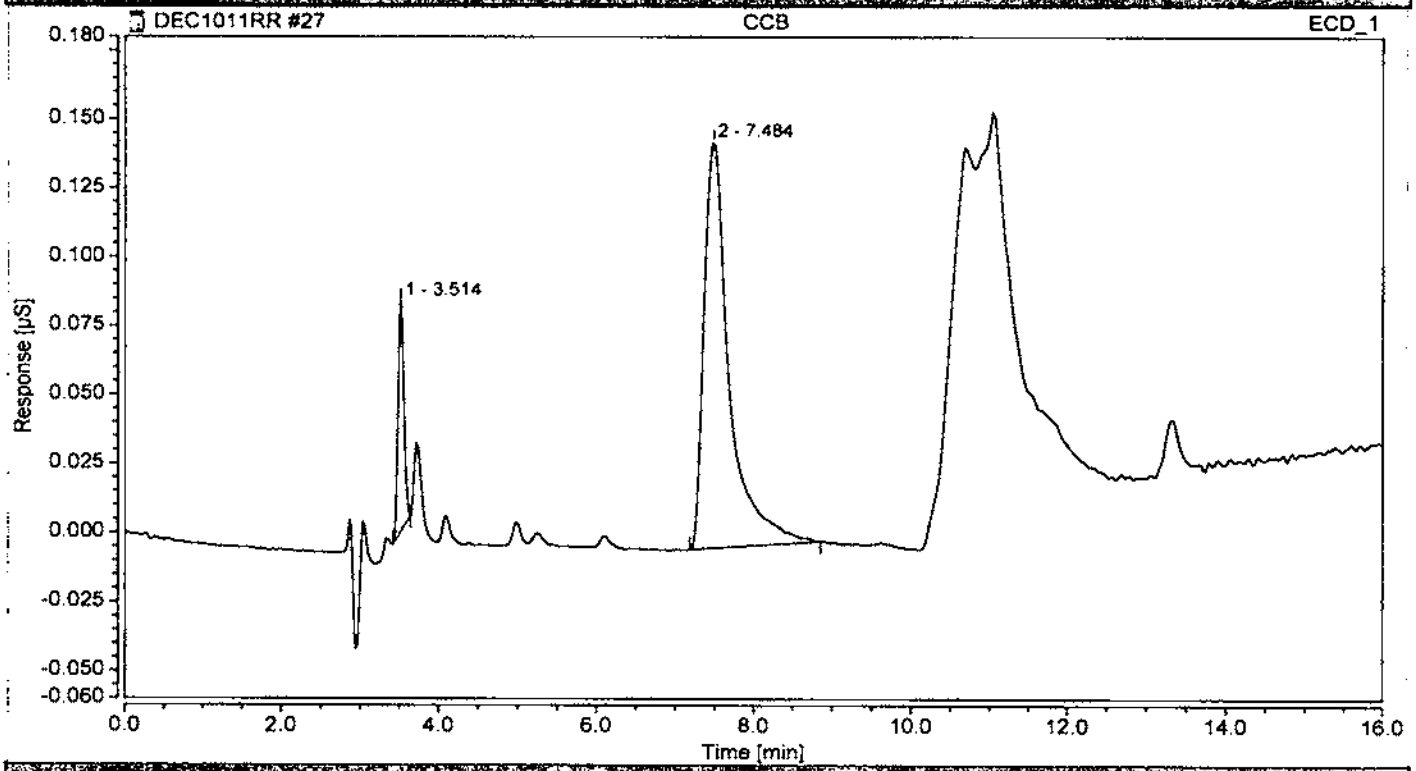
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.045	0.047	FALSE	n.a.
2	Fluoride	5.0	0.214	3.34	0.020	0.240	FALSE	n.a.
3	Chloride	5.0	10.366	4.98	0.628	5.204	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	5.0	13.233	9.65	0.491	1.914	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*CCV*	Inject Number:	26
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 18:52*		



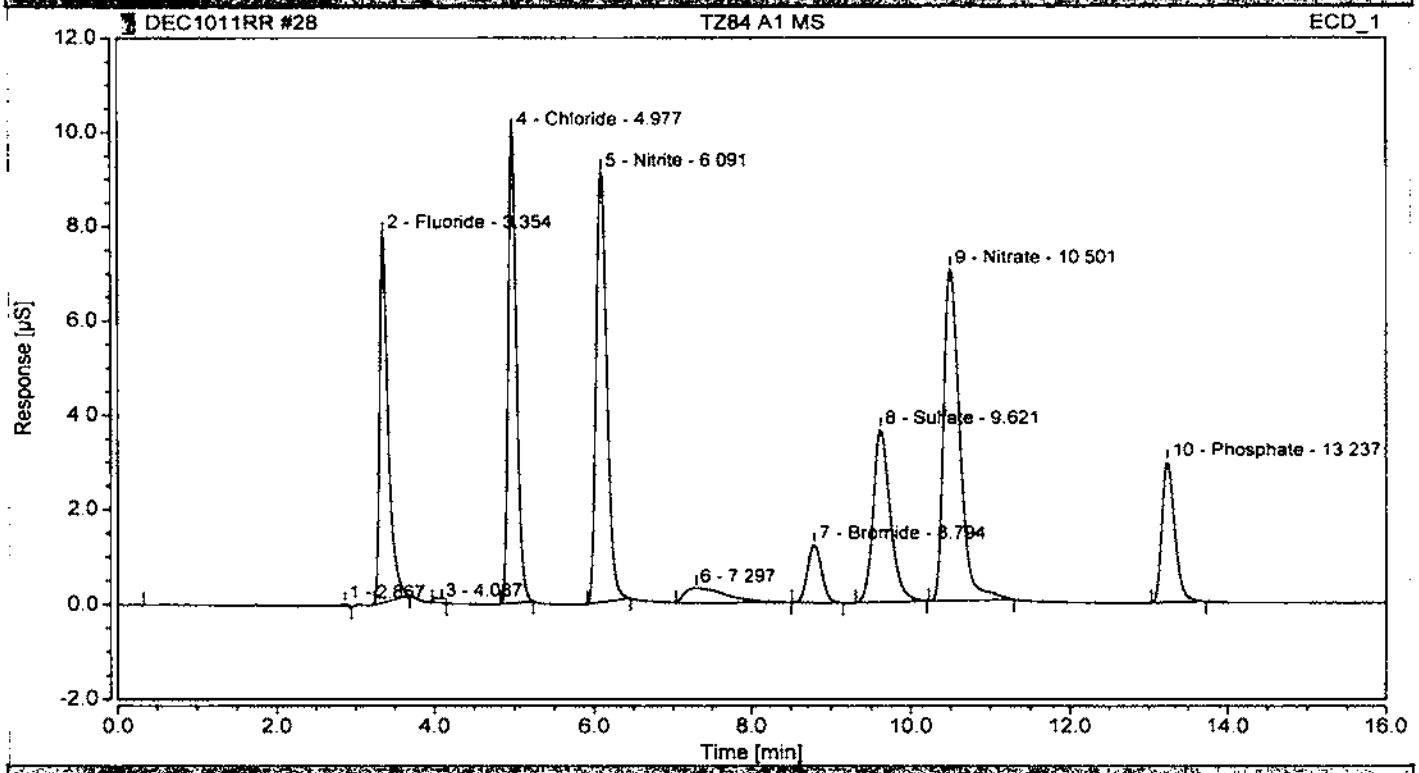
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.045	FALSE	n.a.
2	Fluoride	1.0	3.045	3.35	1.443	11.843	FALSE	1.51
3	Chloride	1.0	2.949	4.98	0.893	7.361	FALSE	-1.71
4	Nitrite	1.0	3.030	6.09	2.109	13.131	FALSE	0.99
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.002	8.79	0.386	1.881	FALSE	0.07
7	Sulfate	1.0	2.901	9.65	0.538	2.118	FALSE	-3.29
8	Nitrate	1.0	3.187	10.47	2.418	10.021	FALSE	6.24
9	Phosphate	1.0	2.979	13.21	0.881	4.643	FALSE	-0.69

Injection Name:	*CCB*	Inject Number:	27
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:12*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	7.48	0.055	0.147	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 MS*	Inject Number:	28
Vial Number:	*24*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:33*		

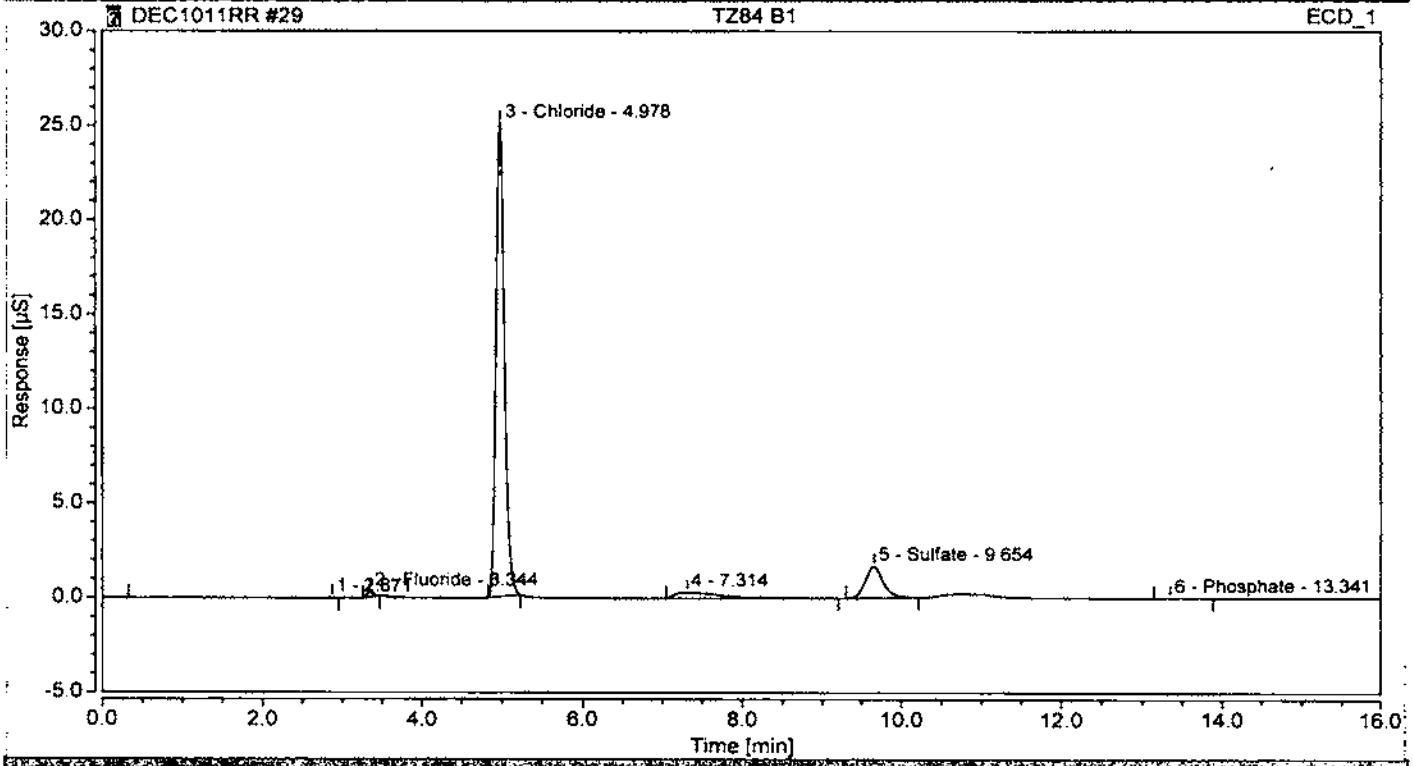


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.046	0.046	FALSE	n.a.
2	Fluoride	5.0	10.194	3.35	0.966	7.787	FALSE	n.a.
3		5.0	n.a.	4.09	0.016	0.087	FALSE	n.a.
4	Chloride	5.0	19.964	4.98	1.209	9.992	FALSE	n.a.
5	Nitrite	5.0	10.129	6.09	1.410	9.094	FALSE	n.a.
6		5.0	n.a.	7.30	0.189	0.301	FALSE	n.a.
7	Bromide	5.0	9.553	8.79	0.246	1.205	FALSE	n.a.
8	Sulfate	5.0	24.259	9.62	0.899	3.636	FALSE	n.a.
9	Nitrate	5.0	10.827	10.50	1.643	7.009	FALSE	n.a.
10	Phosphate	5.0	9.403	13.24	0.556	2.963	FALSE	n.a.

[redacted]

Injection Name:	*TZ84 B1*	Inject Number:	29
Vial Number:	*25*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:53*		

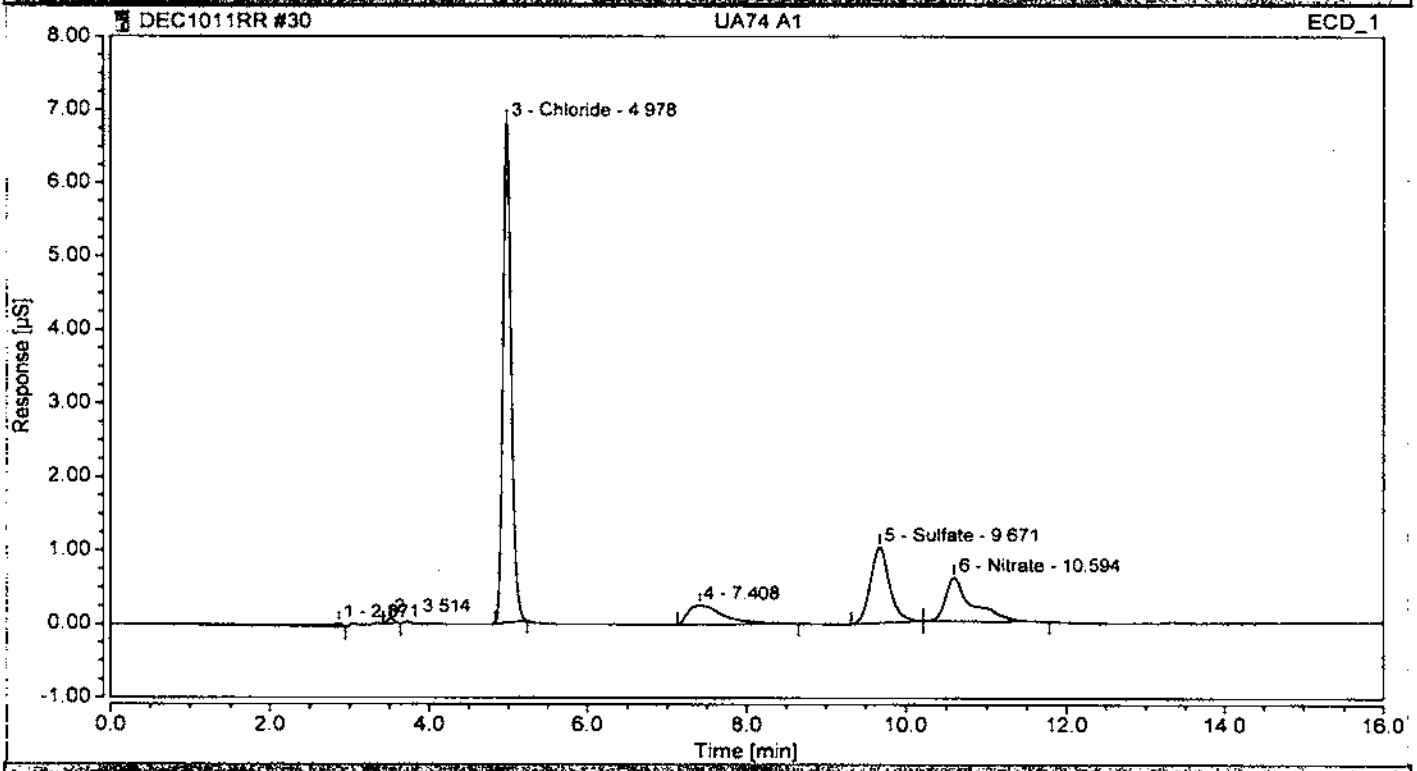
[redacted]



[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.044	0.046	FALSE	n.a.
2	Fluoride	5.0	0.262	3.34	0.025	0.288	FALSE	n.a.
3	Chloride	5.0	50.158	4.98	3.038	25.046	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.31	0.216	0.310	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	11.635	9.65	0.431	1.650	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Phosphate	5.0	0.087	13.34	0.005	0.021	FALSE	n.a.

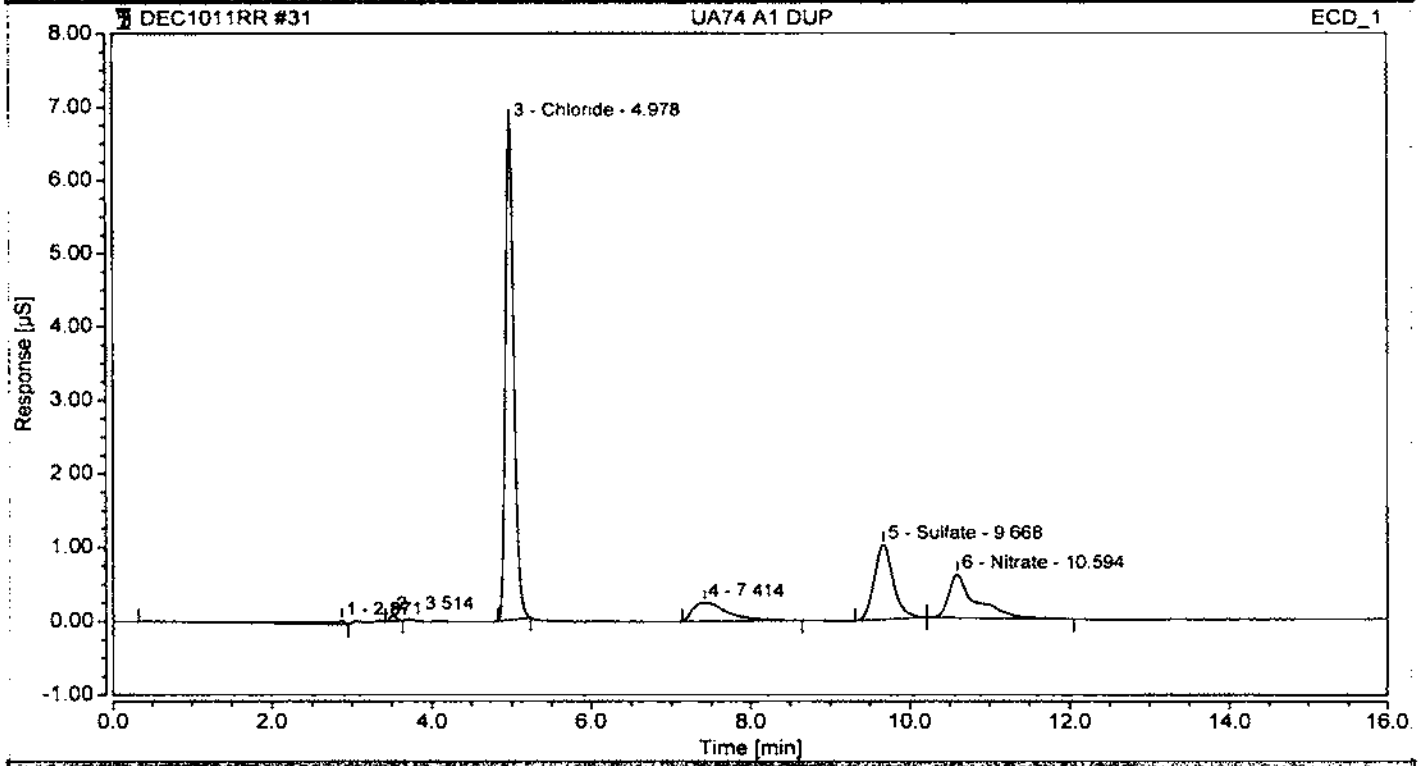
Injection Name:	*UA74 A1*	Inject Number:	30
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 20:13*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.047	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	54.420	4.98	0.824	6.816	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.136	0.258	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	30.725	9.67	0.285	1.028	FALSE	n.a.
6	Nitrate	20.0	5.985	10.59	0.227	0.591	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

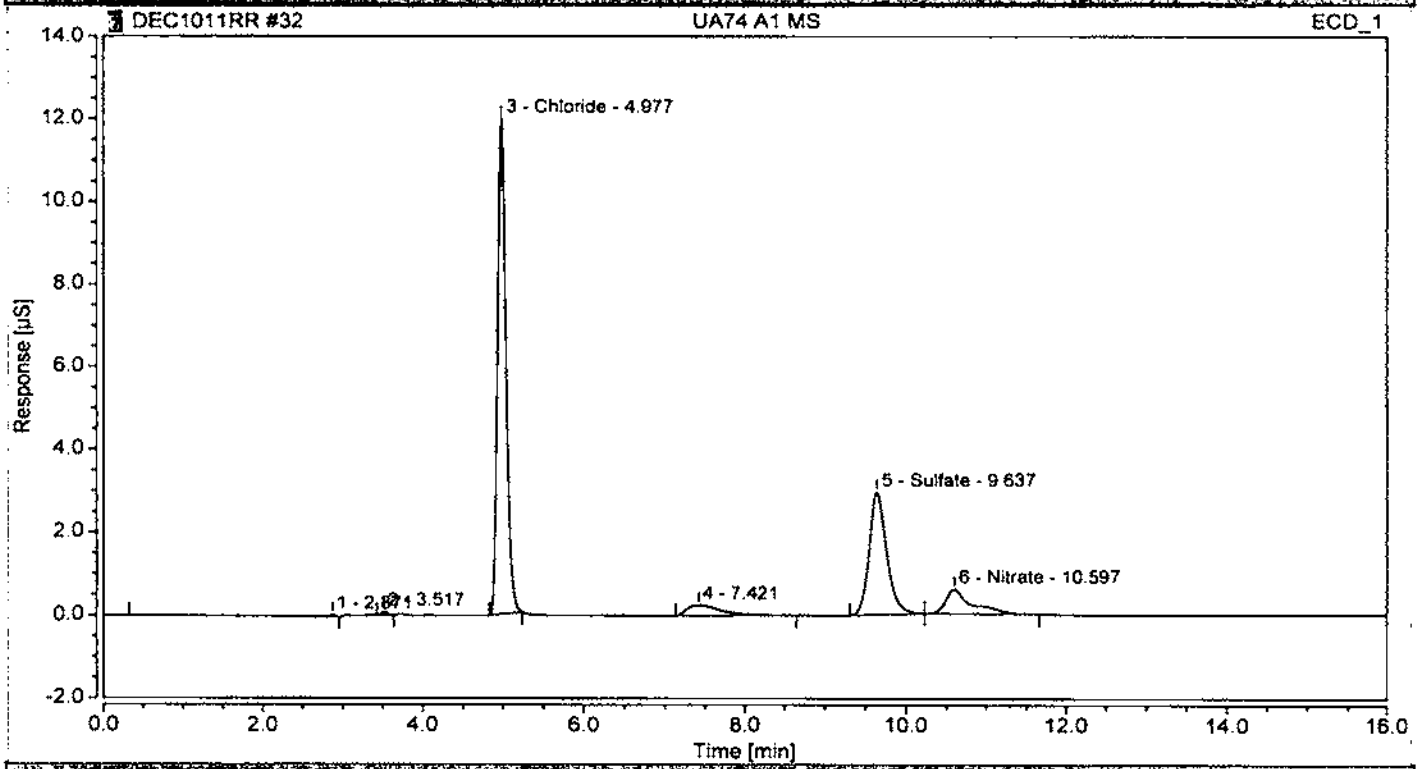
Injection Name:	*UA74 A1 DUP*	Inject Number:	31
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 20:33*		



[redacted]

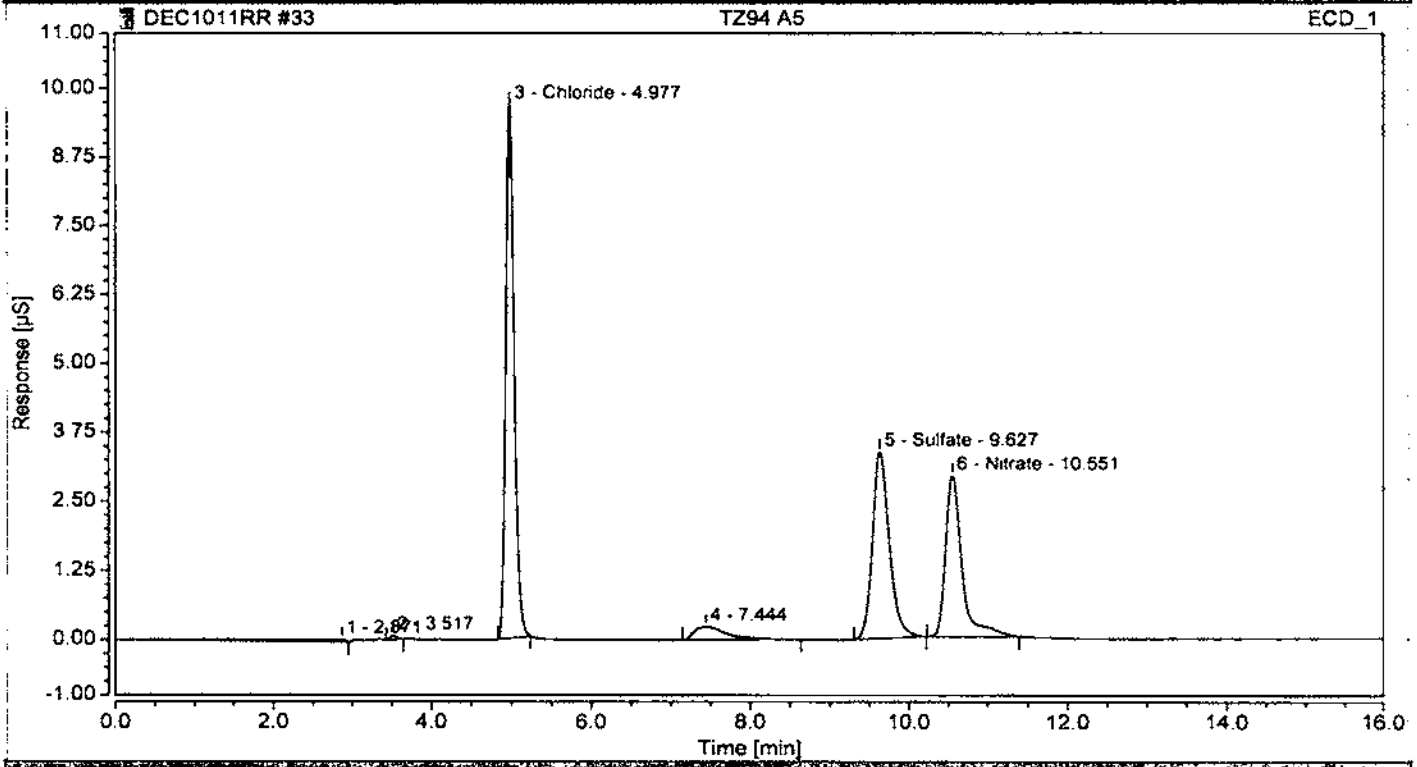
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.044	0.045	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.076	FALSE	n.a.
3	Chloride	20.0	54.138	4.98	0.820	6.777	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.132	0.255	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	30.456	9.67	0.282	1.013	FALSE	n.a.
6	Nitrate	20.0	6.149	10.59	0.233	0.589	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1 MS*	Inject Number:	32
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 20:53*		



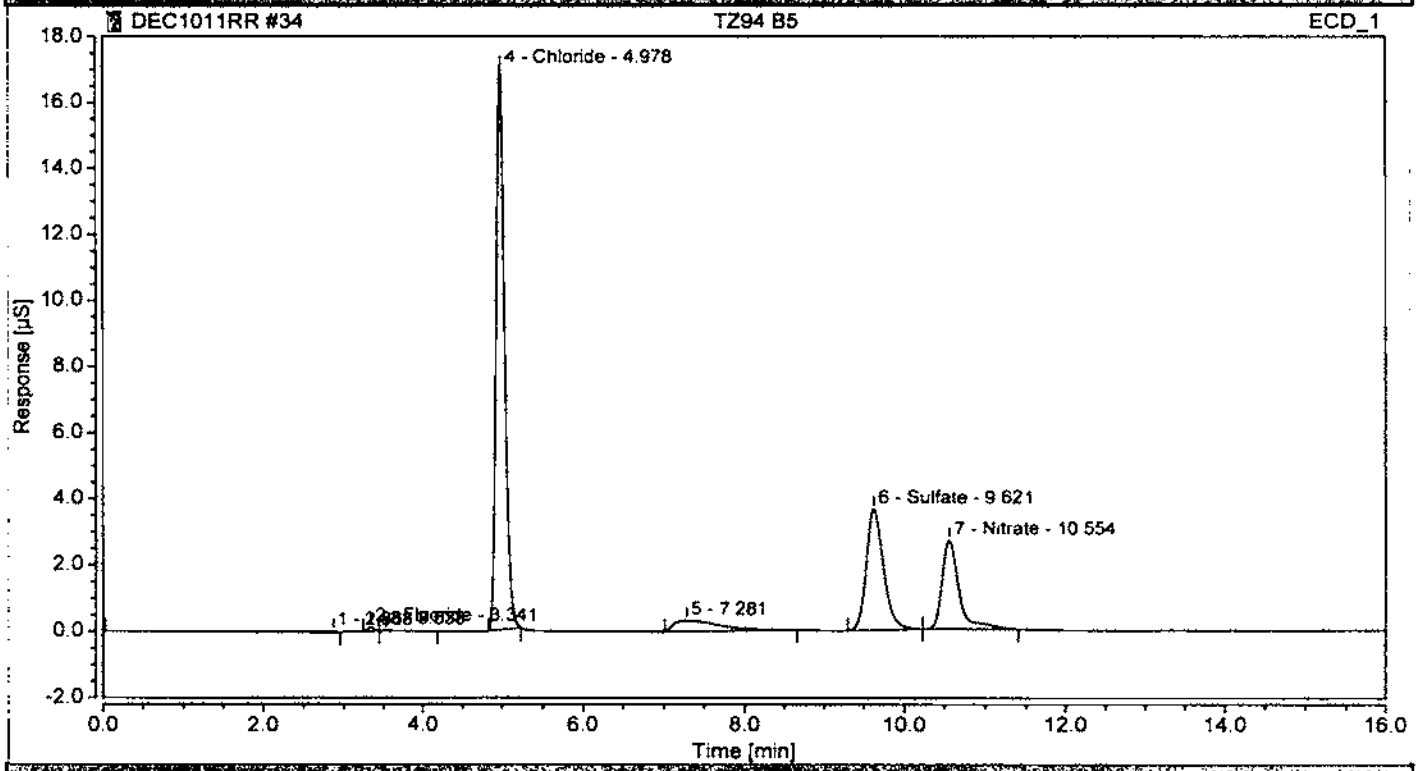
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.045	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.52	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	95.883	4.98	1.451	11.979	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.42	0.130	0.254	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	79.363	9.64	0.736	2.949	FALSE	n.a.
6	Nitrate	20.0	5.896	10.60	0.224	0.590	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ94 A5*	Inject Number:	33
Vial Number:	*26*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 21:14*		



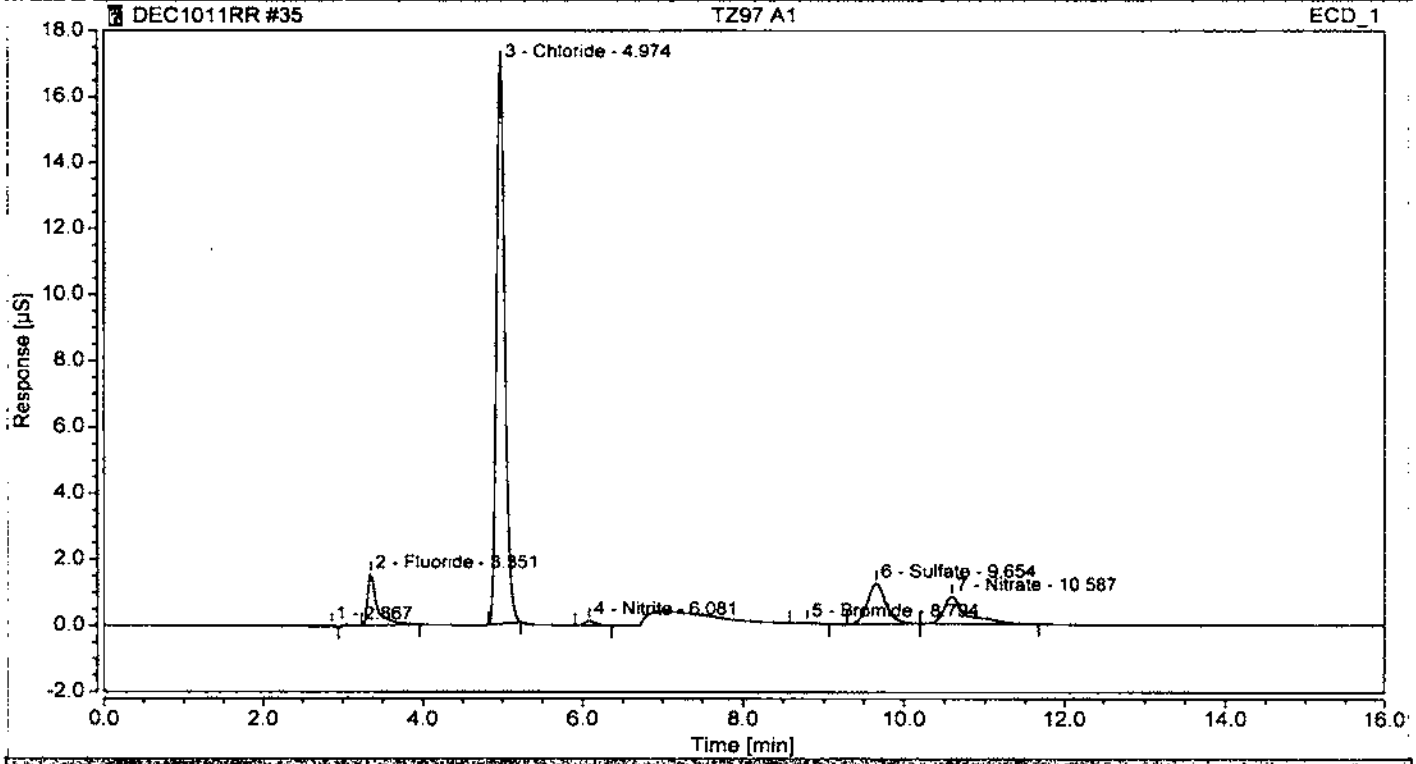
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.045	FALSE	n.a.
n.a.	Fluoride	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.0	n.a.	3.52	0.006	0.071	FALSE	n.a.
3	Chloride	5.0	19.341	4.98	1.171	9.676	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.44	0.114	0.237	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	22.507	9.63	0.835	3.375	FALSE	n.a.
6	Nitrate	5.0	4.648	10.55	0.705	2.908	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ94 B5*	Inject Number:	34
Vial Number:	*27*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 21:34*		



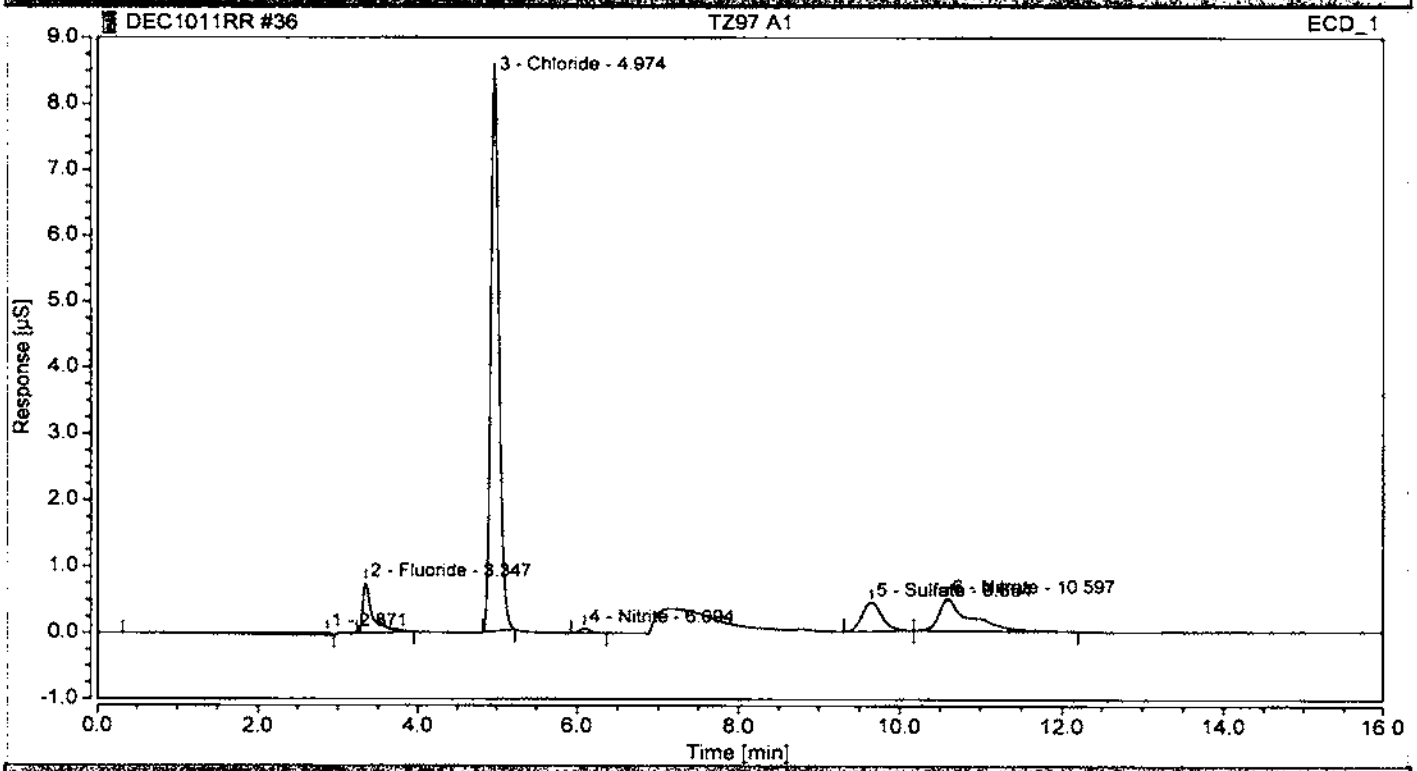
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.044	FALSE	n.a.
2	Fluoride	1.0	0.022	3.34	0.011	0.129	FALSE	n.a.
3		1.0	n.a.	3.54	0.006	0.025	FALSE	n.a.
4	Chloride	1.0	6.795	4.98	2.057	16.982	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.28	0.225	0.324	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	4.839	9.62	0.897	3.644	FALSE	n.a.
7	Nitrate	1.0	0.860	10.55	0.653	2.674	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 A1*	Inject Number:	35
Vial Number:	*28*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 21:55*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.042	FALSE	n.a.
2	Fluoride	1.0	0.469	3.35	0.222	1.549	FALSE	n.a.
3	Chloride	1.0	6.770	4.97	2.050	16.959	FALSE	n.a.
4	Nitrite	1.0	0.029	6.08	0.020	0.144	FALSE	n.a.
5	Bromide	1.0	0.050	8.79	0.006	0.032	FALSE	n.a.
6	Sulfate	1.0	1.780	9.65	0.330	1.228	FALSE	n.a.
7	Nitrate	1.0	0.355	10.59	0.270	0.820	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

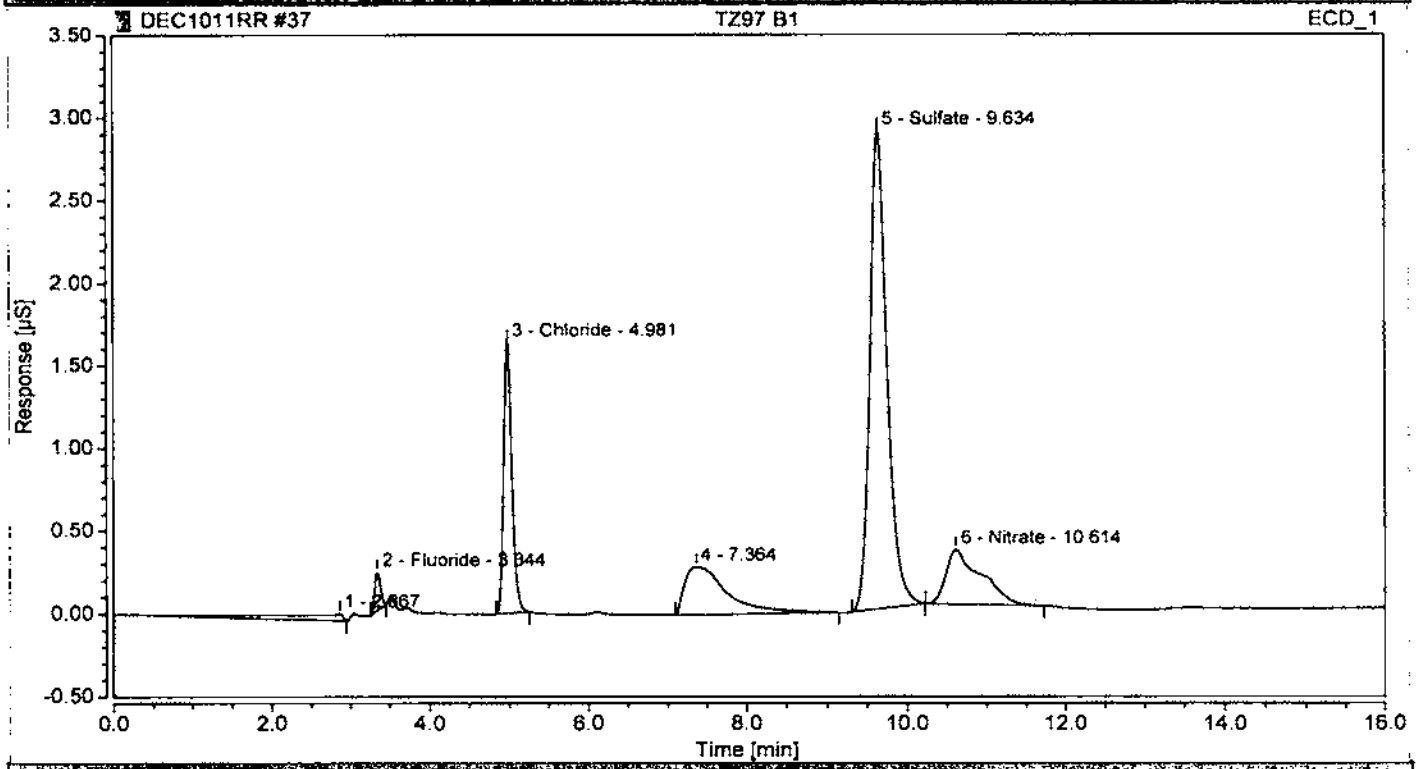
Injection Name:	*TZ97 A1*	Inject Number:	36
Vial Number:	*29*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 22:15*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.87	0.045	0.043	FALSE	n.a.
2	Fluoride	2.0	0.474	3.35	0.112	0.761	FALSE	n.a.
3	Chloride	2.0	6.694	4.97	1.014	8.397	FALSE	n.a.
4	Nitrite	2.0	0.028	6.09	0.010	0.070	FALSE	n.a.
n.a.	Bromide	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	2.0	1.369	9.65	0.129	0.443	FALSE	n.a.
6	Nitrate	2.0	0.588	10.60	0.223	0.486	FALSE	n.a.
n.a.	Phosphate	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

TZ84 : 00673

Injection Name:	*TZ97 B1*	Inject Number:	37
Vial Number:	*30*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 22:36*		



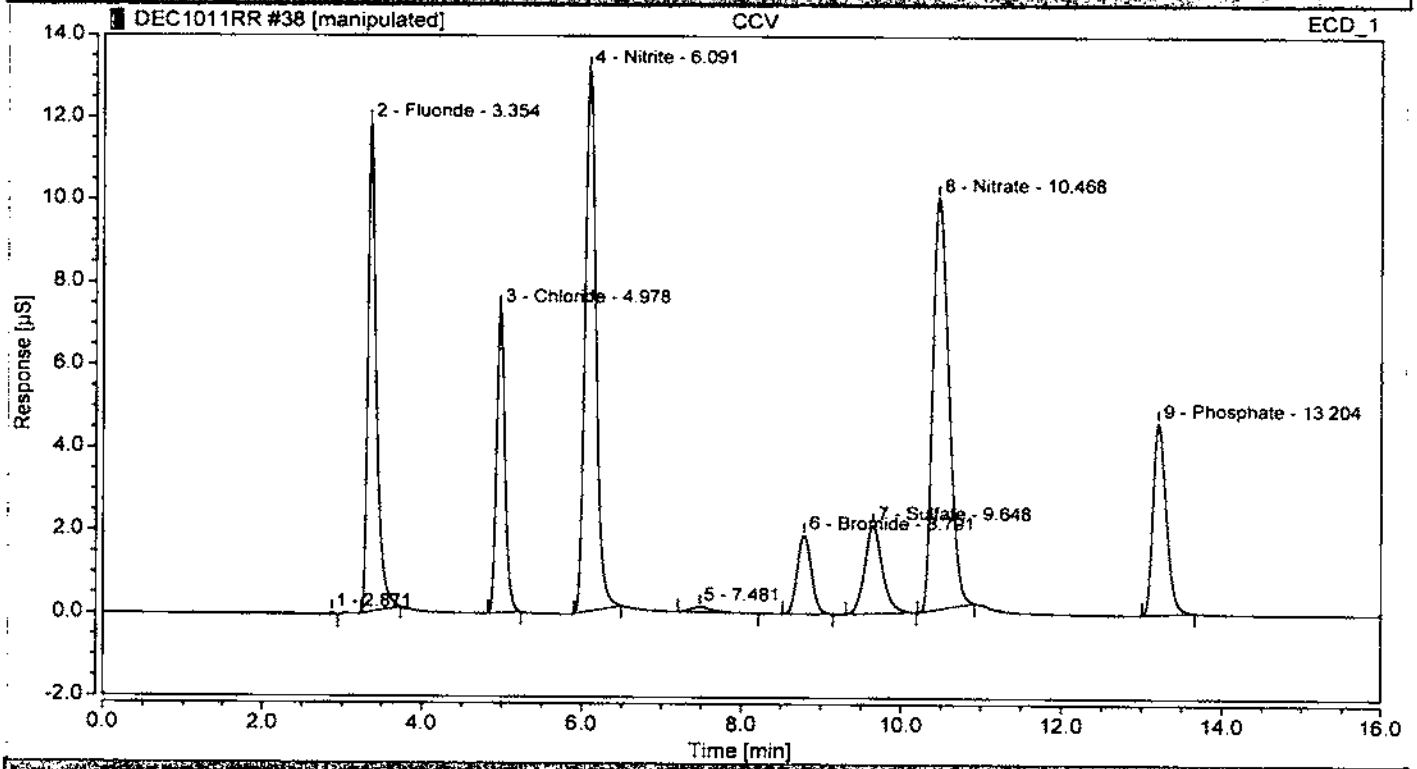
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	5.0	0.202	3.34	0.019	0.228	FALSE	n.a.
3	Chloride	5.0	3.248	4.98	0.197	1.636	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.182	0.288	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.374	9.63	0.718	2.890	FALSE	n.a.
6	Nitrate	5.0	1.100	10.61	0.167	0.327	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Chromatography Results

Run Information

Injection Name:	*CCV*	Inject Number:	38
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 22:56*		

Chromatogram

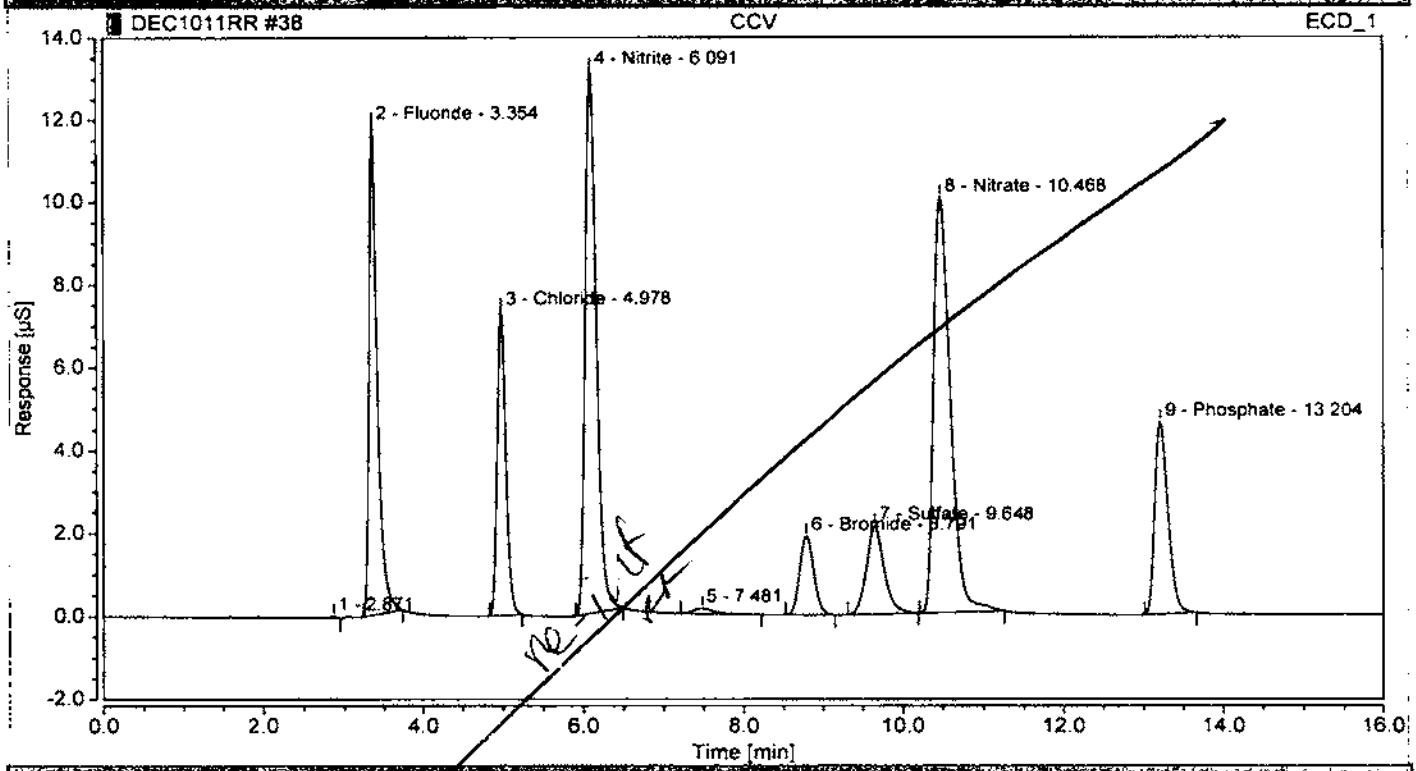


Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	1.0	3.039	3.35	1.440	11.843	FALSE	1.30
3	Chloride	1.0	2.949	4.98	0.893	7.362	FALSE	-1.68
4	Nitrite	1.0	3.036	6.09	2.113	13.134	FALSE	1.19
5		1.0	n.a.	7.48	0.038	0.125	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.887	FALSE	0.32
7	Sulfate	1.0	2.908	9.65	0.539	2.123	FALSE	-3.06
8	Nitrate	1.0	3.054	10.47	2.317	9.940	TRUE	1.80
9	Phosphate	1.0	2.979	13.20	0.881	4.619	FALSE	-0.70

TZ84 : 00675

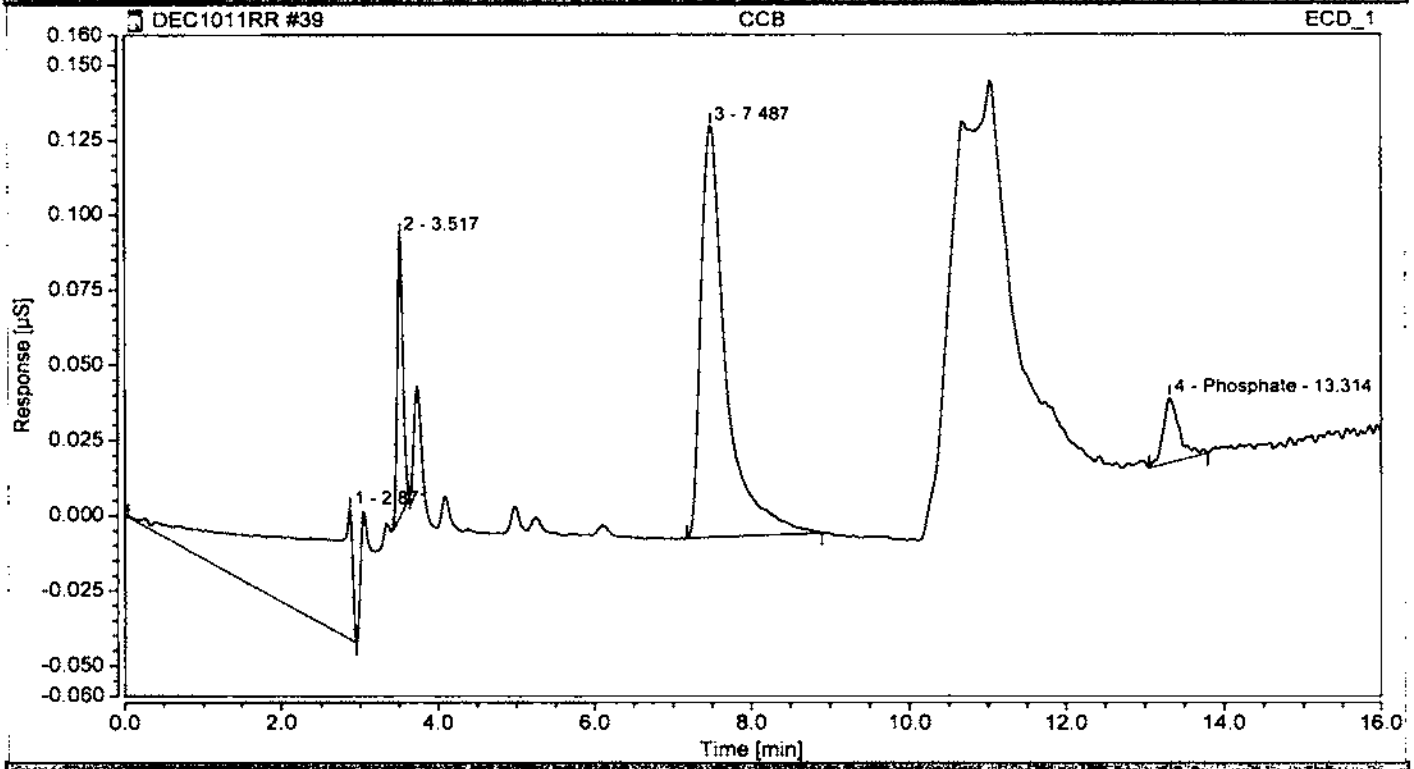
Injection Name:	*CCV*	Inject Number:	38
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 22:56*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	1.0	3.039	3.35	1.440	11.843	FALSE	1.30
3	Chloride	1.0	2.949	4.98	0.893	7.362	FALSE	-1.68
4	Nitrite	1.0	3.036	6.09	2.113	13.134	FALSE	1.19
5		1.0	n.a.	7.48	0.038	0.125	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.887	FALSE	0.32
7	Sulfate	1.0	2.908	9.65	0.539	2.123	FALSE	-3.06
8	Nitrate	1.0	3.188	10.47	2.419	10.012	FALSE	6.28
9	Phosphate	1.0	2.979	13.20	0.881	4.619	FALSE	-0.70

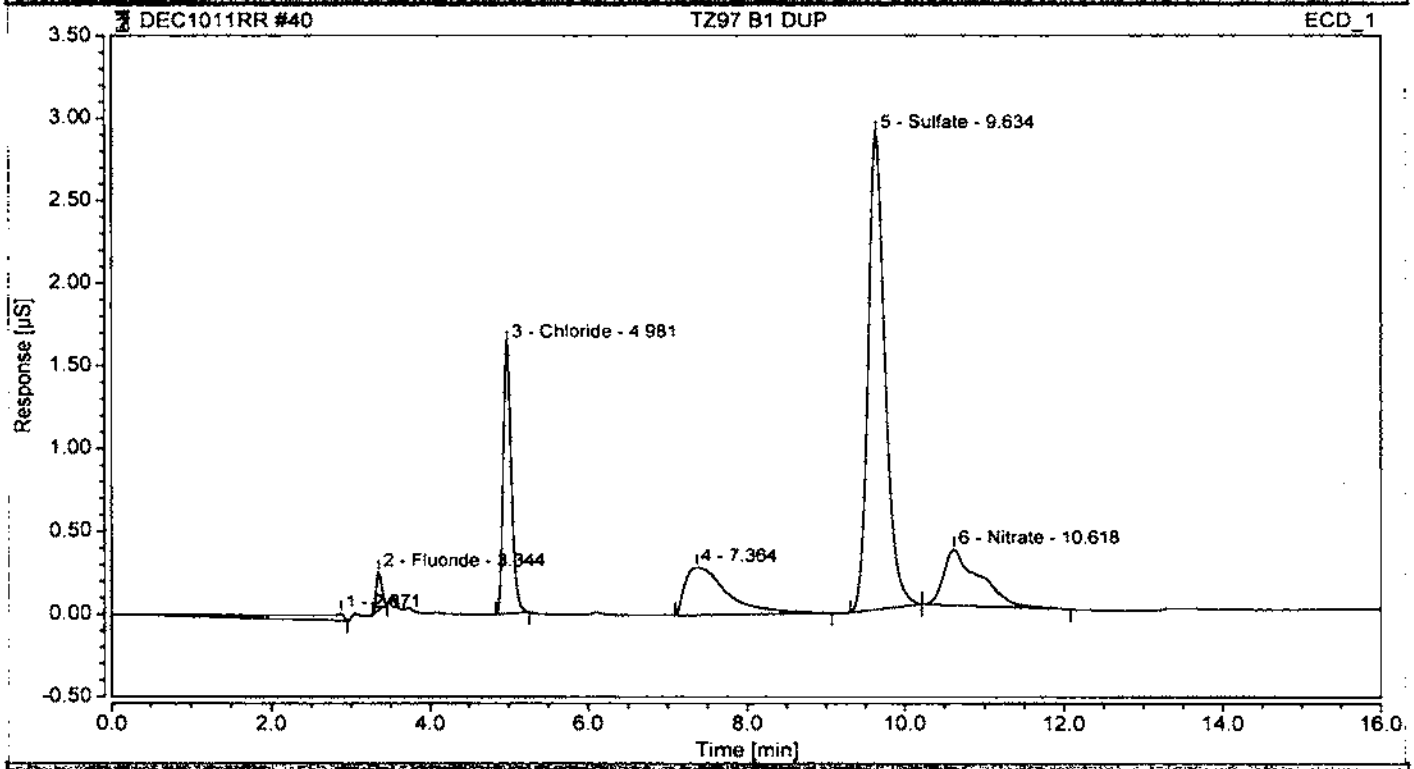
TZ84 : 00675

Injection Name:	*CCB*	Inject Number:	39
Vial Number:	*32*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 23:17*		



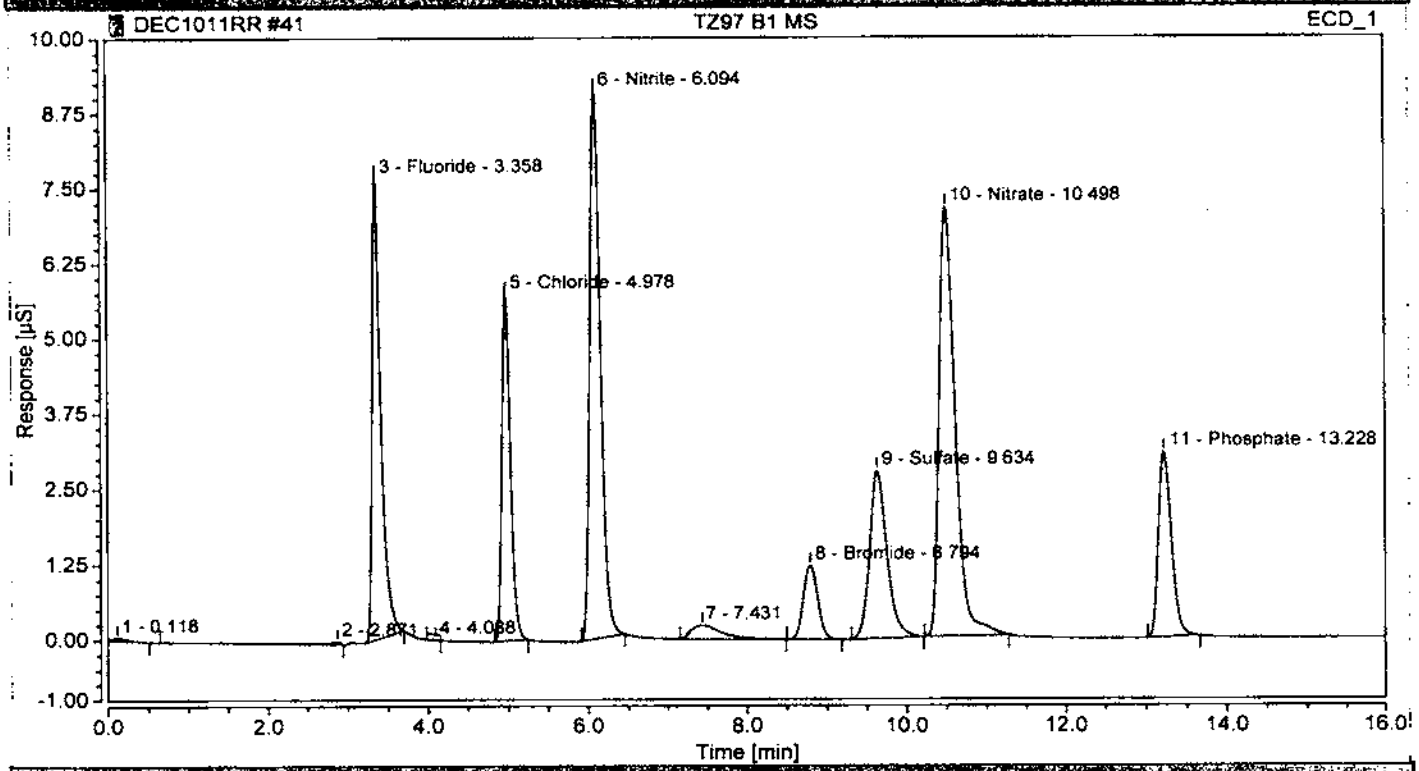
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.045	0.043	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.52	0.008	0.093	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.49	0.051	0.137	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Phosphate	1.0	0.017	13.31	0.005	0.021	FALSE	n.a.

Injection Name:	*TZ97 B1 DUP*	Inject Number:	40
Vial Number:	*33*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 23:37*		



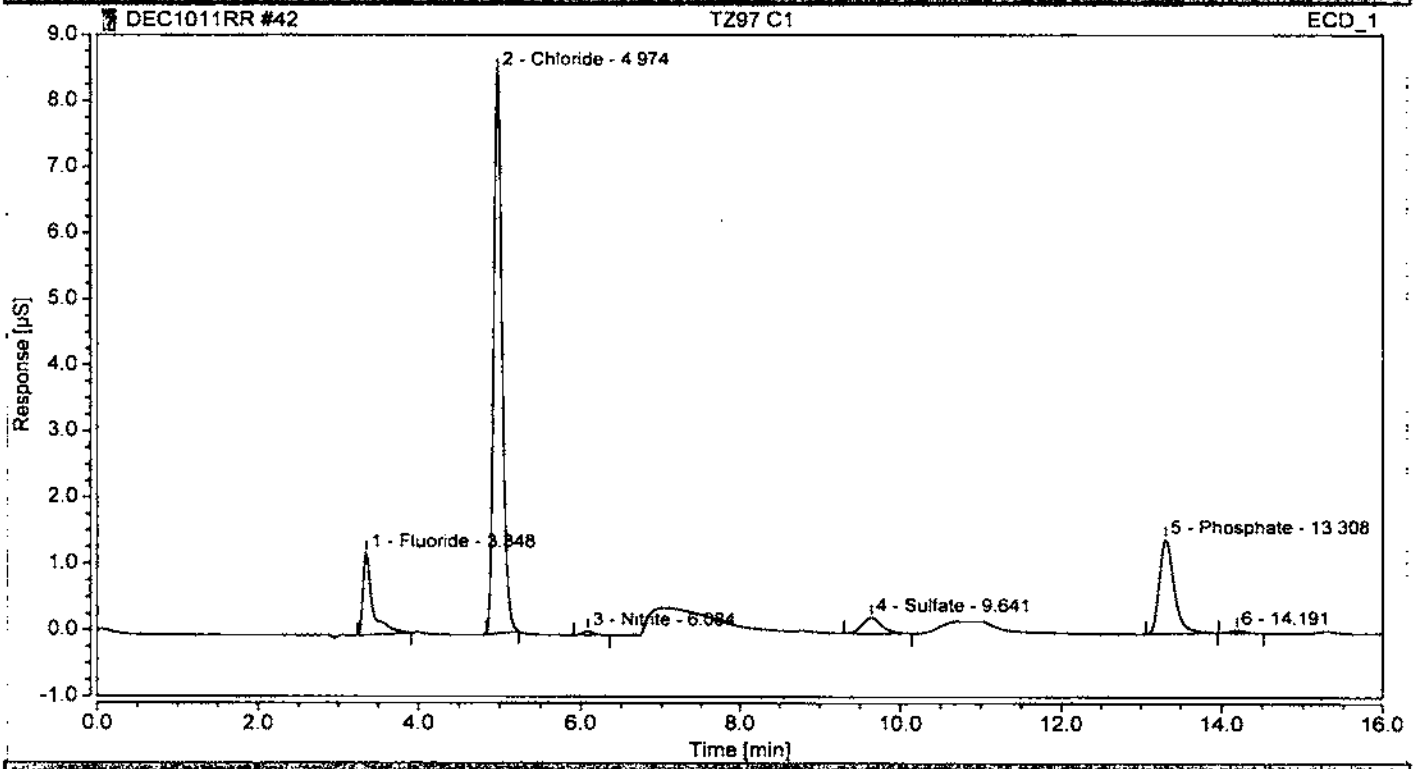
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.046	0.042	FALSE	n.a.
2	Fluoride	5.0	0.202	3.34	0.019	0.229	FALSE	n.a.
3	Chloride	5.0	3.239	4.98	0.196	1.631	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.179	0.287	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.278	9.63	0.715	2.874	FALSE	n.a.
6	Nitrate	5.0	1.151	10.62	0.175	0.336	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 B1 MS*	Inject Number:	41
Vial Number:	*34*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 23:58*		



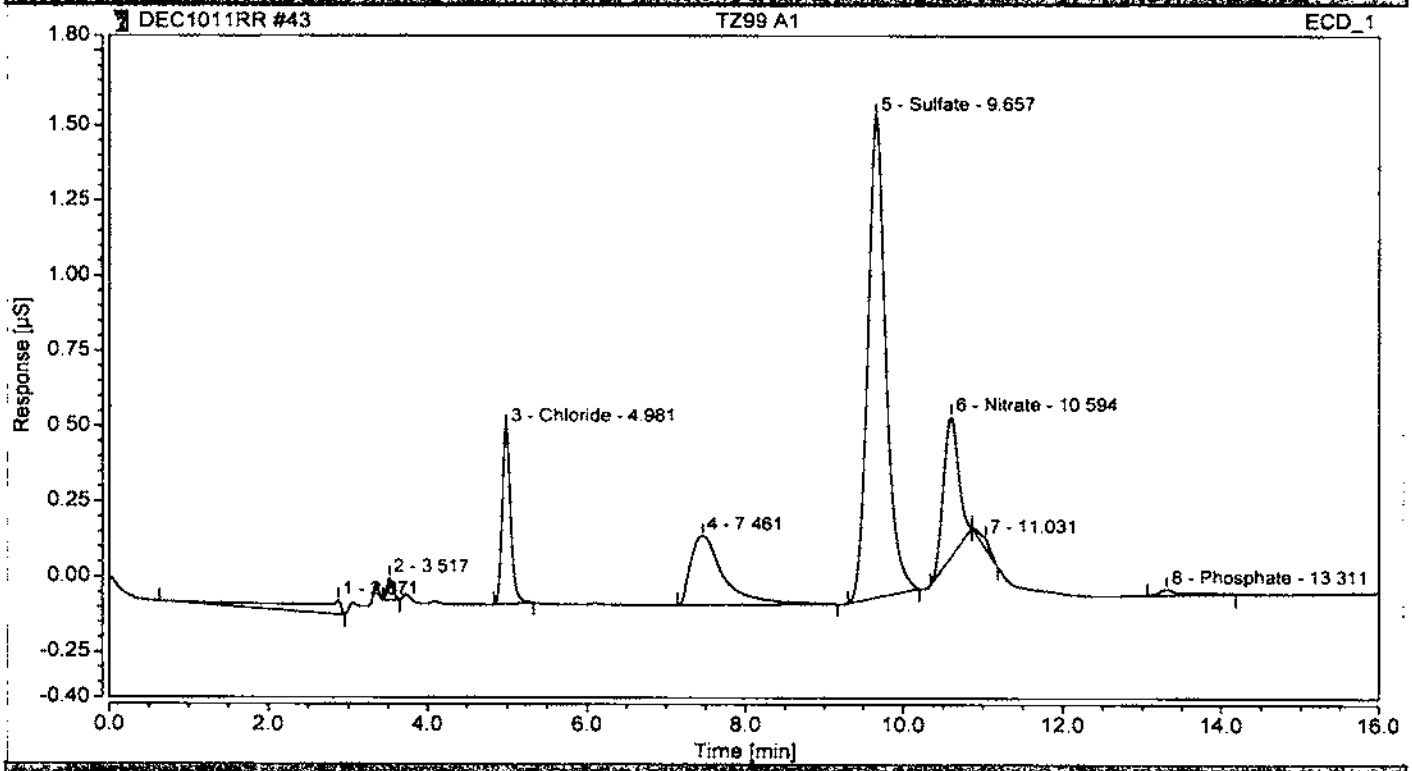
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	0.12	0.011	0.050	FALSE	n.a.
2		10.0	n.a.	2.87	0.035	0.045	FALSE	n.a.
3	Fluoride	10.0	20.125	3.36	0.953	7.666	FALSE	n.a.
4		10.0	n.a.	4.09	0.016	0.085	FALSE	n.a.
5	Chloride	10.0	23.038	4.98	0.698	5.753	FALSE	n.a.
6	Nitrite	10.0	20.445	6.09	1.423	9.099	FALSE	n.a.
7		10.0	n.a.	7.43	0.105	0.230	FALSE	n.a.
8	Bromide	10.0	19.597	8.79	0.252	1.228	FALSE	n.a.
9	Sulfate	10.0	37.545	9.63	0.696	2.782	FALSE	n.a.
10	Nitrate	10.0	22.066	10.50	1.674	7.124	FALSE	n.a.
11	Phosphate	10.0	19.094	13.23	0.565	3.064	FALSE	n.a.

Injection Name:	*TZ97 C1*	Inject Number:	42
Vial Number:	*35*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 00:17*		



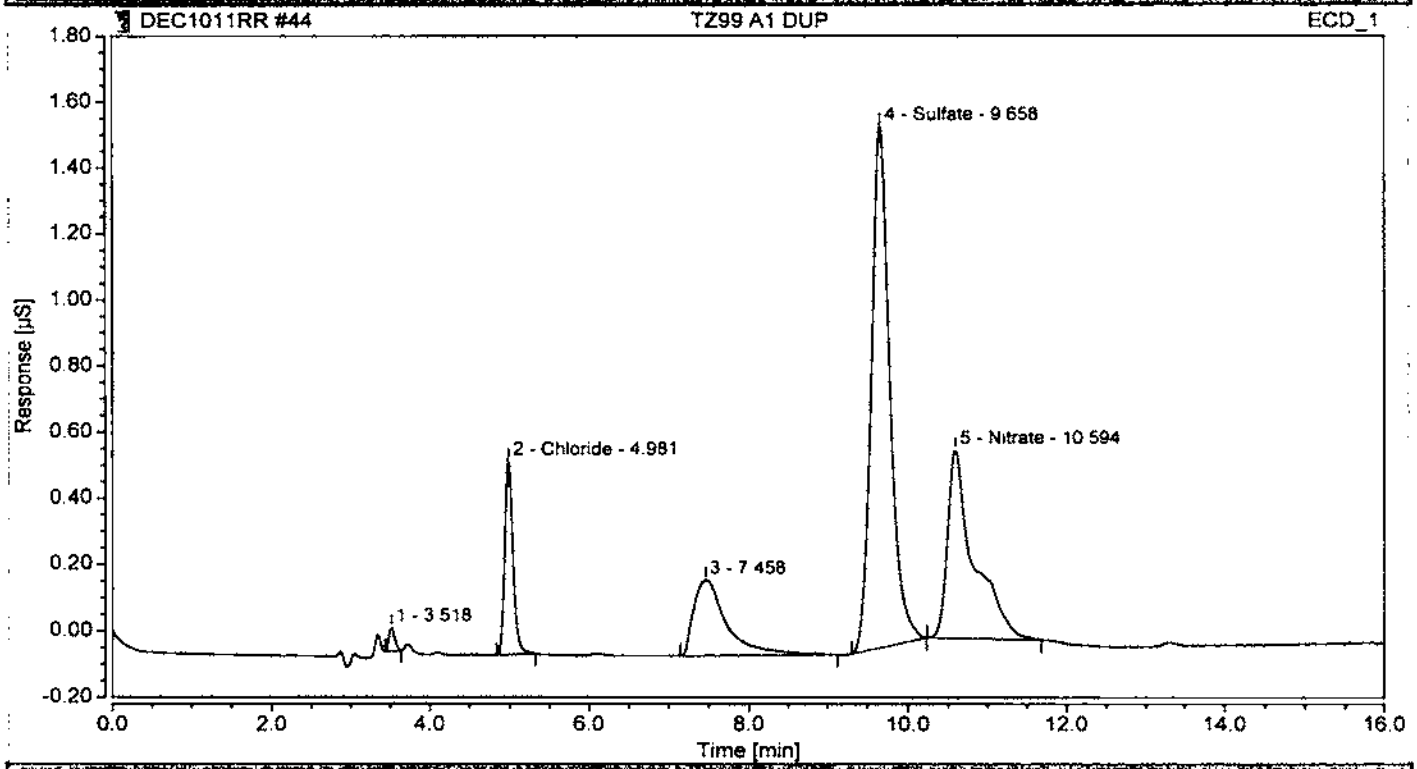
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.364	3.35	0.172	1.227	FALSE	n.a.
2	Chloride	1.0	3.393	4.97	1.027	8.499	FALSE	n.a.
3	Nitrite	1.0	0.012	6.08	0.008	0.058	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	0.376	9.64	0.070	0.242	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	1.031	13.31	0.305	1.416	FALSE	n.a.
6		1.0	n.a.	14.19	0.009	0.042	FALSE	n.a.

Injection Name:	*TZ99 A1*	Inject Number:	43
Vial Number:	*36*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 00:37*		



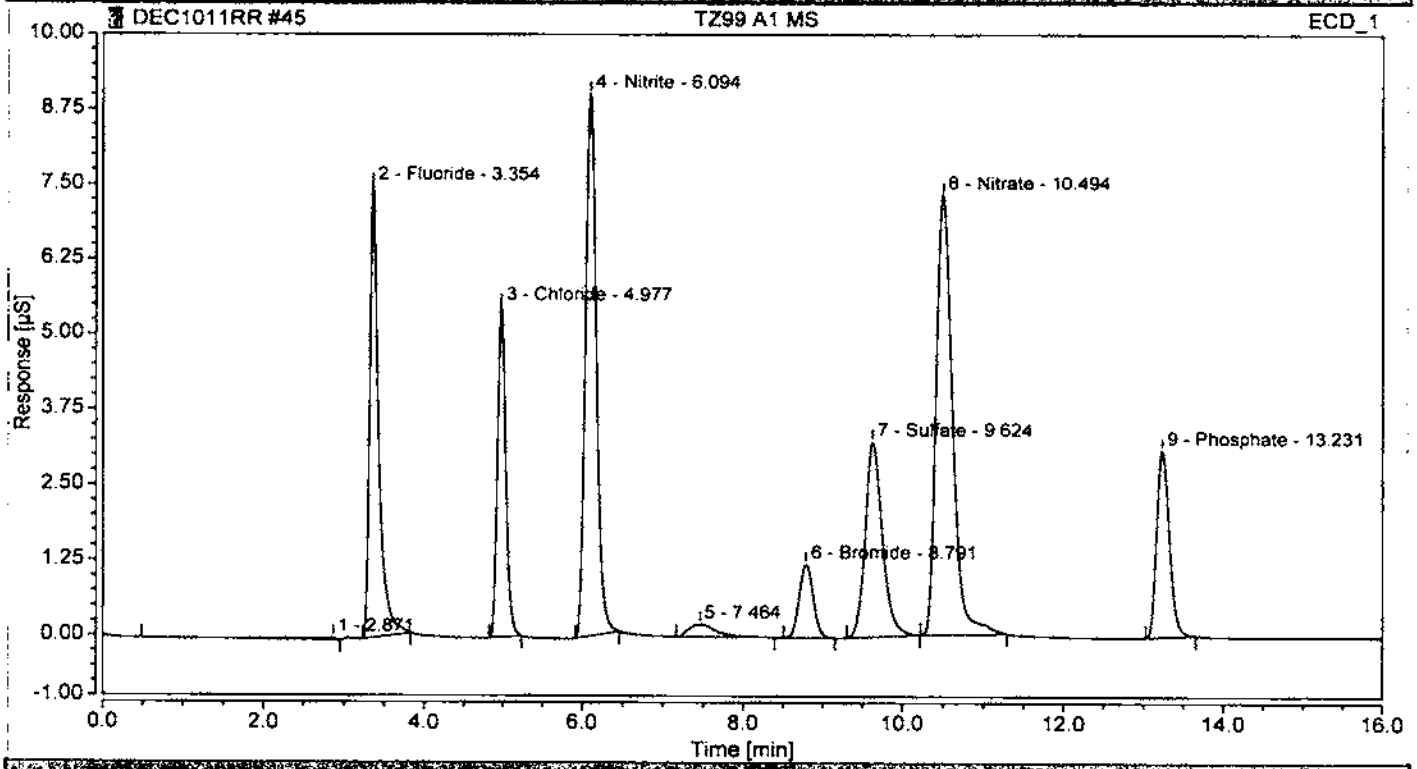
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.87	0.035	0.045	FALSE	n.a.
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		10.0	n.a.	3.52	0.006	0.071	FALSE	n.a.
3	Chloride	10.0	2.342	4.98	0.071	0.585	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		10.0	n.a.	7.46	0.110	0.227	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	10.0	22.857	9.66	0.420	1.598	FALSE	n.a.
6	Nitrate	10.0	1.330	10.59	0.101	0.465	FALSE	n.a.
7		10.0	n.a.	11.03	0.006	0.033	FALSE	n.a.
8	Phosphate	10.0	0.272	13.31	0.008	0.019	FALSE	n.a.

Injection Name:	*TZ99 A1 DUP*	Inject Number:	44
Vial Number:	*37*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 00:56*		



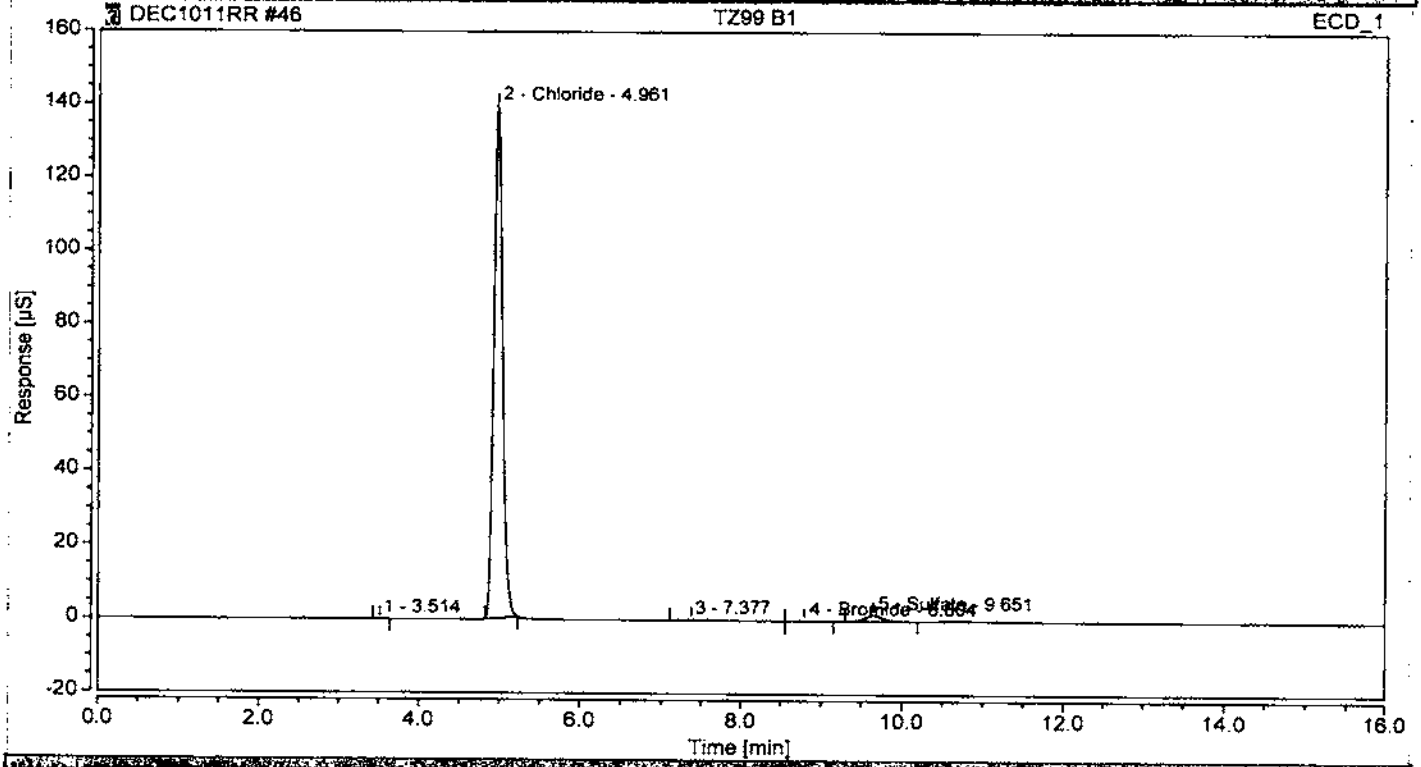
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		10.0	n.a.	3.52	0.006	0.072	FALSE	n.a.
2	Chloride	10.0	2.341	4.98	0.071	0.585	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		10.0	n.a.	7.46	0.110	0.228	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	10.0	22.526	9.66	0.418	1.577	FALSE	n.a.
5	Nitrate	10.0	2.889	10.59	0.219	0.569	FALSE	n.a.
n.a.	Phosphate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ99 A1 MS*	Inject Number:	45
Vial Number:	*38*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 01:15*		



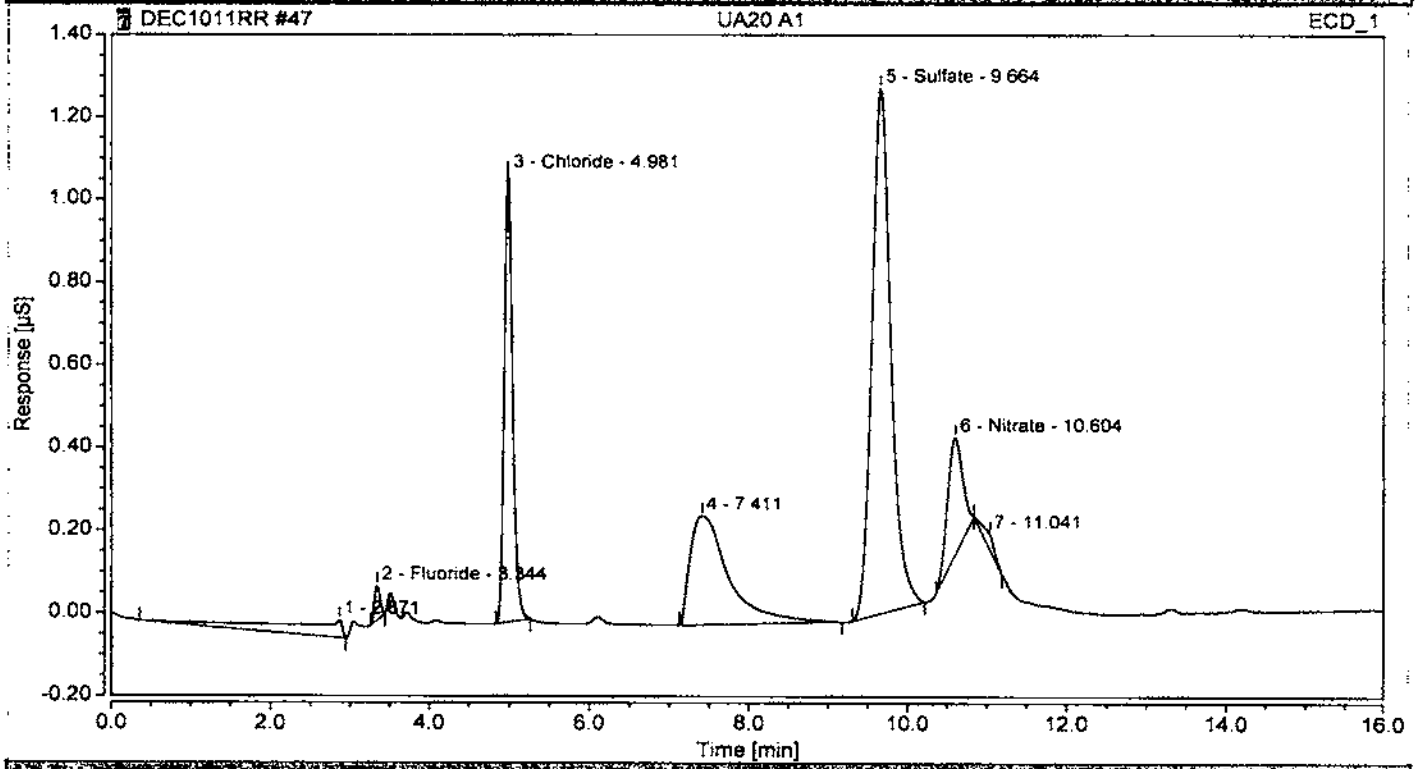
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.87	0.037	0.044	FALSE	n.a.
2	Fluoride	10.0	20.509	3.35	0.972	7.508	FALSE	n.a.
3	Chloride	10.0	21.988	4.98	0.666	5.492	FALSE	n.a.
4	Nitrite	10.0	20.249	6.09	1.410	9.007	FALSE	n.a.
5		10.0	n.a.	7.46	0.086	0.208	FALSE	n.a.
6	Bromide	10.0	19.428	8.79	0.250	1.219	FALSE	n.a.
7	Sulfate	10.0	43.303	9.62	0.803	3.236	FALSE	n.a.
8	Nitrate	10.0	22.755	10.49	1.726	7.306	FALSE	n.a.
9	Phosphate	10.0	19.203	13.23	0.568	3.098	FALSE	n.a.

Injection Name:	*TZ99 B1*	Inject Number:	46
Vial Number:	*39*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 01:35*		



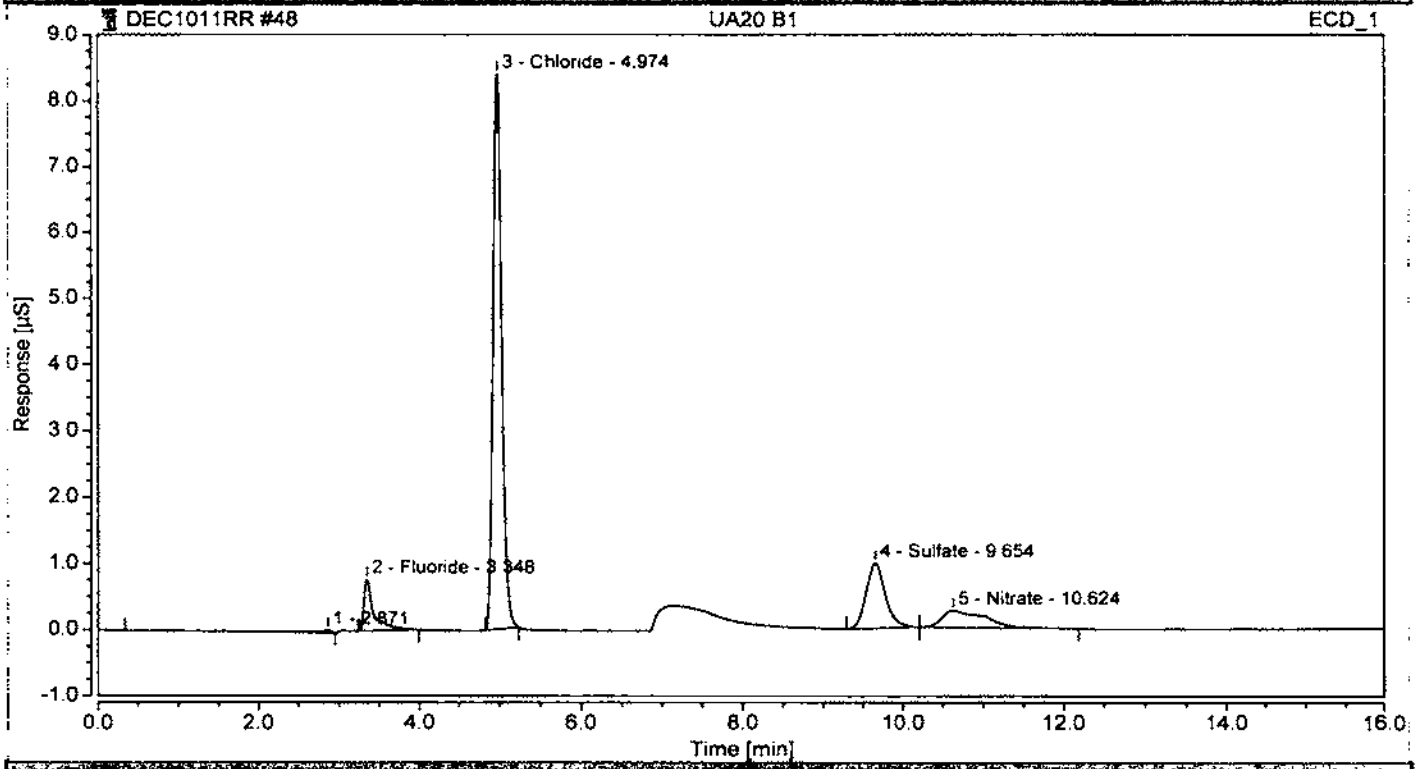
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		10.0	n.a.	3.51	0.006	0.074	FALSE	n.a.
2	Chloride	10.0	571.775	4.96	17.313	139.396	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		10.0	n.a.	7.38	0.151	0.276	FALSE	n.a.
4	Bromide	10.0	1.701	8.80	0.022	0.106	FALSE	n.a.
5	Sulfate	10.0	23.966	9.65	0.444	1.692	FALSE	n.a.
n.a.	Nitrate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA20 A1*	Inject Number:	47
Vial Number:	*40*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 01:55*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.039	0.043	FALSE	n.a.
2	Fluoride	5.0	0.070	3.34	0.007	0.083	FALSE	n.a.
3	Chloride	5.0	2.158	4.98	0.131	1.085	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.41	0.149	0.263	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	9.372	9.66	0.347	1.272	FALSE	n.a.
6	Nitrate	5.0	0.414	10.60	0.063	0.284	FALSE	n.a.
7		5.0	n.a.	11.04	0.007	0.038	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA20 B1*	Inject Number:	48
Vial Number:	*41*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 02:14*		



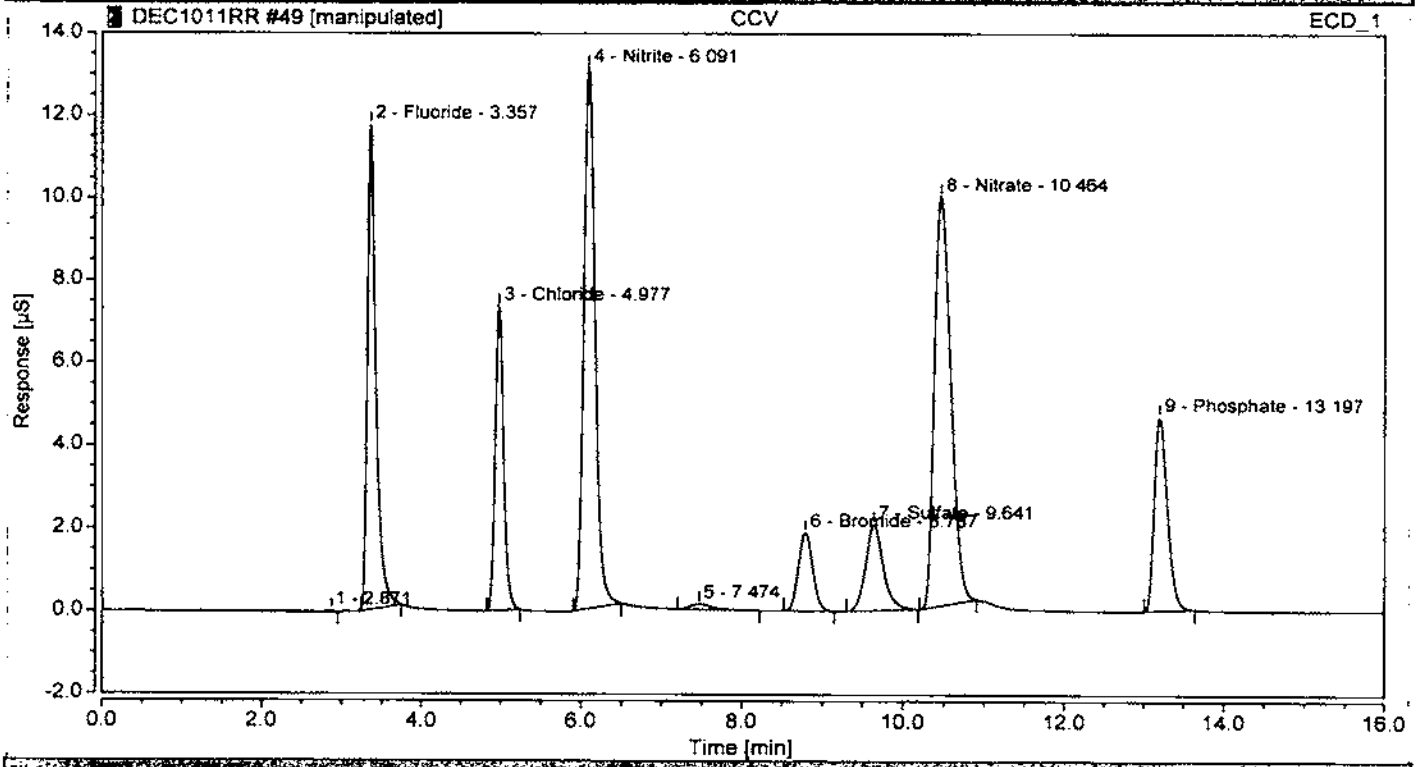
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.041	0.042	FALSE	n.a.
2	Fluoride	1.0	0.240	3.35	0.114	0.784	FALSE	n.a.
3	Chloride	1.0	3.355	4.97	1.016	8.396	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	1.483	9.65	0.275	0.984	FALSE	n.a.
5	Nitrate	1.0	0.218	10.62	0.165	0.260	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Chromatography Test Results

Injection Info

Injection Name:	*CCV*	Inject Number:	49
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:34*		

Chromatogram

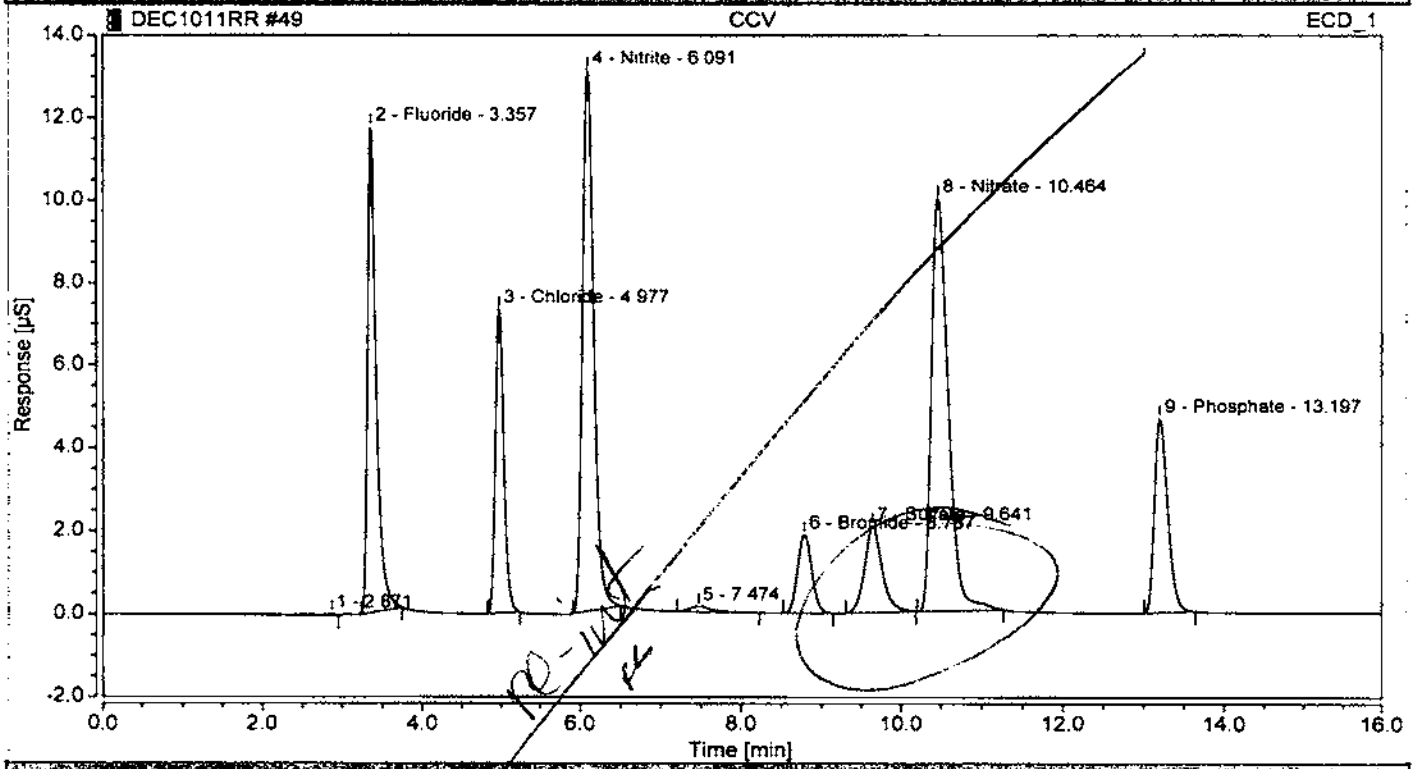


Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
2	Fluoride	1.0	3.047	3.36	1.444	11.752	FALSE	1.58
3	Chloride	1.0	2.952	4.98	0.894	7.352	FALSE	-1.60
4	Nitrite	1.0	3.030	6.09	2.109	13.090	FALSE	1.00
5		1.0	n.a.	7.47	0.041	0.130	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.885	FALSE	0.31
7	Sulfate	1.0	2.868	9.64	0.532	2.078	FALSE	-4.40
8	Nitrate	1.0	3.041	10.46	2.307	9.897	TRUE	1.38
9	Phosphate	1.0	3.000	13.20	0.887	4.677	FALSE	-0.02

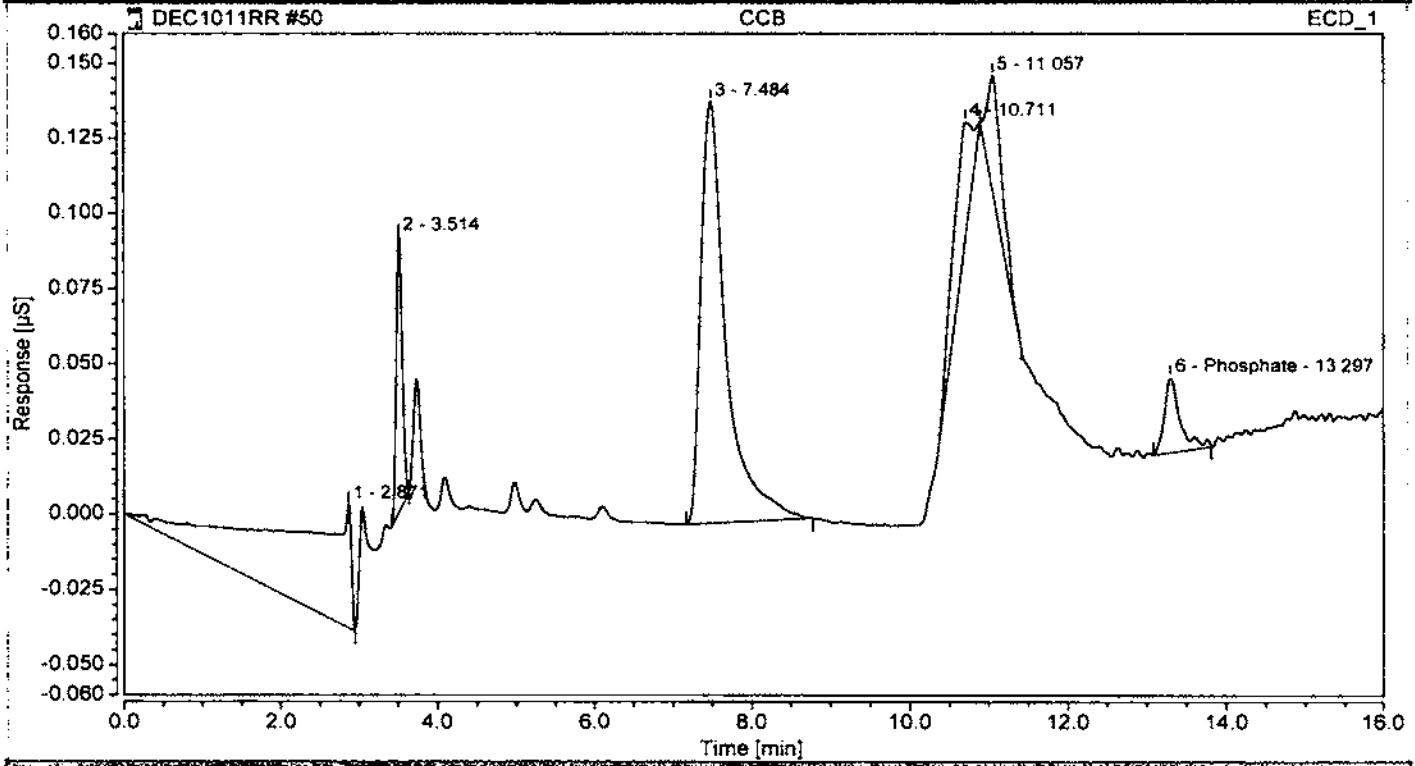
TZ84 : 00587

Injection Name:	*CCV*	Inject Number:	49
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:34*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
2	Fluoride	1.0	3.047	3.36	1.444	11.752	FALSE	1.58
3	Chloride	1.0	2.952	4.98	0.894	7.352	FALSE	-1.60
4	Nitrite	1.0	3.030	6.09	2.109	13.090	FALSE	1.00
5		1.0	n.a.	7.47	0.041	0.130	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.885	FALSE	0.31
7	Sulfate	1.0	2.868	9.64	0.532	2.078	FALSE	-4.40
8	Nitrate	1.0	3.190	10.46	2.420	9.976	FALSE	6.34
9	Phosphate	1.0	3.000	13.20	0.887	4.677	FALSE	-0.02

Injection Name:	*CCB*	Inject Number:	50
Vial Number:	*32*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:54*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.51	0.008	0.092	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.48	0.052	0.140	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	10.71	0.012	0.038	FALSE	n.a.
5		1.0	n.a.	11.06	0.008	0.039	FALSE	n.a.
6	Phosphate	1.0	0.020	13.30	0.006	0.025	FALSE	n.a.

Injection Name:	*STOP*	Inject Number:	51
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 03:15*		

Can't read channel ECD_1 from injection #51 - STOP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	matogram in con	matogram in		n.a.

TZ84 00690

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.4737
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9997

No.	Injection Name	Calibration Level	X Value Fluoride	Y Value Fluoride	Amount mg/l Fluoride	Area µS*min Fluoride	Height µS Fluoride
1	STD1	01	0.1000	0.0399	0.0843	0.040	0.301
2	STD2	02	0.5000	0.2347	0.4955	0.235	1.688
3	STD3	03	1.0000	0.4982	1.0516	0.498	3.502
4	STD4	04	2.5000	1.1985	2.5298	1.198	9.167
5	STD5	05	5.0000	2.3571	4.9755	2.357	19.418

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	n.a.	*Slope (C1)*	0.3028
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Chloride	Y Value Chloride	Amount mg/l Chloride	Area µS*min Chloride	Height µS Chloride
1	STD1	01	0.1000	0.0295	0.0975	0.030	0.248
2	STD2	02	0.5000	0.1435	0.4739	0.144	1.203
3	STD3	03	1.0000	0.2953	0.9752	0.295	2.473
4	STD4	04	2.5000	0.7452	2.4608	0.745	6.210
5	STD5	05	5.0000	1.5222	5.0272	1.522	12.630

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.6962
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Nitrite	Y Value Nitrite	Amount mg/l Nitrite	Area µS*min Nitrite	Height µS Nitrite
1	STD1	01	0.1000	0.0619	0.0890	0.062	0.424
2	STD2	02	0.5000	0.3528	0.5068	0.353	2.375
3	STD3	03	1.0000	0.7198	1.0339	0.720	4.752
4	STD4	04	2.5000	1.7599	2.5280	1.760	11.100
5	STD5	05	5.0000	3.4660	4.9788	3.466	20.655

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1286
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9994

No.	Injection Name	Calibration Level	X Value Bromide	Y Value Bromide	Amount mg/l Bromide	Area µS*min Bromide	Height µS Bromide
1	STD1	01	0.1000	0.0113	0.0878	0.011	0.054
2	STD2	02	0.5000	0.0591	0.4601	0.059	0.283
3	STD3	03	1.0000	0.1225	0.9528	0.122	0.590
4	STD4	04	2.5000	0.3133	2.4372	0.313	1.521
5	STD5	05	5.0000	0.6486	5.0451	0.649	3.160

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1854
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9861

No.	Injection Name	Calibration Level	X Value Sulfate	Y Value Sulfate	Amount mg/l Sulfate	Area µS*min Sulfate	Height µS Sulfate
1	STD1	01	0.1000	0.0089	0.0480	0.009	0.032
2	STD2	02	0.5000	0.0512	0.2781	0.051	0.175
3	STD3	03	1.0000	0.1271	0.6855	0.127	0.417
4	STD4	04	2.5000	0.4181	2.2550	0.418	1.514
5	STD5	05	5.0000	0.9657	5.2089	0.966	3.775

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.7586
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Nitrate	Y Value Nitrate	Amount mg/l Nitrate	Area µS*min Nitrate	Height µS Nitrate
1	STD1	01	0.1000	0.0714	0.0941	0.071	0.362
2	STD2	02	0.5000	0.3658	0.4822	0.366	1.823
3	STD3	03	1.0000	0.7513	0.9904	0.751	3.664
4	STD4	04	2.5000	1.8769	2.4741	1.877	8.565
5	STD5	05	5.0000	3.8058	5.0168	3.806	15.377

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2958
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9995

No.	Injection Name	Calibration Level	X Value Phosphate	Y Value Phosphate	Amount mg/l Phosphate	Area µS*min Phosphate	Height µS Phosphate
1	STD1	01	0.1000	0.0239	0.0809	0.024	0.127
2	STD2	02	0.5000	0.1351	0.4566	0.135	0.741
3	STD3	03	1.0000	0.2837	0.9589	0.284	1.575
4	STD4	04	2.5000	0.7228	2.4434	0.723	3.903
5	STD5	05	5.0000	1.4912	5.0413	1.491	7.383

3
12-19-11

PHOSPHORUS BENCHSHEET, Aqueous					Digested:	Analyzed:
Soluble Reactive P (SRP) by EPA 365.2, SM 450				Date	12/15/11 15:00	12/16/11 18:55
Indicate "Total" or "SRP"	total			Analyst	CDE	CDE
Total P by digestion (indicate procedure used)					SM 4500-P B5-99, Acid persulfate	
NOTE: curve standards must be digested !					SM 4500-P B4-99, Sulfuric-Nitric Acid	

Curve Standards — *make no entries to shaded cells, they are calculated !!*

Prep date:	6/1/2011	Stock #:	00116/8			
Weight KH2PO4:	0.2197	grams in	1000	mL		
Conc =	50.00	mg/L P				
Intermediate Std =	5	mL stk to	50	mL DI =	5.00	mg P/L

Calibration Curve — for Digested Curve — std make-up volume (mL) = 50; mL digest = 50; final vol (mL) = 50

ml int Std		CONC	UNITS		AVG		REGRESSION DATA
SRP	Total P	(mg/L)	(ABS 880 nm 5cm cell)			mg/L	CONC = (ABS-intercept)/ slope
0.00	0.00	0.000	0.000		0.000	0.000	intercept = -0.0006
0.04	0.30	0.030	0.087		0.087	0.029	Slope = 3.0029
0.25	0.60	0.060	0.175		0.175	0.058	r = 1.0000
0.50	1.50	0.150	0.449		0.449	0.150	
1.00	5.00	0.500	1.515		1.515	0.505	Comment: Calibration OK!
5.0	10.0	1.000	2.996		2.996	0.998	
							maxabs = 2.996

Verification Standards			Source: ERA # 200610			Conc (mg/L)	1000	
ICV	dilution =	0.06	mL Int to	250	mL DI =	0.240	mg/L	CVS
Verification Standards			Source: ERA # 3303093			Conc (mg/L)	1000	
Intermediate		0.50	mL to	50		mL DI =	10.0	mg/L
Tot P	dilution =	0.40	mL Int to	25	mL DI =	0.160	mg/L	LCS

DQL Standard (low level)		Source: Curve Intermediate			Conc (mg/L)	5.0
SRP	0.100	ml to	50	ml DI =	0.010	mg/L
Total P	0.400	ml to	25	ml DI =	0.080	mg/L
Total P	0.160	ml to	10	ml DI =	0.080	mg/L

Sample Data

1. For SRP, leave digest data blank!!
2. Spike with 10 mg/L Intermediate Standard — enter dilution as final vol / sample vol

SAMPLE ID	Tot P Digest		Analysis Data			TOT P	SRP	
	mL sample	mL digest	Abs	Dilution	(mg/L)	(mg/L)	(mg/L)	Notes
Calib Blank			0.000	1.0	0.0002		< 0.03	OK
ICV			0.755	1.0	0.2516		0.252	104.84%
MB total	25	50	0.035	1.0	0.0118	< 0.06		OK
DQL Total	25	50	0.155	1.0	0.0518	0.104		
LCS 1	25	50	0.269	1.0	0.0898	0.180		112.21%
TZ97 A8	25	50	1.834	1.0	0.6109	1.222		
TZ97 A8 dup	25	50	1.873	1.0	0.6239	1.248		RPD = 2.1
TZ97 A8 ms	25	50	2.216	1.0	0.7382	1.476		127.2% Rec
Spike =	0.5	ml of	10	mg/L to	25	ml sample =	0.200	
TZ97 B18	25	50	0.576	1.0	0.1920	0.384		
TZ97 C3	25	50	****	1.0	#VALUE!	#VALUE!		offscale
UA09 B5	25	50	0.169	1.0	0.0565	0.113		
UA17 A2	25	50	1.844	1.0	0.6143	1.229		
Calib Blank			0.000	1.0	0.0002		< 0.03	OK
CCV			0.753	1.0	0.2509		0.251	104.56%
UA20 A4	25	50	0.287	1.0	0.0958	0.192		
UA20 B3	25	50	0.378	1.0	0.1261	0.252		
UA50 A2	25	50	****	1.0	#VALUE!	#VALUE!		offscale
UB21 A1	25	50	0.111	1.0	0.0372	0.074		
UB21 B1	25	50	0.220	1.0	0.0735	0.147		
UB21 C1	25	50	0.189	1.0	0.0631	0.126		
UB22 A1	25	50	0.184	1.0	0.0615	0.123		

UB22 B1	25	50	0.148	1.0	0.0495	**0.099**		
UB22 C1	25	50	0.315	1.0	0.1051	**0.210**		
UB22 D1	25	50	0.238	1.0	0.0794	**0.159**		
Calib Blank			-0.001	1.0	-0.0001		**< 0.03**	*OK*
CCV			0.757	1.0	0.2523		**0.252**	*105.12%*
UB23 A1	25	50	0.576	1.0	0.1920	**0.384**		
UB23 B1	25	50	0.530	1.0	0.1767	**0.353**		
UB23 C1	25	50	0.105	1.0	0.0352	**0.070**		
UB23 D1	25	50	0.140	1.0	0.0468	**0.094**		
TZ97 C3	25	50	1.953	2.0	0.6506	**2.602**		
UA50 A2	25	50	1.801	2.0	0.5999	**2.400**		
Calib Blank			0.000	1.0	0.0002		**< 0.03**	*OK*
CCV			0.754	1.0	0.2513		**0.251**	*104.70%*

PHOSPHORUS BENCHSHEET, Aqueous

	Digested:	Analyzed:
Date	12-15-11 15:00	12-16-11 18:55
Analyst	CDL	CDL

Soluble Reactive P (SRP) by EPA 365.2, SM 4501

Indicate "Total" or "SRP": **total**

Total P by digestion (indicate procedure used)

NOTE: *curve standards must be digested !*

SM 4500-P B5-99, Acid persulfate

SM 4500-P B4-99, Sulfuric-Nitric Acid

Curve Standards ***make no entries to shaded cells, they are calculated !!***

Prep date: 6-1-11 *Stock #:* 00116-8

Weight KH2PO4: 0.2197 *grams in* 1000 *mL*

Conc = 50.00 *mg/L P*

Intermediate Std = 5 *mL stk to* 50 *mL DI =* ***5.00*** ***mg P/L***

Calibration Curve *std make-up volume (mL) =* 50

for Digested Curve *mL digest =* ~~25~~ 50 *final vol (mL) =* 50

REGRESSION DATA

CONC = (ABS-intercept)/ slope

ml int Std		CONC	UNITS	AVG	
SRP	Total P	(mg/L)	(ABS 880 nm 5cm cell)		*mg/L*
0.00	0.00	0.000	0.000		
0.04	0.30	0.015	0.087		
0.25	0.60	0.030	0.175		
0.50	1.50	0.075	0.449		
1.00	5.00	0.250	1.515		
5.0	10.0	0.500	2.996		

intercept =

Slope =

r =

Comment:

maxabs = 0.000

Verification Standards			*Source:*	*ERA #* 200610		*Conc (mg/L)*	1000	
Intermediate		~~0.50~~	*mL to*	~~50~~		*mL DI =*	***10.0***	***mg/L***
ICV	*dilution =*	~~1.250~~	*mL Int to*	250	*mL DI =*	~~0.050~~ 0.24	*mg/L*	*CVS*
Verification Standards			*Source:*	*ERA #* 330393		*Conc (mg/L)*	1000	
Intermediate		0.50	*mL to*	50		*mL DI =*	***10.0***	***mg/L***
Tot P LCS	*dilution =*	0.40	*mL Int to*	25	*mL DI =*	***0.160***	*mg/L*	*LCS*
DQL Standard (low level)			*Source:*	***Curve Intermediate***		*Conc (mg/L)*	5.0	
SRP	0.100	*ml to*	50	*ml DI =*	***0.010***	*mg/L*		
Total P	0.400	*ml to*	25	*ml DI =*	***0.080***	*mg/L*		

Sample Data

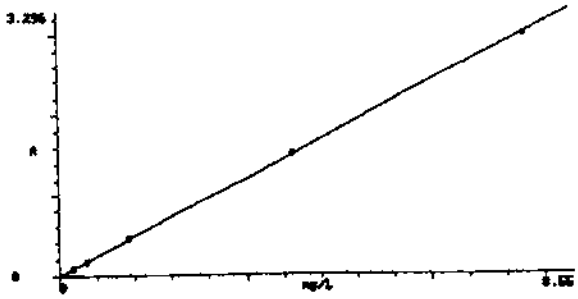
1. *For SRP, leave digest date blank!!*
2. *Spike with 10 mg/L Intermediate Standard* *enter dilution as final vol / sample vol*

SAMPLE ID	Tot P Digest		Analysis Data			TOT P	SRP	
	mL sample	mL digest	Abs	Dilution	(mg/L)	(mg/L)	(mg/L)	*Notes*
Calib Blank			0.000	1.0				
ICV			0.755	1.0				
MB total	25	50	0.025	1.0				
~~LCS 1~~ DQL	25	50	0.155	1.0				
~~DQL Total~~ LCS	25	50	0.269	1.0				
TZ97A1			1.834	1.0				
↓ A1 dup			1.873	1.0				
↓ A1 ms			2.216	1.0				0% Rec
Spike =	0.5	*ml of*	10	*mg/L to*	25	*ml sample =*	0.200	
TZ97B1			0.570	1.0				
↓ C1				1.0				
TLA09B5			0.169	1.0				
UA17A2			1.844	1.0				
CCB			0.000	1.0				
CCV			0.753	1.0				
UA28A4			0.287	1.0				
↓ B3			0.378	1.0				
UA58A2				1.0				
UB21A1			0.111	1.0				
↓ B1			0.220	1.0				
↓ C1			0.189	1.0				
UB22A1			0.184	1.0				

SAMPLE ID	Tot P Digest		Analysis Data			TOT P	SRP	Notes
	mL sample	mL digest	Abs	Dilution	(mg/L)	(mg/L)	(mg/L)	
UB22 B1			0.148	1.0				
C1			0.315	1.0				
D1			0.238	1.0				
CCB			-0.001	1.0				
CCV			0.757	1.0				
UB23 A1			0.576	1.0				
B1			0.530	1.0				
C1			0.105	1.0				
D1			0.140	1.0				
TZ97 C3			1.953	~~1.0~~ 2x				
UA50 A2			1.901	~~1.0~~ 2x				
CCB			0.000	1.0				
CCV			0.754	1.0				
				1.0				
				1.0				

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Standard Curve	18:58 16Dec11
Test Name	TOTAL PHOS[Saved]
Date Standards Measured	16Dec11
Wavelength	880nm
Ref. Wavelength Correction	Off
Curve Fit	Linear
Number of Standards	6
Units	mg/L
IDs (0=OFF)	Off
Low/High Limits	0.000/0.800
Statistics	Off
Auto Print	On



Curve Fit	Linear
Slope	6.01
Intercept	-0.00056
Std Dev	0.008
Corr Coeff	1.000

Conc. mg/L	Abs 880nm
0.000	0.000
0.015	0.087
0.030	0.175
0.075	0.449
0.250	1.515
0.500	2.996

12-16-11
ADC

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Advanced A-XT-C	18:59 16Dec11
Test Name	TOTAL PHOS[Saved]
Measurement Mode	Absorbance
Wavelength	880nm
Ref. Wavelength Correction	Off
Delay Time (min:sec)	0:00
IDs (0=OFF)	1
Low/High Limits	0.000/0.800
Statistics	Off
Auto Print	On

IDs	Abs 880nm
1	0.000
2	0.755
3	0.035
4	0.155
5	0.269
6	1.834
7	1.873
8	2.216
9	0.576
10	[*****]
11	0.169
12	1.844
13	0.000
14	0.753
15	0.287
16	0.378
17	[*****]
18	0.111
19	0.220
20	0.189
21	0.184
22	0.148
23	0.315
24	0.238
25	-0.001
26	0.757
27	0.576
28	0.530
29	0.105
30	0.140
31	1.953
32	1.801
33	0.000
34	0.754

Table of Contents: ARI Job TZ83

Client: ERM-West Project: 128296 RG

	Page From:	Page To:
Inventory Sheet		
Cover Letter	1	1
Chain of Custody Documentation	2	6
Case Narrative, Data Qualifiers, Control Limits	7	23
Semivolatile Analysis		
Report and Summary QC Forms	24	50
SIM PAH Analysis		
Report and Summary QC Forms	51	62
Metals Analysis		
Report and Summary QC Forms	63	106
General Chemistry Analysis		
Report and Summary QC Forms	107	111
Subcontracted Analysis		
Report and Summary QC Forms	112	143
General Chemistry Raw Data		
Analyst Notes and Raw Data	144	264

BC
Signature

December-16-2011
Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

December 30, 2011

Michael F. Mendes
ERM-West, Inc.
1218 3rd Avenue, Suite 1412
Seattle, WA 98101

RE: RG Fall GW Sampling, 128296.07
ARI Job No.: TZ83

Dear Mr. Mendes:

Please find enclosed Chain-of-Custody (COC) records, sample receipt documentation, and the final data package for samples from the project referenced above.

Sample receipt and details of these analyses are discussed in the Case Narrative.

Please note that current ARI control limits are available at www.arilabs.com.

An electronic copy of this package will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Susan D. Dunnihoo
Director, Client Services
206-695-6207
sue@arilabs.com

Enclosures

cc: eFile TZ83

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Documentation

ARI Job ID: TZ83

(1 of 2)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: T283	Turn-around Requested: Standard	Page: 1 of 2	
ARI Client Company: ERM	Phone: 425 214 0458	Date: 12/2/11	Ice Present? Y
Client Contact: Mike Mendes		No. of Coolers: 5	Cooler Temps: 0.6 -3.7
Client Project Name: RG			
Client Project #: 1278290	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	TOC	SVOC full-scan + cPAH	Alkalinity	TOX	TSS	Anions Cl, SO4, NO3	Total Phosphate	Total / Dissolved* As	Notes/Comments
					Analysis Requested								
MW-14D-120211	12/2/11	0853	water	16	X	X	X	X	+	X	X	X	Additional analyses continued on next COC →

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
*Dissolved metals samples filtered in the field	Printed Name: Cyrus Gorman	Printed Name: J. Volgarden	Printed Name:	Printed Name:
	Company: ERM	Company: ARI	Company:	Company
	Date & Time: 12/2/10 1510	Date & Time: 12/2/11 1510	Date & Time:	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

T283

(B)

(3) total metals Ca, K, Mg, Na, Al, Fe, Mn

(4) Dissolved metals Al, Fe, Mn

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

ARI Assigned Number: T283	Turn-around Requested: Standard
ARI Client Company: ERM	Phone: 425 214 0458
Client Contact: Mike Mendes	
Client Project Name: RG	
Client Project #: 128296.07	Samplers: Cyrus / Matt

Page: 2 of 2	
Date: 12/2/11	Ice Present? Y
No. of Coolers: 5	Cooler Temps: 0.6 - 3.7

Sample ID	Date	Time	Matrix	No Containers	Total metals (1)	Dissolved metals (2)*	Hardness	MS/MSD Total metals (3)*	MS/MSD Dissolved metals (4)*				Notes/Comments
Continued from page 1													
MW-14D-120211	12/2/11	853	water	16	X	X	X	X	X				

Comments/Special Instructions
* Dissolved metals Samples filtered in the field

Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
Printed Name: Cyrus Gorman	Printed Name: A. Volgardsen	Printed Name:	Printed Name:
Company: ERM	Company: ARI	Company	Company
Date & Time: 12/2/11 1510	Date & Time: 12/2/11 1510	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

(1) Total metals = Cr, Cu, Ag, Zn, Ca, K, Mg, Na, Al, Fe, Mn

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

(2) Dissolved metals = Cr, Cu, Ag, Zn, Al, Fe, Mn

f0099: F8ZL

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client ERM Project Name: RG

COC No(s) _____ (NA) Delivered by Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No. TZ83 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 3.1 0.6 1.0 1.2 3.7

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941d9

Cooler Accepted by TV Date 12/2/11 Time 1510

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA

Was Sample Split by ARI: NA YES Date/Time _____ Equipment: _____ Split by: _____

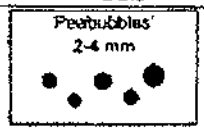
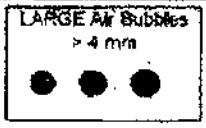
Samples Logged by JM Date 12/2/11 Time 1763

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: Date

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
		

Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

PRESERVATION VERIFICATION 12/02/11
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ83**

Inquiry Number: NONE
Analysis Requested: 12/05/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: JM
Sample Set Used: Yes-481
Validatable Package: Yes
Deliverables:

PC: Sue D.
VTSR: 12/02/11

Project #: 128296
Project: RG
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27856 **TZ83A**	MW-14D-120211						TOT (pH2)		pH2			pH2										
11-27857 **TZ83B**	MW-14D-120211						DIS		+			+				Y						

TZ83 00000

Checked By JM Date 12/2/11

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: TZ83

ANALYTICAL
RESOURCES
INCORPORATED

Narrative

Client: ERM-West, Inc.
Project: RG Fall GW Sampling, 128296.07
ARI Job No.: TZ83

Sample receipt

One water sample was received on December 2, 2011 under ARI job TZ83. The cooler temperatures measured by IR thermometer following ARI SOP were 0.6, 1.0, 1.2, 3.1, and 3.7°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

The TOX analysis was subcontracted to Columbia Analytical Services in Kelso, WA. All data have been included in this package.

Semivolatiles by SW8270

The sample was extracted and analyzed within recommended holding times.

The initial calibrations were within method requirements.

The 12/9/11 continuing calibration (CCAL) was outside the 20% control limit high for 4-Nitrophenol and out low for Benzo(g,h,i)perylene. All detected results associated with this CCAL have been flagged with a "Q" qualifier. No further corrective action was taken.

The CCAL on 12/12/11 was outside the 20% control limit high for 4-Nitrophenol. All associated results were undetected for this compound. No corrective action was taken.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS/LCSD percent recoveries of 4-Nitrophenol were outside the control limits high, the LCS percent recovery of N-Nitrosodiphenylamine fell outside the control limits low, and Benzoic Acid had a wide RPD for **LCS-120711**. No corrective action was taken.

SIM PAHs by SW8270

The sample was extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements. Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limit. The LCS and LCSD percent recoveries were within control limits.

Total and Dissolved Metals by SW6010/6020/7470

The sample and associated laboratory QC were digested and analyzed within recommended holding times.

Initial calibrations were within limits.

The sixth continuing calibration verification (CCV) on 12/8/11 was outside the control limits high for silver. No sample results were associated with this CCV. No corrective action was taken.

The method blanks were clean at the detection limits. The LCS percent recoveries were within control limits.

For the total metals matrix spike percent recoveries sample **MW-14D-120211**, the sample concentrations exceeded the spike concentrations by a factor of four or more for arsenic, iron, and sodium. No corrective action was taken.

For the dissolved matrix spike percent recoveries sample **MW-14D-120211**, the sample concentrations exceeded the spike concentrations by a factor of four or more for total arsenic and iron. No corrective action was taken.

The duplicate RPDs were within control limits.

Conventional Parameters

The sample was prepared and analyzed within recommended holding times.

The method blanks were clean at the detection limits. The LCS percent recovery was within control limits.

The SRM percent recoveries were within limits.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ83
Client: ERM-West
Project Event: 128296
Project Name: RG

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-14D-120211	TZ83A	11-27856	Water	12/02/11 08:53	12/02/11 15:10
2.	MW-14D-120211	TZ83B	11-27857	Water	12/02/11 08:53	12/02/11 15:10

Printed 12/02/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Duplicate RPD is not within established control limits
B	Reported value is less than the CRDL but ≥ the Reporting Limit
N	Matrix Spike recovery not within established control limits
NA	Not Applicable, analyte not spiked
H	The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
L	Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U	Indicates that the target analyte was not detected at the reported concentration
*	Flagged value is not within established control limits
B	Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
J	Estimated concentration when the value is less than ARI's established reporting limits
D	The spiked compound was not detected due to sample extract dilution
E	Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
Q	Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

TZ83:00011

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

TZ83:00012

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

TZ83 00013

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1907-1	PCB 1660	20	ACETONE	11/01/12
2#		BCOC PEST	10	ACETONE	NA
3	1885-1	PEST	01/02/10	ACETONE	12/15/11
4	1885-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1902-4	EPH	1500	MECL2	10/04/12
6	1919-2	PCP	12.5/125	ACETONE	10/15/12
7	1888-1	ABN	100	MEOH	08/30/12
8	1916-2	TBT	2.5	MECL2	11/23/12
9	1918-2	PORE TBT	.125/.25	MECL2	11/23/12
10					
11	1860-4	TPHD	15000	ACETONE	05/12/12
12					
13	1838-4	LOW PCB	2	ACETONE	01/31/12
14					
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1906-4	1,4-DIOXANE	100	MEOH	04/30/12
17	1869-4	1248 PCB	10	ACETONE	06/14/12
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1873-2	AK103	7500	ACETONE	01/02/12
20	1886-4	PNA	100	ACETONE	01/07/12
21	1874-3	SKY/BHT	100	MEOH	01/14/12
22	1864-3	HERB	02 to 2500	MEOH	12/03/11
23	1887-2	EXTRA PNA	15	ACETONE	08/25/12
24					
25#		DIPHENYL	100	MEOH	NA
26	1904-2	OP-PEST	25	MEOH	02/10/12
27		STEROLS	200	MEOH	NA
28#		ADD. PEST	2	ACETONE	NA
29#		DECANES	100	MEOH	NA

TZ83:00014

LCS SOLUTIONS

30		EDB/DBCP	0.2	MEOH	NA
31	1909-2	TERPINEOL	100	MEOH	02/14/12
32	1876-1	GUAIACOL	50-200	ACETONE	01/05/12
33		RETENE	100	MEOH	NA
34	1867-3	CONGENERS	0.5	ACETONE	03/14/12
35	1875-3	ALKYL PNA A	10	MEOH	07/18/12
36		ALKYL PNA B	10	MEOH	NA
37		CAR/PERY	100	ACETONE	NA
38	1904-1	ABN ACID	200-450	MEOH	04/21/12
39	1853-4	BENZIDINE	500	MEOH	04/30/12
40	1851-3	PBDE	0.5	MEOH	04/22/12
50	1900-1	FULL RESIN	250	ACETONE	08/12/12
51		DDTS	0.01	ACETONE	NA
52		1232 PCB	20	ACETONE	NA
53	1919-1	DALAPON	50	MEOH	08/22/12
54		T-CHLORDANE	10	ACETONE	NA
55		TOXAPHENE	50	ACETONE	NA
56	1917-1	ABN BASE	50-200	MEOH	05/31/12
#=PROJECT SPECIFIC SOLUTION					
*=REVERIFIED SOLUTION					

T283:00015

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1906-5	ABN	100/150	MEOH	04/30/12
B	1917-2	SIM PNA	15/75	ACETONE	05/30/12
C	NA	SIM ABN	25/37.5	MEOH	NA
D	1907-4	LOW PCB	0.2	ACETONE	12/16/11
E	1900-2	HERB	62.5	MEOH	10/06/12
F	1896-2	PCP	12.5	ACETONE	12/09/11
G	1906-3	d8-DIOXANE	100	MEOH	04/30/12
H	1847-2	OP-PEST	25	ACETONE	03/23/12
I	1896-3	LOW S. PNA	1.5	ACETONE	09/22/12
J	1915-4	TBT-PORE	0.125	MECL2	11/23/12
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1915-3	TBT	2.5	MECL2	11/23/12
M	1888-4	EPH	1500	MECL2	04/04/12
N	1914-2	PCB	2	ACETONE	05/28/12
O	1914-4	TPH	450	MECL2	02/04/12
P	1895-4	HCID	2250	MECL2	02/04/12
Q	NA	EDB	1	MEOH	NA
R	1886-3	RESIN ACID	250	ACETONE	02/19/12
S	1864-1	PBDE	.5	MEOH	05/21/12
T	1884-2	ALKYL PNA	10	MEOH	07/15/12
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
LCS Spike Recovery [8]				
Phenol [3]	50 - **100**	43 - 103	16 - **100**	6 - **100**
Bis-(2-chloroethyl) ether	52 - **100**	45 - 105	41 - 112	29 - 124
2-Chlorophenol	56 - **100**	49 - 103	43 - 111	32 - 122
1,3-Dichlorobenzene	23 - **100**	15 - **100**	32 - **100**	22 - 103
1,4-Dichlorobenzene	25 - **100**	17 - **100**	32 - **100**	22 - 103
Benzyl Alcohol	19 - 100	**10** - 114	22 - 100	9 - 113
1,2-Dichlorobenzene	30 - **100**	22 - **100**	34 - **100**	24 - 104
2-Methylphenol	52 - **100**	44 - 106	36 - 110	24 - 122
2,2'-oxybis(1-chloropropane)	32 - 111	19 - 124	29 - 118	14 - 133
4-Methylphenol	53 - 102	45 - 110	38 - 104	27 - 115
N-Nitroso-di-n-propylamine	43 - 104	33 - 114	38 - 115	25 - 128
Hexachloroethane	12 - **100**	**10** - **100**	24 - **100**	13 - 100
Nitrobenzene	33 - 125	18 - 140	45 - 106	35 - 116
Isophorone	57 - 115	47 - 125	55 - 119	44 - 130
2-Nitrophenol	56 - 102	48 - 110	46 - 118	34 - 130
2,4-Dimethyphenol	29 - **100**	20 - **100**	28 - 105	15 - 118
Bis-(2-chloroethoxy) methane	54 - 101	46 - 109	44 - 118	32 - 130
Benzoic Acid [3]	**10** - 131	**10** - 151	11 - **100**	**10** - **100**
2,4-Dichlorophenol	56 - 104	48 - 112	43 - 121	30 - 134
1,2,4-Trichlorobenzene	27 - **100**	18 - **100**	35 - **100**	25 - 107
Naphthalene	45 - **100**	38 - **100**	36 - 111	24 - 124
4-Chloroaniline [3]	**10** - 139	**10** - 161	10 - 174	**10** - 201
2-Chloronaphthalene	45 - **100**	37 - 105	39 - 118	26 - 131
Hexachlorobutadiene	**10** - **100**	**10** - **100**	24 - **100**	12 - 108
4-Chloro-3-methylphenol	53 - 109	44 - 118	45 - 122	32 - 135
2-Methylnaphthalene	46 - **100**	38 - 100	45 - 103	35 - 113
Hexachlorocyclopentadiene	**10** - **100**	**10** - **100**	23 - 108	**10** - 122
2,4,6-Trichlorophenol	58 - 108	50 - 116	48 - 122	36 - 134
2,4,5-Trichlorophenol	58 - 107	50 - 115	48 - 122	36 - 134
2-Nitroaniline	50 - 107	41 - 117	48 - 118	36 - 130
Dimethylphthalate	58 - 107	50 - 115	50 - 120	38 - 132
Acenaphthylene	57 - 100	50 - 107	50 - 119	39 - 131
2,6-Dinitrotoluene	58 - 112	49 - 121	48 - 133	34 - 147
3-Nitroaniline [3]	21 - 150	**10** - 172	54 - 140	40 - 154
Acenaphthene	51 - **100**	43 - 106	41 - 120	28 - 133
2,4-Dinitrophenol	12 - 169	**10** - 195	23 - 176	**10** - 202

TZ83 : 00017

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Dibenzofuran	57 - 100	50 - 107	51 - 114	41 - 125
4-Nitrophenol [3]	35 - 119	21 - 133	13 - **100**	**10** - **100**
2,4-Dinitrotoluene	58 - 117	48 - 127	51 - 134	37 - 148
Fluorene	56 - 104	48 - 112	50 - 120	38 - 132
Diethylphthlalate	52 - 111	42 - 121	48 - 122	36 - 134
4-Chlorophenyl-phenyl ether	55 - 104	47 - 112	50 - 118	39 - 129
4-Nitroaniline	49 - 112	39 - 123	42 - 136	26 - 152
4,6-Dinitro-2-Methylphenol	13 - 139	**10** - 160	32 - 121	17 - 136
N-Nitrosodiphenylamine	60 - 136	47 - 149	58 - 141	44 - 155
4-Bromophenyl-phenyl ether	55 - 103	47 - 111	50 - 122	38 - 134
Hexachlorobenzene	54 - 106	45 - 115	47 - 125	34 - 138
Pentachlorophenol	46 - 114	35 - 125	35 - 130	19 - 146
Phenanthrene	56 - 102	48 - 110	49 - 120	37 - 132
Anthracene	56 - 101	49 - 109	53 - 116	43 - 127
Carbazole	60 - 108	52 - 116	57 - 122	46 - 133
Di-n-butylphthalate	56 - 112	47 - 121	57 - 121	46 - 132
Fluoranthene	57 - 110	48 - 119	56 - 119	46 - 130
Pyrene	48 - 119	36 - 131	37 - 143	19 - 161
Butylbenzylphthalate	51 - 114	41 - 125	34 - 152	14 - 172
Benzo(a)Anthracene	55 - 105	47 - 113	49 - 129	36 - 142
3,3'-Dichlorbenzidine [3]	**10** - 128	**10** - 148	50 - 128	37 - 141
Chrysene	55 - 104	47 - 112	45 - 128	31 - 142
bis(2-Ethylhexyl) phthalate	28 - 164	**10** - 187	57 - 133	44 - 146
Di-n-octylphthalate	57 - 107	49 - 115	52 - 120	41 - 131
Benzofluoranthene(s) (Total)	30 - 160[10]	30 - 160[10]	30 - 160[10]	30 - 160[10]
Benzo(a)Pyrene	45 - 103	35 - 113	46 - 109	36 - 120
Indeno(1,2,3-cd)Pyrene	35 - 118	21 - 132	34 - 136	17 - 153
Dibenz(a,h)anthracene	42 - 119	29 - 132	41 - 134	26 - 150
Benzo(g,h,i)Perylene	39 - 123	25 - 137	41 - 133	26 - 148
Aniline [3]	**10** - **100**	**10** - **100**	28 - 126	12 - 142
1,2-Diphenylhydrazine /Azobenzene	57 - 109	48 - 118	55 - 119	44 - 130
N-Nitrosodimethylamine	49 - **100**	41 - 104	31 - **100**	21 - 105
1-Methylnaphthalene	46 - **100**	37 - 107	43 - 115	31 - 127
1,4-Dioxane	40 - **100**	30 - 108	30 - 160 [4]	30 - 160 [4]
Pyridine	-	-	25 - **100**	15 - **100**
Tributyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Dibutyl Phenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]

TZ83 : 00018

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Butyl Diphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Triphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Butylated Hydroxytoluene (BHT)	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
MB / LCS Surrogate Recovery				
d4-2-Chlorophenol	53 - 100	(5)	49 - 101	(5)
d4-1,2-Dichlorobenzene	38 - **100**	(5)	40 - **100**	(5)
2,4,6-Tribromophenol	52 - 123	(5)	51 - 122	(5)
2-Fluorophenol	46 - **100**	(5)	31 - **100**	(5)
d5-Phenol [3]	50 - 100	52 - 108	19 - **100**	12 - **100**
d5-Nitrobenzene	46 - 100	(5)	46 - 101	(5)
2-Fluorobiphenyl	49 - **100**	(5)	49 - 103	(5)
d14-p-Terphenyl	53 - 119	(5)	49 - 130	(5)
d8-1,4-Dioxane	45 - **100**	(5)	30 - 160 [4]	(5)
Sample Surrogate Recovery				
d4-2-Chlorophenol	44 - **100**	(5)	23 - 104	(5)
d4-1,2-Dichlorobenzene	32 - **100**	(5)	22 - **100**	(5)
2,4,6-Tribromophenol	48 - 118	(5)	22 - 125	(5)
2-Fluorophenol	38 - **100**	(5)	18 - **100**	(5)
d5-Phenol	41 - **100**	32 - 104	**10** - **100**	17 - **100**
d5-Nitrobenzene	39 - **100**	(5)	21 - 106	(5)
2-Fluorobiphenyl	42 - **100**	(5)	26 - 104	(5)
d14-p-Terphenyl	26 - 114	(5)	11 - 132	(5)
d8-1,4-Dioxane	32 - **100**	(5)	30 - 160 [4]	(5)

(1) Control Limits calculated using all data generated 1/1/07 through 12/1/07.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard [6] as beyond the CL but still within the ME limits. ARI defines ME limits as between 3 and 4 standard deviations around the mean with upper limit ≥ 100%. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances in an analysis require corrective action.
(3) These are "**poor performers**" defined in the DoD QSM[7] as compounds that "produce low mean recoveries and high standard deviations, resulting in wide LCS control limits with particularly low lower control limits (sometimes-negative values). ARI does not control batch acceptance based on these compounds since there is a high level of uncertainty in their recovery."
(4) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. **DO NOT** use these limits as the sole reason to reject the data from a batch of analyses.
(5) Marginal Exceedances not allowed for surrogate unless it is a "poor performer".
(6) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(7) Page 182 of: **Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3 Final, March 2005** Prepared By Environmental Data Quality Workgroup, Department of Navy, Lead Service (Based On National Environmental Laboratory Accreditation Conference (NELAC) Chapter 5 (Quality Systems) NELAC Voted Version – 5 June 2003
(8) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(9) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(10) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

TZ83:00019

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Polycyclic Aromatic Hydrocarbons EPA Method SW-846-8270D [1,2]

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Sample Matrix	Water		Soil	
Sample Volume / Final Volume	**500 mL to 0.5 mL**		**7.5 g / 0.5 mL**	
LCS Spike Recovery [6]	**Control Limits**	**ME Limits [3]**	**Control Limits**	**ME Limits [3]**
Napthalene	30 - **100**	21 - **100**	37 - **100**	31 - **100**
2-Methylnapthalene	33 - 108	21 - 121	43 - 101	33 - 111
1-Methylnapthalene	34 - **100**	26 - **100**	39 - **100**	32 - **100**
Acenaphthylene	45 - **100**	38 - **100**	44 - **100**	37 - **100**
Acenapthene	40 - **100**	32 - **100**	41 - **100**	35 - **100**
Dibenzofuran	45 - **100**	37 - **100**	44 - **100**	37 - **100**
Fluorene	45 - **100**	37 - 105	49 - **100**	43 - **100**
Phenanthrene	47 - 101	38 - 110	48 - **100**	42 - **100**
Anthracene	47 - **100**	38 - 108	50 - **100**	44 - **100**
Fluoranthene	48 - 110	38 - 120	54 - **100**	47 - 107
Pyrene	48 - 109	38 - 119	41 - 105	30 - 116
Benz(a)anthracene	44 - 105	34 - 115	49 - **100**	42 - 102
Chyrsene	50 - 103	41 - 112	50 - **100**	43 - 101
Benzofluoranthene(s) (Total)	30 - 160[7]	30 - 160[7]	30 - 160[7]	30 - 160[7]
Benzo(a)pyrene	44 - 107	34 - 118	50 - **100**	42 - 105
Indeno(1,2,3-cd)pyrene	30 - 106	17 - 119	33 - 101	22 - 112
Dibenzo(a,h)anthracene	42 - 103	32 - 113	37 - 104	26 - 115
Benzo(g,h,i)Perylene	42 - 102	32 - 112	33 - 107	21 - 119
MB / LCS Surrogate Recovery		-		
d14-p-Terphenyl	52 - 110	(5)	47 - 112	(5)
2-Fluorobiphenyl	36 - **100**	(5)	40 - **100**	(5)
Sample Surrogate Recovery				
d14-p-Terphenyl	23 - 120	(5)	35 - 112	(5)
2-Fluorobiphenyl	38 - **100**	(5)	34 - **100**	(5)

(1) Control limits calculated using all available spike recovery data from 7/1/07 through 2/27/09.
(2) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(3) **ME** = A marginal exceedance defined in the NELAC Standard (4) as beyond the LCS-CL but still within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. A maximum of one marginal exceedance is acceptable. Two or more marginal exceedances require corrective action.
(4) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(5) Marginal Exceedances are not allowed for surrogate standards.
(6) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(7) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

TZ83:00020

Quality Control Parameters for Metals Analysis using ICP-OES

	Aqueous Samples[2]			Spike Recovery		RPD[5]	Solids[3]	Tissue[4]
Analyte	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ mg/kg	LOQ mg/kg
Aluminum	7.57	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Antimony	6.28	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Arsenic	3.33	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Barium	1.33	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Beryllium	0.16	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Boron	7.39	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Cadmium	0.18	0.5	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Calcium	11.27	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Chromium	1.24	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Cobalt	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Copper	0.92	1.0	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Iron	7.50	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Lead	1.55	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Magnesium	9.61	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Manganese	0.28	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Molybdenum	0.79	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Nickel	3.86	5.0	**10**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Potassium	65.70	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Selenium	4.99	25	**50**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Silicon	8.17	30	**60**	75 – 125	80 – 120	≤ 20	**(6)**	**(6)**
Silver	0.43	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Sodium	11.35	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Strontium	0.09	1.0	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Thallium	3.10	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Tin	1.41	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**
Titanium	2.11	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Vanadium	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Zinc	1.45	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Tissue is reported on an "as received" (wet weight) basis using 2.5 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

(6) ARI does not analyze for Silicon in solids or tissue samples

TZ83 : 00021

Quality Control Parameters for Metals Analysis using ICP-MS

Analyte	Mass	Aqueous Samples[2]			Spike Recovery		RPD[4]	Solids[3]
		DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ[1] mg/kg
Aluminum	27	1.601	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Antimony	121	0.010	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
	123	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #1	75	0.048	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #2	75	0.092	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Barium	135	0.020	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	137	0.019	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Beryllium	9	0.021	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Cadmium	111	0.010	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
	114	0.005	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Calcium	43	3.983	25	**50.0**	75 – 125	80 – 120	≤ 20	**50.0**
Chromium	52	0.045	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	53	0.118	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Cobalt	59	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Copper	63	0.158	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	65	0.236	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Iron	54	5.753	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
	57	3.876	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Lead	208	0.046	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Magnesium	24	0.297	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Manganese	55	0.022	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Molybdenum	98	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Nickel	60	0.079	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	62	0.089	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Potassium	39	2.944	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Selenium	82	0.127	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	78	0.324	0.25	**2.0**	75 – 125	80 – 120	≤ 20	**2.0**
Silver	107	0.008	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Sodium	23	2.833	50	**100.0**	75 – 125	80 – 120	≤ 20	**100.0**
Thorium	232	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Thallium	205	0.004	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Uranium	238	0.003	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Vanadium	51	0.043	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Zinc	66	0.497	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	67	0.531	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	68	0.524	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

TZ83 : 00022

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Conventional Wet Chemistry

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI's Control Limits	
Sample Matrix:	Water	Soil / Sediment
Matrix Spike Recoveries	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 125	75 - 125
Chloride	75 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
Duplicate RPDs		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

TZ83 : 00023

Semivolatile Analysis
Report and Summary QC Forms

ARI Job ID: TZ83

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-14D-120211
SAMPLE

Lab Sample ID: TZ83A
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/07/11
Date Analyzed: 12/12/11 17:50
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-14D-120211**
 SAMPLE

Lab Sample ID: TZ83A QC Report No: TZ83-ERM-West
LIMS ID: 11-27856 Project: RG
Matrix: Water 128296
Date Analyzed: 12/12/11 17:50

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	64.0%	2-Fluorobiphenyl	62.4%
d14-p-Terphenyl	53.6%	d4-1,2-Dichlorobenzene	62.0%
d5-Phenol	68.8%	2-Fluorophenol	63.5%
2,4,6-Tribromophenol	86.1%	d4-2-Chlorophenol	68.5%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ83-ERM-West
Project: RG
128296

Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT OUT
MB-120711	74.8%	67.2%	74.0%	63.6%	80.0%	73.3%	84.0%	78.1%	0
LCS-120711	68.8%	71.6%	84.4%	55.6%	72.8%	64.3%	96.8%	69.9%	0
LCSD-120711	68.4%	70.4%	84.4%	56.8%	69.9%	64.8%	94.9%	70.4%	0
MW-14D-120211	64.0%	62.4%	53.6%	62.0%	68.8%	63.5%	86.1%	68.5%	0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(46-100)	(39-100)
(FBP) = 2-Fluorobiphenyl	(49-100)	(42-100)
(TPH) = d14-p-Terphenyl	(53-119)	(26-114)
(DCB) = d4-1,2-Dichlorobenzene	(38-100)	(32-100)
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27856 to 11-27856

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: LCS-120711
LCS/LCSD

Lab Sample ID: LCS-120711
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted LCS/LCSD: 12/07/11

Date Analyzed LCS: 12/09/11 23:13
LCSD: 12/09/11 23:46
Instrument/Analyst LCS: NT6/JZ
LCSD: NT6/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Phenol	21.4	25.0	85.6%	21.4	25.0	85.6%	0.0%
Bis-(2-Chloroethyl) Ether	20.0	25.0	80.0%	20.4	25.0	81.6%	2.0%
2-Chlorophenol	19.6	25.0	78.4%	20.2	25.0	80.8%	3.0%
1,3-Dichlorobenzene	12.5	25.0	50.0%	12.1	25.0	48.4%	3.3%
1,4-Dichlorobenzene	13.0	25.0	52.0%	12.7	25.0	50.8%	2.3%
Benzyl Alcohol	23.6	25.0	94.4%	22.8	25.0	91.2%	3.4%
1,2-Dichlorobenzene	13.7	25.0	54.8%	13.2	25.0	52.8%	3.7%
2-Methylphenol	20.6	25.0	82.4%	21.4	25.0	85.6%	3.8%
2,2'-Oxybis(1-Chloropropane)	19.5	25.0	78.0%	19.8	25.0	79.2%	1.5%
4-Methylphenol	42.6	50.0	85.2%	43.4	50.0	86.8%	1.9%
N-Nitroso-Di-N-Propylamine	22.6	25.0	90.4%	22.9	25.0	91.6%	1.3%
Hexachloroethane	11.0	25.0	44.0%	10.6	25.0	42.4%	3.7%
Nitrobenzene	20.5	25.0	82.0%	20.0	25.0	80.0%	2.5%
Isophorone	23.7	25.0	94.8%	23.4	25.0	93.6%	1.3%
2-Nitrophenol	20.9	25.0	83.6%	21.3	25.0	85.2%	1.9%
2,4-Dimethylphenol	46.9	75.0	62.5%	54.6	75.0	72.8%	15.2%
Benzoic Acid	36.0	138	26.1%	127	138	92.0%	112%
bis(2-Chloroethoxy) Methane	20.3	25.0	81.2%	18.2	25.0	72.8%	10.9%
2,4-Dichlorophenol	53.9	75.0	71.9%	56.2	75.0	74.9%	4.2%
1,2,4-Trichlorobenzene	14.0	25.0	56.0%	13.8	25.0	55.2%	1.4%
Naphthalene	18.0	25.0	72.0%	18.1	25.0	72.4%	0.6%
4-Chloroaniline	56.8	75.0	75.7%	54.1	75.0	72.1%	4.9%
Hexachlorobutadiene	12.0	25.0	48.0%	11.8	25.0	47.2%	1.7%
4-Chloro-3-methylphenol	63.8	75.0	85.1%	65.0	75.0	86.7%	1.9%
2-Methylnaphthalene	19.6	25.0	78.4%	19.7	25.0	78.8%	0.5%
Hexachlorocyclopentadiene	28.4	75.0	37.9%	30.8	75.0	41.1%	8.1%
2,4,6-Trichlorophenol	61.9	75.0	82.5%	63.3	75.0	84.4%	2.2%
2,4,5-Trichlorophenol	63.7	75.0	84.9%	64.6	75.0	86.1%	1.4%
2-Chloronaphthalene	20.1	25.0	80.4%	20.0	25.0	80.0%	0.5%
2-Nitroaniline	72.1	75.0	96.1%	72.8	75.0	97.1%	1.0%
Dimethylphthalate	23.9	25.0	95.6%	23.5	25.0	94.0%	1.7%
Acenaphthylene	22.3	25.0	89.2%	21.4	25.0	85.6%	4.1%
3-Nitroaniline	74.2	75.0	98.9%	75.5	75.0	101%	1.7%
Acenaphthene	21.8	25.0	87.2%	21.7	25.0	86.8%	0.5%
2,4-Dinitrophenol	123	138	89.1%	124	138	89.9%	0.8%
4-Nitrophenol	90.4 Q	75.0	121%	90.5 Q	75.0	121%	0.1%
Dibenzofuran	23.2	25.0	92.8%	23.2	25.0	92.8%	0.0%
2,6-Dinitrotoluene	70.5	75.0	94.0%	70.3	75.0	93.7%	0.3%
2,4-Dinitrotoluene	73.2	75.0	97.6%	73.5	75.0	98.0%	0.4%
Diethylphthalate	24.3	25.0	97.2%	24.0	25.0	96.0%	1.2%
4-Chlorophenyl-phenylether	22.7	25.0	90.8%	22.8	25.0	91.2%	0.4%
Fluorene	23.2	25.0	92.8%	23.3	25.0	93.2%	0.4%
4-Nitroaniline	80.6	75.0	107%	77.9	75.0	104%	3.4%
4,6-Dinitro-2-Methylphenol	122	138	88.4%	124	138	89.9%	1.6%
N-Nitrosodiphenylamine	18.2	25.0	72.8%	13.1	25.0	52.4%	32.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: LCS-120711
LCS/LCSD

Lab Sample ID: LCS-120711
LIMS ID: 11-27856
Matrix: Water
Date Analyzed LCS: 12/09/11 23:13
LCSD: 12/09/11 23:46

QC Report No: TZ83-ERM-West
Project: RG
128296

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
4-Bromophenyl-phenylether	20.6	25.0	82.4%	20.4	25.0	81.6%	1.0%
Hexachlorobenzene	20.9	25.0	83.6%	20.8	25.0	83.2%	0.5%
Pentachlorophenol	69.4	75.0	92.5%	71.0	75.0	94.7%	2.3%
Phenanthrene	22.0	25.0	88.0%	21.9	25.0	87.6%	0.5%
Carbazole	22.1	25.0	88.4%	19.8	25.0	79.2%	11.0%
Anthracene	21.3	25.0	85.2%	21.3	25.0	85.2%	0.0%
Di-n-Butylphthalate	23.5	25.0	94.0%	23.8	25.0	95.2%	1.3%
Fluoranthene	24.4	25.0	97.6%	24.6	25.0	98.4%	0.8%
Pyrene	24.9	25.0	99.6%	25.4	25.0	102%	2.0%
Butylbenzylphthalate	26.4	25.0	106%	27.0	25.0	108%	2.2%
3,3'-Dichlorobenzidine	55.0	75.0	73.3%	53.8	75.0	71.7%	2.2%
Benzo(a)anthracene	24.5	25.0	98.0%	25.1	25.0	100%	2.4%
bis(2-Ethylhexyl)phthalate	23.5	25.0	94.0%	24.2	25.0	96.8%	2.9%
Chrysene	23.6	25.0	94.4%	24.2	25.0	96.8%	2.5%
Di-n-Octyl phthalate	20.1	25.0	80.4%	20.6	25.0	82.4%	2.5%
Benzo(a)pyrene	21.6	25.0	86.4%	21.6	25.0	86.4%	0.0%
Indeno(1,2,3-cd)pyrene	18.0	25.0	72.0%	18.5	25.0	74.0%	2.7%
Dibenz(a,h)anthracene	18.2	25.0	72.8%	18.7	25.0	74.8%	2.7%
Benzo(g,h,i)perylene	16.7 Q	25.0	66.8%	16.8 Q	25.0	67.2%	0.6%
2,3,4,6-Tetrachlorophenol	26.9	25.0	108%	27.6	25.0	110%	2.6%
1-Methylnaphthalene	20.5	25.0	82.0%	20.5	25.0	82.0%	0.0%
Total Benzofluoranthenes	48.6	50.0	97.2%	50.3	50.0	101%	3.4%

Semivolatile Surrogate Recovery

	LCS	LCSD
d5-Nitrobenzene	68.8%	68.4%
2-Fluorobiphenyl	71.6%	70.4%
d14-p-Terphenyl	84.4%	84.4%
d4-1,2-Dichlorobenzene	55.6%	56.8%
d5-Phenol	72.8%	69.9%
2-Fluorophenol	64.3%	64.8%
2,4,6-Tribromophenol	96.8%	94.9%
d4-2-Chlorophenol	69.9%	70.4%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ83MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Lab File ID: 12091117 Date Extracted: 12/07/11

Instrument ID: NT6 Date Analyzed: 12/09/11

Matrix: LIQUID Time Analyzed: 2240

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ76LCSW1	TZ76LCSW1	12091118	12/09/11
02	TZ76LCSDW1	TZ76LCSDW1	12091119	12/09/11
03	MW-14D-120211	TZ83A	12121103	12/12/11
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-120711
METHOD BLANK

Lab Sample ID: MB-120711
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 22:40
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U
84-66-2	Diethylphthalate	1.0	< 1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MB-120711**
 METHOD BLANK

Lab Sample ID: MB-120711 QC Report No: TZ83-ERM-West
LIMS ID: 11-27856 Project: RG
Matrix: Water 128296
Date Analyzed: 12/09/11 22:40

CAS Number	Analyte	RL	Result
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Nitrobenzene	74.8%	2-Fluorobiphenyl	67.2%
d14-p-Terphenyl	74.0%	d4-1,2-Dichlorobenzene	63.6%
d5-Phenol	80.0%	2-Fluorophenol	73.3%
2,4,6-Tribromophenol	84.0%	d4-2-Chlorophenol	78.1%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 11/21/11 DFTPP Injection Time: 1033

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.9
68	Less than 2.0% of mass 69	0.3 (0.6)1
69	Mass 69 relative abundance	41.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	51.6
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	22.7
365	Greater than 1.0% of mass 198	2.28
441	0.0 - 24.0% of mass 442	11.1 (14.4)2
442	50.0 - 200.0% of mass 198	76.8
443	15.0 - 24.0% of mass 442	15.1 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC11121	IC11121	11211102	11/21/11	1124
02	IC51121	IC51121	11211103	11/21/11	1157
03	IC101121	IC101121	11211104	11/21/11	1230
04	IC401121	IC401121	11211105	11/21/11	1320
05	IC601121	IC601121	11211106	11/21/11	1353
06	IC801121	IC801121	11211107	11/21/11	1426
07	IC251121	IC250121	11211109	11/21/11	1737
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

5B
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 12/09/11 DFTPP Injection Time: 1351

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	41.8
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	10.0 - 80.0% of mass 198	49.8
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	23.1
365	Greater than 1.0% of mass 198	2.56
441	0.0 - 24.0% of mass 442	13.2 (15.0)2
442	50.0 - 200.0% of mass 198	88.1
443	15.0 - 24.0% of mass 442	16.7 (18.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1209	CC1209	12091101	12/09/11	1351
02	TZ76MBW1	TZ76MBW1	12091117	12/09/11	2240
03	TZ76LCSW1	TZ76LCSW1	12091118	12/09/11	2313
04	TZ76LCSDW1	TZ76LCSDW1	12091119	12/09/11	2346
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 12/12/11 DFTPP Injection Time: 1644

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	24.4
68	Less than 2.0% of mass 69	0.2 (0.4)1
69	Mass 69 relative abundance	42.4
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	50.5
197	Less than 2.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 60.0% of mass 198	22.4
365	Greater than 1.0% of mass 198	2.21
441	0.0 - 24.0% of mass 442	11.6 (14.8)2
442	50.0 - 200.0% of mass 198	78.4
443	15.0 - 24.0% of mass 442	15.2 (19.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1212	CC1212	12121101	12/12/11	1644
02	MW-14D-120211	TZ83A	12121103	12/12/11	1750
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ83:00035

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
Phenol	2.046	1.795	1.782	1.677	1.628	1.542	1.504	1.710	10.8
Bis(2-Chloroethyl)ether	1.582	1.343	1.489	1.368	1.347	1.304	1.290	1.389	7.7
2-Chlorophenol	1.675	1.408	1.453	1.395	1.346	1.287	1.255	1.403	9.9
1,3-Dichlorobenzene	1.828	1.568	1.759	1.631	1.573	1.502	1.461	1.617	8.3
1,4-Dichlorobenzene	1.834	1.581	1.743	1.617	1.530	1.497	1.436	1.605	8.7
1,2-Dichlorobenzene	1.761	1.496	1.614	1.516	1.428	1.378	1.364	1.508	9.3
Benzyl alcohol	0.890	0.850	0.928	0.863	0.829	0.822	0.831	0.859	4.5
2,2'-oxybis(1-Chloropropane)	1.340	1.123	1.212	1.115	1.072	1.030	0.993	1.126	10.4
2-Methylphenol	1.488	1.327	1.302	1.250	1.219	1.168	1.100	1.265	9.9
Hexachloroethane	0.682	0.585	0.657	0.625	0.606	0.596	0.584	0.619	6.1
N-Nitroso-di-n-propylamine	1.090	0.950	1.005	0.927	0.882	0.878	0.837	0.938	9.2
4-Methylphenol	1.567	1.356	1.352	1.252	1.212	1.181	1.095	1.288	12.0
Nitrobenzene	0.441	0.378	0.428	0.396	0.379	0.363	0.354	0.391	8.3
Isophorone	0.652	0.568	0.635	0.584	0.563	0.567	0.545	0.588	6.8
2-Nitrophenol	0.190	0.181	0.192	0.198	0.192	0.190	0.187	0.190	2.7
2,4-Dimethylphenol	0.399	0.352	0.357	0.347	0.330	0.322	0.310	0.345	8.4
Bis(2-Chloroethoxy)methane	0.471	0.421	0.468	0.435	0.412	0.408	0.400	0.431	6.7
2,4-Dichlorophenol	0.318	0.293	0.300	0.296	0.280	0.273	0.261	0.289	6.6
1,2,4-Trichlorobenzene	0.368	0.310	0.347	0.325	0.307	0.303	0.296	0.322	8.2
Naphthalene	1.178	1.014	1.090	0.992	0.920	0.870	0.814	0.982	12.9
Benzoic acid		0.120	0.164	0.214	0.212	0.239	0.230	0.196	0.992
4-Chloroaniline	0.454	0.417	0.435	0.399	0.366	0.358	0.320	0.393	12.1
Hexachlorobutadiene	0.193	0.165	0.186	0.180	0.165	0.166	0.165	0.174	6.8
4-Chloro-3-methylphenol	0.307	0.288	0.282	0.275	0.262	0.271	0.248	0.276	6.8
2-Methylnaphthalene	0.621	0.531	0.563	0.518	0.478	0.481	0.446	0.520	11.4
Hexachlorocyclopentadiene	0.239	0.256	0.338	0.361	0.358	0.345	0.375	0.324	16.7
2,4,6-Trichlorophenol	0.320	0.312	0.346	0.351	0.343	0.341	0.340	0.336	4.3
2,4,5-Trichlorophenol	0.330	0.320	0.362	0.373	0.360	0.361	0.363	0.353	5.6
2-Chloronaphthalene	1.301	1.086	1.198	1.110	1.029	0.949	0.943	1.088	12.0
2-Nitroaniline	0.247	0.266	0.295	0.281	0.269	0.280	0.266	0.272	5.6
Acenaphthylene	1.786	1.610	1.787	1.664	1.561	1.492	1.445	1.621	8.3
Dimethylphthalate	1.323	1.124	1.212	1.122	1.057	1.097	1.064	1.143	8.3
2,6-Dinitrotoluene	0.234	0.248	0.279	0.271	0.255	0.272	0.262	0.260	6.0
Acenaphthene	1.213	1.012	1.098	1.035	0.964	0.951	0.924	1.028	9.8
3-Nitroaniline	0.293	0.280	0.292	0.270	0.248	0.227		0.268	9.8
2,4-Dinitrophenol		0.060	0.099	0.143	0.140	0.163	0.158	0.127	0.995
Dibenzofuran	1.704	1.471	1.541	1.419	1.315	1.298	1.204	1.422	11.9

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-1

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	$\overline{RRF}$	%RSD /R^2
4-Nitrophenol	0.066	0.109	0.112	0.127	0.117	0.129	0.117	0.111	19.2
2,4-Dinitrotoluene	0.310	0.315	0.353	0.349	0.328	0.368	0.345	0.338	6.3
Fluorene	1.346	1.162	1.250	1.170	1.074	1.083	1.029	1.159	9.5
4-Chlorophenyl-phenylether	0.668	0.548	0.600	0.565	0.530	0.536	0.516	0.566	9.3
Diethylphthalate	1.263	1.088	1.145	1.067	0.990	1.031	0.971	1.079	9.3
4-Nitroaniline	0.240	0.268	0.269	0.271	0.242	0.279	0.246	0.259	6.2
4,6-Dinitro-2-methylphenol		0.104	0.123	0.142	0.140	0.142	0.145	0.133	12.0
N-Nitrosodiphenylamine (1)	0.697	0.598	0.658	0.597	0.589	0.554	0.568	0.609	8.4
4-Bromophenyl-phenylether	0.252	0.203	0.238	0.215	0.214	0.202	0.210	0.219	8.6
Hexachlorobenzene	0.264	0.220	0.248	0.228	0.223	0.210	0.217	0.230	8.3
Pentachlorophenol		0.079	0.110	0.117	0.122	0.129	0.130	0.114	16.5
Phenanthrene	1.306	1.096	1.165	1.076	1.017	0.962	0.947	1.081	11.6
Anthracene	1.262	1.117	1.215	1.126	1.059	0.993	0.984	1.108	9.5
Carbazole	1.122	1.038	1.095	1.047	0.963	0.951	0.916	1.019	7.6
Di-n-butylphthalate	1.220	1.155	1.248	1.218	1.118	1.088	1.056	1.158	6.4
Fluoranthene	1.098	1.046	1.090	1.062	0.972	0.968	0.951	1.027	6.0
Pyrene	1.517	1.207	1.344	1.210	1.183	1.116	1.090	1.238	11.9
Butylbenzylphthalate	0.485	0.496	0.567	0.559	0.549	0.542	0.534	0.533	5.8
Benzo(a)anthracene	1.044	0.938	1.042	0.994	0.966	0.922	0.913	0.974	5.6
3,3'-Dichlorobenzidine	0.322	0.334	0.357	0.341	0.320	0.286	0.277	0.320	9.1
Chrysene	1.162	0.950	1.057	1.012	0.969	0.934	0.929	1.002	8.4
bis(2-Ethylhexyl)phthalate	0.615	0.538	0.612	0.607	0.594	0.585	0.586	0.591	4.4
Di-n-octylphthalate	1.192	0.962	1.061	1.038	0.988	0.978	0.962	1.026	8.1
Benzo(b)fluoranthene	1.041	0.998	1.057	1.058	1.053	1.000	1.007	1.030	2.7
Benzo(k)fluoranthene	1.261	1.058	1.255	1.092	1.011	0.946	0.903	1.075	13.0
Benzo(a)pyrene	0.926	0.882	0.993	0.956	0.934	0.893	0.893	0.925	4.3
Indeno(1,2,3-cd)pyrene	1.249	1.102	1.325	1.269	1.241	1.177	1.231	1.228	5.8
Dibenzo(a,h)anthracene	1.016	0.916	1.088	1.064	1.018	0.965	0.998	1.009	5.7
Benzo(g,h,i)perylene	1.094	0.968	1.157	1.103	1.103	1.058	1.108	1.084	5.4
N-Nitrosodimethylamine	0.953	0.886	1.001	0.951	0.959	0.934	0.950	0.948	3.6
Aniline	2.291	2.084	2.213	2.022	1.955	1.884	1.752	2.029	9.2
Benzidine		0.092	0.176	0.217	0.248	0.239	0.252	0.204	0.992
Pyridine	1.564	1.631	1.863	1.811	1.771	1.760	1.742	1.734	6.0
1-methylnaphthalene	0.599	0.531	0.555	0.519	0.473	0.485	0.448	0.516	10.0
Azobenzene (1,2-DP-Hydrazine	1.372	1.231	1.322	1.242	1.151	1.159	1.096	1.225	8.0
2,3,4,6-Tetrachlorophenol	0.201	0.214	0.229	0.246	0.238	0.253	0.243	0.232	8.1
1,2,4,5-Tetrachlorobenzene	0.530	0.463	0.526	0.500	0.477	0.452	0.476	0.489	6.2

(1) Cannot be seperated from Diphenylamine

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-2

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	$\overline{RRF}$	%RSD /R^2
Total Benzofluoranthenes	1.094	0.982	1.099	1.022	0.985	0.921	0.898	1.000	7.8
2-Fluorophenol	1.558	1.439	1.559	1.465	1.394	1.361		1.463	5.6
Phenol-d5	2.012	1.839	1.911	1.729	1.669	1.638		1.800	8.1
2-Chlorophenol-d4	1.543	1.393	1.498	1.381	1.333	1.302		1.408	6.7
1,2-Dichlorobenzene-d4	1.124	0.997	1.030	0.944	0.890	0.858		0.974	10.0
Nitrobenzene-d5	0.414	0.396	0.436	0.417	0.408	0.402		0.412	3.3
2-Fluorobiphenyl	1.483	1.302	1.425	1.318	1.258	1.191		1.330	8.1
2,4,6-Tribromophenol	0.133	0.128	0.146	0.144	0.135	0.149		0.139	6.0
Terphenyl-d14	1.089	0.778	0.826	0.736	0.731	0.708		0.811	17.5

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.838	0.800	AVRG	7.5
Bis(2-Chloroethyl)ether	1.389	1.430	0.700	AVRG	3.0
2-Chlorophenol	1.403	1.440	0.800	AVRG	2.6
1,3-Dichlorobenzene	1.617	1.598	0.010	AVRG	-1.2
1,4-Dichlorobenzene	1.605	1.592	0.010	AVRG	-0.8
1,2-Dichlorobenzene	1.508	1.513	0.010	AVRG	0.3
Benzyl alcohol	0.859	0.966	0.010	AVRG	12.4
2,2'-oxybis(1-Chloropropane)	1.126	1.168	0.010	AVRG	3.7
2-Methylphenol	1.265	1.368	0.700	AVRG	8.1
Hexachloroethane	0.619	0.604	0.300	AVRG	-2.4
N-Nitroso-di-n-propylamine	0.938	1.058	0.500	AVRG	12.8
4-Methylphenol	1.288	1.431	0.600	AVRG	11.1
Nitrobenzene	0.391	0.404	0.200	AVRG	3.3
Isophorone	0.588	0.625	0.400	AVRG	6.3
2-Nitrophenol	0.190	0.203	0.100	AVRG	6.8
2,4-Dimethylphenol	0.345	0.360	0.200	AVRG	4.3
Bis(2-Chloroethoxy)methane	0.431	0.446	0.300	AVRG	3.5
2,4-Dichlorophenol	0.289	0.303	0.200	AVRG	4.8
1,2,4-Trichlorobenzene	0.322	0.319	0.010	AVRG	-0.9
Naphthalene	0.982	0.988	0.700	AVRG	0.6
Benzoic acid	50.00	47.79	0.010	LINR	-4.4
4-Chloroaniline	0.393	0.414	0.010	AVRG	5.3
Hexachlorobutadiene	0.174	0.169	0.010	AVRG	-2.9
4-Chloro-3-methylphenol	0.276	0.311	0.200	AVRG	12.7
2-Methylnaphthalene	0.520	0.545	0.400	AVRG	4.8
Hexachlorocyclopentadiene	0.324	0.328	0.050	AVRG	1.2
2,4,6-Trichlorophenol	0.336	0.360	0.200	AVRG	7.1
2,4,5-Trichlorophenol	0.353	0.385	0.200	AVRG	9.1
2-Chloronaphthalene	1.088	1.060	0.800	AVRG	-2.6
2-Nitroaniline	0.272	0.304	0.010	AVRG	11.8
Acenaphthylene	1.621	1.696	0.900	AVRG	4.6
Dimethylphthalate	1.143	1.224	0.010	AVRG	7.1
2,6-Dinitrotoluene	0.260	0.300	0.200	AVRG	15.4
Acenaphthene	1.028	1.043	0.900	AVRG	1.4
3-Nitroaniline	0.268	0.290	0.010	AVRG	8.2
2,4-Dinitrophenol	50.00	53.41	0.010	2ORDR	6.8
Dibenzofuran	1.422	1.487	0.800	AVRG	4.6

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.162	0.010	AVRG	45.9	<-
2,4-Dinitrotoluene	0.338	0.401	0.200	AVRG	18.6	
Fluorene	1.159	1.208	0.900	AVRG	4.2	
4-Chlorophenyl-phenylether	0.566	0.608	0.400	AVRG	7.4	
Diethylphthalate	1.079	1.187	0.010	AVRG	10.0	
4-Nitroaniline	0.259	0.307	0.010	AVRG	18.5	
4,6-Dinitro-2-methylphenol	0.133	0.138	0.010	AVRG	3.8	
N-Nitrosodiphenylamine(1)	0.609	0.608	0.010	AVRG	-0.2	
4-Bromophenyl-phenylether	0.219	0.216	0.100	AVRG	-1.4	
Hexachlorobenzene	0.230	0.227	0.100	AVRG	-1.3	
Pentachlorophenol	0.114	0.117	0.050	AVRG	2.6	
Phenanthrene	1.081	1.065	0.700	AVRG	-1.5	
Anthracene	1.108	1.114	0.700	AVRG	0.5	
Carbazole	1.019	1.048	0.010	AVRG	2.8	
Di-n-butylphthalate	1.158	1.252	0.010	AVRG	8.1	
Fluoranthene	1.027	1.100	0.600	AVRG	7.1	
Pyrene	1.238	1.298	0.600	AVRG	4.8	
Butylbenzylphthalate	0.533	0.627	0.010	AVRG	17.6	
Benzo(a)anthracene	0.974	1.038	0.800	AVRG	6.6	
3,3'-Dichlorobenzidine	0.320	0.356	0.010	AVRG	11.2	
Chrysene	1.002	1.030	0.700	AVRG	2.8	
bis(2-Ethylhexyl)phthalate	0.591	0.618	0.010	AVRG	4.6	
Di-n-octylphthalate	1.026	1.005	0.010	AVRG	-2.0	
Benzo(b)fluoranthene	1.030	1.153	0.700	AVRG	11.9	
Benzo(k)fluoranthene	1.075	1.157	0.700	AVRG	7.6	
Benzo(a)pyrene	0.925	0.974	0.700	AVRG	5.3	
Indeno(1,2,3-cd)pyrene	1.228	1.001	0.500	AVRG	-18.5	
Dibenzo(a,h)anthracene	1.009	0.844	0.400	AVRG	-16.4	
Benzo(g,h,i)perylene	1.084	0.838	0.500	AVRG	-22.7	<-
N-Nitrosodimethylamine	0.948	0.940	0.010	AVRG	-0.8	
Aniline	2.029	1.986	0.010	AVRG	-2.1	
Benzidine	25.00	0.000	0.010	LINR		
Pyridine	1.734	1.652	0.010	AVRG	-4.7	
1-methylnaphthalene	0.516	0.542	0.010	AVRG	5.0	
Azobenzene (1,2-DP-Hydrazine	1.225		0.010	AVRG		
2,3,4,6-Tetrachlorophenol	0.232	0.273	0.010	AVRG	17.7	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.470	0.010	AVRG	-3.9
Total Benzofluoranthenes	1.000	1.096	0.010	AVRG	9.6
2-Fluorophenol	1.463	1.462	0.010	AVRG	-0.1
Phenol-d5	1.800	1.889	0.010	AVRG	4.9
2-Chlorophenol-d4	1.408	1.432	0.010	AVRG	1.7
1,2-Dichlorobenzene-d4	0.974	0.930	0.010	AVRG	-4.5
Nitrobenzene-d5	0.412	0.412	0.010	AVRG	0.0
2-Fluorobiphenyl	1.330	1.276	0.010	AVRG	-4.1
2,4,6-Tribromophenol	0.139	0.164	0.010	AVRG	18.0
Terphenyl-d14	0.811	0.808	0.010	AVRG	-0.4

<- Exceeds QC limit of 20% D

* RF less than minimum RF

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1644

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.834	0.800	AVRG	7.2
Bis(2-Chloroethyl)ether	1.389	1.420	0.700	AVRG	2.2
2-Chlorophenol	1.403	1.454	0.800	AVRG	3.6
1,3-Dichlorobenzene	1.617	1.633	0.010	AVRG	1.0
1,4-Dichlorobenzene	1.605	1.618	0.010	AVRG	0.8
1,2-Dichlorobenzene	1.508	1.524	0.010	AVRG	1.1
Benzyl alcohol	0.859	0.955	0.010	AVRG	11.2
2,2'-oxybis(1-Chloropropane)	1.126	1.180	0.010	AVRG	4.8
2-Methylphenol	1.265	1.364	0.700	AVRG	7.8
Hexachloroethane	0.619	0.606	0.300	AVRG	-2.1
N-Nitroso-di-n-propylamine	0.938	1.036	0.500	AVRG	10.4
4-Methylphenol	1.288	1.416	0.600	AVRG	9.9
Nitrobenzene	0.391	0.396	0.200	AVRG	1.3
Isophorone	0.588	0.609	0.400	AVRG	3.6
2-Nitrophenol	0.190	0.196	0.100	AVRG	3.2
2,4-Dimethylphenol	0.345	0.350	0.200	AVRG	1.4
Bis(2-Chloroethoxy)methane	0.431	0.436	0.300	AVRG	1.2
2,4-Dichlorophenol	0.289	0.298	0.200	AVRG	3.1
1,2,4-Trichlorobenzene	0.322	0.315	0.010	AVRG	-2.2
Naphthalene	0.982	0.983	0.700	AVRG	0.1
Benzoic acid	50.00	46.40	0.010	LINR	-7.2
4-Chloroaniline	0.393	0.398	0.010	AVRG	1.3
Hexachlorobutadiene	0.174	0.166	0.010	AVRG	-4.6
4-Chloro-3-methylphenol	0.276	0.298	0.200	AVRG	8.0
2-Methylnaphthalene	0.520	0.534	0.400	AVRG	2.7
Hexachlorocyclopentadiene	0.324	0.328	0.050	AVRG	1.2
2,4,6-Trichlorophenol	0.336	0.360	0.200	AVRG	7.1
2,4,5-Trichlorophenol	0.353	0.386	0.200	AVRG	9.3
2-Chloronaphthalene	1.088	1.070	0.800	AVRG	-1.6
2-Nitroaniline	0.272	0.293	0.010	AVRG	7.7
Acenaphthylene	1.621	1.702	0.900	AVRG	5.0
Dimethylphthalate	1.143	1.198	0.010	AVRG	4.8
2,6-Dinitrotoluene	0.260	0.295	0.200	AVRG	13.5
Acenaphthene	1.028	1.038	0.900	AVRG	1.0
3-Nitroaniline	0.268	0.282	0.010	AVRG	5.2
2,4-Dinitrophenol	50.00	48.98	0.010	2ORDR	-2.0
Dibenzofuran	1.422	1.469	0.800	AVRG	3.3

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1644

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.152	0.010	AVRG	36.9	<-
2,4-Dinitrotoluene	0.338	0.384	0.200	AVRG	13.6	
Fluorene	1.159	1.196	0.900	AVRG	3.2	
4-Chlorophenyl-phenylether	0.566	0.590	0.400	AVRG	4.2	
Diethylphthalate	1.079	1.124	0.010	AVRG	4.2	
4-Nitroaniline	0.259	0.294	0.010	AVRG	13.5	
4,6-Dinitro-2-methylphenol	0.133	0.132	0.010	AVRG	-0.8	
N-Nitrosodiphenylamine(1)	0.609	0.602	0.010	AVRG	-1.1	
4-Bromophenyl-phenylether	0.219	0.216	0.100	AVRG	-1.4	
Hexachlorobenzene	0.230	0.227	0.100	AVRG	-1.3	
Pentachlorophenol	0.114	0.120	0.050	AVRG	5.3	
Phenanthrene	1.081	1.076	0.700	AVRG	-0.5	
Anthracene	1.108	1.117	0.700	AVRG	0.8	
Carbazole	1.019	1.032	0.010	AVRG	1.3	
Di-n-butylphthalate	1.158	1.240	0.010	AVRG	7.1	
Fluoranthene	1.027	1.080	0.600	AVRG	5.2	
Pyrene	1.238	1.330	0.600	AVRG	7.4	
Butylbenzylphthalate	0.533	0.617	0.010	AVRG	15.8	
Benzo(a)anthracene	0.974	1.049	0.800	AVRG	7.7	
3,3'-Dichlorobenzidine	0.320	0.352	0.010	AVRG	10.0	
Chrysene	1.002	1.013	0.700	AVRG	1.1	
bis(2-Ethylhexyl)phthalate	0.591	0.636	0.010	AVRG	7.6	
Di-n-octylphthalate	1.026	1.009	0.010	AVRG	-1.6	
Benzo(b)fluoranthene	1.030	1.082	0.700	AVRG	5.0	
Benzo(k)fluoranthene	1.075	1.185	0.700	AVRG	10.2	
Benzo(a)pyrene	0.925	0.978	0.700	AVRG	5.7	
Indeno(1,2,3-cd)pyrene	1.228	1.166	0.500	AVRG	-5.0	
Dibenzo(a,h)anthracene	1.009	0.975	0.400	AVRG	-3.4	
Benzo(g,h,i)perylene	1.084	1.010	0.500	AVRG	-6.8	
N-Nitrosodimethylamine	0.948	0.969	0.010	AVRG	2.2	
Aniline	2.029	1.973	0.010	AVRG	-2.8	
Benzidine	25.00	22.40	0.010	LINR	-10.4	
Pyridine	1.734	1.704	0.010	AVRG	-1.7	
1-methylnaphthalene	0.516	0.528	0.010	AVRG	2.3	
Azobenzene (1,2-DP-Hydrazine	1.225	1.264	0.010	AVRG	3.2	
2,3,4,6-Tetrachlorophenol	0.232	0.263	0.010	AVRG	13.4	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1644

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.469	0.010	AVRG	-4.1
Total Benzofluoranthenes	1.000	1.072	0.010	AVRG	7.2
2-Fluorophenol	1.463	1.482	0.010	AVRG	1.3
Phenol-d5	1.800	1.875	0.010	AVRG	4.2
2-Chlorophenol-d4	1.408	1.436	0.010	AVRG	2.0
1,2-Dichlorobenzene-d4	0.974	0.942	0.010	AVRG	-3.3
Nitrobenzene-d5	0.412	0.398	0.010	AVRG	-3.4
2-Fluorobiphenyl	1.330	1.284	0.010	AVRG	-3.4
2,4,6-Tribromophenol	0.139	0.159	0.010	AVRG	14.4
Terphenyl-d14	0.811	0.829	0.010	AVRG	2.2

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	407145	7.81	1609797	9.87	951894	12.73
	UPPER LIMIT		8.31		10.37		13.23
	LOWER LIMIT		7.31		9.37		12.23
01	TZ76MBW1	445872	7.81	1762200	9.87	1062253	12.73
02	TZ76LCSW1	501385	7.82	2020113	9.87	1140549	12.74
03	TZ76LCSDW1	464744	7.81	1869746	9.87	1065334	12.73
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1491310	15.10	1304427	19.42	1085018	21.58
	UPPER LIMIT		15.60		19.92		22.08
	LOWER LIMIT		14.60		18.92		21.08
01	TZ76MBW1	1616689	15.10	1541932	19.42	1294511	21.58
02	TZ76LCSW1	1861335	15.11	1530792	19.42	1343492	21.58
03	TZ76LCSDW1	1742378	15.11	1421329	19.42	1215907	21.58
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1788937	20.58				
	UPPER LIMIT		21.08				
	LOWER LIMIT		20.08				
01	TZ76MBW1	2132740	20.59				
02	TZ76LCSW1	2188200	20.59				
03	TZ76LCSDW1	2049747	20.59				
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/12/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	391205	7.75	1569857	9.81	897974	12.67
	UPPER LIMIT		8.25		10.31		13.17
	LOWER LIMIT		7.25		9.31		12.17
01	MW-14D-12021	466804	7.75	1847374	9.80	1113441	12.67
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/12/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1356223	15.04	1128117	19.36	937645	21.51
	UPPER LIMIT		15.54		19.86		22.01
	LOWER LIMIT		14.54		18.86		21.01
01	MW-14D-12021	1664507	15.04	1508852	19.35	1207291	21.51
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/12/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1506299	20.53				
	UPPER LIMIT		21.03				
	LOWER LIMIT		20.03				
01	MW-14D-12021	2083776	20.53				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

SIM PAH Analysis
Report and Summary QC Forms

ARI Job ID: TZ83

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: MW-14D-120211
SAMPLE

Lab Sample ID: TZ83A
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
Event: 128296
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/06/11
Date Analyzed: 12/09/11 19:29
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	60.3%
d14-Dibenzo(a,h)anthracene	48.7% Q

ANALYTICAL RESOURCES INCORPORATED

SIM SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ83-ERM-West
Project: RG
128296

Client ID	MNP	DBA	TOT OUT
MB-120611	63.3%	80.0%	0
LCS-120611	65.7%	104%	0
LCSD-120611	63.7%	82.7%	0
MW-14D-120211	60.3%	48.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = d10-2-Methylnaphthalene	(40-110)	(33-107)
(DBA) = d14-Dibenzo(a,h)anthracene	(33-140)	(10-142)

Prep Method: SW3520C
Log Number Range: 11-27856 to 11-27856

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: LCS-120611
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120611
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
Event: 128296
Date Sampled: NA
Date Received: NA

Date Extracted LCS/LCSD: 12/06/11

Date Analyzed LCS: 12/09/11 18:06
LCSD: 12/09/11 18:34
Instrument/Analyst LCS: NT4/JZ
LCSD: NT4/JZ

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	1.75	3.00	58.3%	1.72	3.00	57.3%	1.7%
2-Methylnaphthalene	1.70	3.00	56.7%	1.75	3.00	58.3%	2.9%
1-Methylnaphthalene	1.83	3.00	61.0%	1.86	3.00	62.0%	1.6%
Acenaphthylene	1.75	3.00	58.3%	1.73	3.00	57.7%	1.1%
Acenaphthene	1.91	3.00	63.7%	1.93	3.00	64.3%	1.0%
Fluorene	2.05	3.00	68.3%	2.03	3.00	67.7%	1.0%
Phenanthrene	2.18	3.00	72.7%	2.23	3.00	74.3%	2.3%
Anthracene	1.81	3.00	60.3%	1.80	3.00	60.0%	0.6%
Fluoranthene	2.28	3.00	76.0%	2.31	3.00	77.0%	1.3%
Pyrene	2.28	3.00	76.0%	2.21	3.00	73.7%	3.1%
Benzo(a)anthracene	2.12	3.00	70.7%	2.03	3.00	67.7%	4.3%
Chrysene	2.33	3.00	77.7%	2.32	3.00	77.3%	0.4%
Benzo(a)pyrene	1.96	3.00	65.3%	1.95	3.00	65.0%	0.5%
Indeno(1,2,3-cd)pyrene	2.66	3.00	88.7%	2.60	3.00	86.7%	2.3%
Dibenz(a,h)anthracene	2.98	3.00	99.3%	2.68	3.00	89.3%	10.6%
Benzo(g,h,i)perylene	2.60	3.00	86.7%	2.44	3.00	81.3%	6.3%
Dibenzofuran	2.01	3.00	67.0%	2.02	3.00	67.3%	0.5%
Total Benzofluoranthenes	5.08	6.00	84.7%	4.80	6.00	80.0%	5.7%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

SIM Semivolatile Surrogate Recovery

	LCS	LCSD
d10-2-Methylnaphthalene	65.7%	63.7%
d14-Dibenzo(a,h)anthracene	104%	82.7%

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ83MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Lab File ID: 12091111 Date Extracted: 12/06/11

Instrument ID: NT4 Date Analyzed: 12/09/11

Matrix: LIQUID Time Analyzed: 1738

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ83LCSW1	TZ83LCSW1	12091112	12/09/11
02	TZ83LCSDW1	TZ83LCSDW1	12091113	12/09/11
03	MW-14D-120211	TZ83A	12091115	12/09/11
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by SW8270D-SIM GC/MS

Sample ID: MB-120611
METHOD BLANK

Lab Sample ID: MB-120611
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
Event: 128296
Date Sampled: NA
Date Received: NA

Date Extracted: 12/06/11
Date Analyzed: 12/09/11 17:38
Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.10	< 0.10 U

Reported in µg/L (ppb)

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	63.3%
d14-Dibenzo(a,h)anthracene	80.0% Q

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT4 Project: RG

DFTPP Injection Date: 11/21/11 DFTPP Injection Time: 0937

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	29.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	33.8
70	Less than 2.0% of mass 69	0.1 (0.4)1
127	10.0 - 80.0% of mass 198	47.1
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 60.0% of mass 198	30.3
365	Greater than 1.0% of mass 198	4.03
441	0.0 - 24.0% of mass 442	22.6 (15.5)2
442	50.0 - 200.0% of mass 198	145.7
443	15.0 - 24.0% of mass 442	29.5 (20.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC251121	IC251121	11211102	11/21/11	1109
02	IC011121	IC011121	11211103	11/21/11	1138
03	IC051121	IC051121	11211104	11/21/11	1206
04	IC11121	IC11121	11211105	11/21/11	1233
05	IC51121	IC51121	11211106	11/21/11	1301
06	IC101121	IC101121	11211107	11/21/11	1329
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

TZ83:00057

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT4 Project: RG

DFTPP Injection Date: 12/09/11 DFTPP Injection Time: 1214

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	25.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	29.1
70	Less than 2.0% of mass 69	0.1 (0.3)1
127	10.0 - 80.0% of mass 198	42.6
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	31.9
365	Greater than 1.0% of mass 198	4.63
441	0.0 - 24.0% of mass 442	26.4 (14.5)2
442	50.0 - 200.0% of mass 198	182.1
443	15.0 - 24.0% of mass 442	35.0 (19.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1209	CC1209	12091102	12/09/11	1328
02	TZ83MBW1	TZ83MBW1	12091111	12/09/11	1738
03	TZ83LCSW1	TZ83LCSW1	12091112	12/09/11	1806
04	TZ83LCSDW1	TZ83LCSDW1	12091113	12/09/11	1834
05	MW-14D-120211	TZ83A	12091115	12/09/11	1929
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ83:00058

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT4 Calibration Date: 11/21/11

LAB FILE ID: RRF0.1=11211103 RRF0.5=11211104 RRF1 =11211105
RRF2.5=11211102 RRF5 =11211106 RRF10 =11211107

COMPOUND	RRF 0.1	RRF 0.5	RRF 1	RRF 2.5	RRF 5	RRF 10	___ RRF	%RSD /R^2
Naphthalene	1.153	0.967	0.977	0.932	0.878	0.888	0.966	10.4
2-Methylnaphthalene	0.679	0.543	0.555	0.543	0.523	0.518	0.560	10.6
Acenaphthylene	1.836	1.390	1.450	1.504	1.467	1.554	1.534	10.3
Acenaphthene	1.334	1.033	1.037	0.992	0.967	1.018	1.064	12.7
Dibenzofuran	1.825	1.445	1.525	1.442	1.412	1.468	1.520	10.2
Fluorene	1.534	1.146	1.140	1.112	1.104	1.170	1.201	13.7
Phenanthrene	1.325	1.042	1.022	0.972	0.978	0.987	1.054	12.8
Anthracene	1.218	0.930	0.919	0.944	0.927	0.998	0.989	11.7
Fluoranthene	1.565	1.109	1.078	1.047	1.038	1.075	1.152	17.7
Pyrene	1.331	0.968	0.958	0.949	0.923	0.976	1.018	15.2
Benzo(a)anthracene	1.283	0.858	0.883	0.864	0.857	0.913	0.943	17.8
Chrysene	1.381	0.920	0.933	0.875	0.874	0.920	0.984	19.9
Benzo(b)fluoranthene	1.416	0.927	0.958	0.915	0.909	1.016	1.024	19.2
Benzo(k)fluoranthene	1.180	0.947	1.027	0.978	0.923	0.998	1.009	9.1
Benzo(j)fluoranthene	0.908	0.916	0.897	0.808	0.863	0.938	0.888	5.2
Benzo(a)pyrene	0.738	0.792	0.885	0.888	0.907	1.019	0.872	11.2
Indeno(1,2,3-cd)pyrene	1.298	0.986	1.024	1.120	1.192	1.336	1.159	12.3
Dibenzo(a,h)anthracene	0.847	0.718	0.842	0.888	0.958	1.116	0.895	14.9
Benzo(g,h,i)perylene	1.255	0.944	1.071	1.041	1.073	1.179	1.094	9.9
1-methylnaphthalene	0.711	0.540	0.539	0.508	0.499	0.494	0.548	14.9
Perylene	1.167	0.908	0.940	0.895	0.907	1.011	0.971	10.8
2-Methylnaphthalene-d10	0.735	0.614	0.601	0.570	0.558	0.557	0.606	11.2
Dibenzo(a,h)anthracene-d14	0.593	0.558	0.640	0.717	0.782	0.926	0.703	19.4

<- Outside QC limits: %RSD <20% or R^2 > 0.990

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Instrument ID: NT4 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1328

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Naphthalene	0.966	0.952	0.700	AVRG	-1.4	
2-Methylnaphthalene	0.560	0.559	0.400	AVRG	-0.2	
Acenaphthylene	1.534	1.492	0.900	AVRG	-2.7	
Acenaphthene	1.064	1.000	0.900	AVRG	-6.0	
Dibenzofuran	1.520	1.460	0.800	AVRG	-3.9	
Fluorene	1.201	1.115	0.900	AVRG	-7.2	
Phenanthrene	1.054	1.007	0.700	AVRG	-4.4	
Anthracene	0.989	0.958	0.700	AVRG	-3.1	
Fluoranthene	1.152	1.026	0.600	AVRG	-10.9	
Pyrene	1.018	0.918	0.600	AVRG	-9.8	
Benzo(a)anthracene	0.943	0.814	0.800	AVRG	-13.7	
Chrysene	0.984	0.876	0.700	AVRG	-11.0	
Benzo(b)fluoranthene	1.024	0.965	0.700	AVRG	-5.8	
Benzo(k)fluoranthene	1.009	0.913	0.700	AVRG	-9.5	
Benzo(j)fluoranthene	0.888	0.832	0.010	AVRG	-6.3	
Benzo(a)pyrene	0.872	0.927	0.700	AVRG	6.3	
Indeno(1,2,3-cd)pyrene	1.159	1.278	0.500	AVRG	10.3	
Dibenzo(a,h)anthracene	0.895	1.022	0.400	AVRG	14.2	
Benzo(g,h,i)perylene	1.094	1.150	0.500	AVRG	5.1	
1-methylnaphthalene	0.548	0.520	0.010	AVRG	-5.1	
Perylene	0.971	0.890	0.010	AVRG	-8.3	
2-Methylnaphthalene-d10	0.606	0.595	0.010	AVRG	-1.8	
Dibenzo(a,h)anthracene-d14	0.703	0.885	0.010	AVRG	25.9	<-

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211102 Ical Date: 11/21/11

Instrument ID: NT4 Cont. Cal Date: 12/09/11

		IS1(NPT) AREA #	RT #	IS2(ANT) AREA #	RT #	IS3(PHN) AREA #	RT #
	ICAL MIDPT	343604	5.50	195804	7.79	321226	9.76
	UPPER LIMIT	687208		391608		642452	
	LOWER LIMIT	171802		97902		160613	
	CCAL	264038	4.75	153295	7.00	252936	8.94
	UPPER LIMIT		5.25		7.50		9.44
	LOWER LIMIT		4.25		6.50		8.44
01	TZ83MBW1	247571	4.75	144488	7.00	240858	8.94
02	TZ83LCSW1	254488	4.75	147312	7.00	251304	8.94
03	TZ83LCSDW1	250996	4.75	148741	7.00	251423	8.94
04	MW-14D-12021	247162	4.75	148437	7.00	251963	8.94
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = Naphthalene-d8
IS2 = Acenaphthene-d10
IS3 = Phenanthrene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ83 Project: RG

Ical Midpoint ID: 11211102 Ical Date: 11/21/11

Instrument ID: NT4 Cont. Cal Date: 12/09/11

		IS4(CRY) AREA #	RT #	IS5(PRY) AREA #	RT #	AREA #	RT #
	ICAL MIDPT	375207	15.01	400310	18.86		
	UPPER LIMIT	750414		800620			
	LOWER LIMIT	187604		200155			
	CCAL	297495	13.58	306453	17.23		
	UPPER LIMIT		14.08		17.73		
	LOWER LIMIT		13.08		16.73		
01	TZ83MBW1	274318	13.58	275169	17.22		
02	TZ83LCSW1	292805	13.58	283073	17.22		
03	TZ83LCSDW1	293289	13.58	277707	17.22		
04	MW-14D-12021	287039	13.58	265324	17.22		
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Chrysene-d12
IS5 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

Metals Analysis
Report and Summary QC Forms

ARI Job ID: TZ83

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-14D-120211	TZ83A	11-27856	
MW-14D-120211D	TZ83ADUP	11-27856	
MW-14D-120211S	TZ83ASPK	11-27856	
PBW	TZ83MB1	11-27856	
LCSW	TZ83MB1SPK	11-27856	
MW-14D-120211	TZ83B	11-27857	
MW-14D-120211D	TZ83BDUP	11-27857	
MW-14D-120211S	TZ83BSPK	11-27857	
PBW	TZ83MB2	11-27857	
LCSW	TZ83MB2SPK	11-27857	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/14/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-14D-120211
SAMPLE

Lab Sample ID: TZ83A
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/06/11	6010B	12/08/11	**7429-90-5**	**Aluminum**	50	**560**	
200.8	12/06/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**427**	
3010A	12/06/11	6010B	12/08/11	**7440-70-2**	**Calcium**	50	**20,400**	
200.8	12/06/11	6020	12/12/11	**7440-47-3**	**Chromium**	1	**13**	
3010A	12/06/11	6010B	12/08/11	**7440-50-8**	**Copper**	2	**4**	
3010A	12/06/11	6010B	12/08/11	**7439-89-6**	**Iron**	50	**9,600**	
3010A	12/06/11	6010B	12/08/11	**7439-95-4**	**Magnesium**	50	**12,500**	
3010A	12/06/11	6010B	12/08/11	**7439-96-5**	**Manganese**	1	**413**	
3010A	12/06/11	6010B	12/08/11	**7440-09-7**	**Potassium**	500	**14,800**	
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
3010A	12/06/11	6010B	12/08/11	**7440-23-5**	**Sodium**	500	**161,000**	
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

Calculated Hardness (mg-CaCO3/L): 100

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-14D-120211
MATRIX SPIKE

Lab Sample ID: TZ83A
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010B	560	2,480	2,000	96.0%	
Arsenic	6020	427	471	25.0	176%	H
Calcium	6010B	20,400	30,900	10,000	105%	
Chromium	6020	12.7	38.8	25.0	104%	
Copper	6010B	3.87	525	500	104%	
Iron	6010B	9,600	11,400	2,000	90.0%	H
Magnesium	6010B	12,500	22,600	10,000	101%	
Manganese	6010B	413	885	500	94.4%	
Potassium	6010B	14,800	24,500	10,000	97.0%	
Silver	6010B	3.00 U	492	500	98.4%	
Sodium	6010B	161,000	171,000	10,000	100%	H
Zinc	6010B	10.0 U	466	500	93.2%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-14D-120211
DUPLICATE

Lab Sample ID: TZ83A
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	560	570	1.8%	+/- 20%	
Arsenic	6020	427	426	0.2%	+/- 20%	
Calcium	6010B	20,400	20,200	1.0%	+/- 20%	
Chromium	6020	13	12	8.0%	+/- 20%	
Copper	6010B	4	3	28.6%	+/- 2	L
Iron	6010B	9,600	9,470	1.4%	+/- 20%	
Magnesium	6010B	12,500	12,500	0.0%	+/- 20%	
Manganese	6010B	413	412	0.2%	+/- 20%	
Potassium	6010B	14,800	14,700	0.7%	+/- 20%	
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Sodium	6010B	161,000	161,000	0.0%	+/- 20%	
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ83LCS
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	2000	2000	100%	
Arsenic	6020	27.2	25.0	109%	
Calcium	6010B	9760	10000	97.6%	
Chromium	6020	25.5	25.0	102%	
Copper	6010B	503	500	101%	
Iron	6010B	2090	2000	104%	
Magnesium	6010B	10100	10000	101%	
Manganese	6010B	462	500	92.4%	
Potassium	6010B	10000	10000	100%	
Silver	6010B	489	500	97.8%	
Sodium	6010B	9430	10000	94.3%	
Zinc	6010B	470	500	94.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ83MB
LIMS ID: 11-27856
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/06/11	6010B	12/08/11	7429-90-5	Aluminum	50	50	U
200.8	12/06/11	6020	12/13/11	7440-38-2	Arsenic	0.2	0.2	U
3010A	12/06/11	6010B	12/08/11	7440-70-2	Calcium	50	50	U
200.8	12/06/11	6020	12/12/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
3010A	12/06/11	6010B	12/08/11	7439-89-6	Iron	50	50	U
3010A	12/06/11	6010B	12/08/11	7439-95-4	Magnesium	50	50	U
3010A	12/06/11	6010B	12/08/11	7439-96-5	Manganese	1	1	U
3010A	12/06/11	6010B	12/08/11	7440-09-7	Potassium	500	500	U
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
3010A	12/06/11	6010B	12/08/11	7440-23-5	Sodium	500	500	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-14D-120211
SAMPLE

Lab Sample ID: TZ83B
LIMS ID: 11-27857
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/06/11	6010B	12/08/11	**7429-90-5**	**Aluminum**	50	**240**	
200.8	12/06/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**390**	
200.8	12/06/11	6020	12/12/11	**7440-47-3**	**Chromium**	1	**9**	
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
6010B	12/06/11	6010B	12/08/11	**7439-89-6**	**Iron**	50	**9,230**	
6010B	12/06/11	6010B	12/08/11	**7439-96-5**	**Manganese**	1	**412**	
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-14D-120211
MATRIX SPIKE

Lab Sample ID: TZ83B
LIMS ID: 11-27857
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Aluminum	6010B	236	2,140	2,000	95.2%	
Arsenic	6020	390	438	25.0	192%	H
Chromium	6020	9.38	34.0	25.0	98.5%	
Copper	6010B	2.00 U	505	500	101%	
Iron	6010B	9,230	10,800	2,000	78.5%	H
Manganese	6010B	412	860	500	89.6%	
Silver	6010B	3.00 U	448	500	89.6%	
Zinc	6010B	10.0 U	467	500	93.4%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-14D-120211
DUPLICATE

Lab Sample ID: TZ83B
LIMS ID: 11-27857
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Aluminum	6010B	240	230	4.3%	+/- 50	L
Arsenic	6020	390	416	6.5%	+/- 20%	
Chromium	6020	9	9	0.0%	+/- 20%	
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Iron	6010B	9,230	9,320	1.0%	+/- 20%	
Manganese	6010B	412	415	0.7%	+/- 20%	
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: LAB CONTROL

Lab Sample ID: TZ83LCS
LIMS ID: 11-27857
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Aluminum	6010B	1960	2000	98.0%	
Arsenic	6020	27.2	25.0	109%	
Chromium	6020	26.5	25.0	106%	
Copper	6010B	480	500	96.0%	
Iron	6010B	1960	2000	98.0%	
Manganese	6010B	454	500	90.8%	
Silver	6010B	471	500	94.2%	
Zinc	6010B	470	500	94.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: TZ83MB
LIMS ID: 11-27857
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ83-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/06/11	6010B	12/08/11	7429-90-5	Aluminum	50	50	U
200.8	12/06/11	6020	12/13/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/12/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
6010B	12/06/11	6010B	12/08/11	7439-89-6	Iron	50	50	U
6010B	12/06/11	6010B	12/08/11	7439-96-5	Manganese	1	1	U
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Aluminum	AL	ICP	IP120871	2000.0	1967.95	**98.4**	2000.0	1973.33	**98.7**	1979.00	**99.0**	1941.11	**97.1**	1919.17	**96.0**	1937.82	**96.9**
Arsenic	AS	PMS	MS121281	50.0	50.99	**102.0**	50.0	49.95	**99.9**	50.42	**100.8**	49.81	**99.6**	49.65	**99.3**	50.42	**100.8**
Calcium	CA	ICP	IP120871	2000.0	2031.76	**101.6**	2000.0	2060.53	**103.0**	2052.42	**102.6**	2021.18	**101.1**	2000.44	**100.0**	2031.42	**101.6**
Chromium	CR	PMS	MS121281	50.0	51.01	**102.0**	50.0	49.92	**99.8**	49.82	**99.6**	51.16	**102.3**	50.88	**101.8**	51.05	**102.1**
Copper	CU	ICP	IP120871	1000.0	1015.83	**101.6**	1000.0	1022.98	**102.3**	1001.57	**100.2**	1000.36	**100.0**	992.59	**99.3**	988.25	**98.8**
Iron	FE	ICP	IP120871	2000.0	1997.59	**99.9**	2000.0	2024.60	**101.2**	1987.00	**99.4**	1951.11	**97.6**	1923.79	**96.2**	1962.68	**98.1**
Magnesium	MG	ICP	IP120871	2000.0	1962.66	**98.1**	2000.0	1994.07	**99.7**	1971.19	**98.6**	1939.62	**97.0**	1918.27	**95.9**	1952.17	**97.6**
Manganese	MN	ICP	IP120871	1000.0	980.66	**98.1**	1000.0	986.40	**98.6**	964.85	**96.5**	949.04	**94.9**	935.42	**93.5**	950.05	**95.0**
Potassium	K	ICP	IP120871	20000.0	20091.02	**100.5**	20000.0	20242.28	**101.2**	20185.21	**100.9**	19774.42	**98.9**	19561.84	**97.8**	19664.58	**98.3**
Silver	AG	ICP	IP120871	1000.0	1005.93	**100.6**	1000.0	1011.24	**101.1**	967.29	**96.7**	970.81	**97.1**	953.38	**95.3**	952.40	**95.2**
Sodium	NA	ICP	IP120871	50000.0	48862.69	**97.7**	50000.0	48823.70	**97.6**	47726.78	**95.5**	47140.54	**94.3**	46488.68	**93.0**	46638.47	**93.3**
Zinc	ZN	ICP	IP120871	1000.0	972.06	**97.2**	1000.0	986.40	**98.6**	972.26	**97.2**	961.14	**96.1**	949.52	**95.0**	966.30	**96.6**

TZ83 : 00075

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Aluminum	AL	ICP	IP120871	2000.0	1930.66	96.5	1916.54	95.8	1921.61	96.1	1917.52	95.9	1891.31	94.6	1903.27	95.2
Arsenic	AS	PMS	MS121281	50.0	50.09	100.2	49.90	99.8	50.26	100.5	49.96	99.9	50.17	100.3	49.38	98.8
Calcium	CA	ICP	IP120871	2000.0	2018.38	100.9	2000.10	100.0	2001.03	100.1	1989.71	99.5	1977.60	98.9	1980.90	99.0
Chromium	CR	PMS	MS121281	50.0	50.01	100.0	49.90	99.8	49.31	98.6	49.36	98.7	50.44	100.9	50.46	100.9
Copper	CU	ICP	IP120871	1000.0	979.31	97.9	988.79	98.9	987.10	98.7	979.07	97.9	981.23	98.1	982.54	98.3
Iron	FE	ICP	IP120871	2000.0	1950.11	97.5	1931.31	96.6	1942.53	97.1	1930.58	96.5	1919.07	96.0	1918.44	95.9
Magnesium	MG	ICP	IP120871	2000.0	1943.89	97.2	1918.71	95.9	1922.77	96.1	1918.00	95.9	1899.24	95.0	1902.23	95.1
Manganese	MN	ICP	IP120871	1000.0	946.82	94.7	940.59	94.1	945.15	94.5	937.25	93.7	931.74	93.2	934.32	93.4
Potassium	K	ICP	IP120871	20000.0	19678.53	98.4	19505.27	97.5	19682.38	98.4	19557.32	97.8	19501.73	97.5	19530.15	97.7
Silver	AG	ICP	IP120871	1000.0	1628.59	162.9	957.21	95.7	959.82	96.0	952.56	95.3	996.58	99.7	959.55	96.0
Sodium	NA	ICP	IP120871	50000.0	46678.59	93.4	46535.13	93.1	47025.68	94.1	46749.91	93.5	46340.75	92.7	46442.99	92.9
Zinc	ZN	ICP	IP120871	1000.0	961.12	96.1	953.98	95.4	953.40	95.3	948.35	94.8	942.58	94.3	942.33	94.2

Control Limits: Mercury 80-120; Other Metals 90-110

TZ83 09076

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV12	%R	CCV13	%R	CCV14	%R	CCV15	%R	CCV16	%R	CCV17	%R
Aluminum	AL	ICP	IP120871	2000.0	1916.08	**95.8**	1920.15	**96.0**								
Arsenic	AS	PMS	MS121281	50.0												
Calcium	CA	ICP	IP120871	2000.0	1994.84	**99.7**	1988.70	**99.4**								
Chromium	CR	PMS	MS121281	50.0												
Copper	CU	ICP	IP120871	1000.0	977.04	**97.7**	974.66	**97.5**								
Iron	FE	ICP	IP120871	2000.0	1934.75	**96.7**	1937.13	**96.9**								
Magnesium	MG	ICP	IP120871	2000.0	1917.45	**95.9**	1909.21	**95.5**								
Manganese	MN	ICP	IP120871	1000.0	940.51	**94.1**	939.79	**94.0**								
Potassium	K	ICP	IP120871	20000.0	19432.72	**97.2**	19414.40	**97.1**								
Silver	AG	ICP	IP120871	1000.0	954.88	**95.5**	950.55	**95.1**								
Sodium	NA	ICP	IP120871	50000.0	46550.90	**93.1**	46715.63	**93.4**								
Zinc	ZN	ICP	IP120871	1000.0	950.84	**95.1**	944.83	**94.5**								

Control Limits: Mercury 80-120; Other Metals 90-110

TZ83 : 0097

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS121381	50.0	51.34	102.7	50.0	49.94	99.9	49.40	98.8	49.41	98.8	49.63	99.3	49.65	99.3

TZ83 00073

Control Limits: Mercury 80-120; Other Metals 90-110

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Aluminum	AL	ICP	IP120871	50.0	60.13	**120.3**	56.09	**112.2**	60.99	**122.0**						
Arsenic	AS	PMS	MS121281	0.2	0.26	**130.0**										
Calcium	CA	ICP	IP120871	50.0	47.11	**94.2**	46.84	**93.7**	45.28	**90.6**						
Chromium	CR	PMS	MS121281	0.5	0.50	**100.0**										
Copper	CU	ICP	IP120871	2.0	2.20	**110.0**	2.14	**107.0**	2.18	**109.0**						
Iron	FE	ICP	IP120871	50.0	50.93	**101.9**	50.84	**101.7**	50.74	**101.5**						
Magnesium	MG	ICP	IP120871	50.0	43.50	**87.0**	37.18	**74.4**	47.17	**94.3**						
Manganese	MN	ICP	IP120871	1.0	0.94	**94.0**	0.73	**73.0**	0.71	**71.0**						
Potassium	K	ICP	IP120871	500.0	500.48	**100.1**	522.55	**104.5**	516.81	**103.4**						
Silver	AG	ICP	IP120871	3.0	2.97	**99.0**	3.07	**102.3**	2.94	**98.0**						
Sodium	NA	ICP	IP120871	500.0	468.58	**93.7**	475.41	**95.1**	484.01	**96.8**						
Zinc	ZN	ICP	IP120871	10.0	9.58	**95.8**	9.36	**93.6**	8.84	**88.4**						

Control Limits: no control limits have been established by the EPA at this time.

TZ83 : 000179

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I	TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Arsenic	AS	PMS	MS121381		0.2	0.17	85.0										

Control Limits: no control limits have been established by the EPA at this time.

TZ83:00080

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Aluminum	AL	ICP	IP120871	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS121281	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Calcium	CA	ICP	IP120871	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Chromium	CR	PMS	MS121281	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Iron	FE	ICP	IP120871	100.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Magnesium	MG	ICP	IP120871	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Manganese	MN	ICP	IP120871	15.0	1.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Potassium	K	ICP	IP120871	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Sodium	NA	ICP	IP120871	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ83 : 59081

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS:ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Aluminum	AL	ICP	IP120871	200.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS121281	10.0	0.2	0.2	B	0.3	B	0.3	B	0.3	B	0.3	B	0.3	B
Calcium	CA	ICP	IP120871	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Chromium	CR	PMS	MS121281	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Iron	FE	ICP	IP120871	100.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Magnesium	MG	ICP	IP120871	5000.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Manganese	MN	ICP	IP120871	15.0	1.0	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Potassium	K	ICP	IP120871	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Sodium	NA	ICP	IP120871	5000.0	500.0	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U	500.0	U
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ83 00082

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB12	C	CCB13	C	CCB14	C	CCB15	C	CCB16	C	CCB17	C
Aluminum	AL	ICP	IP120871	200.0	50.0	50.0	U	50.0	U								
Arsenic	AS	PMS	MS121281	10.0	0.2												
Calcium	CA	ICP	IP120871	5000.0	50.0	50.0	U	50.0	U								
Chromium	CR	PMS	MS121281	10.0	0.5												
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U								
Iron	FE	ICP	IP120871	100.0	50.0	50.0	U	50.0	U								
Magnesium	MG	ICP	IP120871	5000.0	50.0	50.0	U	50.0	U								
Manganese	MN	ICP	IP120871	15.0	1.0	1.0	U	1.0	U								
Potassium	K	ICP	IP120871	5000.0	500.0	500.0	U	500.0	U								
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U								
Sodium	NA	ICP	IP120871	5000.0	500.0	500.0	U	500.0	U								
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U								

TZ83 : 68883

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS121381	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U

TZ83 : 00024

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

ICS SOURCE: I.V.

RUNID: IP120871

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	195569.8	195251.1	**97.6**	187441.5	189633.9	**94.8**	188756.1	188589.5	**94.3**
Antimony		1000	-2.5	943.0	**94.3**	-10.7	897.1	**89.7**	-10.3	872.0	**87.2**
Arsenic		1000	0.1	969.4	**96.9**	0.3	928.6	**92.9**	1.8	911.2	**91.1**
Barium		1000	0.0	973.2	**97.3**	0.4	941.0	**94.1**	0.1	926.4	**92.6**
Beryllium		1000	-0.1	962.0	**96.2**	-0.2	921.2	**92.1**	-0.1	916.5	**91.7**
Boron			-12.7	-11.1		-10.9	-10.3		-12.2	-10.7	
Cadmium		1000	0.7	1018.2	**101.8**	0.6	985.9	**98.6**	0.7	967.1	**96.7**
Calcium	100000	100000	99304.6	99994.8	**100.0**	97188.6	96842.5	**96.8**	97213.4	97055.0	**97.1**
Chromium		1000	-0.2	980.1	**98.0**	-0.1	951.0	**95.1**	-1.0	936.3	**93.6**
Cobalt		1000	1.5	951.4	**95.1**	1.4	921.3	**92.1**	1.3	903.5	**90.4**
Copper		1000	-1.3	1051.7	**105.2**	-0.5	1028.7	**102.9**	-0.6	1011.1	**101.1**
Iron	200000	200000	193343.2	194354.5	**97.2**	184949.6	186610.6	**93.3**	186303.6	186486.4	**93.2**
Lead		1000	-4.8	965.4	**96.5**	-3.8	925.7	**92.6**	-3.9	908.6	**90.9**
Magnesium	100000	100000	100524.6	97242.3	**97.2**	96648.4	94127.9	**94.1**	96452.4	93272.6	**93.3**
Manganese		1000	0.3	963.3	**96.3**	0.2	925.8	**92.6**	0.2	913.3	**91.3**
Molybdenum			6.1	6.2		5.2	5.8		5.2	5.9	
Nickel		1000	0.3	919.5	**92.0**	1.5	884.6	**88.5**	0.4	871.5	**87.2**
Potassium			49.8	212.7		79.8	240.2		57.7	232.9	
Selenium		1000	9.8	989.8	**99.0**	17.1	944.8	**94.5**	19.2	928.3	**92.8**
Silicon			-13.2	-18.3		-5.6	-10.2		-4.1	-6.5	
Silver		1000	-0.5	1029.2	**102.9**	-0.4	990.7	**99.1**	-0.4	975.4	**97.5**
Sodium			10.7	11.1		33.0	35.3		33.0	29.3	
Strontium			10.1	10.1		9.8	9.8		9.9	9.8	
Thallium		1000	5.7	947.5	**94.8**	9.4	900.9	**90.1**	8.3	883.7	**88.4**
Tin			-11.6	-12.9		-12.2	-12.3		-12.4	-12.4	
Titanium			-0.2	-0.5		-0.6	-0.3		-0.7	-0.6	
Vanadium		1000	5.3	986.9	**98.7**	4.2	961.0	**96.1**	4.5	947.6	**94.8**
Zinc		1000	-1.7	918.0	**91.8**	-0.9	889.7	**89.0**	-2.0	879.1	**87.9**

TZ83:0085

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121281

SDG: TZ83

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.8	99.0						
Cadmium		20	0.1	20.0	100.0						
Chromium		20	0.9	20.6	103.0						
Cobalt		20	0.0	19.4	97.0						
Copper		20	0.5	19.4	97.0						
Lead			0.1	0.1							
Manganese		20	0.2	19.8	99.0						
Molybdenum	400	400	488.9	408.6	102.2						
Nickel		20	0.6	19.1	95.5						
Selenium			0.1	0.1							
Silver		20	0.0	19.5	97.5						
Vanadium			0.0	-0.3							
Zinc		20	1.4	20.0	100.0						

TZ83 00086

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

ICS SOURCE: I.V.

RUNID: MS121381

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.5	**97.5**						
Cadmium		20	0.0	19.7	**98.5**						
Chromium		20	0.8	20.5	**102.5**						
Cobalt		20	0.0	19.8	**99.0**						
Copper		20	0.4	20.1	**100.5**						
Lead			0.1	0.1							
Manganese		20	0.1	19.8	**99.0**						
Molybdenum	400	400	397.7	391.4	**97.9**						
Nickel		20	0.6	19.4	**97.0**						
Selenium			-0.1	-0.1							
Silver		20	0.0	19.2	**96.0**						
Vanadium			0.0	-0.3							
Zinc		20	0.9	20.0	**100.0**						

TZ83 : 9008

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ83

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Aluminum	MW-14D-120211L	TZ83A-L	Water	IP120871	560.43		548.50	B	2.1	
Calcium	MW-14D-120211L	TZ83A-L	Water	IP120871	20351.57		20864.90	B	2.5	
Copper	MW-14D-120211L	TZ83A-L	Water	IP120871	3.87	B	10.00	U	100.0	
Iron	MW-14D-120211L	TZ83A-L	Water	IP120871	9595.62		9502.55		1.0	
Magnesium	MW-14D-120211L	TZ83A-L	Water	IP120871	12511.43		12596.60	B	0.7	
Manganese	MW-14D-120211L	TZ83A-L	Water	IP120871	412.85		402.25		2.6	
Potassium	MW-14D-120211L	TZ83A-L	Water	IP120871	14770.98		14408.70	B	2.5	
Silver	MW-14D-120211L	TZ83A-L	Water	IP120871	3.00	U	15.00	U		
Sodium	MW-14D-120211L	TZ83A-L	Water	IP120871	161339.58		150849.45		6.5	
Zinc	MW-14D-120211L	TZ83A-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ83

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Aluminum	MW-14D-120211L	TZ83B-L	Water	IP120871	236.23		250.00	U	100.0	
Copper	MW-14D-120211L	TZ83B-L	Water	IP120871	2.00	U	10.00	U		
Iron	MW-14D-120211L	TZ83B-L	Water	IP120871	9227.22		9260.30		0.4	
Manganese	MW-14D-120211L	TZ83B-L	Water	IP120871	411.66		399.85		2.9	
Silver	MW-14D-120211L	TZ83B-L	Water	IP120871	3.00	U	15.00	U		
Zinc	MW-14D-120211L	TZ83B-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ83

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Chromium	MW-14D-120211L	0Z83A-L	Water	MS121281	5.07	B	5.20	B	2.6	
Arsenic	MW-14D-120211L	TZ83A-L	Water	MS121281	170.84		170.21		0.4	
Arsenic	MW-14D-120211L	TZ83B-L	Water	MS121281	155.82		155.70		1.0	
Chromium	MW-14D-120211L	TZ83B-L	Water	MS121281	3.75	B	3.70	B	1.3	

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Aluminum	AL	ICP	OPTIMA ICP 2	308.22		200	50.0	4/1/2011	250000.0	8/3/2011
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Calcium	CA	ICP	OPTIMA ICP 2	317.93		5000	50.0	4/1/2011	500000.0	8/3/2011
Chromium	CR	PMS	PE ELAN 6000 MS	0.00		10	0.5	4/1/2011		
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Iron	FE	ICP	OPTIMA ICP 2	259.94		100	50.0	4/1/2011	250000.0	8/3/2011
Magnesium	MG	ICP	OPTIMA ICP 2	279.08		5000	50.0	4/1/2011	500000.0	8/3/2011
Manganese	MN	ICP	OPTIMA ICP 2	257.61		15	1.0	4/1/2011	30000.0	8/3/2011
Potassium	K	ICP	OPTIMA ICP 2	766.49		5000	500.0	4/1/2011	500000.0	8/3/2011
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2011	5000.0	8/3/2011
Sodium	NA	ICP	OPTIMA ICP 2	589.00		5000	500.0	4/1/2011	5000000.0	8/3/2011
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ83

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3891270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.1208350
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0339516	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0076716	0.0000000	-0.1892080	0.0000000	0.0000000	0.0522067
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0242504	0.0000000	0.0000000	0.0000000	0.0000000	-0.0377814
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0584929
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2018030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0540270
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5652870
Manganese	257.61	0.0071394	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0051324
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0123608	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.2053280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	-0.1233420
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0108199	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1141760
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0387268	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0730907
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0258303	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TZ83:09502

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ83

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0405628	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0057432	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0041261	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0107429	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0736777	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

TZ83 : 65993

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

ANALYSIS METHOD: ICP

ARI PREP CODE: TWC

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-14D-120211	TZ83A	0.000	50.0	50.0
MW-14D-120211D	TZ83ADUP	0.000	50.0	50.0
MW-14D-120211S	TZ83ASPK	0.000	50.0	50.0
PBW	TZ83MB1	0.000	50.0	50.0
LCSW	TZ83MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

ANALYSIS METHOD: ICP

ARI PREP CODE: WMN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-14D-120211	TZ83B	0.000	50.0	50.0
MW-14D-120211D	TZ83BDUP	0.000	50.0	50.0
MW-14D-120211S	TZ83BSPK	0.000	50.0	50.0
PBW	TZ83MB2	0.000	50.0	50.0
LCSW	TZ83MB2SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ83

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-14D-120211	TZ83A	0.000	50.0	25.0
MW-14D-120211D	TZ83ADUP	0.000	50.0	25.0
MW-14D-120211S	TZ83ASPK	0.000	50.0	25.0
MW-14D-120211	TZ83B	0.000	50.0	25.0
MW-14D-120211D	TZ83BDUP	0.000	50.0	25.0
MW-14D-120211S	TZ83BSPK	0.000	50.0	25.0
PBW	TZ83MB1	0.000	50.0	25.0
LCSW	TZ83MB1SPK	0.000	50.0	25.0
PBW	TZ83MB2	0.000	50.0	25.0
LCSW	TZ83MB2SPK	0.000	50.0	25.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ83 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08363		X	X					X				X	X		X	X	X		X											X
S2	S2	1.00	08405												X					X													
S3	S3	1.00	08425		X																												X
S4	S4	1.00	08452																														
S5	S5	1.00	08473			X					X					X		X	X			X											
ICV	ICV	1.00	08551		X	X					X				X	X		X	X	X		X											X
ICB	ICB	1.00	08591		X	X					X				X	X		X	X	X		X											X
CRI	CRII	1.00	09032		X	X					X				X	X		X	X	X		X											X
ICSA	ICSAI	1.00	09074		X	X					X				X	X		X	X	X		X											X
ICSAB	ICSABI	1.00	09115		X	X					X				X	X		X	X	X		X											X
CCV	CCV1	1.00	09170		X	X					X				X	X		X	X	X		X											X
CCB	CCB1	1.00	09210		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ98MB2	2.00	09251																														
ZZZZZZ	TZ98MB1	1.00	09293																														
ZZZZZZ	TZ98ADUP	1.00	09334																														
ZZZZZZ	TZ98A	1.00	09375																														
ZZZZZZ	TZ98ASPK	1.00	09421																														
ZZZZZZ	TZ98BDUP	2.00	09462																														
ZZZZZZ	TZ98B	2.00	09504																														
ZZZZZZ	TZ98BSPK	2.00	09545																														
ZZZZZZ	TZ98MB2SPK	2.00	09585																														
ZZZZZZ	TZ98MB1SPK	1.00	10025																														
CCV	CCV2	1.00	10065		X	X					X				X	X		X	X	X		X											X
CCB	CCB2	1.00	10105		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ50MB2	1.00	10150																														
ZZZZZZ	TZ50L-L	5.00	10192																														
ZZZZZZ	TZ50L	1.00	10233																														
ZZZZZZ	TZ50LDUP	1.00	10274																														
ZZZZZZ	TZ50LSPK	1.00	10320																														
ZZZZZZ	TZ50O	1.00	10370																														
ZZZZZZ	TZ50P	1.00	10412																														
ZZZZZZ	TZ50Q	1.00	10453																														
ZZZZZZ	TZ50F	1.00	10495																														
ZZZZZZ	TZ50MB2SPK	1.00	10540																														
CCV	CCV3	1.00	10580		X	X					X				X	X		X	X	X		X											X

FORM XIV

TZ83:00057

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ83 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB3	1.00	11020		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ50MB1	1.00	11061																														
ZZZZZZ	TZ50C-L	5.00	11102																														
ZZZZZZ	TZ50C	1.00	11144																														
ZZZZZZ	TZ50CDUP	1.00	11185																														
ZZZZZZ	TZ50CSPK	1.00	11231																														
ZZZZZZ	TZ50G	1.00	11271																														
ZZZZZZ	TZ50H	1.00	11312																														
ZZZZZZ	TZ50F	1.00	11353																														
ZZZZZZ	TZ50LSPK	1.00	11421																														
ZZZZZZ	TZ50MB1SPK	1.00	11460																														
CCV	CCV4	1.00	11500		X	X					X				X	X		X	X	X		X											X
CCB	CCB4	1.00	11541		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ73MB1	1.00	11582																														
ZZZZZZ	TZ73A-L	5.00	12023																														
ZZZZZZ	TZ73A	1.00	12065																														
ZZZZZZ	TZ73ADUP	1.00	12110																														
ZZZZZZ	TZ73ASPK	1.00	12151																														
ZZZZZZ	TZ73B	1.00	12191																														
ZZZZZZ	TZ73C	1.00	12233																														
ZZZZZZ	TZ73H	1.00	12274																														
ZZZZZZ	TZ73P	1.00	12321																														
ZZZZZZ	TZ73MB1SPK	1.00	12364																														
CCV	CCV5	1.00	12404		X	X					X				X	X		X	X	X		X											X
CCB	CCB5	1.00	12444		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ73MB2	1.00	12490																														
ZZZZZZ	ZZZZZZ	5.00	12531																														
ZZZZZZ	TZ73I	1.00	12573																														
ZZZZZZ	TZ73IDUP	1.00	13014																														
ZZZZZZ	TZ73ISPK	1.00	13055																														
ZZZZZZ	TZ73J	1.00	13095																														
ZZZZZZ	TZ73K	1.00	13141																														
ZZZZZZ	TZ73ISPK	1.00	13182																														
ZZZZZZ	TZ73MB2SPK	1.00	13221																														
ZZZZZZ	TZ73MB2SPK	1.00	13285																														

FORM XIV

TZ83 00998

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ83 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCV	CCV6	1.00	13325		X	X					X				X	X		X	X	X		X											X
CCB	CCB6	1.00	13365		X	X					X				X	X		X	X	X		X											X
CCV	CCV7	1.00	13431		X	X					X				X	X		X	X	X		X											X
CCB	CCB7	1.00	13471		X	X					X				X	X		X	X	X		X											X
PBW	TZ83MB2	1.00	13513		X	X									X	X				X													X
MW-14D-120211L	TZ83B-L	5.00	13554		X	X									X	X				X													X
MW-14D-120211	TZ83B	1.00	13595		X	X									X	X				X													X
MW-14D-120211D	TZ83BDUP	1.00	14041		X	X									X	X				X													X
MW-14D-120211S	TZ83BSPK	1.00	14082		X	X									X	X				X													X
ZZZZZZ	TZ86C-L	5.00	14170																														
ZZZZZZ	TZ86C	1.00	14211																														
ZZZZZZ	TZ86CDUP	1.00	14252																														
ZZZZZZ	TZ86CSPK	1.00	14294																														
LCSW	TZ83MB1SPK	1.00	14334		X	X					X				X	X		X	X	X		X											X
CCV	CCV8	1.00	14374		X	X					X				X	X		X	X	X		X											X
CCB	CCB8	1.00	14414		X	X					X				X	X		X	X	X		X											X
CRI	CRIF	1.00	14455		X	X					X				X	X		X	X	X		X											X
ICSA	ICSAF	1.00	14501		X	X					X				X	X		X	X	X		X											X
ICSAB	ICSABF	1.00	14542		X	X					X				X	X		X	X	X		X											X
CCV	CCV9	1.00	14593		X	X					X				X	X		X	X	X		X											X
CCB	CCB9	1.00	15033		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ73MB2	1.00	15074																														
ZZZZZZ	TZ73I-L	5.00	15115																														
ZZZZZZ	TZ73I	1.00	15161																														
ZZZZZZ	TZ73IDUP	1.00	15202																														
ZZZZZZ	TZ73ISPK	1.00	15243																														
ZZZZZZ	ZZZZZZ	1.00	15320																														
ZZZZZZ	ZZZZZZ	1.00	15395																														
ZZZZZZ	D1	1.00	15435																														
ZZZZZZ	TZ73J	1.00	15480																														
ZZZZZZ	TZ73K	1.00	15522																														
CCV	CCV10	1.00	15563		X	X					X				X	X		X	X	X		X											X
CCB	CCB10	1.00	16003		X	X					X				X	X		X	X	X		X											X
PBW	TZ83MB1	1.00	16045		X	X					X				X	X		X	X	X		X											X
MW-14D-120211L	TZ83A-L	5.00	16090		X	X					X				X	X		X	X	X		X											X

FORM XIV

TZ83-6666

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ83 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-14D-120211	TZ83A	1.00	16131		X	X					X				X	X		X	X	X		X											X
MW-14D-120211D	TZ83ADUP	1.00	16173		X	X					X				X	X		X	X	X		X											X
MW-14D-120211S	TZ83ASPK	1.00	16214		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ86A-L	5.00	16260																														
ZZZZZZ	TZ86A	1.00	16301																														
ZZZZZZ	TZ86ADUP	1.00	16343																														
ZZZZZZ	TZ86ASPK	1.00	16384																														
LCSW	TZ83MB2SPK	1.00	16424		X	X									X	X				X													X
CCV	CCV11	1.00	16464		X	X					X				X	X		X	X	X		X											X
CCB	CCB11	1.00	16504		X	X					X				X	X		X	X	X		X											X
ZZZZZZ	TZ86MB1	1.00	16550																														
ZZZZZZ	TZ86MB2	1.00	16591																														
ZZZZZZ	TZ86MB2SPK	1.00	17032																														
ZZZZZZ	TZ73MB2SPK	1.00	17072																														
ZZZZZZ	TZ86MB1SPK	1.00	17112																														
ZZZZZZ	TZ73ISPK	1.00	17152																														
ZZZZZZ	D2	1.00	17192																														
CCV	CCV12	1.00	17233		X	X					X				X	X		X	X	X		X											X
CCB	CCB12	1.00	17273		X	X					X				X	X		X	X	X		X											X
CRI	CRIF1	1.00	17315		X	X					X				X	X		X	X	X		X											X
ICSA	ICSAF1	1.00	17360		X	X					X				X	X		X	X	X		X											X
ICSAB	ICSABF1	1.00	17401		X	X					X				X	X		X	X	X		X											X
CCV	CCV13	1.00	17452		X	X					X				X	X		X	X	X		X											X
CCB	CCB13	1.00	17492		X	X					X				X	X		X	X	X		X											X

TZ83 : 00195

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ83 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09460				X							X																			
S1	S1	1.00	09530				X							X																			
S2	S2	1.00	09590				X							X																			
S3	S3	1.00	10050				X							X																			
S4	S4	1.00	10110				X							X																			
ZZZZZZ	Rinse Sampl	1.00	10180																														
ICV	MICV	1.00	10320				X							X																			
ICB	ICB	1.00	10390				X							X																			
CCV	MCCV1	1.00	10440				X							X																			
CCB	CCB1	1.00	10510				X							X																			
CRI	MCRI	1.00	10570				X							X																			
ICSA	ICSAI	1.00	11030				X							X																			
ICSAB	ICSABI	1.00	11110				X							X																			
ZZZZZZ	LR200	1.00	11170																														
ZZZZZZ	LR300	1.00	11240																														
CCV	MCCV2	1.00	11300				X							X																			
CCB	CCB2	1.00	11370				X							X																			
ZZZZZZ	UA26RMB	2.00	11430																														
ZZZZZZ	UA30MB1	2.00	11490																														
ZZZZZZ	UA30MB1SPK	2.00	11550																														
ZZZZZZ	UA26RMBSPK	2.00	12010																														
ZZZZZZ	UA26RADUP	2.00	12070																														
ZZZZZZ	UA26RA	2.00	12130																														
ZZZZZZ	UA26RASPK	2.00	12200																														
ZZZZZZ	UA30ADUP	2.00	12260																														
ZZZZZZ	UA30A	2.00	12320																														
ZZZZZZ	UA30ASPK	2.00	12390																														
CCV	MCCV3	1.00	12450				X							X																			
CCB	CCB3	1.00	12510				X							X																			
ZZZZZZ	UA26RADUP	2.00	12580																														
ZZZZZZ	UA26RA	2.00	13040																														
CCV	MCCV4	1.00	13150				X							X																			
CCB	CCB4	1.00	13220				X							X																			
ZZZZZZ	UA30MB2	2.00	13280																														
ZZZZZZ	UA58MBSPK	20.00	13340																														

FORM XIV

TZ83 00101

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ83 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	UA30MB2SPK	2.00	13410																														
ZZZZZZ	TZ50O	2.00	13470																														
ZZZZZZ	UA30BDUP	2.00	13530																														
ZZZZZZ	UA30B	2.00	13590																														
ZZZZZZ	UA30BSPK	2.00	14060																														
ZZZZZZ	UA58ADUP	20.00	14120																														
ZZZZZZ	UA58A	20.00	14180																														
ZZZZZZ	UA58ASPK	20.00	14250																														
CCV	MCCV5	1.00	14310				X							X																			
CCB	CCB5	1.00	14370				X							X																			
ZZZZZZ	UA58MB	20.00	14460																														
ZZZZZZ	TZ73C	2.00	14510																														
ZZZZZZ	TZ73C	5.00	14580																														
ZZZZZZ	TZ73G	5.00	15040																														
ZZZZZZ	TZ73H	2.00	15100																														
ZZZZZZ	TZ73H	5.00	15160																														
ZZZZZZ	TZ73K	2.00	15230																														
ZZZZZZ	TZ73K	5.00	15290																														
ZZZZZZ	TZ73O	5.00	15350																														
ZZZZZZ	UA58B	20.00	15420																														
CCV	MCCV6	1.00	15480				X							X																			
CCB	CCB6	1.00	15540				X							X																			
ZZZZZZ	TZ73A-L	10.00	16020																														
ZZZZZZ	TZ73A	2.00	16090																														
ZZZZZZ	TZ73ADUP	2.00	16150																														
ZZZZZZ	TZ73ASPK	2.00	16210																														
ZZZZZZ	ZZZZZZ	2.00	16270																														
ZZZZZZ	TZ73A-L	25.00	16340																														
ZZZZZZ	TZ73A	5.00	16400																														
ZZZZZZ	TZ73ADUP	5.00	16460																														
ZZZZZZ	TZ73ASPK	5.00	16520																														
ZZZZZZ	ZZZZZZ	5.00	16590																														
CCV	MCCV7	1.00	17050				X							X																			
CCB	CCB7	1.00	17120				X							X																			
ZZZZZZ	TZ73I-L	10.00	17180																														

TZ83 : 05/12

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ83 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ73I	2.00	17240																														
ZZZZZZ	TZ73IDUP	2.00	17300																														
ZZZZZZ	TZ73ISPK	2.00	17360																														
ZZZZZZ	ZZZZZZ	2.00	17430																														
ZZZZZZ	TZ73I-L	25.00	17490																														
ZZZZZZ	TZ73I	5.00	17550																														
ZZZZZZ	TZ73IDUP	5.00	18010																														
ZZZZZZ	TZ73ISPK	5.00	18080																														
ZZZZZZ	ZZZZZZ	5.00	18140																														
CCV	MCCV8	1.00	18200				X							X																			
CCB	CCB8	1.00	18270				X							X																			
PBW	TZ83MB1	2.00	18330											X																			
PBW	TZ83MB2	2.00	18380											X																			
LCSW	TZ83MB1SPK	2.00	18440											X																			
LCSW	TZ83MB2SPK	2.00	18510											X																			
ZZZZZZ	TZ73P	2.00	18570																														
ZZZZZZ	TZ73P	5.00	19030																														
ZZZZZZ	TZ86B	2.00	19090																														
ZZZZZZ	TZ86B	5.00	19160																														
ZZZZZZ	TZ86D	2.00	19220																														
ZZZZZZ	TZ86D	5.00	19280																														
CCV	MCCV9	1.00	19350				X							X																			
CCB	CCB9	1.00	19410				X							X																			
ZZZZZZ	ZZZZZZ	10.00	19470																														
MW-14D-120211	TZ83A	2.00	19530																														
MW-14D-120211D	TZ83ADUP	2.00	19590																														
ZZZZZZ	TZ83A SPK	2.00	20060																														
ZZZZZZ	ZZZZZZ	2.00	20120																														
MW-14D-120211L	TZ83A-L	25.00	20180				X							X																			
MW-14D-120211	TZ83A	5.00	20250				X							X																			
MW-14D-120211D	TZ83ADUP	5.00	20310				X							X																			
MW-14D-120211S	TZ83ASPK	5.00	20370				X							X																			
ZZZZZZ	ZZZZZZ	5.00	20430																														
CCV	MCCV10	1.00	20500				X							X																			
CCB	CCB10	1.00	20560				X							X																			

FORM XIV

TZ83 : 09103

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ83 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	ZZZZZZ	10.00	21020																														
MW-14D-120211	TZ83B	2.00	21080																														
MW-14D-120211D	TZ83BDUP	2.00	21150																														
MW-14D-120211S	TZ83BSPK	2.00	21210																														
ZZZZZZ	ZZZZZZ	2.00	21270																														
MW-14D-120211L	TZ83B-L	25.00	21340				X							X																			
MW-14D-120211	TZ83B	5.00	21400				X							X																			
MW-14D-120211D	TZ83BDUP	5.00	21460				X							X																			
MW-14D-120211S	TZ83BSPK	5.00	21520				X							X																			
ZZZZZZ	ZZZZZZ	5.00	21590																														
CCV	MCCV11	1.00	22050				X							X																			
CCB	CCB11	1.00	22120				X							X																			

TZ83 : 09104

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/13/2011

SDG: TZ83 | RUNID: MS121381 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09150				X																										
S1	S1	1.00	09210				X																										
S2	S2	1.00	09270				X																										
S3	S3	1.00	09340				X																										
S4	S4	1.00	09400				X																										
ZZZZZZ	Rinse Samp1	1.00	09460																														
ICV	MICV	1.00	09540				X																										
ICB	ICB	1.00	10000				X																										
CCV	MCCV1	1.00	10060				X																										
CCB	CCB1	1.00	10130				X																										
ZZZZZZ	NEW IS	1.00	10180																														
CRI	MCRI	1.00	10240				X																										
ICSA	ICSAI	1.00	10300				X																										
ICSAB	ICSABI	1.00	10360				X																										
ZZZZZZ	LR200	1.00	10430																														
ZZZZZZ	LR300	1.00	10490																														
CCV	MCCV2	1.00	10560				X																										
CCB	CCB2	1.00	11020				X																										
S0	S0	1.00	11090				X																										
CCV	MCCV3	1.00	11160				X																										
CCB	CCB3	1.00	11220				X																										
ZZZZZZ	UA83MB1	200.00	11280																														
ZZZZZZ	UA83MB1SPK	200.00	11340																														
ZZZZZZ	UA83ADUP	200.00	11410																														
ZZZZZZ	UA83A	200.00	11470																														
ZZZZZZ	UA83ASPK	200.00	11530																														
ZZZZZZ	UA83B	200.00	11590																														
ZZZZZZ	UA83C	200.00	12060																														
ZZZZZZ	UA83D	200.00	12120																														
ZZZZZZ	UA83E	200.00	12180																														
ZZZZZZ	UA83F	200.00	12240																														
CCV	MCCV4	1.00	12310				X																										
CCB	CCB4	1.00	12370				X																										
PBW	TZ83MB1	2.00	12450				X																										
PBW	TZ83MB2	2.00	12510				X																										

FORM XIV

TZ83 : 9515

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/13/2011

SDG: TZ83 | RUNID: MS121381 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ86MB1	2.00	12570																														
ZZZZZZ	TZ86MB2	2.00	13030																														
ZZZZZZ	TZ86MB1SPK	2.00	13080																														
ZZZZZZ	TZ86MB2SPK	2.00	13150																														
LCSW	TZ83MB1SPK	2.00	13210				X																										
LCSW	TZ83MB2SPK	2.00	13270				X																										
ZZZZZZ	UA58B	20.00	13330																														
ZZZZZZ	TZ73K	10.00	13400																														
CCV	MCCV5	1.00	13460				X																										
CCB	CCB5	1.00	13530				X																										

TZ83 00166

General Chemistry Analysis
Report and Summary QC Forms

ARI Job ID: TZ83

SAMPLE RESULTS-CONVENTIONALS
TZ83-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296
Date Sampled: 12/02/11
Date Received: 12/02/11

Client ID: MW-14D-120211
ARI ID: 11-27856 TZ83A

Analyte	Date Batch	Method	Units	RL	Sample
Alkalinity	12/12/11 121211#1	SM 2320	mg/L CaCO3	1.0	432
Carbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Bicarbonate	12/12/11	SM 2320	mg/L CaCO3	1.0	432
Hydroxide	12/12/11	SM 2320	mg/L CaCO3	1.0	< 1.0 U
Total Suspended Solids	12/[illegible]/11 120[illegible]1#1	SM2540D	mg/L	1.1	1.7
Chloride	12/02/11 120211#1	EPA 300.0	mg/L	1.0	39.9
N-Nitrate	12/03/11 120311#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Phosphorus	12/[illegible]/11 120[illegible]1#1	SM4500-PE	mg-P/L	0.008	0.047
Sulfate	12/[illegible]/11 120[illegible]1#1	EPA 300.0	mg/L	0.1	0.1
Total Organic Carbon	12/05/11 120511#1	EPA 9060M	mg/L	1.50	28.5

RL Analytical reporting limit
U Undetected at reported detection limit

LAB CONTROL RESULTS-CONVENTIONALS
TZ83-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296
Date Sampled: NA
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Total Suspended Solids SM2540D	ICVL	12/06/11	mg/L	47.9	50.0	95.8%

METHOD BLANK RESULTS-CONVENTIONALS
TZ83-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296
Date Sampled: NA
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
Total Suspended Solids	SM2540D	12/06/11	mg/L	< 1.0 U	
Chloride	EPA 300.0	12/02/11	mg/L	< 0.1 U	
N-Nitrate	EPA 300.0	12/03/11	mg-N/L	< 0.1 U	
Total Phosphorus	SM4500-P	12/05/11	mg-P/L	< 0.008 U	
Sulfate	EPA 300.0	12/10/11	mg/L	< 0.1 U	
Total Organic Carbon	EPA 9060A	12/05/11	mg/L	< 1.50 U	

STANDARD REFERENCE RESULTS-CONVENTIONALS
TZ83-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/16/11

Project: RG
Event: 128296
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
Alkalinity ERA #P114506	SM 2320	12/12/11	mg/L CaCO3	51.2	49.2	104.1%
Chloride ERA #411010	EPA 300.0	12/02/11	mg/L	3.1	3.0	103.3%
N-Nitrate ERA #230511	EPA 300.0	12/03/11	mg-N/L	3.1	3.0	103.3%
Total Phosphorus ERA #30064	SM4500-P.	12/05/11	mg-P/L	0.103	0.100	103.0%
Sulfate ERA #160121	EPA 300..	12/10/11	mg/L	2.9	3.0	96.7%
Total Organic Carbon ERA 0523-11-05	EPA 9060M	12/05/11	mg/L	20.5	20.0	102.5%

Subcontracted Results
TOX Analyzed by Columbia Analytical Services Inc.

ARI Job ID: TZ83

Columbia Analytical Services™ 1317 S. 13th Avenue, Kelso, WA 98626 360.577.7222 800.695.7222 www.caslab.com

December 19, 2011 Analytical Report for Service Request No: K1111927

Sue Dunnihoo
Analytical Resources, Incorporated
4611 So. 134th Place
Suite 100
Tukwila, WA 98168

RE: TZ83

Dear Sue:

Enclosed are the results of the rush sample submitted to our laboratory on December 08, 2011. For your reference, these analyses have been assigned our service request number K1111927.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3363. You may also contact me via Email at LDomenighini@caslab.com.

Respectfully submitted,

Columbia Analytical Services, Inc.

Lisa Domenighini
Project Chemist

LD/ln

TZ83:00113

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

TZ83:00114

Inorganic Data Qualifiers

*	The result is an outlier See case narrative
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.1 definition* . Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

T283 : 00115

Columbia Analytical Services, Inc.
Kelso, WA
State Certifications, Accreditations, and Licenses

Agency	Number
Alaska DEC UST	UST-040
Arizona DHS	AZ0339
Arkansas - DEQ	88-0637
California DHS	2286
DOD ELAP	L11-119
Florida DOH	E87412
Georgia DNR	881
Hawaii DOH	-
Idaho DHW	-
Indiana DOH	C-WA-01
ISO 17025	L11-118
Louisiana DEQ	3016
Louisiana DHH	LA080001
Maine DHS	WA0035
Michigan DEQ	9949
Minnesota DOH	053-999-368
Montana DPHHS	CERT0047
Nevada DEP	WA35
New Jersey DEP	WA005
New Mexico ED	-
North Carolina DWQ	605
Oklahoma DEQ	9801
Oregon – DEQ (NELAP)	WA100010
South Carolina DHEC	61002
Texas CEQ	04704427-08-TX
Washington DOE	C1203
Wisconsin DNR	998386840
Wyoming (EPA Region 8)	-

TZ83:00116

Case Narrative

TZ83:00117

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Analytical Resources, Incorporated	**Service Request No.:**	K1111927
Project:	TZ83	**Date Received:**	12/08/11
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

One water sample was received for analysis at Columbia Analytical Services on 12/08/11. The sample was received in good condition and consistent with the accompanying chain of custody form. The sample was stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Approved by Lisa A Jonaughin **Date** 12/19/11

Chain of Custody

TZ83 00119

K1111927

SUBCONTRACTOR ANALYSIS REQUEST
CUSTODY TRANSFER 12/06/11

ANALYTICAL RESOURCES INCORPORATED

ARI Project: TZ83

Laboratory: Columbia Analytical Services Inc.
Lab Contact: Ed Wallace
Lab Address: 1317 South 13th Street
Kelso, WA 98626
Phone: 360-577-7222
Fax: 360-636-1068

ARI Client: ERM-West
Project ID: RG
ARI PM: Sue Dunnihoo
Phone: 206-695-6207
Fax: 206-695-6201
Email: subdata@arilabs.com

Analytical Protocol: In-house
Special Instructions:

Requested Turn Around: **12/16/11**
Email Results (Y/N): **email**

Limits of Liability. *Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or sucessors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.*

ARI ID	Client ID/ Add'l ID	Sampled	Matrix	Bottles	Analyses
11-27856-TZ83A	MW-14D-120211	12/02/11 08:53	Water	1	TOX

Special Instructions: None

Method 9020

Carrier	UPS		Airbill	1Z832695 03 5132 6490		Date	12/7/11
Relinquished by		Company	ARI	Date	12/7/11	Time	1340
Received by		Company	CAS	Date	12/8/11	Time	1030

Subcontractor Custody Form - **TZ83**
Page 1 of 1

TZ83:00126

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC Lisa

Client / Project: Analytical Resources Inc. Service Request K11 11927

Received: 12/8/11 Opened: 12/8/11 By: SMW Unloaded: 12/8/11 By: SMW

1. Samples were received via? *Mail* *Fed Ex* (*UPS*) *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? One, front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.5		299		1Z 832 695 03 5132 6490	

7. Packing material used. *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
14. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
15. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

TZ89 00121

General Chemistry Parameters

TZ83 : 00122

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Analytical Resources, Incorporated	**Service Request:**	
Project:	TZ83	**Date Collected:**	
Sample Matrix:	Water	**Date Received:**	

Halides, Total Organic (TOX)

Prep Method:	NONE	Units:	
Analysis Method:	9020B	Basis:	
Test Notes:			

Sample Name	Lab Code	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result
11-27856-1Z83A / MW-14D-120211	K1111927-001	10	1	NA	12/15/2011	24
Method Blank	K1111927-MB	10	1	NA	12/15/2011	ND

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	Analytical Resources, Incorporated	**Service Request:**	K1111927
Project:	TZ83	**Date Collected:**	12/2/2011
Sample Matrix:	Water	**Date Received:**	12/8/2011
		Date Extracted:	NA
		Date Analyzed:	12/15/2011

Matrix Spike/Duplicate Matrix Spike Summary
Halides, Total Organic (TOX)

Sample Name:	11-27856-TZ83A / MW-14D-120211	Units:	ug/L (ppb)
Lab Code:	K1111927-001MS, K1111927-001DMS	Basis:	NA

Test Notes:

									Percent Recovery				
				Spike Level		Sample	Spike Result				CAS Acceptance	Relative Percent	Result
Analyte	Prep Method	Analysis Method	MRL	MS	DMS	Result	MS	DMS	MS	DMS	Limits	Difference	Notes
Halides, Total Organic (TOX)	NONE	9020B	20	200	200	24	210	220	93	98	82-121	5	

DMS/020597p

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Analytical Resources, Incorporated
Project: TZ83
Sample Matrix: Water

Service Request: K1111927
Date Collected: NA
Date Received: NA
Date Analyzed: 12/15/2011

Calibration and Method Blank Summary
Halides, Total Organic (TOX)
EPA Method 9020

	Halide Check Standard (µg)	Instrument Calibration Standard (µg)	Adsorption Standard (µg/L)	Method Blank (µg/L)
True Value	3.64	10.0	100	ND
Run A	3.43	10.7	96	ND
Percent Recovery	94	107	96	
Run B	3.36	10.3	106	
Percent Recovery	92	103	106	

Work Request # Original (K11927) K11881

Tier: IV II (13-20)

Date Analyzed: 12/15/11 EM 12/15/11

Analyst: EM

Analysis: TOX 9020B K TOX03

273164

DATA QUALITY REPORT
INORGANICS

Explain any "no" responses to questions below, and any corrective actions in the comments section below.

1.	Is the method name and number correct and appropriate?		yes/no/NA
2.	Holding times met for all analyses and for all samples?		yes/no/NA
3.	Are calculations correct?		yes/no/NA
4.	Is the reporting basis correct? (Dry Weight)		yes/no/NA
5.	All quality control criteria met?		yes/no/NA EM 12/15/11
	a.	Is the calibration curve correlation coefficient ≥ 0.995?	yes/no/NA
	b.	MBs, CCVs, CCBs, LCSs, Dups, and Spikes, analyzed at proper frequency?	yes/no/NA
	c.	Are ICVs, CCVs, and CCBs all within acceptance limits?	yes/no/NA
	d.	Are results for methods blanks all ND?	yes/no/NA
	e.	Are all QC samples within acceptance criteria? (LCS % rec, MS/DMS % rec, DUP or MS/DMS RPDs, etc.)	yes/no/NA
	f.	Are all exceptions explained?	yes/no/NA
6.	Are all service requests that apply attached?		yes/no/NA
7.	Are all samples labelled correctly?		yes/no/NA
8.	Have all instructions on the service request been followed? (e.g. Special MRLs, QC on a specific sample)		yes/no/NA
9.	Are detection limits and units reported correctly?		yes/no/NA
10.	Are proper Analysis/Extraction stickers included on report?		yes/no/NA
11.	Is the unused space on the benchsheet crossed out?		yes/no/NA
12.	Was analysis turned in by the due date? (n-2) (If not record SR#)		yes/no/NA

COMMENTS:

K11927 RUSH 12/16

K11881 RUSH 12/16

Final Approved by: [signature] Date: 12/16/11

DQREPORT

TZ83 00126

AOX/TOX Benchsheet

Service Request #: K1111927, K1111881 Method #: TOX-9020B

Analysis For: Total Organic Halides Instrument: Crackers

Calibration Date: 7/5/2001 IPR Date: 5/9/2000

Instrument:	Volume	Concentration	Result	Reported Value	% Rec.
Halide Check	Run A = 10 µL	3.64	3.4300	3.4300	94
	Run B = 10 µL	3.64	3.3650	3.3650	92
NO_3 Wash Blank	2 mL	1) 0.1810	2) 0.0510	Average =	0.1160
Inst Cal Std	Run A = 10 µL	10.0	10.8200	10.7040	107
	Run B = 10 µL	10.0	10.4560	10.3400	103

Lab Code	Initial Volume (mls)	Final Volume (mls)	OBS A µg	OBS B µg	Conc. (ppb)	Reported Value (ppb)	% Break-through	% RPD	Head-space	pH	% Recovery
MB	100	100	0.1560	0.0700	-0.1	< 10					
PAR STD	100	100	9.6940	0.1290	96	96	<1				96
K11927-1	50	100	0.8560	0.5790	24		38.5		n	7	
K11927-1D	100	100	1.7280	0.8920	24		32.5	<1			1+1d
K11927-1MS	50	100	9.7120	1.1430	212	210	9.7				93
K11927-1MSD	50	100	9.7330	1.3060	216	210	11.0	2			98
K11881-13	10	100	0.3930	0.1370	30		7.0		n	5	
K11881-13D	20	100	0.5410	0.2330	27	<50	21.6	-			13+13d
NO_3 Wash Blank	2 mL		1) 0.2160		2) 0.1480		Average =				0.1820
ICS	10 µl				10.747	10.5650					106

Comments: NA signifies B column is equal to or less than the nitrate wash blank and should be disregarded as per method.
High break through is disregarded if sample concentration is less than or equal to the MRL.
K11881 elevated MRL due to limited sample volume.

sulfuric acid: EMD 51164 nitric acid: JTB41037

Halide Check = 3.64 µg/L **Inst. Cal Std. =** 10.0 µg/L

TOX-9020B (ppb) = $\frac{[(OBS.A - NO_3\ Blank) + (OBS.B - NO_3\ Blank)] \times (DF)}{Volume\ Analyzed\ (L)}$

AOX-506 (ppb)

AOX-1650C (ppb) = $\frac{((OBS.A + OBS.B) - (MB\ OBS.A + MB\ OBS.B))}{Initial\ Volume\ Analyzed\ (L)}$

% Breakthrough = $\frac{(OBS.B - MB\ OBS.B) \times 100}{(OBS.A - MB\ OBS.A) + (OBS.B - MB\ OBS.B)}$

Matrix Spike = $\frac{10\ µl \times 1\ µg \times 100\ ml}{1\ µl \times 50ml \times 0.1\ L} = 200\ µg/L$

NO_3 Wash ID #: TOX/3-27-J
Electrolyte ID #: TOX/3-60-N
Carbon Lot #: 1106134
0.0103 NaCl ID #: TOX/3-70-M
1000 ppm TCP (PAR) ID #: TOX/3-72-E
1000 ppm TCP (ICS) ID #: TOX/3-72-D

NO3 = < 1.0
ICS = 90%-110%
PAR = 87-113%
MS =82-121%

W.D on 12/15/11

Analyzed By:	EM	Date:	12/15/11 0639
Reviewed By:		Date:	12/16/11

TZ83 : 00127

AOX/TOX Benchsheet

Service Request #: K1111927, K1111881 Method #: TOX-9020B

Analysis For: Total Organic Halides Instrument: Crackers

Lab Code	Initial Volume (mls)	Final Volume (mls)	OBS A µg	OBS B µg	Conc. (ppb)	Reported Value (ppb)	% Break-through	% RPD	Head-space	pH	% Recovery
K11881-14	10	100	0.5110	NA	33		<1		n	6	
K11881-14D	20	100	0.6970	0 2700	30	<50	14.6	-			14+14d
K11881-15	10	100	0.8980	NA	72		<1		n	6	
K11881-15D	20	100	1 5580	NA	69	71	<1	4			15+15d
K11881-16	10	100	0.0630	NA	-12		60.5		n	6	
K11881-16D	20	100	0.1140	NA	-3	<50	72.8	-			16+16d
K11881-17	10	100	0.1390	NA	-4		80.9		n	6	
K11881-17D	20	100	0.1800	NA	0	<50	98.9	-			17+17d
NO3 Wash Blank	2 mL		1) 0.1300		2) 0 1210		Average =				0.1255
ICS	10 µl				10.653	10.5275					105
K11881-18	10	100	0.2090	NA	8		298.8		n	6	
K11881-18D	20	100	0.1740	NA	2	<50	163.0	-			18+18d
K11881-19	10	100	0.1730	NA	5		160.9		n	6	
K11881-19D	20	100	0 1690	NA	2	<50	153 0	-			19+19d
K11881-20	10	100	0.2510	NA	13		<1		y	5	
K11881-20D	20	100	0.3070	NA	9	<50	<1	-			20+20d
ICS	10 µl				10 775	10.6495					106

Comments:

Analyzed By: DM	Date: 12/15/11
Reviewed By: [illegible]	Date: 12/16/11

Blank Report

Blank Results

Data ID : AOX212152011.001 12/12/16/11

Reps.	Mode	Counts(µg)	Total Counts	$\bar{X}$	SD	RSD(%)	ABC No.	Date
1-1	AOX-2	0.181					1	12/15/11 06:39
1-2	AOX-2	0.051	0.232	0.232	***.**	***.**	1	12/15/11 06:45

BM 12/15/11

TZ83:00129

Sample Report

Sample All Data

Data ID : AOX212152011.001
Blank : 0.232 µg/2Column

LDu/12/16/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	ICS	10.00 µl	1.0000	10.820			1
1-2	ICS	10.00 µl	1.0000	10.456	21.276	0.21 %	1
n = 1	$\bar{X}$ = 0.21 %			SD = ****.**		RSD(%) = ***.**	

DM 12/15/11

TZ83:00130

Sample Report

Sample All Data

Data ID : AOX212152011.002
Blank : 0.232 µg/2Column Dan/12/16/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	MB	100.00 ml	1.0000	0.156			1
1-2	MB	100.00 ml	1.0000	0.070	0.226	0.00 ppm	1
n = 1	$\bar{X}$ = 0.00 ppm			SD = ****.**		RSD(%) = ***.**	
1-1	PAR	100.00 ml	1.0000	9.694			1
1-2	PAR	100.00 ml	1.0000	0.129	9.823	95.91 ppb	1
n = 1	$\bar{X}$ = 95.91 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11927-1	100.00 ml	0.5000	0.856			1
1-2	K11927-1	100.00 ml	0.5000	0.579	1.435	24.06 ppb	1
n = 1	$\bar{X}$ = 24.06 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11927-1D	100.00 ml	1.0000	1.728			1
1-2	K11927-1D	100.00 ml	1.0000	0.892	2.620	23.88 ppb	1
n = 1	$\bar{X}$ = 23.88 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11927-1MS	100.00 ml	0.5000	9.712			1
1-2	K11927-1MS	100.00 ml	0.5000	1.143	10.855	212.46 ppb	1
n = 1	$\bar{X}$ = 212.46 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11927-1MSD	100.00 ml	0.5000	9.733			1
1-2	K11927-1MSD	100.00 ml	0.5000	1.306	11.039	216.14 ppb	1
n = 1	$\bar{X}$ = 216.14 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11881-13	100.00 ml	0.1000	0.393			1
1-2	K11881-13	100.00 ml	0.1000	0.137	0.530	29.80 ppb	1
n = 1	$\bar{X}$ = 29.80 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	K11881-13D	100.00 ml	0.2000	0.541			1
1-2	K11881-13D	100.00 ml	0.2000	0.233	0.774	27.10 ppb	1
n = 1	$\bar{X}$ = 27.10 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	NITRATE WASH BLANK	100.00 ml	1.0000	0.216			1
1-2	NITRATE WASH BLANK	100.00 ml	1.0000	0.148	0.364	1.32 ppb	1
n = 1	$\bar{X}$ = 1.32 ppb			SD = ****.**		RSD(%) = ***.**	
1-1	ICS	100.00 ml	1.0000	10.747	10.747	105.15 ppb	1
n = 1	$\bar{X}$ = 105.15 ppb			SD = ****.**		RSD(%) = ***.**	

DM 12/15/11

TZ83:00131

Sample Report

Sample All Data

Data ID : AOX212152011.002
Blank : 0.232 µg/2Column

KK 12/16/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	K11881-14	100.00 ml	0.1000	0.511			1
1-2	K11881-14	100.00 ml	0.1000	0.090 NA	0.601	36.90 ppb	1
	n = 1	$\bar{X}$ = 36.90 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-14D	100.00 ml	0.2000	0.697			1
1-2	K11881-14D	100.00 ml	0.2000	0.270	0.967	36.75 ppb	1
	n = 1	$\bar{X}$ = 36.75 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-15	100.00 ml	0.1000	0.898			1
1-2	K11881-15	100.00 ml	0.1000	0.017 NA	0.915	68.30 ppb	1
	n = 1	$\bar{X}$ = 68.30 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-15D	100.00 ml	0.2000	1.558			1
1-2	K11881-15D	100.00 ml	0.2000	0.175 NA	1.733	75.05 ppb	1
	n = 1	$\bar{X}$ = 75.05 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-16	100.00 ml	0.1000	0.063			1
1-2	K11881-16	100.00 ml	0.1000	0.029 NA	0.092	0.00 ppm	1
	n = 1	$\bar{X}$ = 0.00 ppm		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-16D	100.00 ml	0.2000	0.114			1
1-2	K11881-16D	100.00 ml	0.2000	-0.003 NA	0.114	0.00 ppm	1
	n = 1	$\bar{X}$ = 0.00 ppm		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-17	100.00 ml	0.1000	0.139			1
1-2	K11881-17	100.00 ml	0.1000	0.134 NA	0.273	4.10 ppb	1
	n = 1	$\bar{X}$ = 4.10 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-17D	100.00 ml	0.2000	0.180			1
1-2	K11881-17D	100.00 ml	0.2000	0.097 NA	0.277	2.25 ppb	1
	n = 1	$\bar{X}$ = 2.25 ppb		SD = ****.**		RSD(%) = ***.**	
2-1	NITRATE WASH BLANK	100.00 ml	1.0000	0.130			1
2-2	NITRATE WASH BLANK	100.00 ml	1.0000	0.121	0.251	0.19 ppb	1
	n = 1	$\bar{X}$ = 0.19 ppb		SD = ****.**		RSD(%) = ***.**	
2-1	ICS	100.00 ml	1.0000	10.653	10.653	104.21 ppb	1
	n = 1	$\bar{X}$ = 104.21 ppb		SD = ****.**		RSD(%) = ***.**	

EM 12/15/11

TZ83 : 00132

Sample Report

Sample All Data

Data ID : AOX212152011.002
Blank : 0.232 µg/2Column

kw/12/16/11

Reps.	Sample ID	Sample Size	Dilution Rate	Counts(µg)	Total Counts	Concentration	ABC No.
1-1	K11881-18	100.00 ml	0.1000	0.209			1
1-2	K11881-18	100.00 ml	0.1000	0.059 NA	0.268	3.60 ppb	1
	n = 1	$\bar{X}$ = 3.60 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-18D	100.00 ml	0.2000	0.174			1
1-2	K11881-18D	100.00 ml	0.2000	0.054 NA	0.228	0.00 ppm	1
	n = 1	$\bar{X}$ = 0.00 ppm		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-19	100.00 ml	0.1000	0.173			1
1-2	K11881-19	100.00 ml	0.1000	0.080 NA	0.253	2.10 ppb	1
	n = 1	$\bar{X}$ = 2.10 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-19D	100.00 ml	0.2000	0.169			1
1-2	K11881-19D	100.00 ml	0.2000	0.086 NA	0.255	1.15 ppb	1
	n = 1	$\bar{X}$ = 1.15 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-20	100.00 ml	0.1000	0.251			1
1-2	K11881-20	100.00 ml	0.1000	0.067 NA	0.318	8.60 ppb	1
	n = 1	$\bar{X}$ = 8.60 ppb		SD = ****.**		RSD(%) = ***.**	
1-1	K11881-20D	100.00 ml	0.2000	0.307			1
1-2	K11881-20D	100.00 ml	0.2000	0.101 NA	0.408	8.80 ppb	1
	n = 1	$\bar{X}$ = 8.80 ppb		SD = ****.**		RSD(%) = ***.**	
3-1	ICS	100.00 ml	1.0000	10.775	10.775	105.43 ppb	1
	n = 1	$\bar{X}$ = 105.43 ppb		SD = ****.**		RSD(%) = ***.**	

EM12/15/11

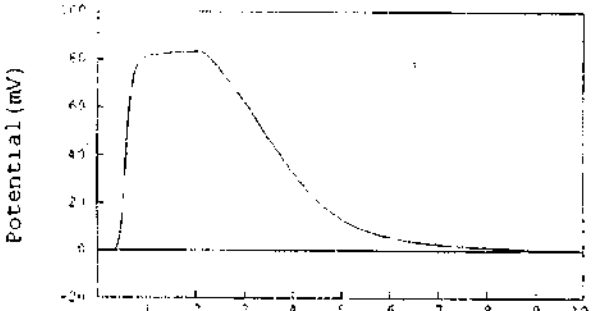
TZ83 00133

Sample Report

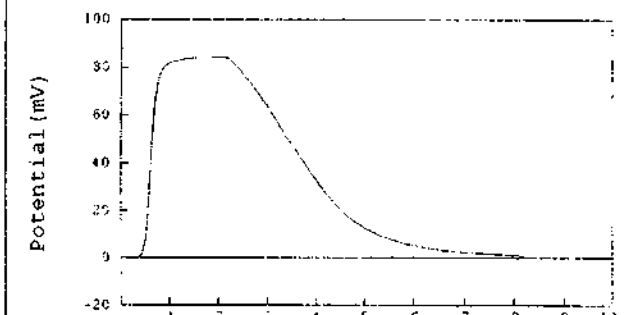
Sample Charts

Data ID : AOX212152011.001 ldw/12/16/11

Reps. : 1-1 12/15/11 06:55
Sample ID : ICS
Counts(µg): 10.820



Reps. : 1-2 12/15/11 07:05
Sample ID : ICS
Counts(µg): 10.456

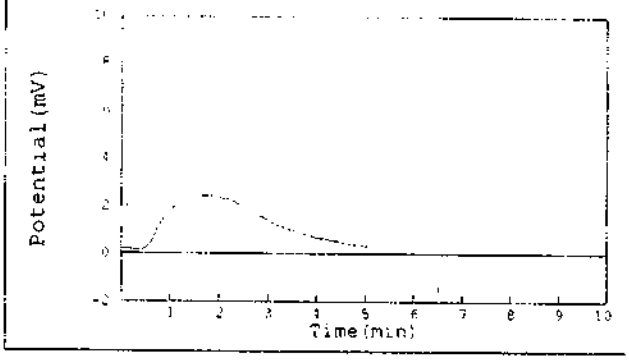


Sample Report

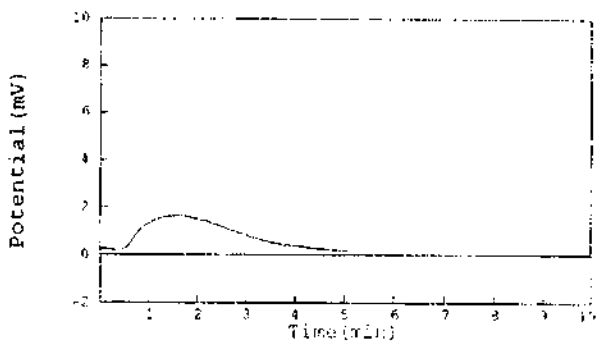
Sample Charts

Data ID : AOX212152011.002 12/12/11

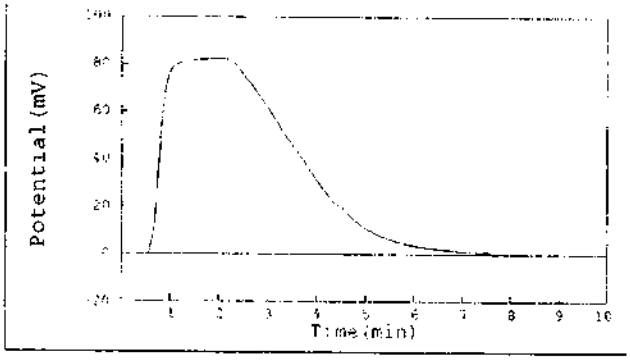
Reps. : 1-1 12/15/11 07:12
Sample ID : MB
Counts(µg): 0.156



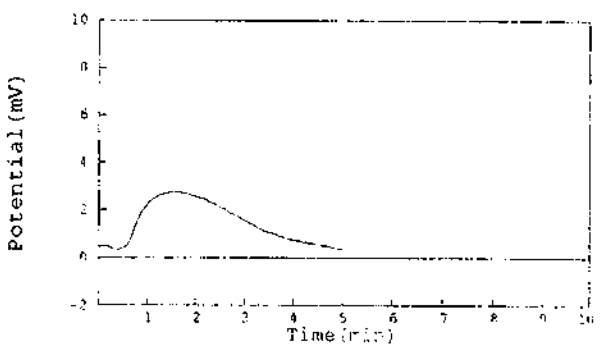
Reps. : 1-2 12/15/11 07:17
Sample ID : MB
Counts(µg): 0.070



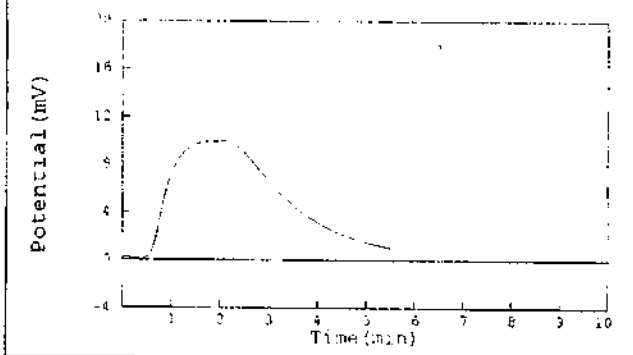
Reps. : 1-1 12/15/11 07:25
Sample ID : PAR
Counts(µg): 9.694



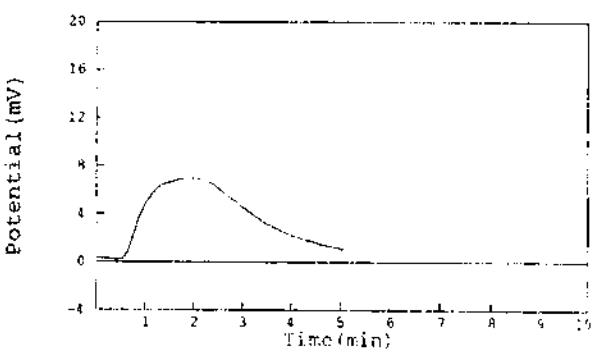
Reps. : 1-2 12/15/11 07:31
Sample ID : PAR
Counts(µg): 0.129



Reps. : 1-1 12/15/11 07:36
Sample ID : K11927-1
Counts(µg): 0.856



Reps. : 1-2 12/15/11 07:43
Sample ID : K11927-1
Counts(µg): 0.579



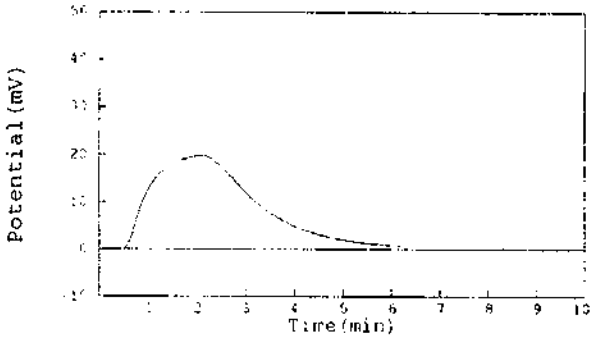
TZ83:00135

Sample Report

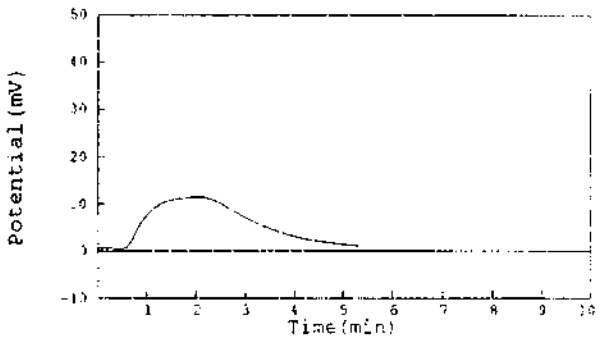
Sample Charts

Data ID : AOX212152011.002

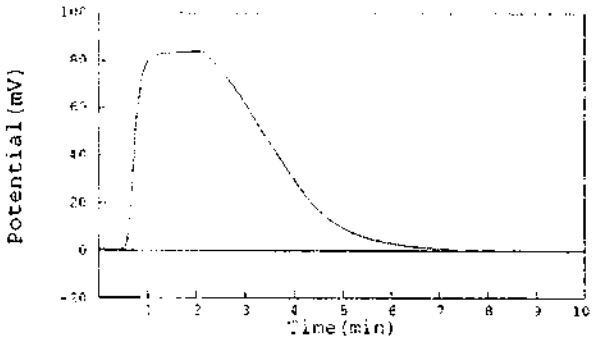
Reps. : 1-1 12/15/11 08:07
Sample ID : K11927-1D
Counts(µg): 1.728



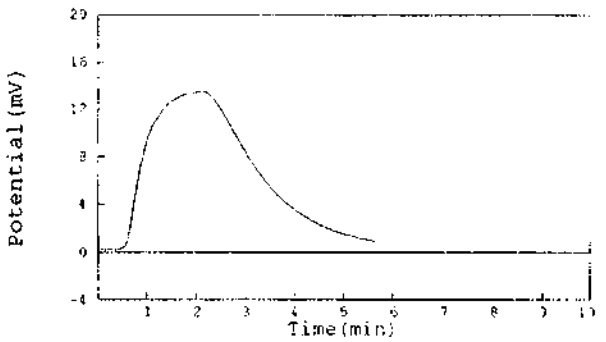
Reps. : 1-2 12/15/11 08:13
Sample ID : K11927-1D
Counts(µg): 0.892



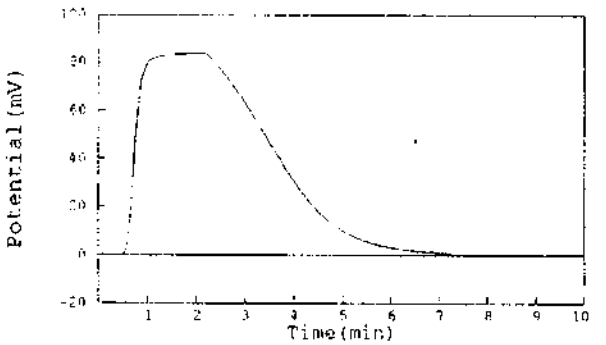
Reps. : 1-1 12/15/11 08:22
Sample ID : K11927-1MS
Counts(µg): 9.712



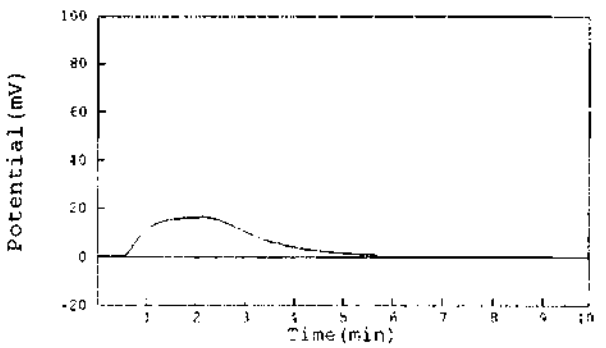
Reps. : 1-2 12/15/11 08:29
Sample ID : K11927-1MS
Counts(µg): 1.143



Reps. : 1-1 12/15/11 08:37
Sample ID : K11927-1MSD
Counts(µg): 9.733



Reps. : 1-2 12/15/11 08:44
Sample ID : K11927-1MSD
Counts(µg): 1.306



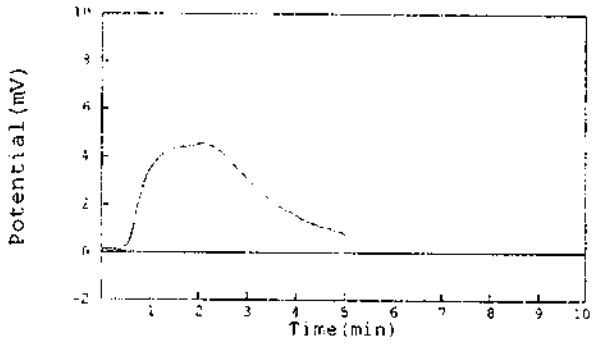
TZ83:00136

Sample Report

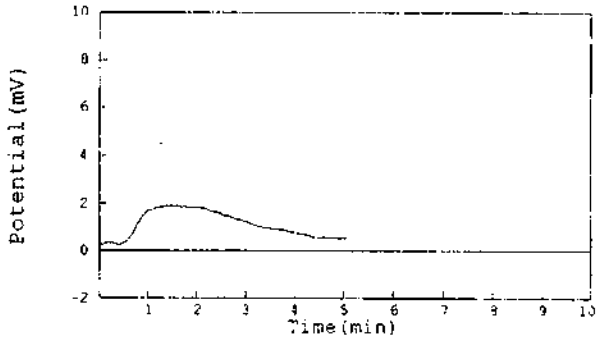
Sample Charts

Data ID : AOX212152011.002

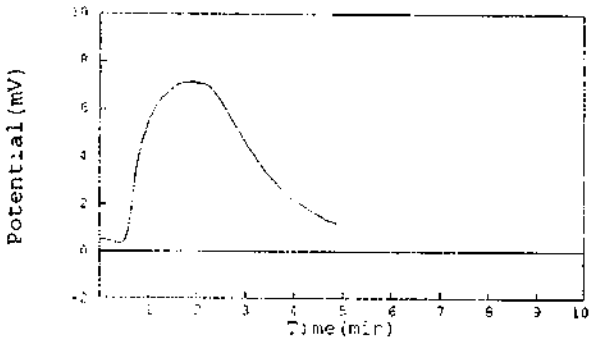
Reps. : 1-1 12/15/11 08:52
Sample ID : K11881-13
Counts(µg): 0.393



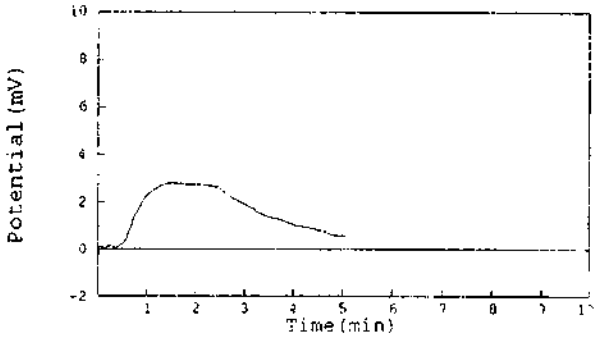
Reps. : 1-2 12/15/11 09:00
Sample ID : K11881-13
Counts(µg): 0.137



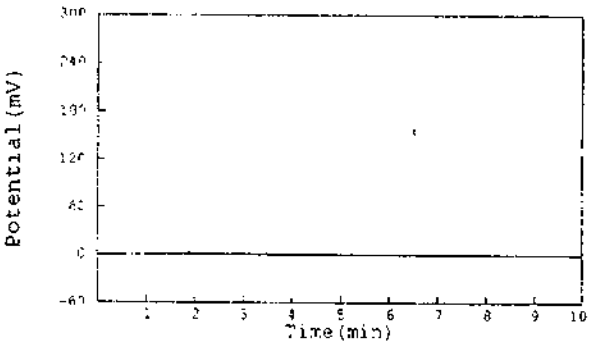
Reps. : 1-1 12/15/11 09:05
Sample ID : K11881-13D
Counts(µg): 0.541



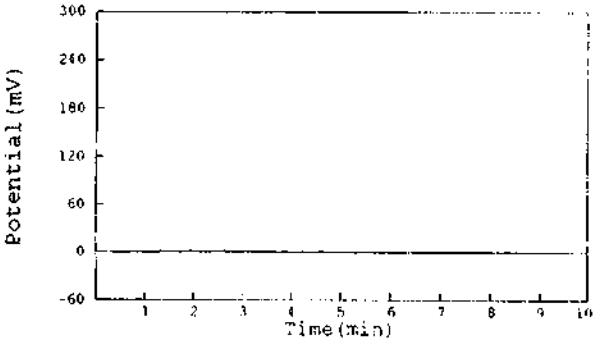
Reps. : 1-2 12/15/11 09:14
Sample ID : K11881-13D
Counts(µg): 0.233



Reps. : 1-1 12/15/11 09:28
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.216



Reps. : 1-2 12/15/11 09:34
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.148



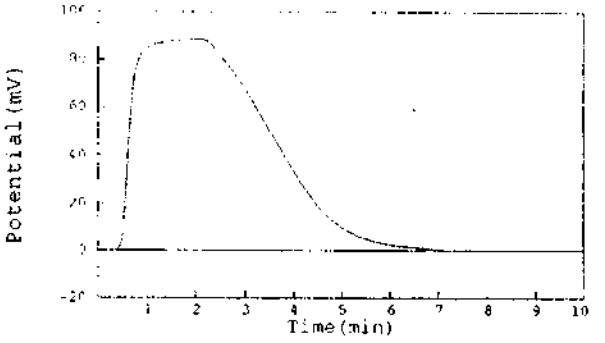
TZ83:00137

Sample Report

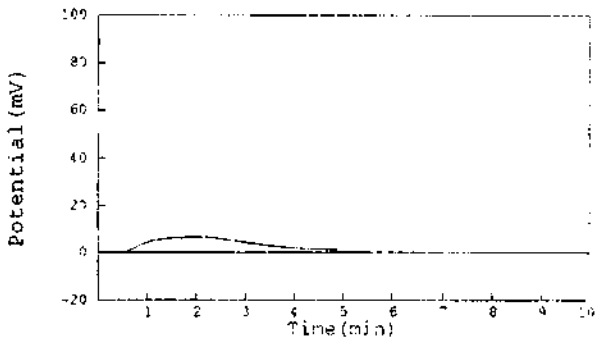
Sample Charts

Data ID : AOX212152011.002

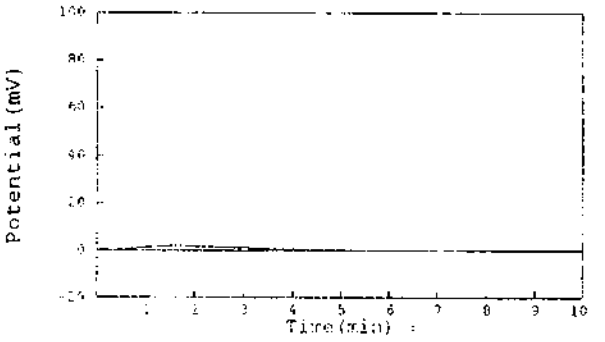
Reps. : 1-1 12/15/11 09:42
Sample ID : ICS
Counts(µg): 10.747



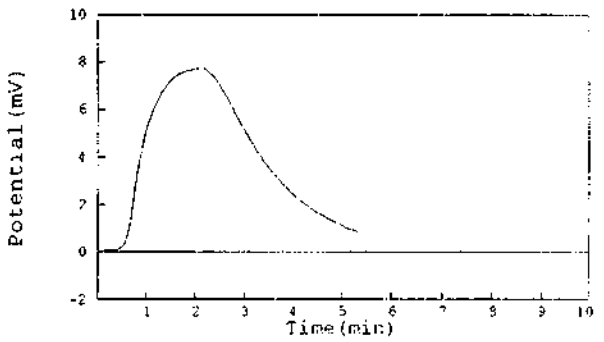
Reps. : 1-1 12/15/11 09:47
Sample ID : K11881-14
Counts(µg): 0.511



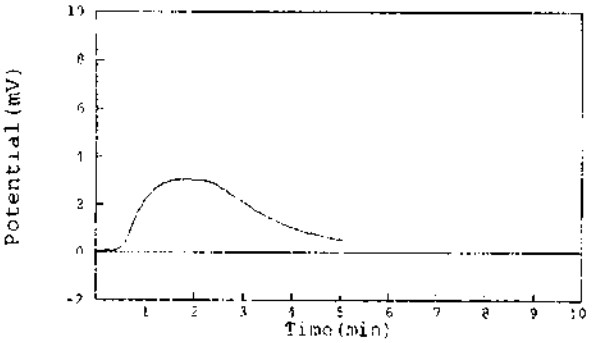
Reps. : 1-2 12/15/11 09:53
Sample ID : K11881-14
Counts(µg): 0.090



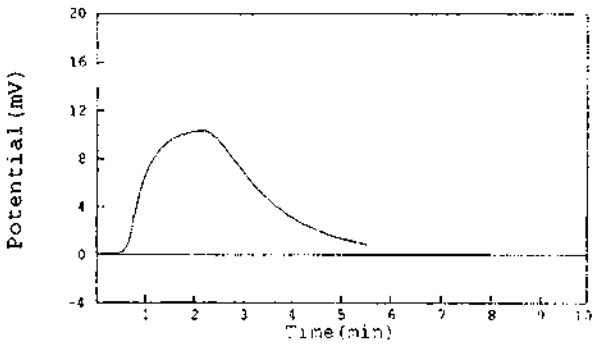
Reps. : 1-1 12/15/11 10:01
Sample ID : K11881-14D
Counts(µg): 0.697



Reps. : 1-2 12/15/11 10:09
Sample ID : K11881-14D
Counts(µg): 0.270



Reps. : 1-1 12/15/11 10:17
Sample ID : K11881-15
Counts(µg): 0.898



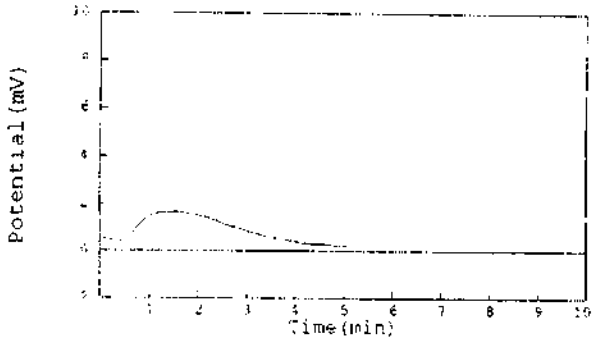
TZ83:00138

Sample Report

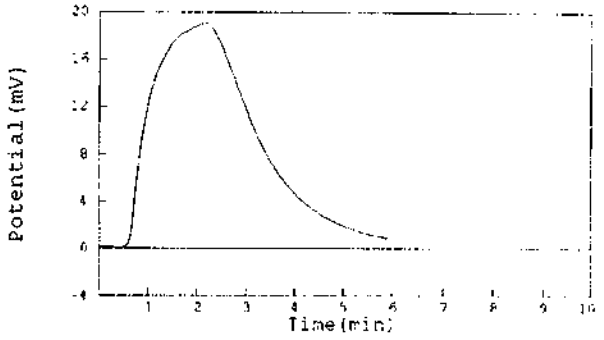
Sample Charts

Data ID : AOX212152011.002

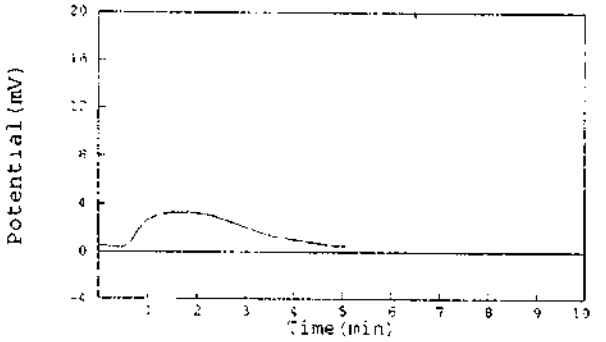
Reps. : 1-2 12/15/11 10:22
Sample ID : K11881-15
Counts(µg): 0.017



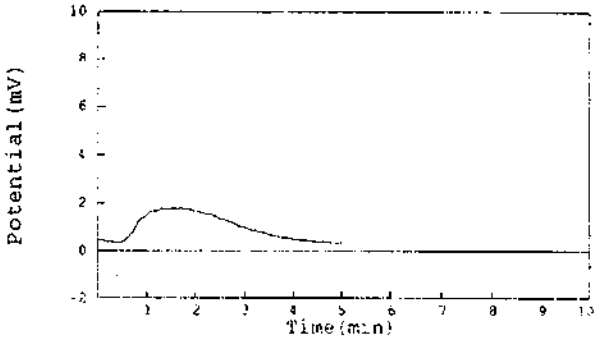
Reps. : 1-1 12/15/11 10:30
Sample ID : K11881-15D
Counts(µg): 1.558



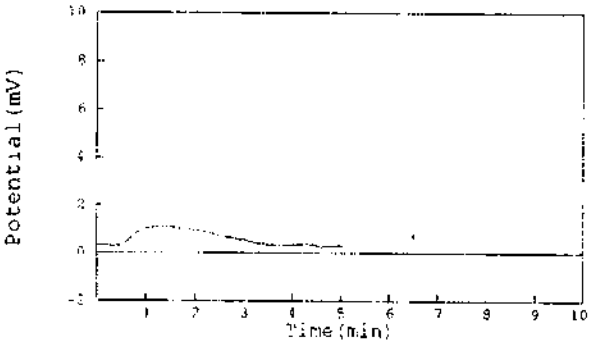
Reps. : 1-2 12/15/11 10:36
Sample ID : K11881-15D
Counts(µg): 0.175



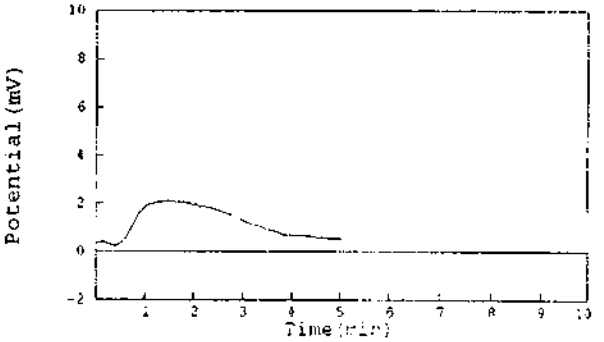
Reps. : 1-1 12/15/11 10:41
Sample ID : K11881-16
Counts(µg): 0.063



Reps. : 1-2 12/15/11 10:47
Sample ID : K11881-16
Counts(µg): 0.029



Reps. : 1-1 12/15/11 10:53
Sample ID : K11881-16D
Counts(µg): 0.114



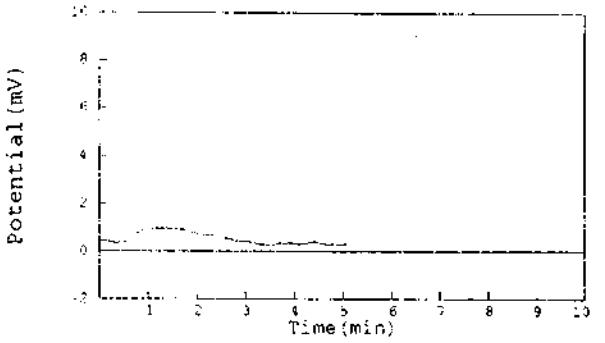
TZ83 : 00139

Sample Report

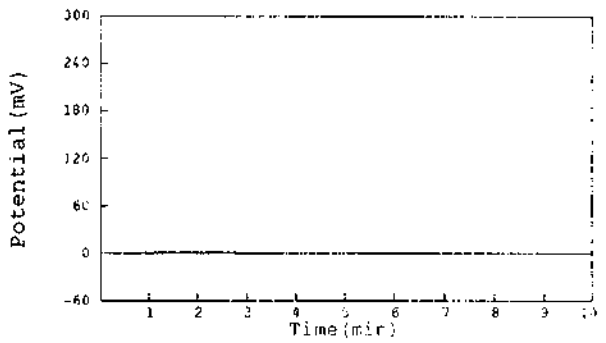
Sample Charts

Data ID : AOX212152011.002

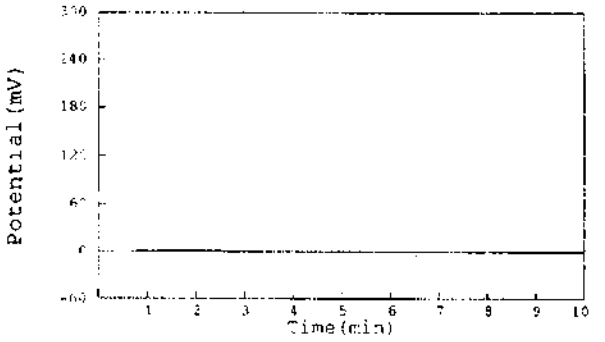
Reps. : 1-2 12/15/11 11:00
Sample ID : K11881-16D
Counts(µg): -0.003



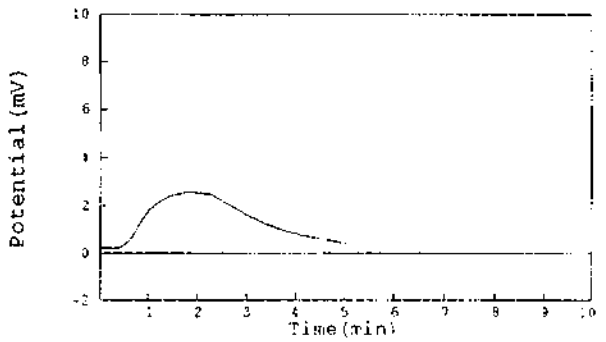
Reps. : 1-1 12/15/11 11:10
Sample ID : K11881-17
Counts(µg): 0.139



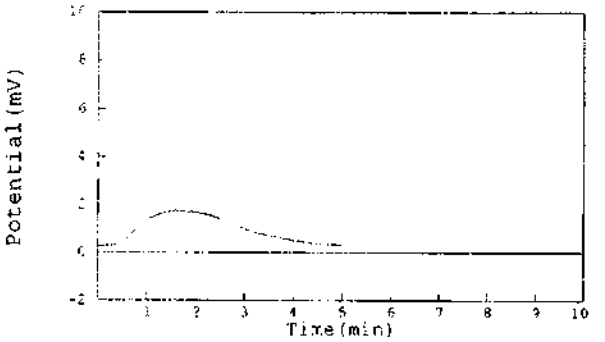
Reps. : 1-2 12/15/11 11:17
Sample ID : K11881-17
Counts(µg): 0.134



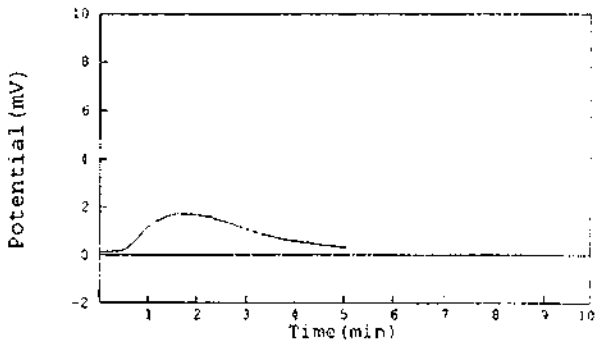
Reps. : 1-1 12/15/11 11:23
Sample ID : K11881-17D
Counts(µg): 0.180



Reps. : 1-2 12/15/11 11:29
Sample ID : K11881-17D
Counts(µg): 0.097



Reps. : 2-1 12/15/11 11:35
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.130



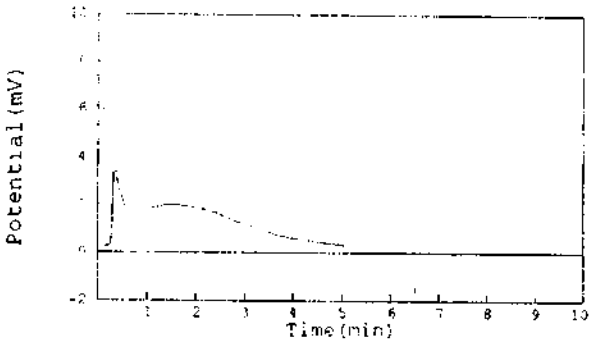
TZ83:00140

Sample Report

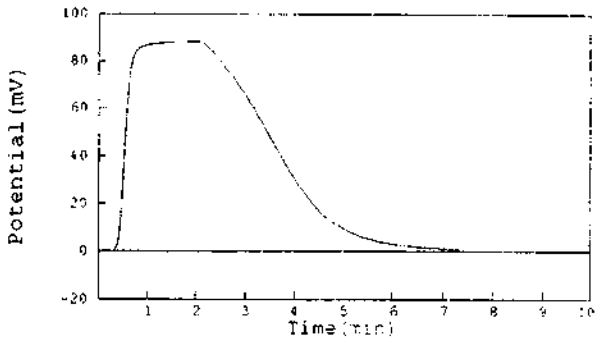
Sample Charts

Data ID : AOX212152011.002

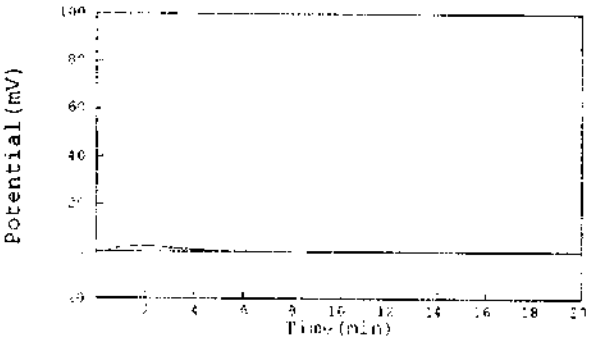
Reps. : 2-2 12/15/11 11:42
Sample ID : NITRATE WASH BLANK
Counts(µg): 0.121



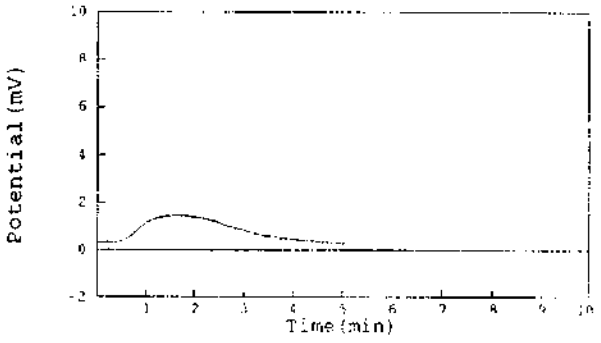
Reps. : 2-1 12/15/11 11:50
Sample ID : ICS
Counts(µg): 10.653



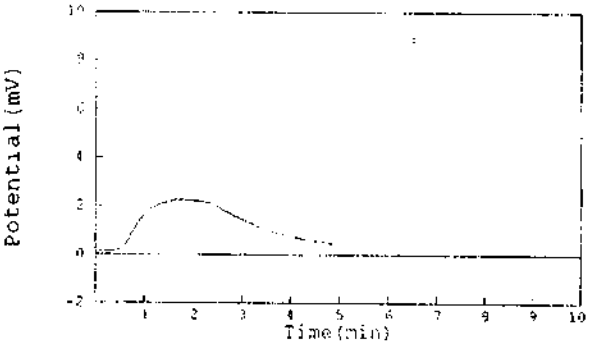
Reps. : 1-1 12/15/11 12:33
Sample ID : K11881-18
Counts(µg): 0.209



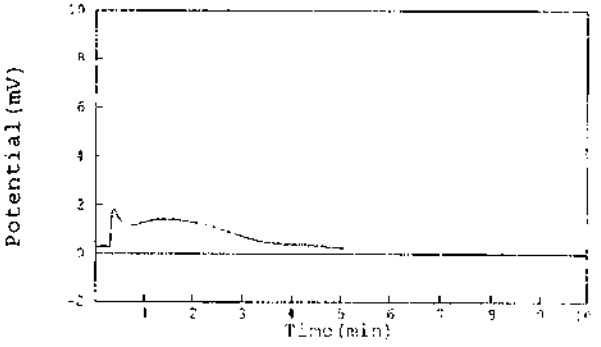
Reps. : 1-2 12/15/11 12:39
Sample ID : K11881-18
Counts(µg): 0.059



Reps. : 1-1 12/15/11 12:45
Sample ID : K11881-18D
Counts(µg): 0.174



Reps. : 1-2 12/15/11 12:51
Sample ID : K11881-18D
Counts(µg): 0.054



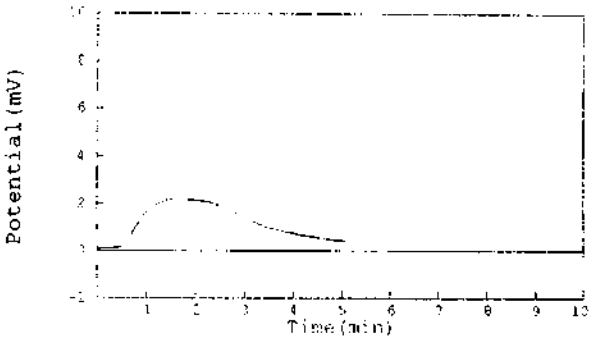
TZ83:00141

Sample Report

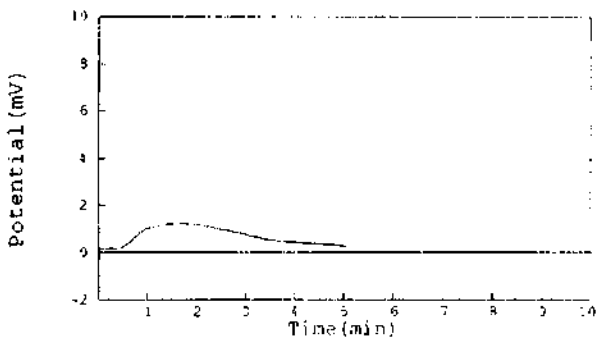
Sample Charts

Data ID : AOX212152011.002

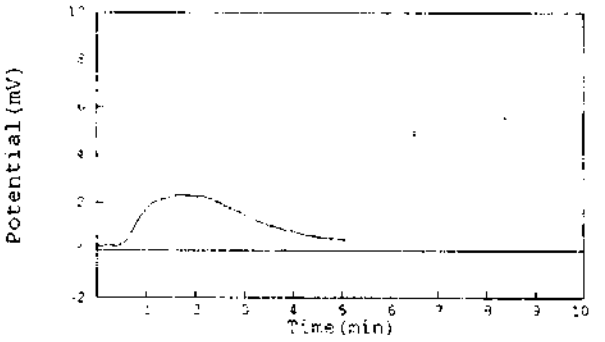
Reps. : 1-1 12/15/11 13:03
Sample ID : K11881-19
Counts(µg): 0.173



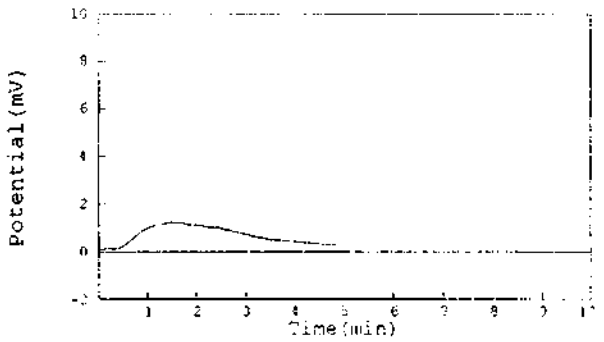
Reps. : 1-2 12/15/11 13:09
Sample ID : K11881-19
Counts(µg): 0.080



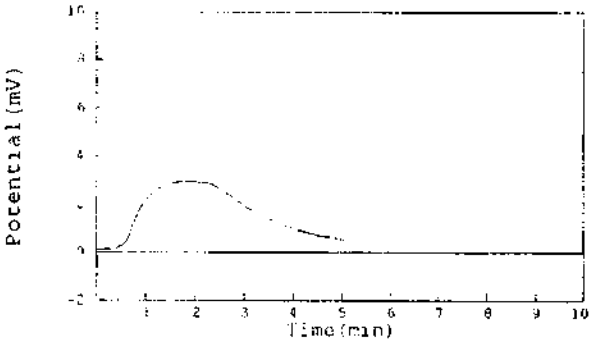
Reps. : 1-1 12/15/11 13:15
Sample ID : K11881-19D
Counts(µg): 0.169



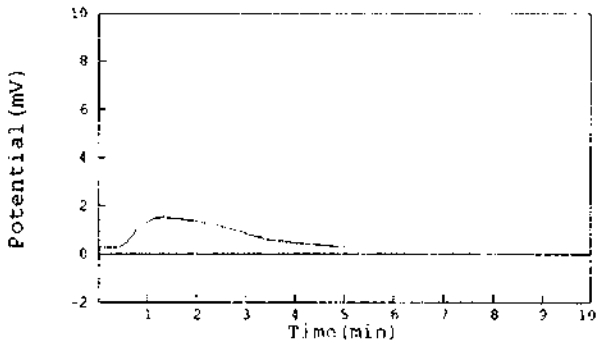
Reps. : 1-2 12/15/11 13:27
Sample ID : K11881-19D
Counts(µg): 0.086



Reps. : 1-1 12/15/11 13:42
Sample ID : K11881-20
Counts(µg): 0.251



Reps. : 1-2 12/15/11 13:48
Sample ID : K11881-20
Counts(µg): 0.067



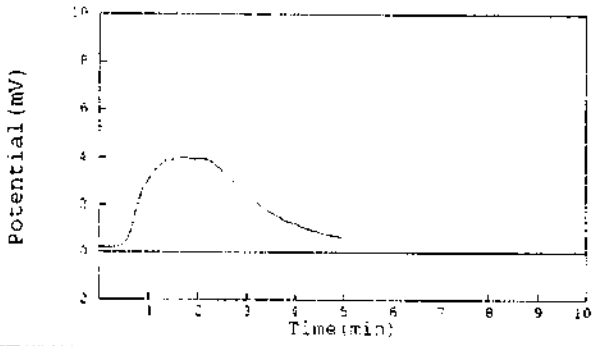
TZ83:00142

Sample Report

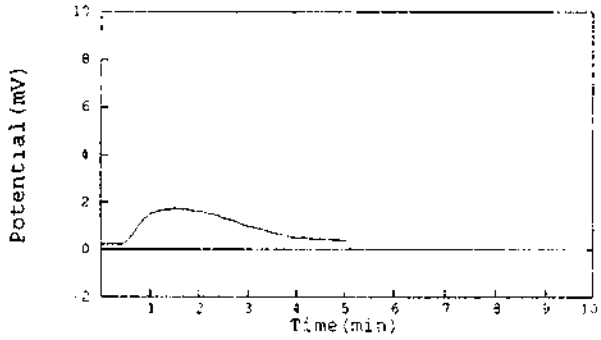
Sample Charts

Data ID : AOX212152011.002

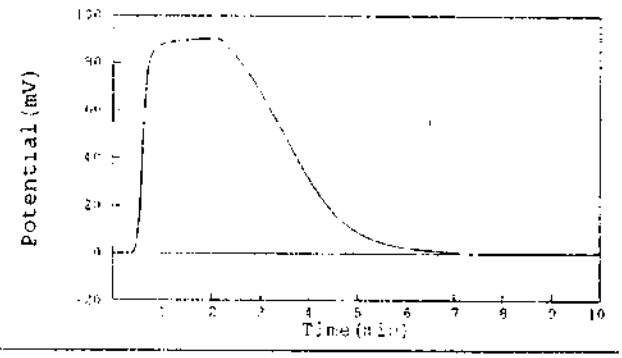
Reps. : 1-1 12/15/11 13:54
Sample ID : K11881-20D
Counts(µg): 0.307



Reps. : 1-2 12/15/11 14:00
Sample ID : K11881-20D
Counts(µg): 0.101



Reps. : 3-1 12/15/11 14:13
Sample ID : ICS
Counts(µg): 10.775



TZ83:00143

General Chemistry Raw Data
Analyst Notes and Raw Data

ARI Job ID: TZ83

LJ
12-6-11

TOTAL SUSPENDED SOLIDS / VOLATILE SUSPENDED SOLIDS (TSS / TVSS) DATE: 12/6/11 951

Methods : SM 2540 D-97, 2540 E-97 ANALYST: SM

Instrumentation ***Drying Ovens:*** 12 ***Analytical Balance:*** 1123230597

Muffle Furnace:

make no entries to shaded cells
they are calculated !!

TSS (mg/l) calculated as:
Final dry wt (mg) = (minimum Dry Wt - Tare Wt)*1000
TSS = [(Final Dry Wt)/ ml Sample] * 1000
if dy wt < 1mg, TSS = <1mg / mL sample * 1000
with "<" flag

Loss on ignition (LOI) = TVSS (mg/L) calculated as:
LOI (mg) = Dry wt(mg) -((min ash wt - tare wt) * 1000)
TVSS (mg/L) = LOI / mL sample * 1000
if LOI <1mg, TVSS = <1mg / mL sample * 1000
with "<" flag

LCS source: *Cellulose, MP Biomedicals Lot# 6399J* 0.05 grams to 1000 mL = **50** ***mg/L TSS***

SAMPLE ID	DISH #	filtered (mL)	TARE WT (grams)	DRY WT 104C (grams) 1	2	3	4	DryWT (mg)	TSS (mg/L)	ASH WT 550C (grams) 1	2	3	4	LOI (mg)	TVSS (mg/l)
Cal Weight ID			CV-02	CV-02	CV-02	CV-02	CV-02			CV-02	CV-02	CV-02	CV-02		
Date & Time				12/6/11 1230	12/6/11 1417										
Cal Wt (g) 10.0000				10.0000	10.0000										
record weights to 4 places				*Cal OK!*	*Cal OK!*										
BLANK		1000	0.1185	0.1185	0.1184	STOP		-0.1	**< 1**						
LCS # 586-5		1000	0.1167	0.1646	0.1647	STOP		47.9	**47.9**	95.8%	% Recovery				
TZ60 A5		910	0.1195	0.1203	0.1203	STOP		0.8	**< 1.1**						
TZ83 A5		926	0.1174	0.1190	0.1190	STOP		1.6	**1.7**						
TZ84 A13		930	0.1169	0.1288	0.1287	STOP		11.8	**12.7**						
TZ84 B11		940	0.1186	0.1400	0.1398	STOP		21.2	**22.6**						
TZ87 A2		945	0.1172	0.1209	0.1209	STOP		3.7	**3.9**						
TZ89A2		350	0.1144	0.1243	0.1242	STOP		9.8	**28.0**						
TZ89A2 dup		350	0.1193	0.1294	0.1294	STOP		10.1	**28.9**						
								RPD =	*3.2%*					*RPD =*	*NA*
TZ89 B2		950	0.1194	0.1194	0.1194	STOP		0.0	**< 1.1**						
TZ97 A11		930	0.1151	0.1227	0.1227	STOP		7.6	**8.2**						
TZ97 B20		950	0.1205	0.1216	0.1216	STOP		1.1	**1.2**						
TZ97 C5		960	0.1207	0.1352	0.1351	STOP		14.4	**15.0**						

Ch T89 : 697

Analytical Resources, Incorporated
Analytical Chemists and Consultants

TOTAL SUSPENDED (TSS) / TOTAL VOLATILE SUSPENDED SOLID(TVSS) BENCHSHEET

Analyst:	SM	Date/Time:	12-6-11 951	Oven #:	012	Muffle Furnance:		Balance:	1123230597

Dry at 104 °C (12-24 hrs) then combust at 550 °C for 30 min. Record Weights to 4 places

TSS (mg/L) calculated as:
Final Dry Weight (mg) = (Min Dry Weight – Tare Weight) * 1000
TSS = (Final Dry Weight) / (mL Sample) * 1000
If dry wt < 1 mg / mL sample * 1000 use "<" flag

Loss on ignition (LOI) = TVSS (mg / L) is calculated as:
LOI (mg / L) = Dry Weight (mg) – [(Minimum Ash Weight – Tare Weight) * 1000]
TVSS (mg / L) = LOI / mL sample * 1,000
If LOI < 1 mg, TVSS = < 1 mg / mL sample * 1000 use "<" flag

LCS (Cellulose from MP Biochemicals) Lott #	6399J	0.0500 Gram to 1000 mL = 50 mg / L TSS							
Cal Weight ID	CV-02	CV-02	CV-02	CV-02	CV-02	[redacted]		CV-02	CV-02	[redacted]
Date & Time:			12-6-11 1230	12-6-11 1417						
Cal Weight (10.0000g):			10.0000	10.0000						

Sample ID	Dish #	Filtered mL	Tare	Dry Weight 104°C (grams)			Dry Wt mg	TSS	Ash Weight 550°C		LOI - mg	TVSS mg/L
				1	2	3			1	2		
BLANK		1000	0.1185	0.1185	0.1184							
LCS 586-5		1000	0.1167	0.1646	0.1647							
T266 A5	1	910	0.1196	0.1203	0.1203							
T283 A5	2	926	0.1174	0.1190	0.1190							
T284 A13	3	930	0.1169	0.1288	0.1287							
↓ B11	4	940	0.1186	0.1400	0.1398							
T287 A2	5	945	0.1172	0.1209	0.1209							
T289 A2	6	950	0.1144	0.1243	0.1242							
↓ A2 lab	7	950	0.1193	0.1294	0.1294							
↓ B2	8	950	0.1194	0.1194	0.1194							
T297 A11	9	930	0.1151	0.1228	0.1227							
↓ A20	10	950	0.1205	0.1216	0.1216							
↓ C5	11	960	0.1207	0.1352	0.1351							

6054F

① = SM 12-6-11

TOC, Aqueous Data Summary (Apollo 9000) DATE: 12/5/2011

EPA 9060 A, SM 5310 B-00 ANALYST: UW

Analysis Mode: **NPOC** *Instrument:* ***Apollo 9000***

Detection Limits (mgC/L)

MRL = 1.5 **upper blank =** 1.5 **lower blank =** -1.5

Calibration Data

Stock ID: ARI 00121-6	factor (m):	1.442E+05	r^2: 0.99994
Curve Date: 11/28/2011	intercept (b_{cal}):	30905	sys blk (b_{sys}) 21111

Curve ID: 112811X 0-50ppm

LCS, Verification Standard and Inorganic Sparge Check

	Organic Carbon			Inorganic carbon		
Source:	**ERA 0523-11-05**			**ARI # 0104-9**		
Conc:	5,000	*mg/L*		1,000	*mg/L*	
dilution:	1.00	*mL to*	mg C/ L	5.00	*mL to*	mg C/ L
Volume:	250	*mL =*	**20.0**	250	*mL =*	**20**

Sample Data

SAMPLE ID	Dilution Factor	Carbon (mg C/L) *enter Form as TC, TIC, NPOC*						Notes: *will flag if RSD >5%*
		Form	# reps	mean	stdev	Measured	Report as	
ICV	1	NPOC	3	20.4761	0.06	20.48	20.5	*102.50%*
ICB	1	NPOC	3	0.0338	0.09	0.03	<1.5	*OK !*
1.5 ppm	1	NPOC	3	1.3602	0.08	1.36	<1.5	90.68%
~~IC Sparge Check~~	~~1~~	~~NPOC~~	~~3~~	~~22.1679~~	~~0.32~~	~~22.17~~	~~22.2~~	~~*CVS Err @ 111%*~~
TZ65 A6	1	NPOC	3	3.0302	0.17	3.03	3.03	RSD > 5% chk value
IC Sparge Check	1	NPOC	3	20.1343	0.67	20.13	20.1	*100.50%*
TZ65 A6 dup	1	NPOC	3	2.7342	0.10	2.73	2.73	*RPD =3.5%*
TZ65 A6 ms	1	NPOC	3	24.4202	0.96	24.42	24.4	*106.95%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ65 B6	1	NPOC	3	1.9279	0.11	1.93	1.93	
TZ65 C6	1	NPOC	3	2.4059	0.04	2.41	2.41	
TZ65 D6	1	NPOC	3	2.4299	0.22	2.43	2.43	RSD > 5% chk value
TZ65 E6	1	NPOC	3	2.3752	0.37	2.38	2.38	RSD > 5% chk value
TZ65 F6	1	NPOC	3	1.3792	0.01	1.38	<1.5	
CCV	1	NPOC	3	20.1897	0.28	20.19	20.2	*101.00%*
CCB	1	NPOC	3	0.1113	0.06	0.11	<1.5	*OK !*
TZ65 G6	1	NPOC	3	0.8370	0.09	0.84	<1.5	
TZ83 A1	1	NPOC	3	28.4740	0.40	28.47	28.5	
TZ84 A7	1	NPOC	3	7.5852	0.39	7.59	7.59	RSD > 5% chk value
TZ84 A7 dup	1	NPOC	3	7.0820	0.26	7.08	7.08	*RPD =7%*
TZ84 A7 ms	1	NPOC	3	27.4732	0.89	27.47	27.5	*99.44%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ84 B7	1	NPOC	3	6.1481	0.21	6.15	6.15	
TZ93 B6	1	NPOC	3	12.5329	0.41	12.53	12.5	
TZ93 B6 dup	1	NPOC	3	12.6828	0.21	12.68	12.7	*RPD =1.6%*
TZ93 B6 ms	1	NPOC	3	34.9637	0.36	34.96	35	*112.15%*
Spike at	0.200	*mL of*	2,000	*ppm Std to*	20.00	*mL =*	20.0	*mg/L*
TZ93 D6	1	NPOC	3	16.0279	0.39	16.03	16	
CCV	1	NPOC	3	21.8402	0.20	21.84	21.8	*109.00%*
CCB	1	NPOC	3	0.3138	0.12	0.31	<1.5	*OK !*
~~TZ94 A4~~	~~1~~	~~NPOC~~	~~3~~	~~0.9056~~	~~0.10~~	~~0.91~~	~~<1.5~~	~~RSD > 5% chk value~~
~~TZ94 A4 dup~~	~~1~~	~~NPOC~~	~~3~~	~~0.7840~~	~~0.02~~	~~0.78~~	~~<1.5~~	~~*#VALUE!*~~
~~TZ94 A4 ms~~	~~1~~	~~NPOC~~	~~3~~	~~22.6510~~	~~0.22~~	~~22.65~~	~~22.7~~	~~*113.26%*~~
~~*Spike at*~~	~~0.200~~	~~*mL of*~~	~~2,000~~	~~*ppm Std to*~~	~~20.00~~	~~*mL =*~~	~~20.0~~	~~*mg/L*~~
~~TZ94 B4~~	~~1~~	~~NPOC~~	~~3~~	~~0.8148~~	~~0.09~~	~~0.81~~	~~<1.5~~	
~~CCV~~	~~1~~	~~NPOC~~	~~3~~	~~22.3308~~	~~0.57~~	~~22.33~~	~~22.3~~	~~*CVS Err @ 111.6%*~~
~~CCB~~	~~1~~	~~NPOC~~	~~3~~	~~0.2278~~	~~0.10~~	~~0.23~~	~~<1.5~~	~~*OK !*~~

12-6-11

Detailed Analysis Report Print Date/Time: 2011/12/06 9:34:50

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 10:01
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	20.4278	10.2139	1503512	16.220	17.218	204
2	20.5412	10.2706	1511690	16.050	17.047	197
3	20.4593	10.2296	1505784	15.798	16.794	194

<<<Statistics>>> Mean: 20.4761 Std Dev: 0.0585 RSD: 0.29

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 10:23
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1371	0.0685	40788	14.482	15.472	106
2	-0.0109	-0.0054	30122	14.347	14.499	120
3	-0.0247	-0.0124	29124	14.137	14.188	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.0338 Std Dev: 0.0897 RSD: 265.12

Sample ID: 1.5 ppm
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 10:45
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.4223	0.7111	133433	13.457	14.452	126
2	1.2680	0.6340	122312	13.396	14.391	122
3	1.3902	0.6951	131124	13.206	14.205	123

<<<Statistics>>> Mean: 1.3602 Std Dev: 0.0814 RSD: 5.99

Sample ID: CHECK
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 11:10
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	21.7987	10.8993	1602339	13.083	14.081	184
2	22.3138	11.1569	1639469	12.770	13.768	188
3	22.3911	11.1956	1645044	12.624	13.620	187

Last Message: Out of Calibration
<<<Statistics>>> Mean: 22.1679 Std Dev: 0.3220 RSD: 1.45

Sample ID: TZ65 A6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 11:33
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	3.2223	1.6112	232292	11.938	12.935	143
2	2.9432	1.4716	212167	11.884	12.879	143
3	2.9251	1.4625	210864	11.826	12.824	144

<<<Statistics>>> Mean: 3.0302 Std Dev: 0.1666 RSD: 5.50

TZ83 : 00148

Sample ID: CHECK
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 11:58
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	19.3643	9.6821	1426845	12.023	13.022	182
2	20.4654	10.2327	1506227	11.554	12.553	188
3	20.5732	10.2866	1513998	11.460	12.459	187

<<<Statistics>>> Mean: 20.1343 Std Dev: 0.6690 RSD: 3.32

Sample ID: TZ65 A6 DUP
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 12:21
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.8501	1.4250	205457	10.997	11.994	141
2	2.6494	1.3247	190990	10.920	11.917	141
3	2.7032	1.3516	194871	10.836	11.833	142

<<<Statistics>>> Mean: 2.7342 Std Dev: 0.1039 RSD: 3.80

Sample ID: TZ65 A6 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 12:47
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	23.3555	11.6778	1683664	11.413	12.407	188
2	24.6984	12.3492	1780468	10.953	11.948	194
3	25.2067	12.6033	1817110	10.755	11.751	197

<<<Statistics>>> Mean: 24.4202 Std Dev: 0.9564 RSD: 3.92

Sample ID: TZ65 B6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 13:09
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.0513	1.0256	147874	10.347	11.343	127
2	1.8976	0.9488	136796	10.288	11.287	127
3	1.8349	0.9174	132273	10.227	11.222	129

<<<Statistics>>> Mean: 1.9279 Std Dev: 0.1113 RSD: 5.78

Sample ID: TZ65 C6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 13:32
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.3898	1.1949	172280	10.083	11.082	134
2	2.3748	1.1874	171192	10.008	11.005	136
3	2.4530	1.2265	176830	9.952	10.947	138

<<<Statistics>>> Mean: 2.4059 Std Dev: 0.0415 RSD: 1.73

Sample ID: TZ65 D6

Mode: TOC

Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Filename: 12050937
Timestamp: 2011/12/05 13:55
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.6885	1.3442	193809	9.846	10.846	136
2	2.3178	1.1589	167088	9.839	10.837	135
3	2.2833	1.1416	164599	9.825	10.819	137

<<<Statistics>>> Mean: 2.4299 Std Dev: 0.2246 RSD: 9.25

Sample ID: TZ65 E6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 14:17
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	2.7943	1.3972	201438	9.760	10.759	131
2	2.2292	1.1146	160698	9.791	10.790	132
3	2.1020	1.0510	151533	9.708	10.707	130

<<<Statistics>>> Mean: 2.3752 Std Dev: 0.3685 RSD: 15.52

Sample ID: TZ65 F6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 14:39
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	1.3929	0.6965	100412	9.631	10.631	120
2	1.3659	0.6830	98467	9.570	10.566	121
3	1.3788	0.6894	99397	9.559	10.556	123

<<<Statistics>>> Mean: 1.3792 Std Dev: 0.0135 RSD: 0.98

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 15:05
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	20.4378	10.2189	1504232	9.643	10.642	207
2	20.2412	10.1206	1490061	9.763	10.762	204
3	19.8900	9.9450	1464743	9.783	10.781	196

<<<Statistics>>> Mean: 20.1897 Std Dev: 0.2775 RSD: 1.37

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 15:27
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1748	0.0874	43506	9.386	9.617	120
2	0.0957	0.0478	37801	9.345	9.627	120
3	0.0634	0.0317	35476	9.377	9.662	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.1113 Std Dev: 0.0573 RSD: 51.50

Sample ID: TZ65 G6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 15:49

Operator ID: UW

Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.9387	0.4694	67672	9.390	10.384	113
2	0.7673	0.3836	55310	9.389	10.388	112
3	0.8049	0.4025	58025	9.395	10.391	113

<<<Statistics>>> Mean: 0.8370 Std Dev: 0.0901 RSD: 10.76

Sample ID: TZ83 A1
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 16:14
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	28.9154	14.4577	2084466	9.411	10.410	190
2	28.3626	14.1813	2044616	9.497	10.496	185
3	28.1439	14.0720	2028853	9.544	10.539	184

<<<Statistics>>> Mean: 28.4740 Std Dev: 0.3976 RSD: 1.40

Sample ID: TZ84 A7
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 16:38
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	8.0349	4.0175	579226	9.330	10.324	161
2	7.4193	3.7097	534849	9.398	10.394	159
3	7.3015	3.6508	526356	9.343	10.342	158

<<<Statistics>>> Mean: 7.5852 Std Dev: 0.3939 RSD: 5.19

Sample ID: TZ84 A7 DUP
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 17:01
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	7.3751	3.6876	531663	9.332	10.329	156
2	6.9670	3.4835	502238	9.378	10.377	158
3	6.9040	3.4520	497697	9.357	10.353	157

<<<Statistics>>> Mean: 7.0820 Std Dev: 0.2558 RSD: 3.61

Sample ID: TZ84 A7 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 17:27
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	26.6142	13.3071	1918573	10.069	11.067	187
2	27.4214	13.7107	1976766	9.557	10.557	198
3	28.3841	14.1921	2046166	9.467	10.463	199

<<<Statistics>>> Mean: 27.4732 Std Dev: 0.8861 RSD: 3.23

Sample ID: TZ84 B7
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 17:51
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning	Ending	Integration

				Baseline	Baseline	Time
1	6.3948	3.1974	460991	9.371	10.368	153
2	6.0455	3.0228	435813	9.401	10.398	152
3	6.0039	3.0019	432811	9.430	10.428	153

<<<Statistics>>> Mean: 6.1481 Std Dev: 0.2147 RSD: 3.49

Sample ID: TZ93 B6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 18:15
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	12.9414	6.4707	932928	9.349	10.343	177
2	12.1222	6.0611	873873	9.349	10.346	169
3	12.5352	6.2676	903642	9.379	10.375	174

<<<Statistics>>> Mean: 12.5329 Std Dev: 0.4096 RSD: 3.27

Sample ID: TZ93 B6 DUP
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 18:40
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	12.9215	6.4607	931489	9.324	10.321	177
2	12.5725	6.2863	906335	9.354	10.351	171
3	12.5543	6.2772	905023	9.337	10.336	173

<<<Statistics>>> Mean: 12.6828 Std Dev: 0.2069 RSD: 1.63

Sample ID: TZ93 B6 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 19:07
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	34.8925	17.4463	2515347	9.277	10.276	219
2	34.6423	17.3211	2497309	9.437	10.432	215
3	35.3563	17.6782	2548783	9.502	10.499	215

<<<Statistics>>> Mean: 34.9637 Std Dev: 0.3623 RSD: 1.04

Sample ID: TZ93 D6
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 19:31
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	16.4739	8.2369	1187576	9.308	10.306	182
2	15.7625	7.8813	1136297	9.454	10.450	177
3	15.8474	7.9237	1142418	9.426	10.424	178

<<<Statistics>>> Mean: 16.0279 Std Dev: 0.3885 RSD: 2.42

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW
Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 19:58
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	22.0697	11.0348	1621874	9.348	10.344	212
2	21.6761	10.8380	1593500	9.535	10.534	204

3	21.7749	10.8875	1600627	9.519	10.515	205

<<<Statistics>>> Mean: 21.8402 Std Dev: 0.2048 RSD: 0.94

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 20:19
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.4487	0.2244	63251	9.329	10.327	112
2	0.2567	0.1283	49410	9.309	10.307	111
3	0.2360	0.1180	47916	9.325	10.322	109

<<<Statistics>>> Mean: 0.3138 Std Dev: 0.1173 RSD: 37.38

Sample ID: TZ94 A4
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 20:41
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.9759	0.4879	70349	9.286	10.279	113
2	0.9502	0.4751	68495	9.291	10.286	114
3	0.7907	0.3954	57001	9.364	10.358	113

<<<Statistics>>> Mean: 0.9056 Std Dev: 0.1003 RSD: 11.08

Sample ID: TZ94 A4 DUP
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 21:02
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.8033	0.4017	57909	9.334	10.326	113
2	0.7899	0.3950	56943	9.294	10.287	113
3	0.7589	0.3794	54706	9.319	10.312	112

<<<Statistics>>> Mean: 0.7840 Std Dev: 0.0228 RSD: 2.90

Sample ID: TZ94 A4 MS
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 21:27
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	22.9062	11.4531	1651275	9.301	10.298	192
2	22.5349	11.2674	1624505	9.482	10.482	183
3	22.5120	11.2560	1622854	9.468	10.465	182

<<<Statistics>>> Mean: 22.6510 Std Dev: 0.2213 RSD: 0.98

Sample ID: TZ94 B4
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 21:49
Sample Type: Sample

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.9192	0.4596	66263	9.313	10.306	113
2	0.7720	0.3860	55654	9.280	10.274	112
3	0.7533	0.3767	54304	9.298	10.294	112

<<<Statistics>>> Mean: 0.8148 Std Dev: 0.0909 RSD: 11.15

Sample ID: ICV/CCV
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 22:15
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	22.9909	11.4954	1688282	9.333	10.330	205
2	21.9832	10.9916	1615639	9.540	10.539	196
3	22.0184	11.0092	1618177	9.492	10.489	196

Last Message: Out of Calibration
<<<Statistics>>> Mean: 22.3308 Std Dev: 0.5719 RSD: 2.56

Sample ID: ICB / CCB
Method: TOC 0 to 50 ppm
Cal. Curve: 112811X 0-50ppm
Operator ID: UW

Mode: TOC
Filename: 12050937
Timestamp: 2011/12/05 22:36
Sample Type: Cal. Verification

Rep #	ppm C	ug C	Raw Data	Beginning Baseline	Ending Baseline	Integration Time
1	0.1766	0.0883	43635	9.369	10.362	109
2	0.3413	0.1706	55505	9.288	10.285	112
3	0.1656	0.0828	42842	9.273	9.586	120

Last Message: Low Sample Detected
<<<Statistics>>> Mean: 0.2278 Std Dev: 0.0984 RSD: 43.20

Calibration Report Print Date/Time: 2011/11/28 12:48:57

Cal. Curve ID: 112811X 0~50ppm
Created: 2011/11/28 12:48
Calibration Factor (m): 1.442e+05
Y Intercept (b): 30905
r-squared: 0.99994

Standard ID	Y Raw Data	X Expected ug C	Measured ug C	Message	Date & Time
BLK	41742	0.000	0.075	Low Sample De	2011/11/28 10:44
1.5	129933	0.750	0.687		2011/11/28 11:06
5.0	376619	2.500	2.398		2011/11/28 11:29
10.0	760027	5.000	5.057		2011/11/28 11:53
25.0	1842433	12.500	12.565		2011/11/28 12:19
50.0	3630767	25.000	24.968		2011/11/28 12:45

TZ83 00155

12-6-11

PHOSPHORUS BENCHSHEET, Aqueous	Date	Digested: 12/5/2011	Analyzed: 12/5/2011
Total and Ortho P by EPA 365.2	Analyst	KE	14:10

Describe digestion procedure if used:
H2SO4 + POT. PERSULFATE

Curve Standards — *make no entries to shaded cells, they are calculated !!*

Prep date:	6/1/2011	*Stock #:*	00116 - 8			
Weight KH2PO4:	0.2197	*grams in*	1000	*ml*		
Conc =	50.00	*mg/L P*				
Intermediate Std =	20	*ml stk to*	100	*ml DI =*	***10.00***	***mg P/L***

Calibration Curve — *std make-up volume (mL) =* 250

ml int Std to 250 ml	CONC (mg/l)	UNITS (ABS 880 nm 5cm cell)		AVG	mg/L
0.0	0.000	0.000		0.000	0.001
0.1	0.004	0.012		0.012	0.005
0.4	0.016	0.041		0.041	0.015
1.6	0.064	0.186		0.186	0.063
3.2	0.128	0.382		0.382	0.128
5.0	0.200	0.591		0.591	0.198
10.0	0.400	1.202		1.202	0.401

REGRESSION DATA
CONC = (ABS-intercept)/ slope

intercept =	-0.0039
Slope =	3.0061
r =	1.0000
Comment:	*Calibration OK!*
maxabs =	*1.202*

Verification Standards — *Source:* *ERA # 210109* — *Conc (mg/l)* 1000

dilution = 0.06 *ml to* 250 *ml DI =* ***0.240*** ***mg/l***

Digest Prep Standards — *Source:* *ERA # 200951* — *Conc (mg/l)* 10

dilution 1 =	0.100	*ml to*	50	*ml DI =*	***0.020***	***mg/l***
dilution 2 =	0.50	*ml to*	50	*ml DI =*	***0.100***	***mg/l***
dilution 2 =	1.00	*ml to*	50	*ml DI =*	***0.200***	***mg/l***

Sample Data

1. *For SRP, leave digest date blank!!*
2. *Spike with 10 mg/L Intermediate Standerd* — *enter dilution as finel vol / sample vol*

SAMPLE ID	Tot P Digest mL sample	mL digest	Analysis Data Abs	Dilution	(mg/l)	TOT P (mg/l)	SRP (mg/l)	Notes
Calib Blank			0.000	1.0	0.0013		< 0.004	*OK*
ICV			0.751	1.0	0.2511		0.251	*104.63%*
Prep Blank	25	50	0.009	1.0	0.0043	0.009		*OK*
Prep Std			0.068	1.0	0.0239		0.024	*119.55%*
Prep Std			0.306	1.0	0.1031		0.103	*103.08%*
Prep Std			0.678	1.0	0.2268		0.227	*113.42%*
TX59 A5	25	50	0.125	1.0	0.0429	0.086		
TX64 A2	25	50	0.092	1.0	0.0319	0.064		
TX96 A2	25	50	0.067	1.0	0.0236	0.047		
TX96 B2	25	50	0.050	1.0	0.0179	0.036		
TX96 C2	25	50	0.525	5.0	0.1759	1.759		
TZ83 A2	25	50	0.067	1.0	0.0236	0.047		
Calib Blank			0.000	1.0	0.0013		< 0.004	*OK*
CCV			0.752	1.0	0.2514		0.251	*104.77%*
TZ84 A9	25	50	0.348	1.0	0.1171	0.234		
TZ84 A9 dup	25	50	0.345	1.0	0.1161	0.232		*RPD = 0.86*
TZ84 A9 ms	25	50	0.939	1.0	0.3137	0.627		*98.3% Rec*
Spike =	1	*ml of*	10	*mg/L to*	25	*ml sample =*	0.400	
TZ84 B8	25	50	0.573	2.0	0.1919	0.768		
Calib Blank			-0.003	1.0	0.0003		< 0.004	*OK*
CCV			0.749	1.0	0.2504		0.250	*104.35%*

TZ83 : 00156

① 12-5-11 ②

PHOSPHORUS BENCHSHEET, Aqueous	Analyst	Digested: 12-5-11	Analyzed: 12-5-11
Total P by EPA 365.2	Date	(MW)	14:40

Describe digestion procedure if used:
H2SO4 + POT. PERSULFATE

Curve Standards *make no entries to shaded cells, they are calculated !!*

Prep date:	6/1/2011	*Stock #:*	00116 - 8			
Weight KH2PO4:	0.2197	*grams in*	1000	*ml*		
Conc =	50.00	*mg/L P*				
Intermediate Std =	20	*ml stk to*	100	*ml DI =*	***10.00***	***mg P/L***

Calibration Curve *std make-up volume (mL) =* 250

ml int Std to 250 ml	CONC (mg/l)	UNITS (ABS 880 nm 5cm cell)		AVG	mg/L
0.0	0.000	0.000			
0.1	0.004	0.012			
0.4	0.016	0.041			
1.6	0.064	0.196			
3.2	0.128	0.382			
5.0	0.200	0.591			
10.0	0.400	1.202			

REGRESSION DATA
CONC = (ABS-intercept)/ slope

intercept =
Slope =
r =
Comment:
mexabs = 0.000

Verification Standards *Source:* ERA # 210109 *Conc (mg/l)* 1000

dilution =	0.06	*ml to*	250	*ml DI =*	***0.240***	***mg/l***

Digest Prep Standards *Source:* ERA # 200951 *Conc (mg/l)* 10

dilution 1 =	0.100	*ml to*	50	*ml DI =*	***0.020***	***mg/l***
dilution 2 =	0.50	*ml to*	50	*ml DI =*	***0.100***	***mg/l***
dilution 2 =	1.00	*ml to*	50	*ml DI =*	***0.200***	***mg/l***

Sample Data

1. *For SRP, leave digest data blank!!*
2. *Spike with 10 mg/L Intermediate Standard* *enter dilution as final vol / sample vol*

SAMPLE ID	Tot P Digest		Analysis Data			TOT P (mg/l)	SRP (mg/l)	Notes
	mL sample	mL digest	Abs	Dilution	(mg/l)			
Calib Blank			0.000	1.0				
ICV			0.751	1.0				
Prep Blank	25	50	0.009	1.0				
Prep Std			0.069	1.0				
Prep Std			0.306	1.0				
Prep Std			0.678	1.0				
TX59 A5	25	50	0.125	1.0				
TX64 A2	↓	↓	0.092	1.0				
TX96 A2			0.067	1.0				
↓ B2			0.050	1.0				
↓ C2			0.525	(0)10.5x				
T283 A2	↓	↓	0.167	1.0				
Calib Blank			0.000	1.0				
CCV			0.758	1.0				
T284 A9	25	50	0.348	1.0				
↓ A9	↓	↓	0.345	1.0				
↓ A9			0.439	1.0				
↓ B5	↓	↓	0.573	(0)10.5x2x				
Calib Blank			-0.003	1.0				
CCV			0.749	1.0				
				1.0				
				1.0				
				1.0				
				1.0				
Calib Blank				1.0				Chk for Err
CCV				1.0				

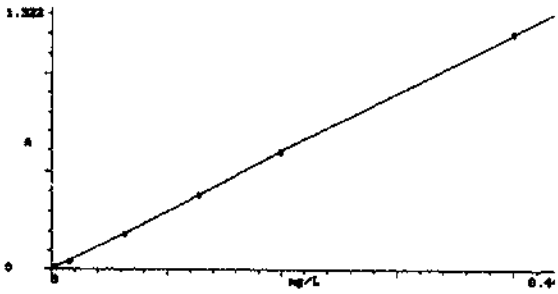
12-5-11 ②

T283 : 00157

12-5-11(W)

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Standard Curve	17:02 5Dec11
Test Name	ORTHO PHOS
Date Standards Measured	5Dec11
Wavelength	880nm
Ref. Wavelength Correction	Off
Curve Fit	Linear
Number of Standards	7
Units	mg/L
ID# (0=OFF)	Off
Low/High Limits	0.000/0.400
Statistics	On
Auto Print	On



Curve Fit	Linear
Slope	3.01
Intercept	-0.00388
Std Dev	0.004
Corr Coeff	1.000

Conc. mg/L	Abs 880nm
0.000	0.000
0.004	0.012
0.016	0.041
0.064	0.186
0.128	0.382
0.200	0.591
0.400	1.202

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Advanced A-%T-C	17:26 5Dec11
Test Name	TOTAL PHOS[Saved]
Measurement Mode	Absorbance
Wavelength	880nm
Ref. Wavelength Correction	Off
Delay Time (min:sec)	0:00
ID# (0=OFF)	1
Low/High Limits	0.000/0.800
Statistics	Off
Auto Print	On

ID#	Abs 880nm
1	0.000
2	0.751
3	0.009

19	0.573		
18	0.939		
17	0.345		
16	0.348		
15	0.752		
14	0.000		
13	0.067		
12	0.525	5x	
11	1.326	2x 12-5-11(W)	
10	0.050		
9	0.067		
8	0.092		
7	0.125		
6	0.678		
5	0.306		
4	0.068		
21	0.749		
20	-0.003		

[redacted]

Name:	**DEC0211RR**	*Calibration:*	**OCT0611RR**	**ARI # 581-9**
Directory:	**Instrument Data\DEC 2011**	*Calibration exp:*	**1/6/2012**	
Data Vault:	**ChromeleonLocal**	*Queue Start:*	12/2/2011 18:35	
No. of Injections:	**22.000**	*User:*	**RR**	

[redacted]

		ERA 161110	ERA 411010	ERA 401010	ERA 111109	ERA 160111	ERA 230511	ERA 200610
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a. Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a
ICV	1.0	3.000	3.057	3.161	3.005	2.660	3.060	2.936
%R=		**100.0%**	**101.9%**	**105.4%**	**100.2%**	**88.7%**	**102.0%**	**97.9%**
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	0.017	n.a.
[redacted]		0.075	9.408	n.a.	0.072	6.147	[redacted]	n.a
		0.073	9.410	n.a.	0.071	6.138		n.a
%RPD=		**3.08%**	**0.02%**		**1.28%**	**0.14%**		
[redacted]		2.109	11.424	1.980	1.968	8.172	[redacted]	1.630
%R=		**105.4%**	**100.8%**	**99.0%**	**94.8%**	**101.3%**	**106.0%**	**81.5%**
SPK=	**0.02mL*10000ppm/5mL**	**=40ppm**						
[redacted]		0.060	15.903	0.059	0.140	10.144	[redacted]	0.017
		0.066	10.662	n.a.	0.098	7.577		n.a.
		0.083	9.366	n.a.	0.088	3.146		n.a.
		0.062	8.487	n.a.	0.083	0.395		n.a.
		0.048	7.487	0.012	0.078	8.426		n.a.
TZ65 G7	1.0	0.074	5.241	0.074	0.071	19.656	8.051	n.a.
[redacted]		0.336	[redacted]	n.a.	n.a.	n.a.	n.a.	1.406
CCV	1.0	2.990	3.060	3.154	3.010	2.525	3.081	2.888
%R=		**99.7%**	**102.0%**	**105.1%**	**100.3%**	**84.2%**	**102.7%**	**96.3%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
[redacted]		0.426	10.919	n.a	n.a.	13.998	[redacted]	n.a.
		0.427	10.939	n.a.	n.a.	13.866		n.a.
%RPD=		**0.16%**	**0.18%**			**0.94%**		
[redacted]		2.381	12.922	1.985	1.855	15.761	[redacted]	n.a
%R=		**97.7%**	**100.2%**	**99.3%**	**92.7%**	**88.2%**	**107.3%**	
SPK=	**0.02mL*10000ppm/5mL**	**=40ppm**						
[redacted]		0.548	51.968	n.a.	n.a.	12.443	[redacted]	n.a.
CCV	1.0	3.005	3.062	3.164	3.012	2.624	3.120	2.908
%R=		**100.2%**	**102.1%**	**105.5%**	**100.4%**	**87.5%**	**104.0%**	**96.9%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
STOP	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a.

Name:	**DEC0211RR**	*Queue Start:*	**2011-12-02T18:35:54-**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**22**		

No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	02/Dec/11 18:35:54
2	ICV	2	Check Standard	06	1.0	02/Dec/11 18:54:47
3	ICB	3	Blank		1.0	02/Dec/11 19:13:58
4	TZ65 A7	4	Unknown		1.0	02/Dec/11 19:33:14
5	TZ65 A7 DUP	5	Unknown		1.0	02/Dec/11 19:52:35
6	TZ65 A7 MS	6	Unknown		1.0	02/Dec/11 20:12:02
7	TZ65 B7	7	Unknown		1.0	02/Dec/11 20:31:35
8	TZ65 C7	8	Unknown		1.0	02/Dec/11 20:51:14
9	TZ65 D7	9	Unknown		1.0	02/Dec/11 21:10:58
10	TZ65 E7	10	Unknown		1.0	02/Dec/11 21:30:48
11	TZ65 F7	11	Unknown		1.0	02/Dec/11 21:50:43
12	TZ65 G7	12	Unknown		1.0	02/Dec/11 22:10:44
13	TZ83 A3	13	Unknown		10.0	02/Dec/11 22:30:51
14	CCV	2	Check Standard	06	1.0	02/Dec/11 22:51:04
15	CCB	3	Blank		1.0	02/Dec/11 23:11:40
16	TZ84 A1	14	Unknown		1.0	02/Dec/11 23:32:24
17	TZ84 A1 DUP	15	Unknown		1.0	02/Dec/11 23:52:52
18	TZ84 A1 MS	16	Unknown		1.0	03/Dec/11 00:13:24
19	TZ84 B1	17	Unknown		1.0	03/Dec/11 00:34:01
20	CCV	2	Check Standard	06	1.0	03/Dec/11 00:54:46
21	CCB	3	Blank		1.0	03/Dec/11 01:16:15
22	STOP	1	Unknown		1.0	03/Dec/11 01:36:22

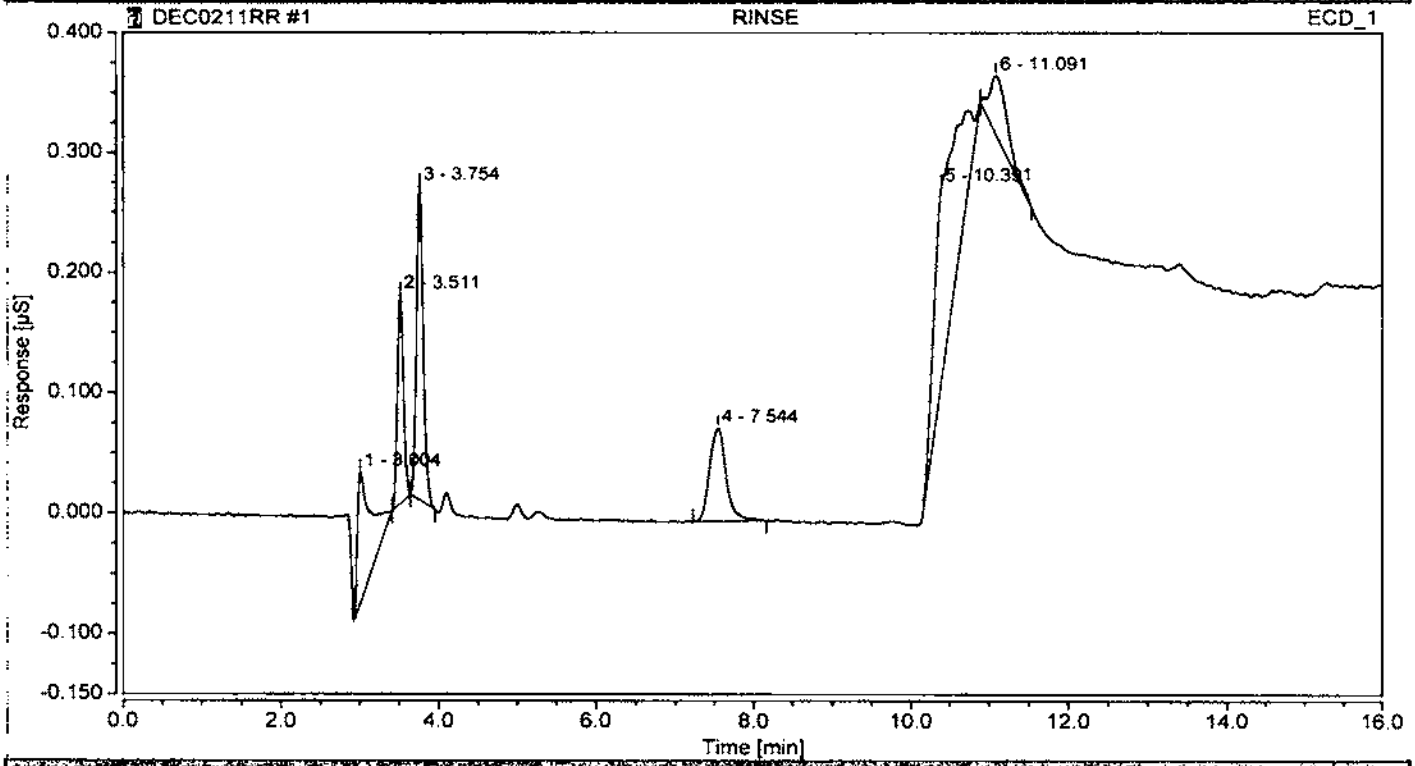
Chromeleon (c) Dionex
Version 7.0.1.272

TZ83 : 00160

[redacted]

Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 18:35*		

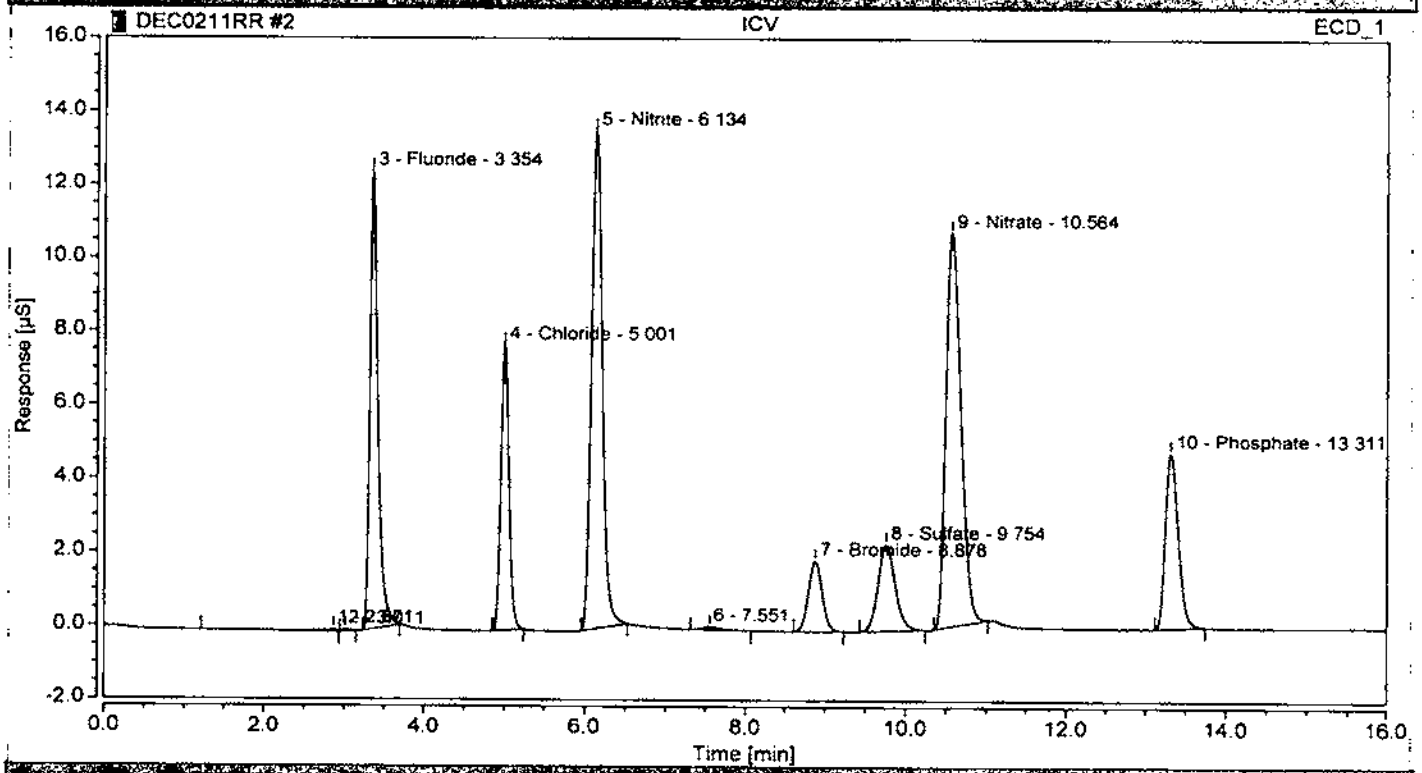
[redacted]



[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.00	0.021	0.109	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.51	0.016	0.174	FALSE	n.a.
3		1.0	n.a.	3.75	0.025	0.261	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.54	0.019	0.077	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	10.39	0.064	0.162	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	11.09	0.013	0.049	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

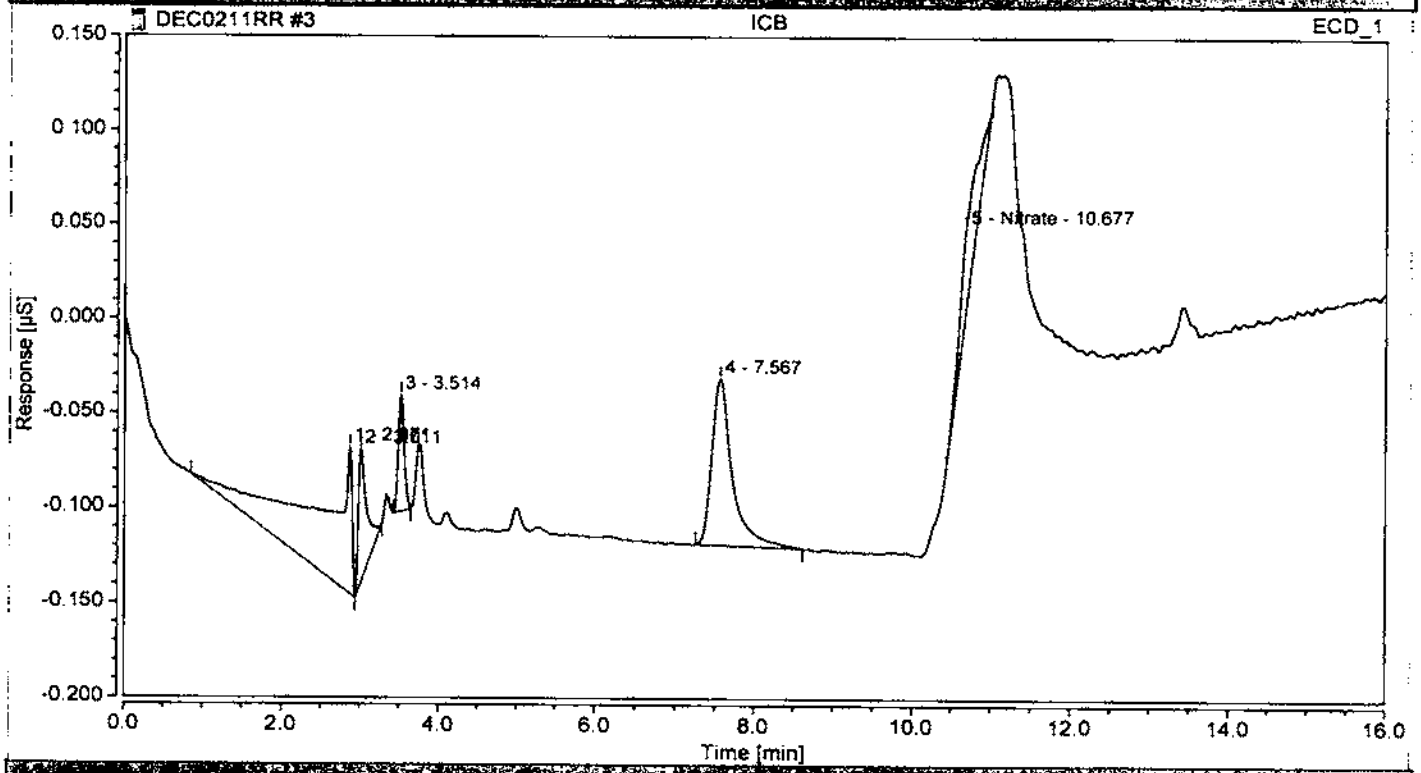
Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 18:54*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.033	0.076	FALSE	n.a.
2		1.0	n.a.	3.01	0.006	0.062	FALSE	n.a.
3	Fluoride	1.0	3.000	3.35	1.441	12.466	FALSE	0.01
4	Chloride	1.0	3.057	5.00	0.905	7.730	FALSE	1.91
5	Nitrite	1.0	3.161	6.13	2.113	13.545	FALSE	5.36
6		1.0	n.a.	7.55	0.019	0.077	FALSE	n.a.
7	Bromide	1.0	3.005	8.68	0.383	1.908	FALSE	0.16
8	Sulfate	1.0	2.660	9.75	0.580	2.350	FALSE	-11.32
9	Nitrate	1.0	3.060	10.56	2.315	10.693	FALSE	2.01
10	Phosphate	1.0	2.936	13.31	0.886	4.753	FALSE	-2.15

TZ83 : 00182

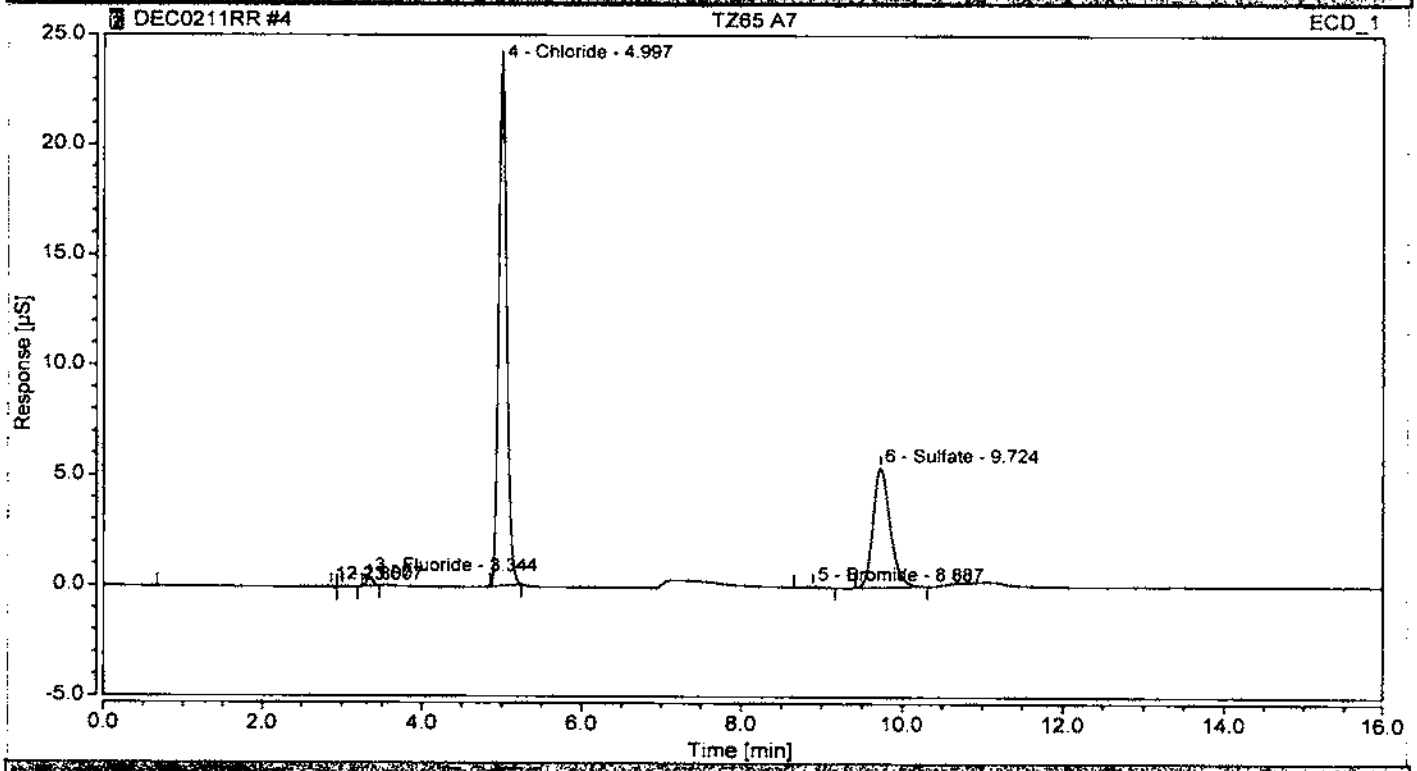
Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodei*		
Injection Date/Time:	*02/12/11 19:13*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.041	0.077	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.070	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.005	0.061	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.57	0.027	0.088	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.017	10.68	0.013	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

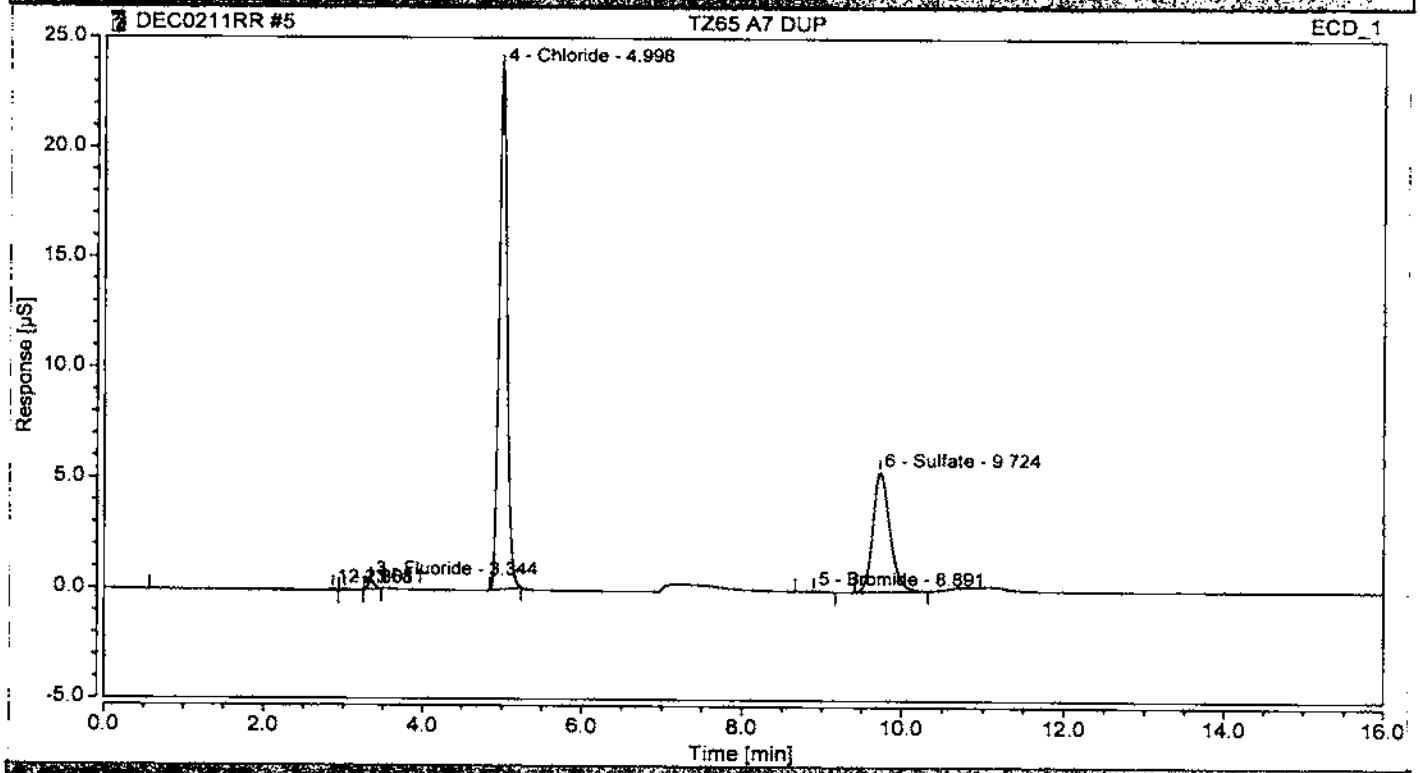
TZ83 : 00183

Injection Name:	*TZ65 A7*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 19:33*		



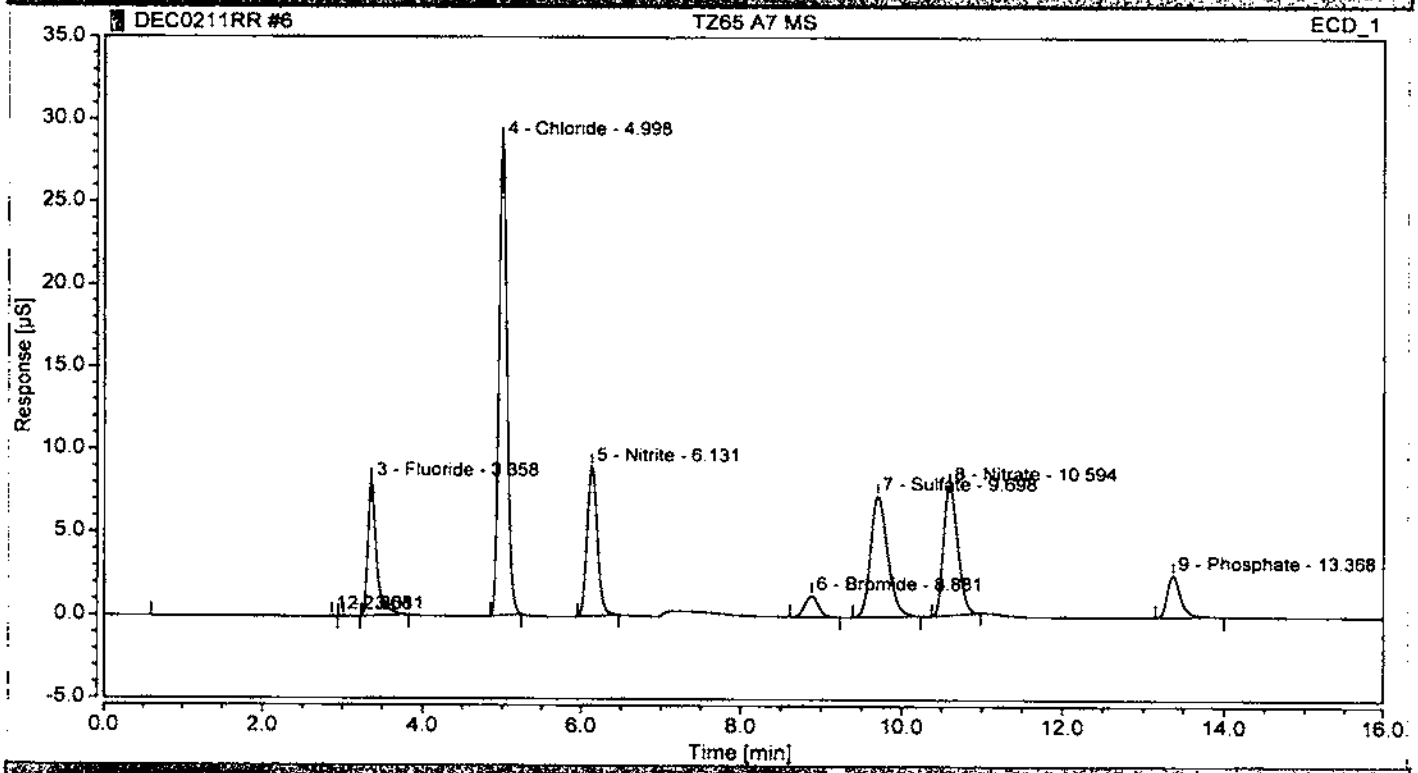
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.007	0.068	FALSE	n.a.
3	Fluoride	1.0	0.075	3.34	0.036	0.408	FALSE	n.a.
4	Chloride	1.0	9.408	5.00	2.784	23.723	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.072	8.89	0.009	0.046	FALSE	n.a.
6	Sulfate	1.0	6.147	9.72	1.340	5.423	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 A7 DUP*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 19:52*		



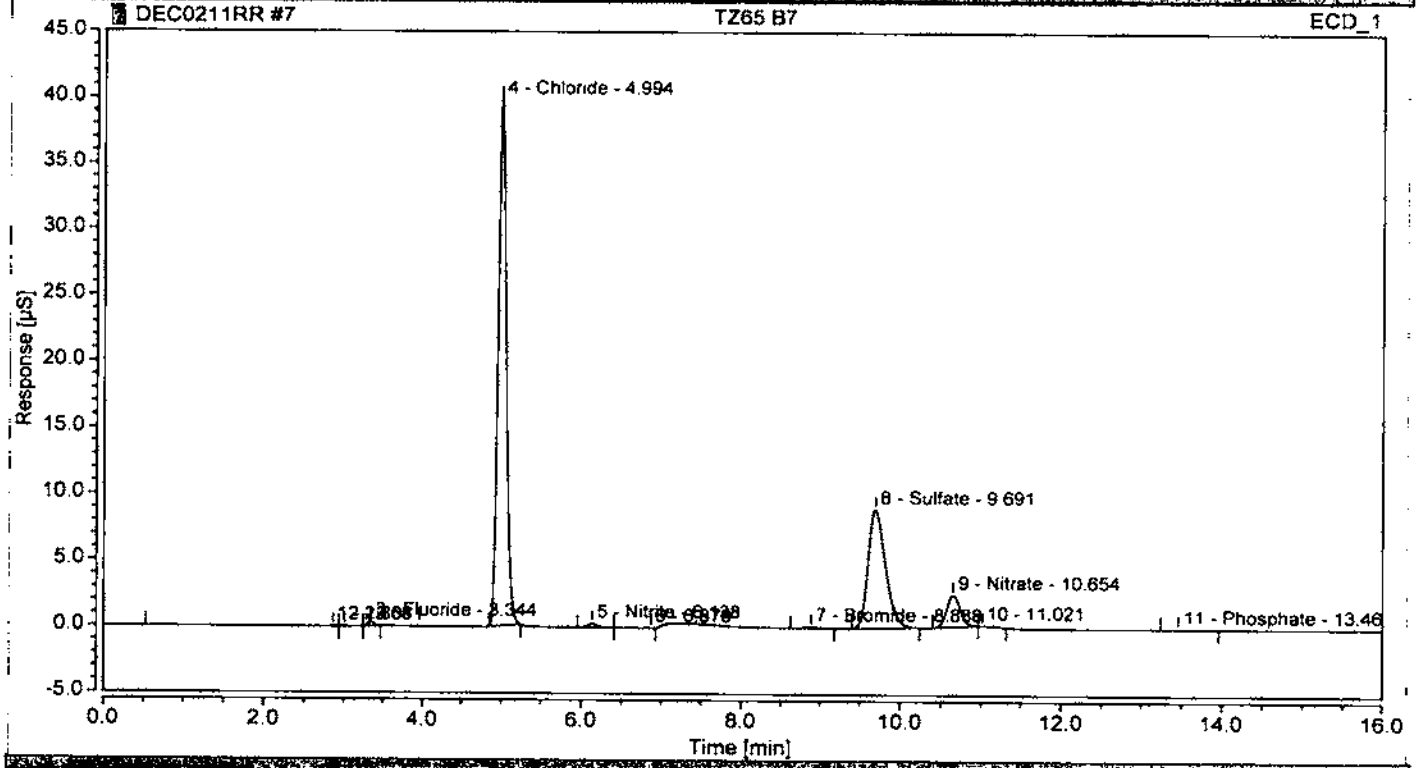
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.051	0.074	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.070	FALSE	n.a.
3	Fluoride	1.0	0.073	3.34	0.035	0.397	FALSE	n.a.
4	Chloride	1.0	9.410	5.00	2.785	23.681	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.071	8.89	0.009	0.045	FALSE	n.a.
6	Sulfate	1.0	6.138	9.72	1.338	5.400	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 A7 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 20:12*		



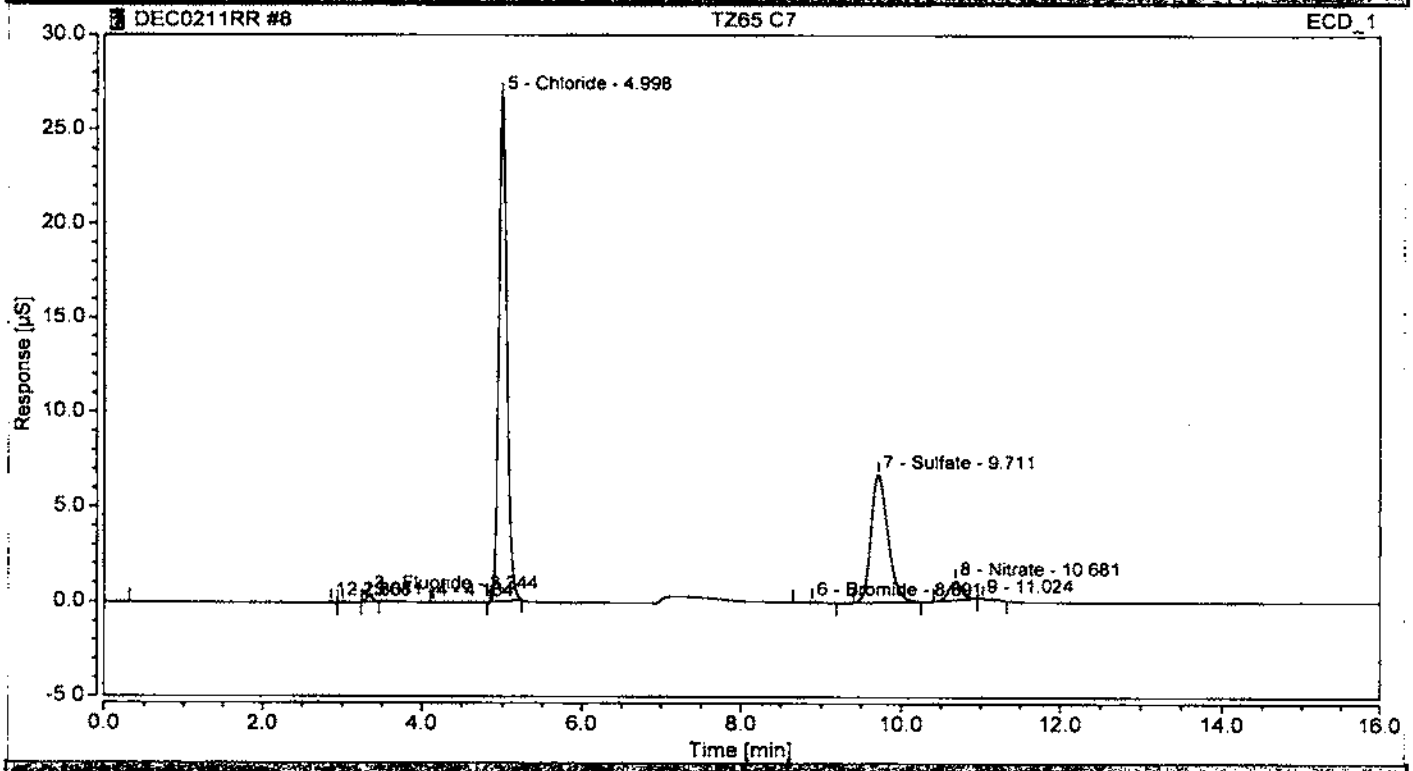
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.052	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.071	FALSE	n.a.
3	Fluoride	1.0	2.109	3.36	1.013	8.080	FALSE	n.a.
4	Chloride	1.0	11.424	5.00	3.381	28.702	FALSE	n.a.
5	Nitrite	1.0	1.980	6.13	1.323	8.968	FALSE	n.a.
6	Bromide	1.0	1.968	8.88	0.251	1.257	FALSE	n.a.
7	Sulfate	1.0	6.172	9.70	1.781	7.252	FALSE	n.a.
8	Nitrate	1.0	2.120	10.59	1.604	7.759	FALSE	n.a.
9	Phosphate	1.0	1.630	13.37	0.492	2.510	FALSE	n.a.

Injection Name:	*TZ65 B7*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 20:31*		



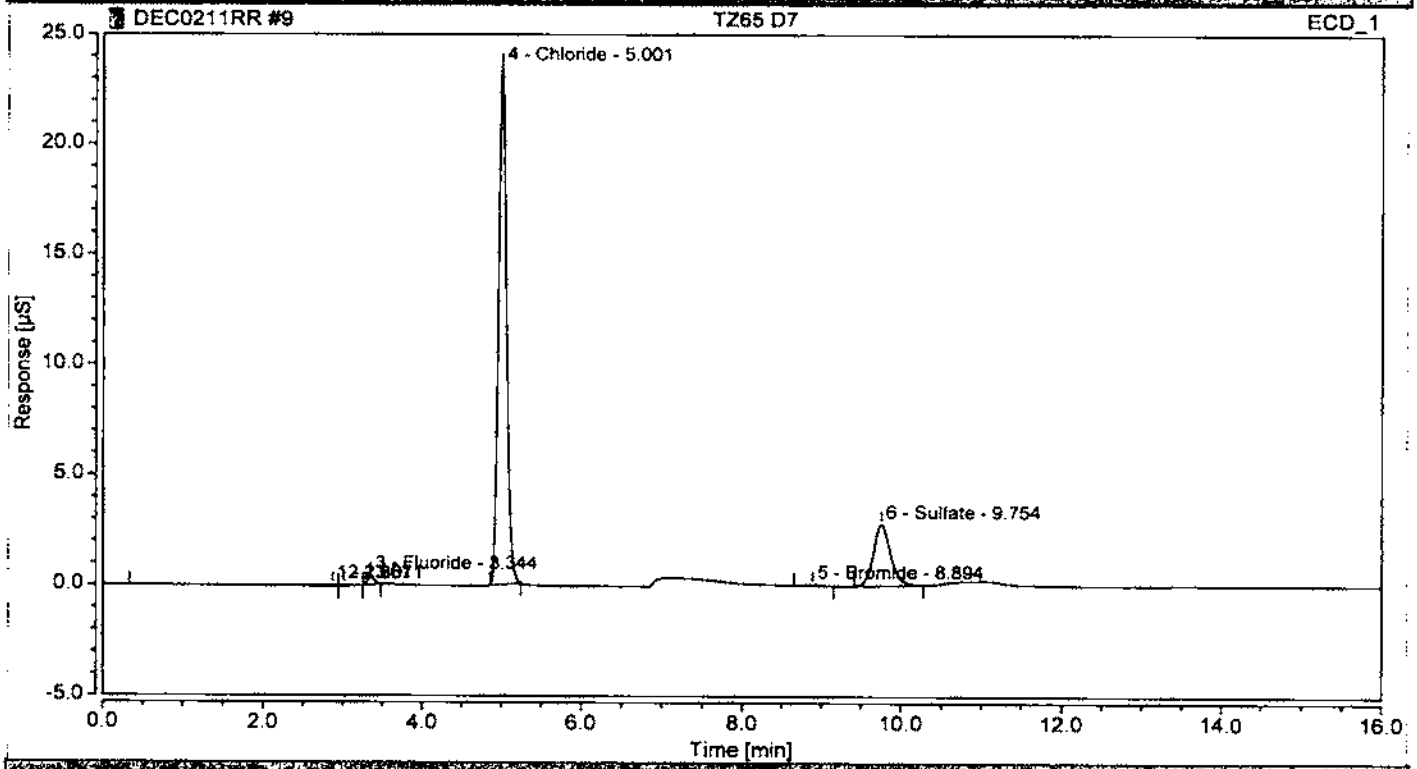
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipuiated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.056	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.072	FALSE	n.a.
3	Fluoride	1.0	0.060	3.34	0.029	0.331	FALSE	n.a.
4	Chloride	1.0	15.903	4.99	4.706	39.786	FALSE	n.a.
5	Nitrite	1.0	0.059	6.14	0.039	0.285	FALSE	n.a.
6		1.0	n.a.	8.88	0.005	0.021	FALSE	n.a.
7	Bromide	1.0	0.140	8.89	0.018	0.089	FALSE	n.a.
8	Sulfate	1.0	10.144	9.69	2.211	8.947	FALSE	n.a.
9	Nitrate	1.0	0.514	10.65	0.485	2.402	FALSE	n.a.
10		1.0	n.a.	11.02	0.010	0.027	FALSE	n.a.
11	Phosphate	1.0	0.017	13.48	0.005	0.018	FALSE	n.a.

Injection Name:	*TZ65 C7*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 20:51*		



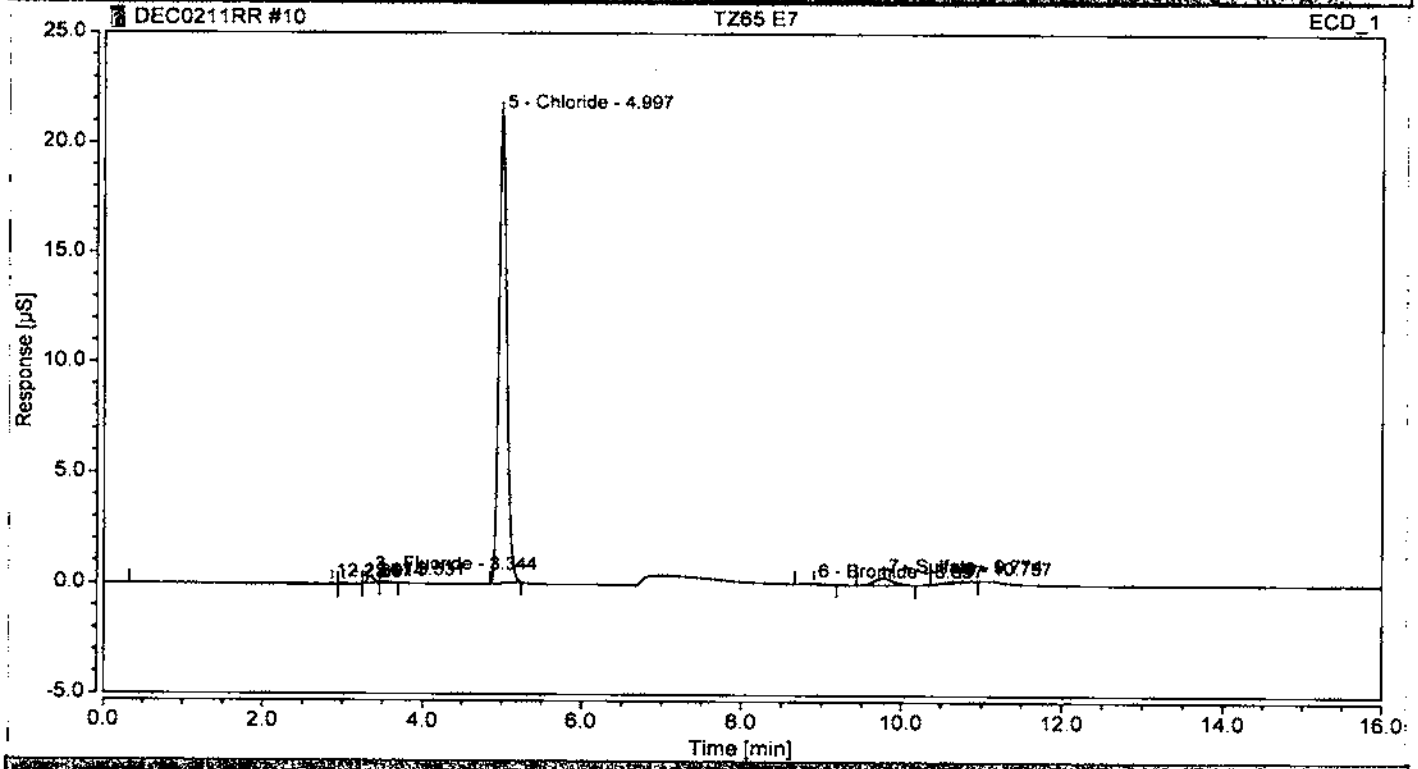
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.062	0.076	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.071	FALSE	n.a.
3	Fluoride	1.0	0.068	3.34	0.032	0.362	FALSE	n.a.
4		1.0	n.a.	4.13	0.021	0.027	FALSE	n.a.
5	Chloride	1.0	10.662	5.00	3.155	26.774	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Bromide	1.0	0.098	8.89	0.013	0.063	FALSE	n.a.
7	Sulfate	1.0	7.577	9.71	1.662	6.733	FALSE	n.a.
8	Nitrate	1.0	0.250	10.68	0.189	0.969	FALSE	n.a.
9		1.0	n.a.	11.02	0.012	0.030	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 D7*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 21:10*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.064	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.071	FALSE	n.a.
3	Fluoride	1.0	0.063	3.34	0.040	0.444	FALSE	n.a.
4	Chloride	1.0	9.366	5.00	2.772	23.527	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.088	8.89	0.011	0.057	FALSE	n.a.
6	Sulfate	1.0	3.146	9.75	0.686	2.775	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

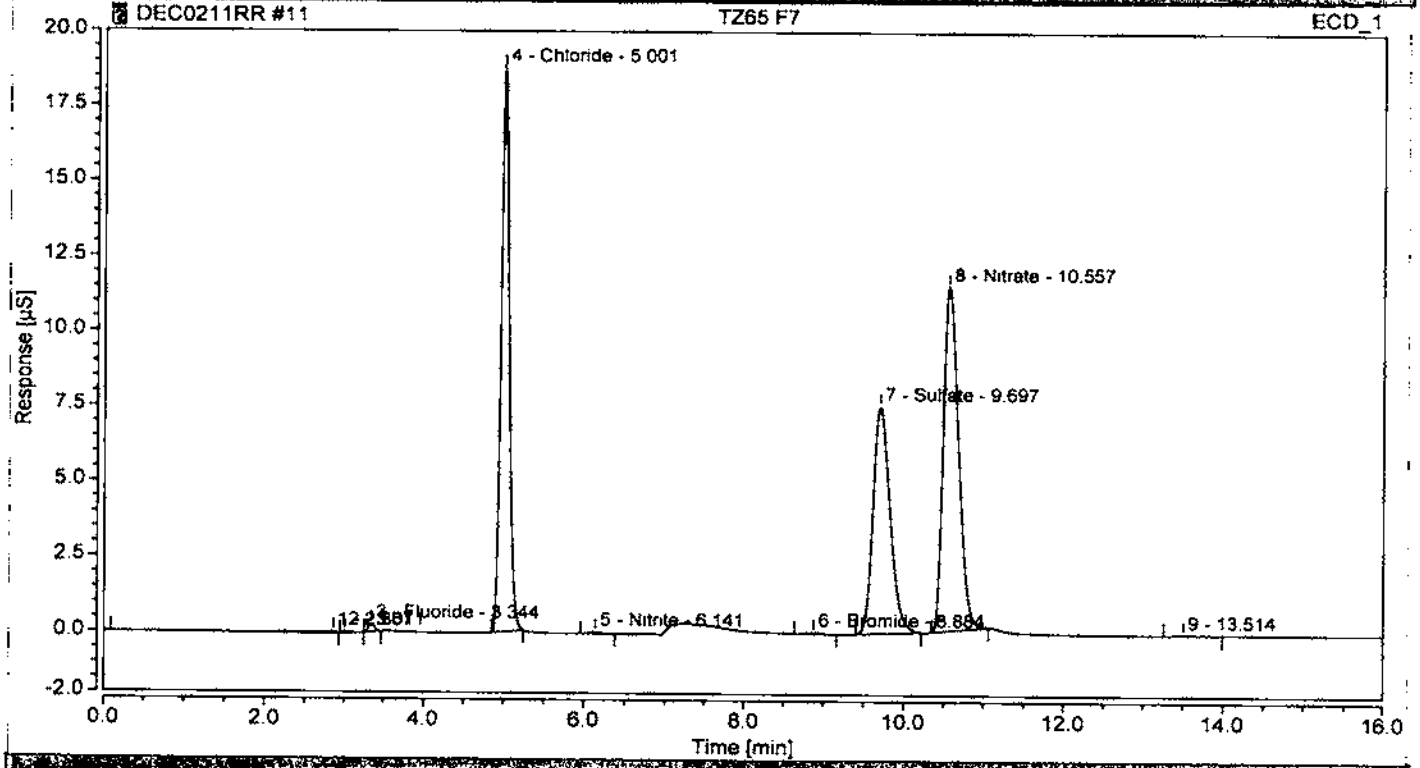
Injection Name:	*TZ65 E7*	Inject Number:	10
Vial Number:	*10*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodel*		
Injection Date/Time:	*02/12/11 21:30*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.065	0.072	FALSE	n.a.
2		1.0	n.a.	3.01	0.008	0.069	FALSE	n.a.
3	Fluoride	1.0	0.062	3.34	0.030	0.344	FALSE	n.a.
4		1.0	n.a.	3.53	0.006	0.055	FALSE	n.a.
5	Chloride	1.0	8.487	5.00	2.512	21.306	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Bromide	1.0	0.093	8.90	0.011	0.053	FALSE	n.a.
7	Sulfate	1.0	0.395	9.77	0.086	0.312	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	10.74	0.019	0.063	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

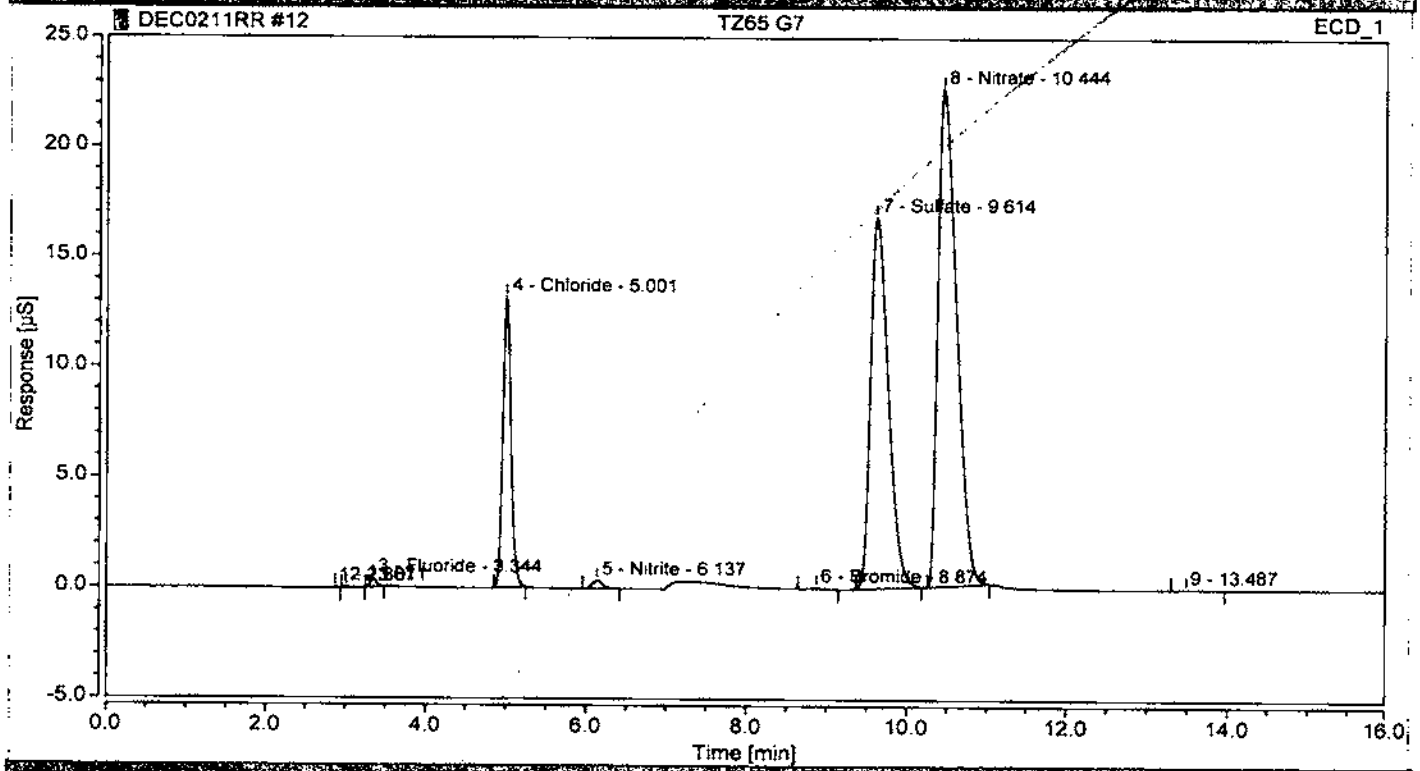
TZ83 : 001170

Injection Name:	*TZ65 F7*	Inject Number:	11
Vial Number:	*11*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 21:50*		



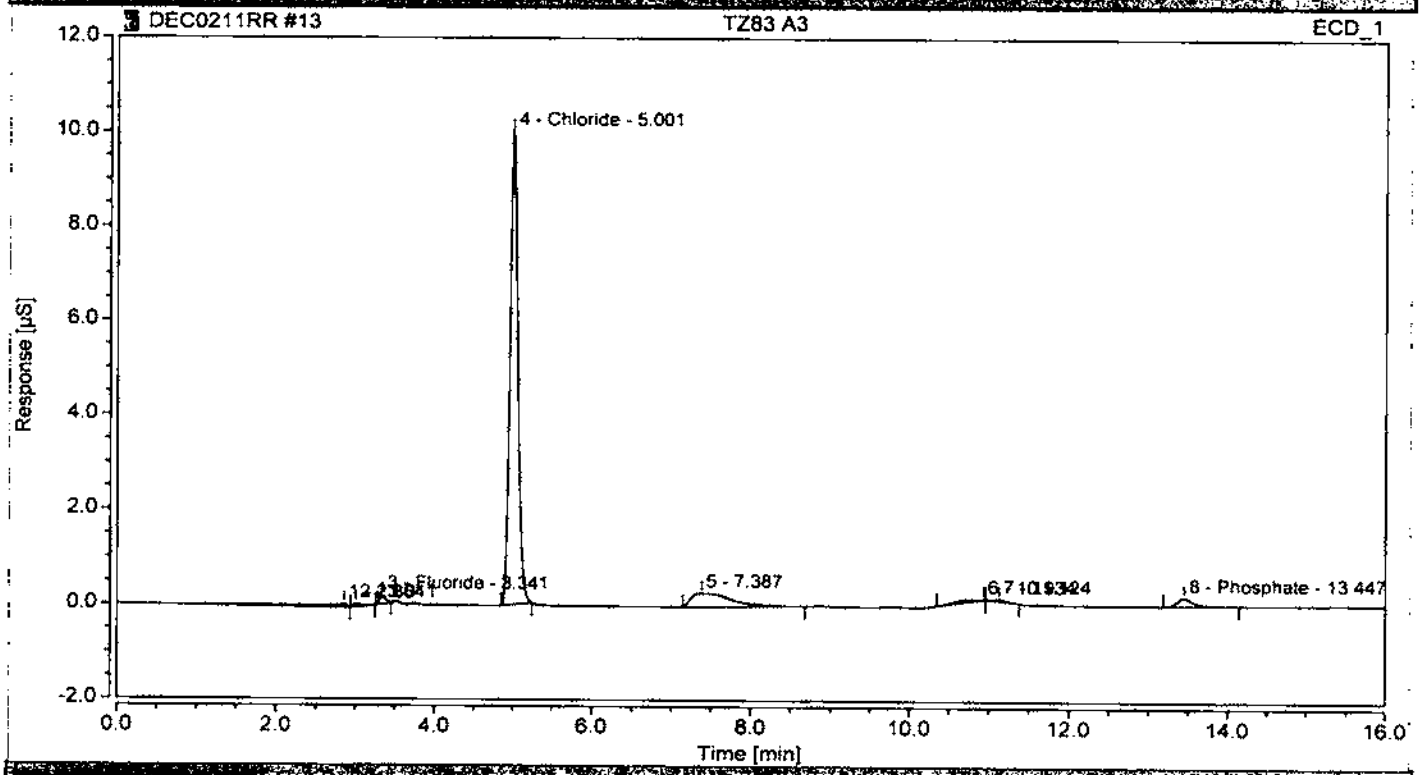
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.069	0.076	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.073	FALSE	n.a.
3	Fluoride	1.0	0.048	3.34	0.023	0.266	FALSE	n.a.
4	Chloride	1.0	7.487	5.00	2.216	18.766	FALSE	n.a.
5	Nitrite	1.0	0.012	6.14	0.008	0.056	FALSE	n.a.
6	Bromide	1.0	0.078	8.88	0.010	0.050	FALSE	n.a.
7	Sulfate	1.0	8.426	9.70	1.837	7.531	FALSE	n.a.
8	Nitrate	1.0	3.328	10.56	2.518	11.426	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.51	0.006	0.018	FALSE	n.a.

Injection Name:	*TZ65 G7*	Inject Number:	12
Vial Number:	*12*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodel*		
Injection Date/Time:	*02/12/11 22:10*		



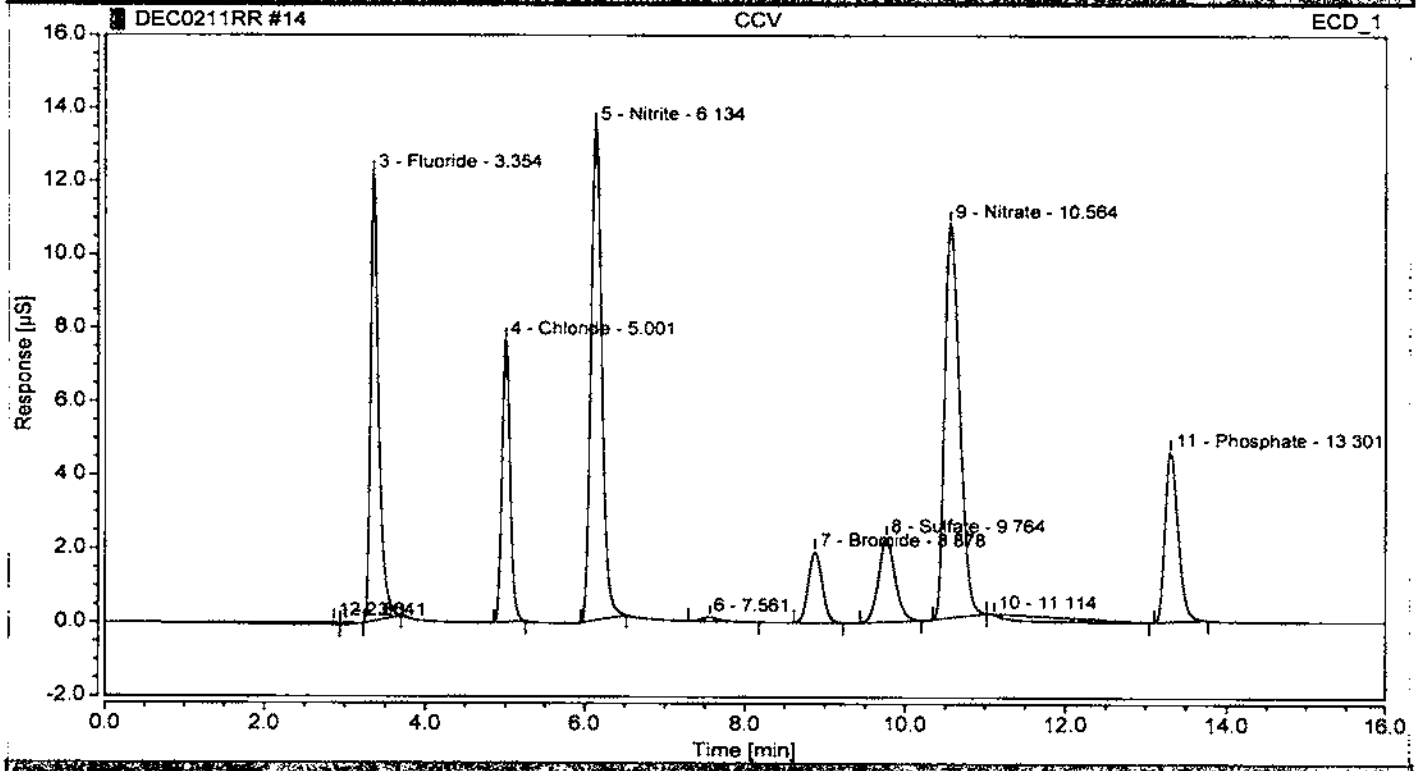
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.071	0.075	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.072	FALSE	n.a.
3	Fluoride	1.0	0.074	3.34	0.035	0.398	FALSE	n.a.
4	Chloride	1.0	5.241	5.00	1.851	13.156	FALSE	n.a.
5	Nitrite	1.0	0.074	6.14	0.049	0.355	FALSE	n.a.
6	Bromide	1.0	0.071	8.87	0.009	0.047	FALSE	n.a.
7	Sulfate	1.0	19.656	9.61	4.285	16.807	FALSE	n.a.
8	Nitrate	1.0	8.051	10.44	6.091	22.576	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.49	0.006	0.019	FALSE	n.a.

Injection Name:	*TZ83 A3*	Inject Number:	13
Vial Number:	*13*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 22:30*		



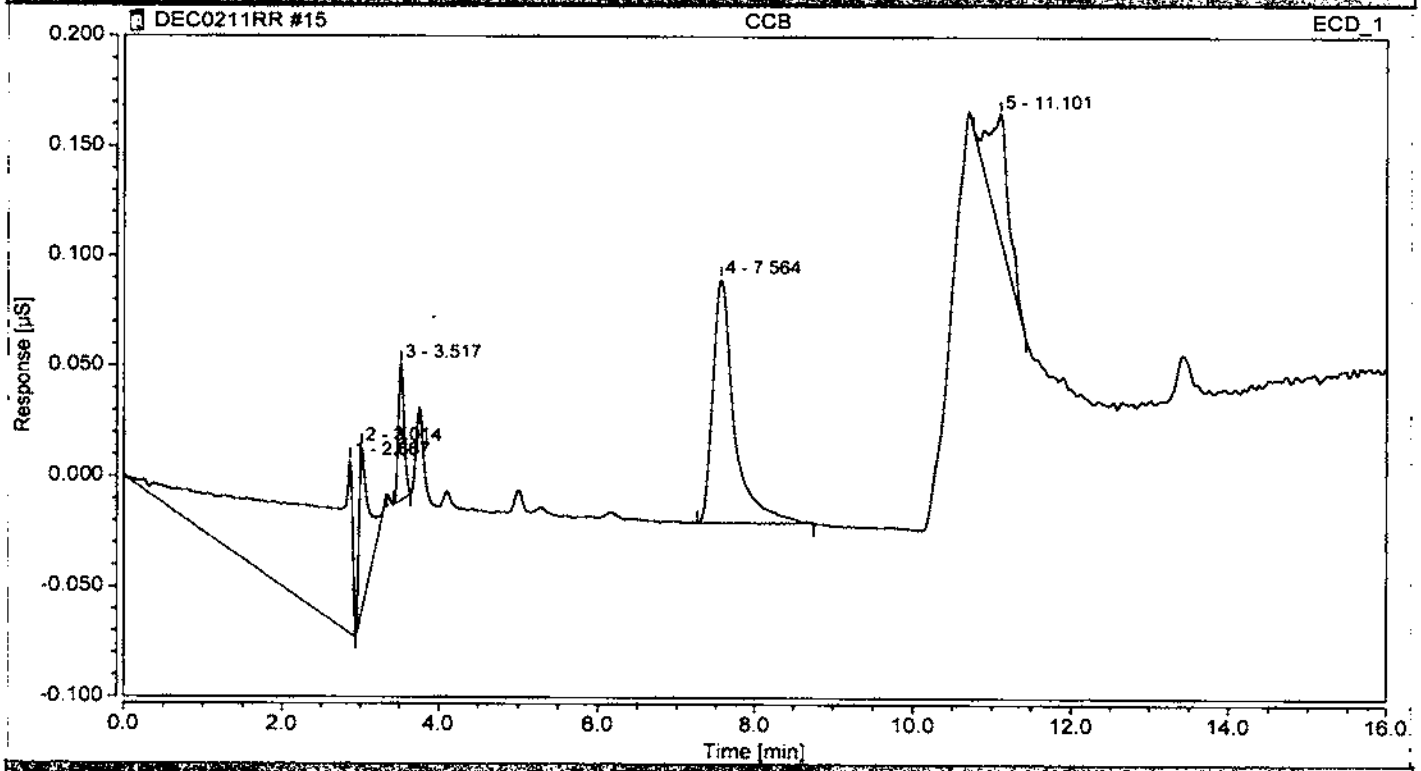
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.86	0.075	0.078	FALSE	n.a.
2		10.0	n.a.	3.01	0.009	0.073	FALSE	n.a.
3	Fluoride	10.0	0.338	3.34	0.016	0.193	FALSE	n.a.
4	Chloride	10.0	39.939	5.00	1.182	10.011	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		10.0	n.a.	7.39	0.179	0.292	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		10.0	n.a.	10.93	0.017	0.006	FALSE	n.a.
7		10.0	n.a.	11.12	0.008	0.046	FALSE	n.a.
8	Phosphate	10.0	1.406	13.45	0.042	0.177	FALSE	n.a.

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 22:51*		



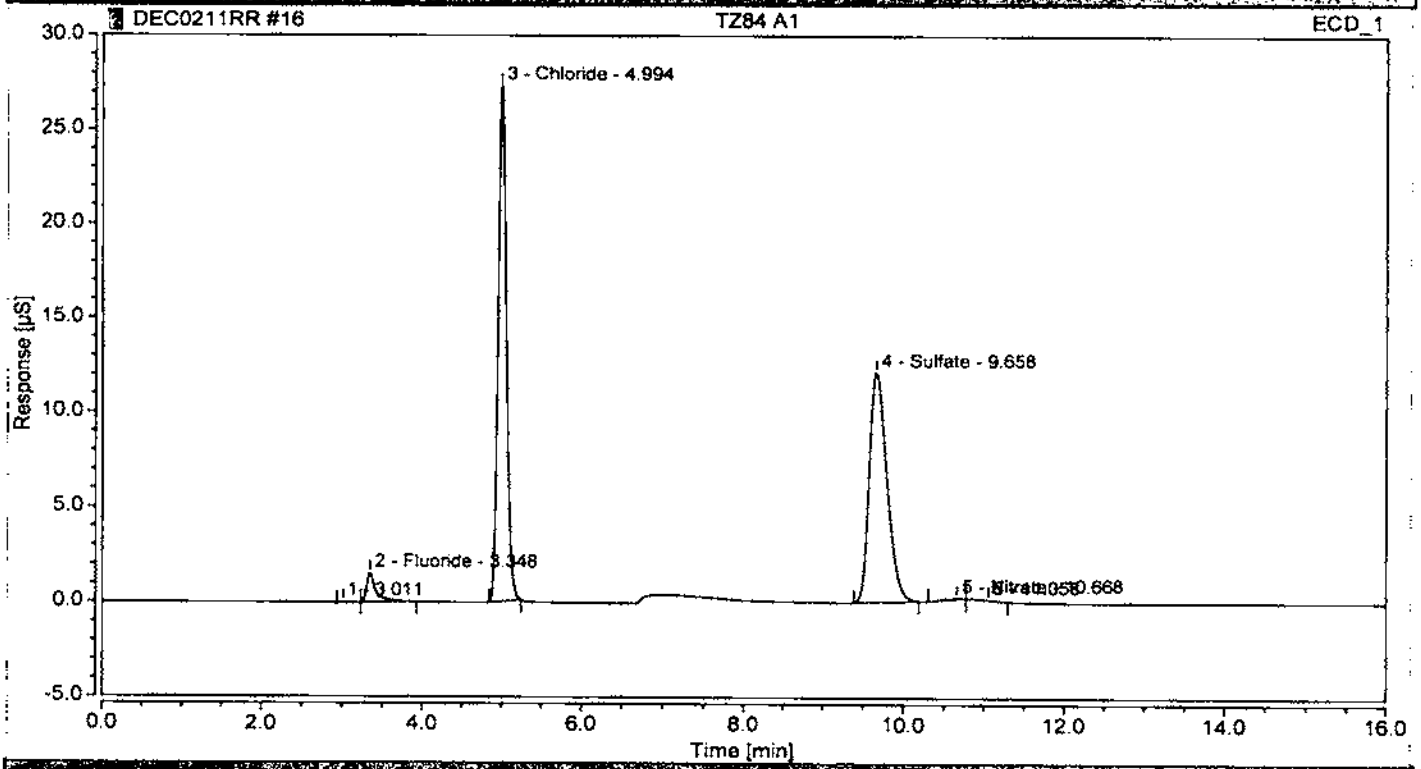
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.078	0.077	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.074	FALSE	n.a.
3	Fluoride	1.0	2.990	3.35	1.436	12.176	FALSE	-0.33
4	Chloride	1.0	3.060	5.00	0.905	7.656	FALSE	1.98
5	Nitrite	1.0	3.154	6.13	2.108	13.449	FALSE	5.15
6		1.0	n.a.	7.56	0.028	0.103	FALSE	n.a.
7	Bromide	1.0	3.010	8.88	0.384	1.906	FALSE	0.34
8	Sulfate	1.0	2.525	9.76	0.550	2.263	FALSE	-15.82
9	Nitrate	1.0	3.081	10.56	2.331	10.704	FALSE	2.70
10		1.0	n.a.	11.11	0.161	0.018	FALSE	n.a.
11	Phosphate	1.0	2.888	13.30	0.872	4.591	FALSE	-3.73

Injection Name:	*CCB*	Inject Number:	15
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 23:11*		



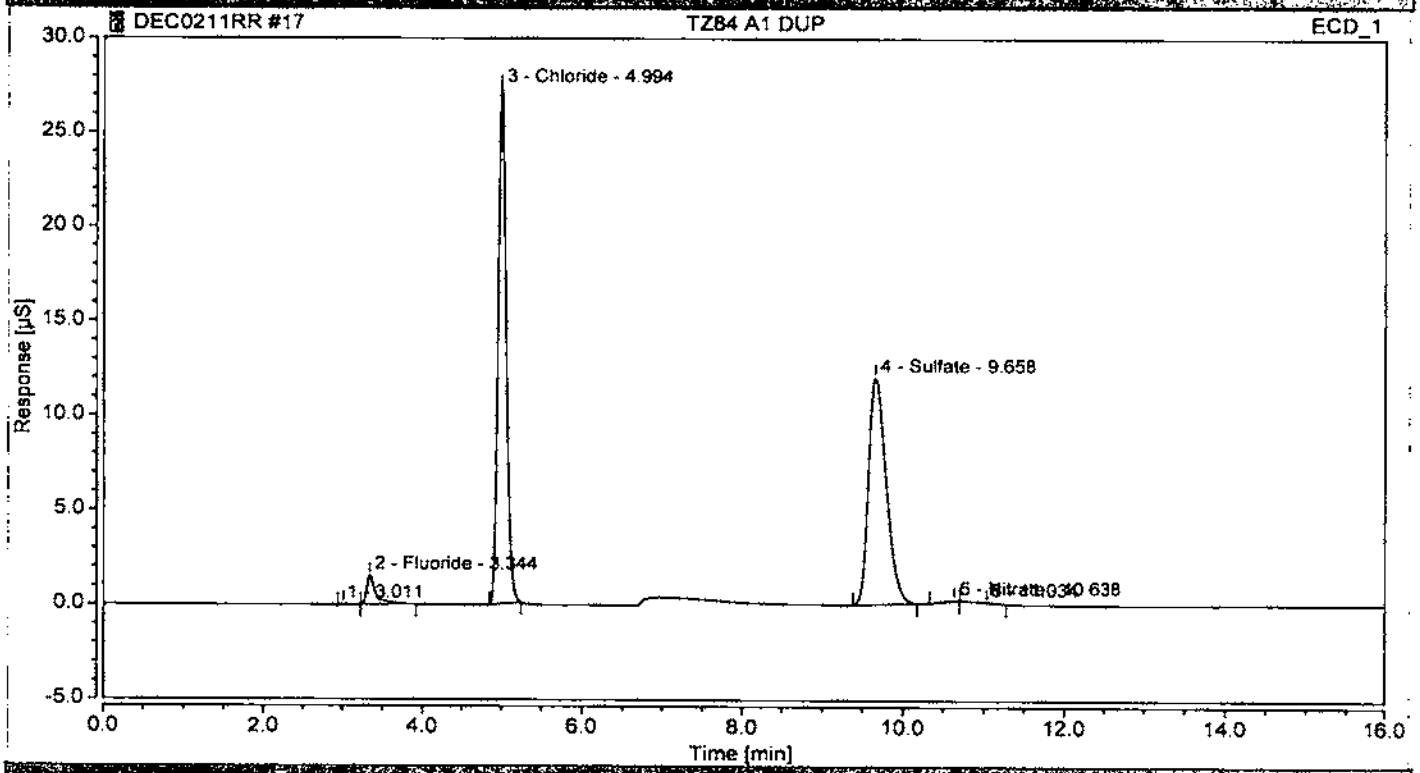
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.079	0.078	FALSE	n.a.
2		1.0	n.a.	3.01	0.010	0.075	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.52	0.005	0.062	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.56	0.036	0.110	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	11.10	0.015	0.056	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1*	Inject Number:	16
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*02/12/11 23:32*		



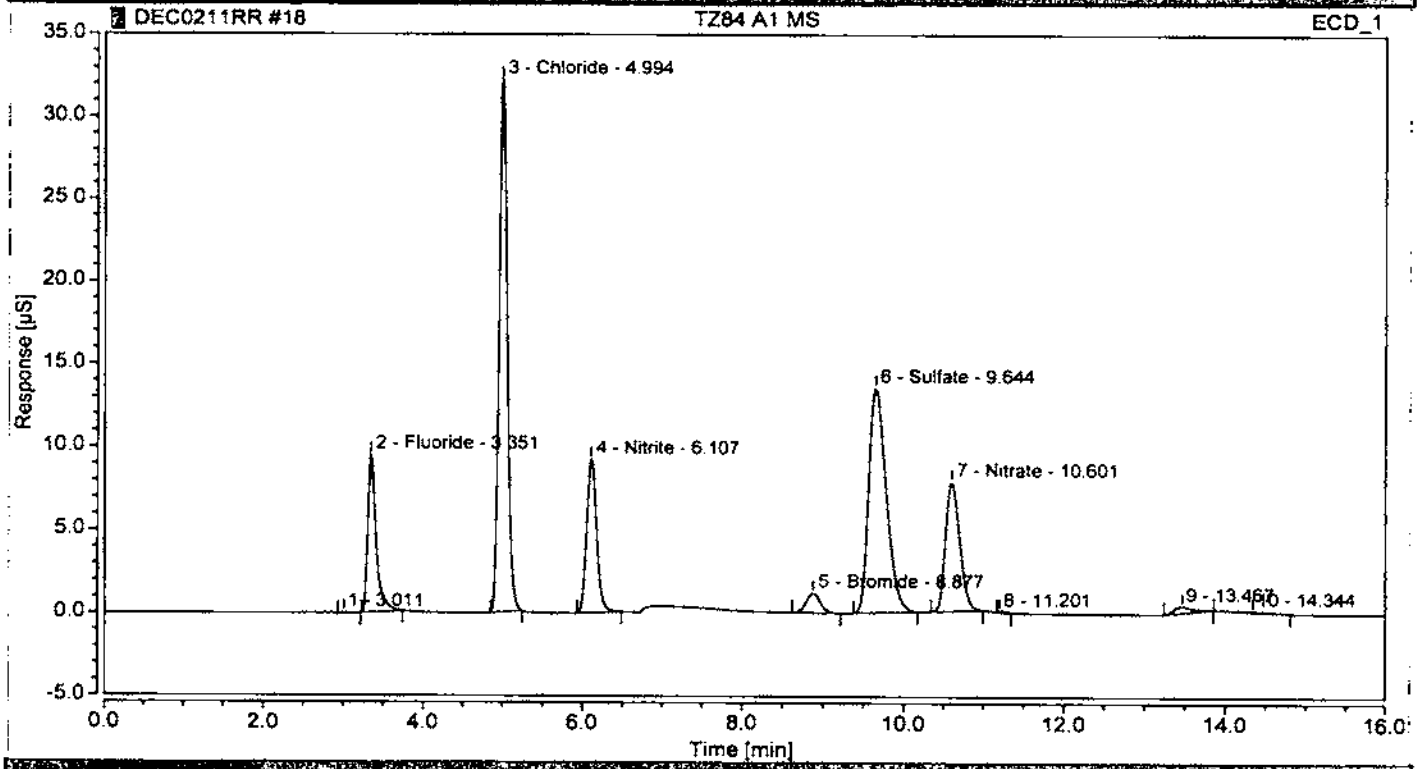
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.087	FALSE	n.a.
2	Fluoride	1.0	0.426	3.35	0.205	1.514	FALSE	n.a.
3	Chloride	1.0	10.919	4.99	3.231	27.279	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	13.998	9.66	3.051	12.080	FALSE	n.a.
5	Nitrate	1.0	0.022	10.67	0.017	0.059	FALSE	n.a.
6		1.0	n.a.	11.06	0.009	0.035	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 DUP*	Inject Number:	17
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*02/12/11 23:52*		



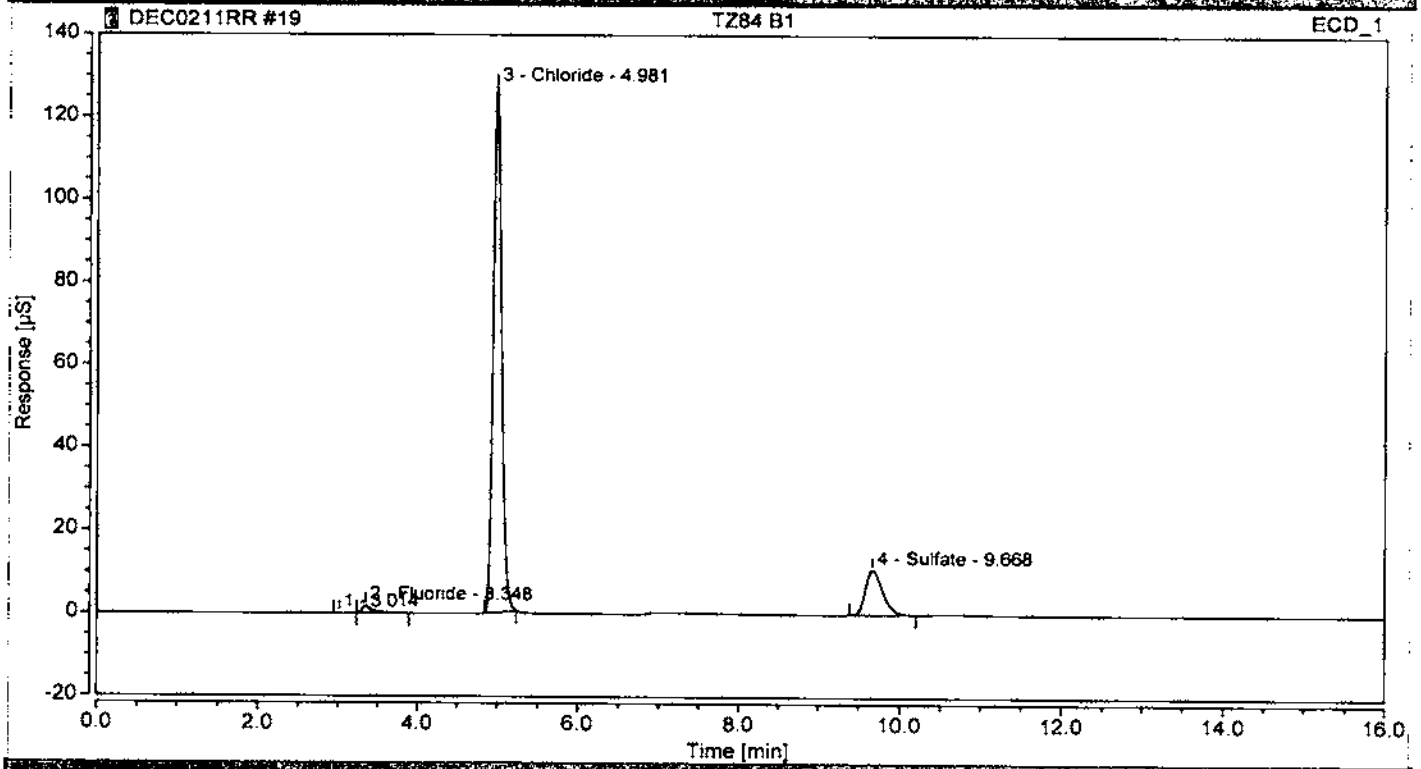
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.066	FALSE	n.a.
2	Fluoride	1.0	0.427	3.34	0.205	1.531	FALSE	n.a.
3	Chloride	1.0	10.939	4.99	3.237	27.311	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	13.866	9.66	3.023	11.978	FALSE	n.a.
5	Nitrate	1.0	0.014	10.64	0.011	0.037	FALSE	n.a.
6		1.0	n.a.	11.03	0.010	0.034	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 MS*	Inject Number:	18
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 00:13*		



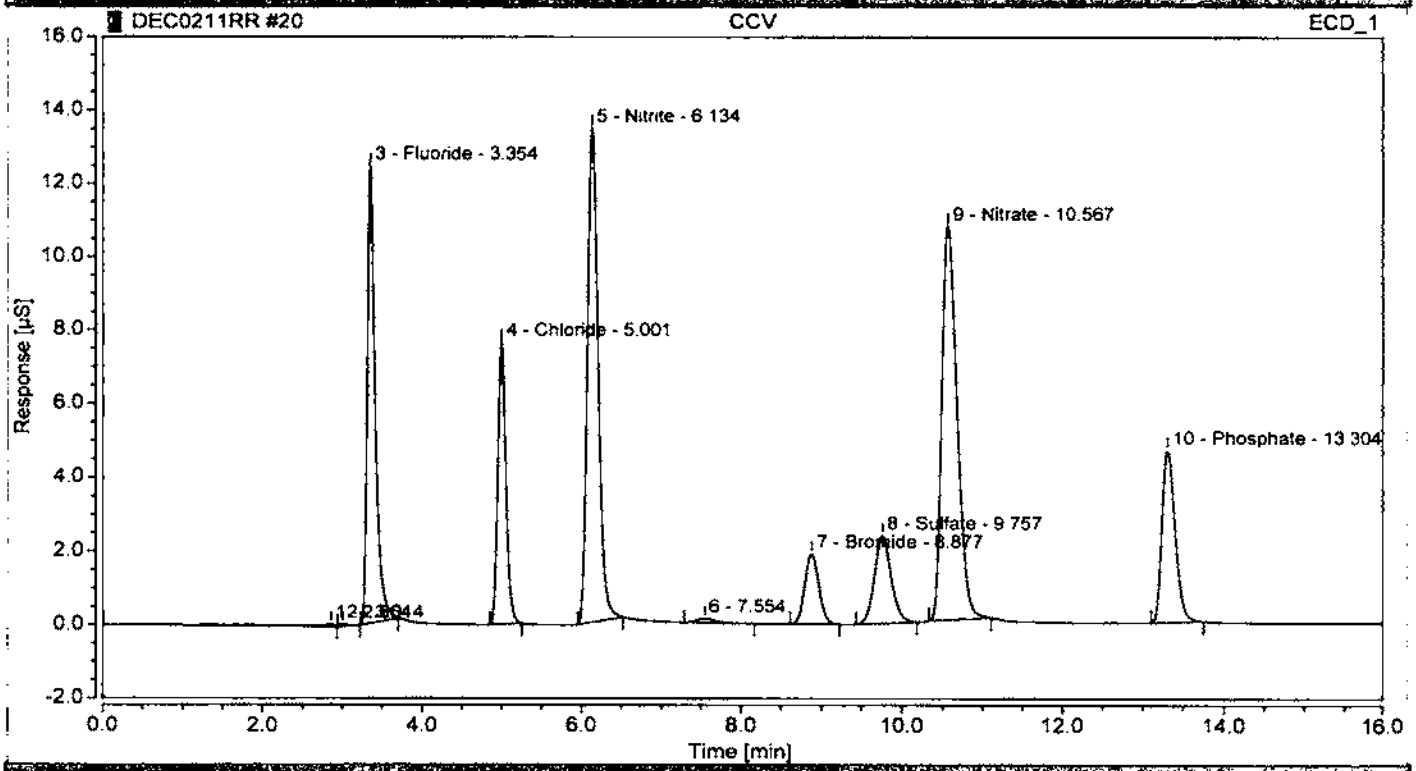
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.065	FALSE	n.a.
2	Fluoride	1.0	2.381	3.35	1.143	9.495	FALSE	n.a.
3	Chloride	1.0	12.922	4.99	3.824	32.194	FALSE	n.a.
4	Nitrite	1.0	1.985	6.11	1.327	9.230	FALSE	n.a.
5	Bromide	1.0	1.855	8.88	0.237	1.194	FALSE	n.a.
6	Sulfate	1.0	15.761	9.64	3.436	13.520	FALSE	n.a.
7	Nitrate	1.0	2.147	10.60	1.624	7.766	FALSE	n.a.
8		1.0	n.a.	11.20	0.011	0.049	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9		1.0	n.a.	13.47	0.102	0.387	FALSE	n.a.
10		1.0	n.a.	14.34	0.023	0.043	FALSE	n.a.

Injection Name:	*TZ84 B1*	Inject Number:	19
Vial Number:	*17*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 00:34*		



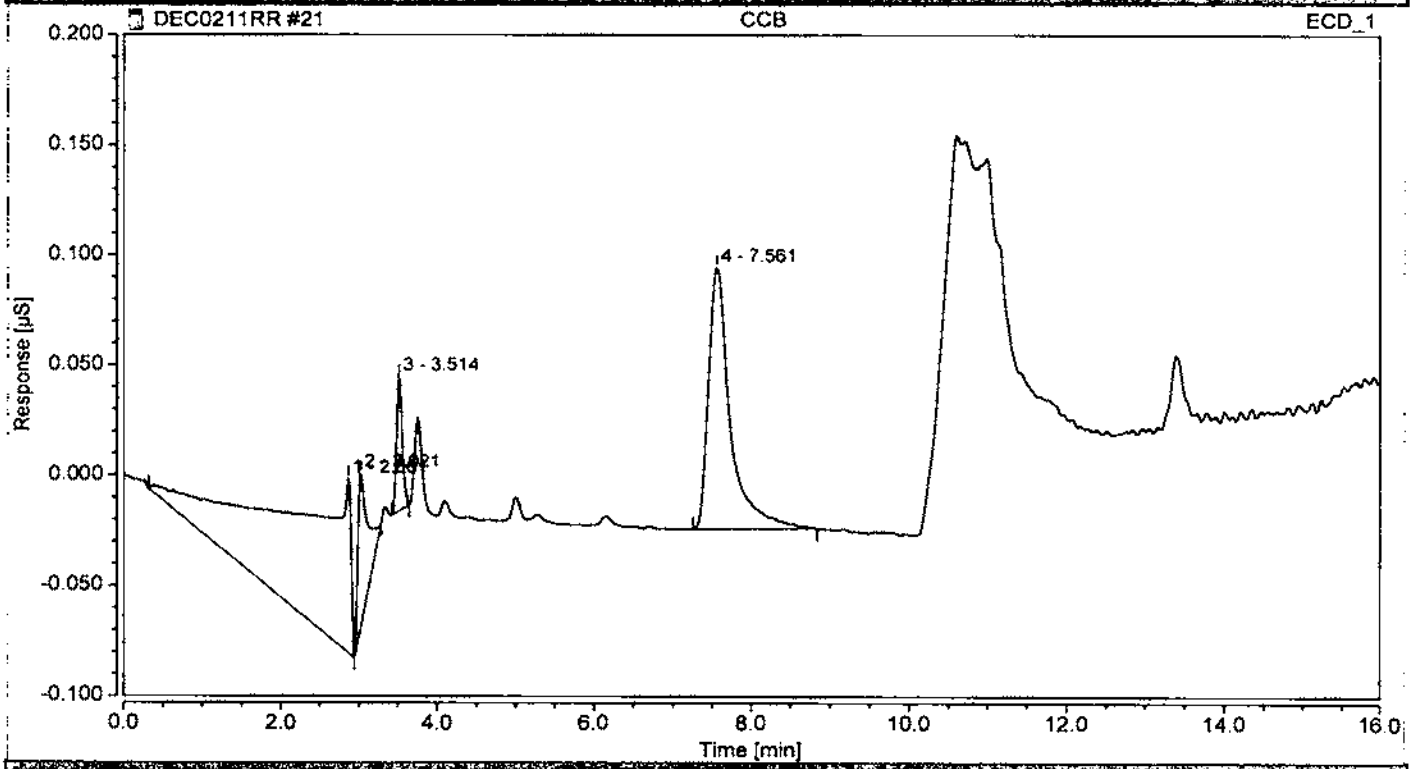
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	3.01	0.008	0.065	FALSE	n.a.
2	Fluoride	1.0	0.548	3.35	0.263	1.831	FALSE	n.a.
3	Chloride	1.0	51.968	4.98	15.379	127.139	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	12.443	9.67	2.712	10.858	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*CCV*	Inject Number:	20
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 00:54*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.079	0.073	FALSE	n.a.
2		1.0	n.a.	3.01	0.009	0.071	FALSE	n.a.
3	Fluoride	1.0	3.005	3.35	1.443	12.454	FALSE	0.18
4	Chloride	1.0	3.982	5.00	0.906	7.649	FALSE	2.07
5	Nitrite	1.0	6.164	6.13	2.115	13.448	FALSE	5.48
6		1.0	n.a.	7.55	0.032	0.116	FALSE	n.a.
7	Bromide	1.0	3.012	8.88	0.384	1.904	FALSE	0.41
8	Sulfate	1.0	2.624	9.76	0.572	2.384	FALSE	-12.54
9	Nitrate	1.0	3.120	10.57	2.360	10.701	FALSE	3.99
10	Phosphate	1.0	2.908	13.30	0.878	4.674	FALSE	-3.06

Injection Name:	*CCB*	Inject Number:	21
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 01:16*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.079	0.079	FALSE	n.a.
2		1.0	n.a.	3.02	0.010	0.070	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.005	0.061	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.56	0.038	0.118	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*STOP*	Inject Number:	22
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0211RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 01:36*		

Can't read channel ECD_1 from injection #22 - STOP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	natogram in con	natogram in		n.a.

[redacted]

Name:	**DEC0311RR**	*Calibration:*	**OCT0611RR**	**ARI # 581-9**
Directory:	**Instrument Data\DEC 2011**	*Calibration exp:*	**1/6/2012**	
Data Vault:	**ChromeleonLocal**	*Queue Start:*	12/3/2011 10:55	
No. of Injections:	**12.000**	*User:*	**RR**	

[redacted]

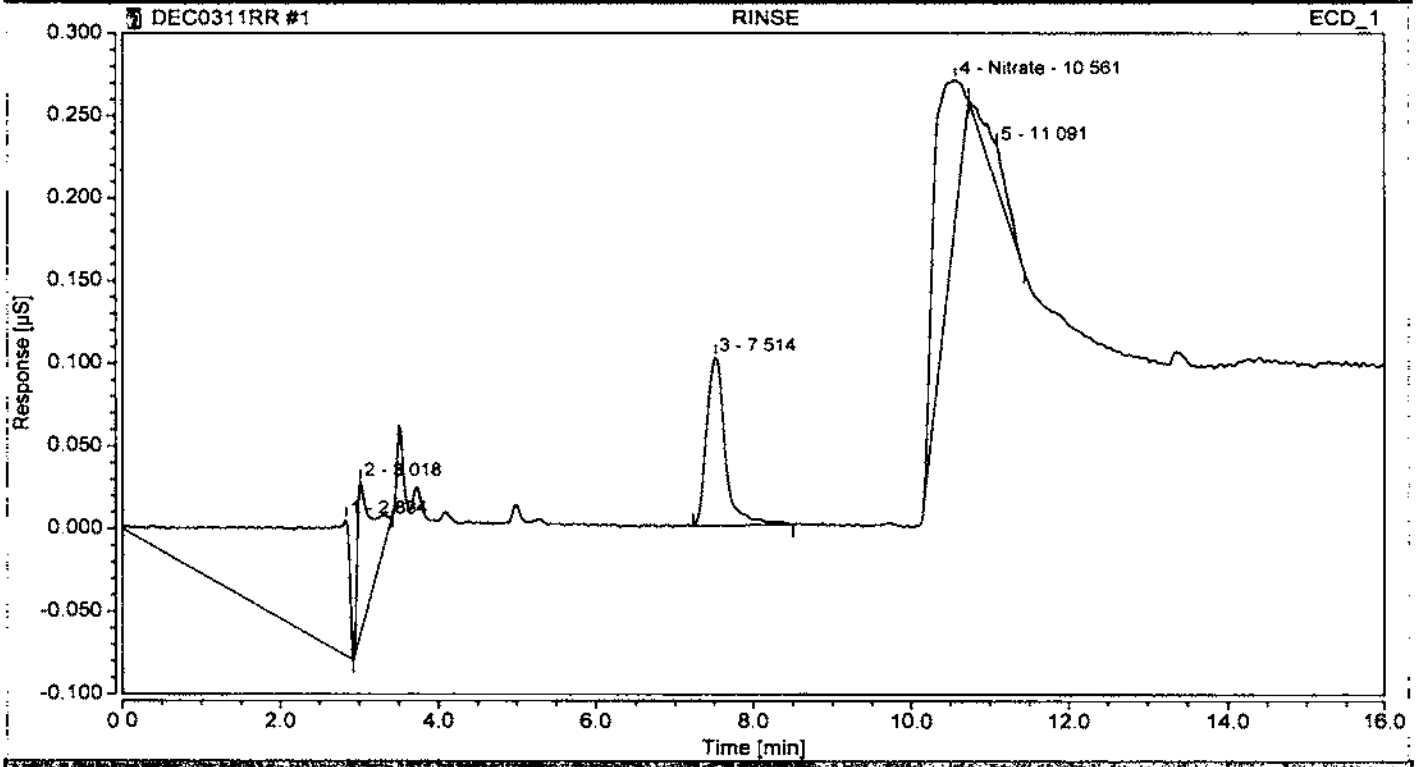
		ERA 161110	ERA 411010	ERA 401010	ERA 111109	ERA 160111	ERA 230511	ERA 200610
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	0.067	n.a.
ICV	1.0	2.986	3.037	3.171	3.015	2.601	3.132	2.925
%R=		**99.5%**	**101.2%**	**105.7%**	**100.5%**	**86.7%**	**104.4%**	**97.5%**
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
[redacted]		0.069	5.161	0.071	n.a.	18.944	[redacted]	0.035
		0.607	41.066	n.a.	0.316	0.278		1.508
		0.221	[redacted]	n.a.	n.a.	11.322	n.a.	n.a.
		0.218		n.a.	n.a.	11.325	n.a	n.a.
%RPD=		**1.43%**	**0.91%**			**0.02%**		
[redacted]		10.472	[redacted]	10.023	9.689	20.619	11.412	8.956
%R=		**104.7%**	**98.1%**	**100.2%**	**96.9%**	**93.0%**	**114.1%**	**89.6%**
SPK=	**0.25mL*200ppm/5mL**		**=10ppm**					
[redacted]		0.255	[redacted]	n.a.	n.a.	6.489	0.440	0.382
CCV	1.0	2.983	3.038	3.158	3.017	2.493	3.181	2.943
%R=		**99.4%**	**101.3%**	**105.3%**	**100.6%**	**83.1%**	**106.0%**	**98.1%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
STOP	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Name:	**DEC0311RR**	*Queue Start:*	**2011-12-03T10:55:41-**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**12**		

No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	03/Dec/11 10:55:41
2	ICV	2	Check Standard	06	1.0	03/Dec/11 11:14:35
3	ICB	3	Blank		1.0	03/Dec/11 11:33:46
4	TZ65 G7	4	Unknown		2.0	03/Dec/11 11:53:02
5	TZ83 A3	5	Unknown		1.0	03/Dec/11 12:12:23
6	TZ84 A1	6	Unknown		5.0	03/Dec/11 12:31:50
7	TZ84 A1 DUP	7	Unknown		5.0	03/Dec/11 12:51:23
8	TZ84 A1 MS	8	Unknown		5.0	03/Dec/11 13:11:02
9	TZ84 B1	9	Unknown		20.0	03/Dec/11 13:30:46
10	CCV	2	Check Standard	06	1.0	03/Dec/11 13:50:36
11	CCB	3	Blank		1.0	03/Dec/11 14:10:51
12	STOP	1	Unknown		1.0	03/Dec/11 14:31:14

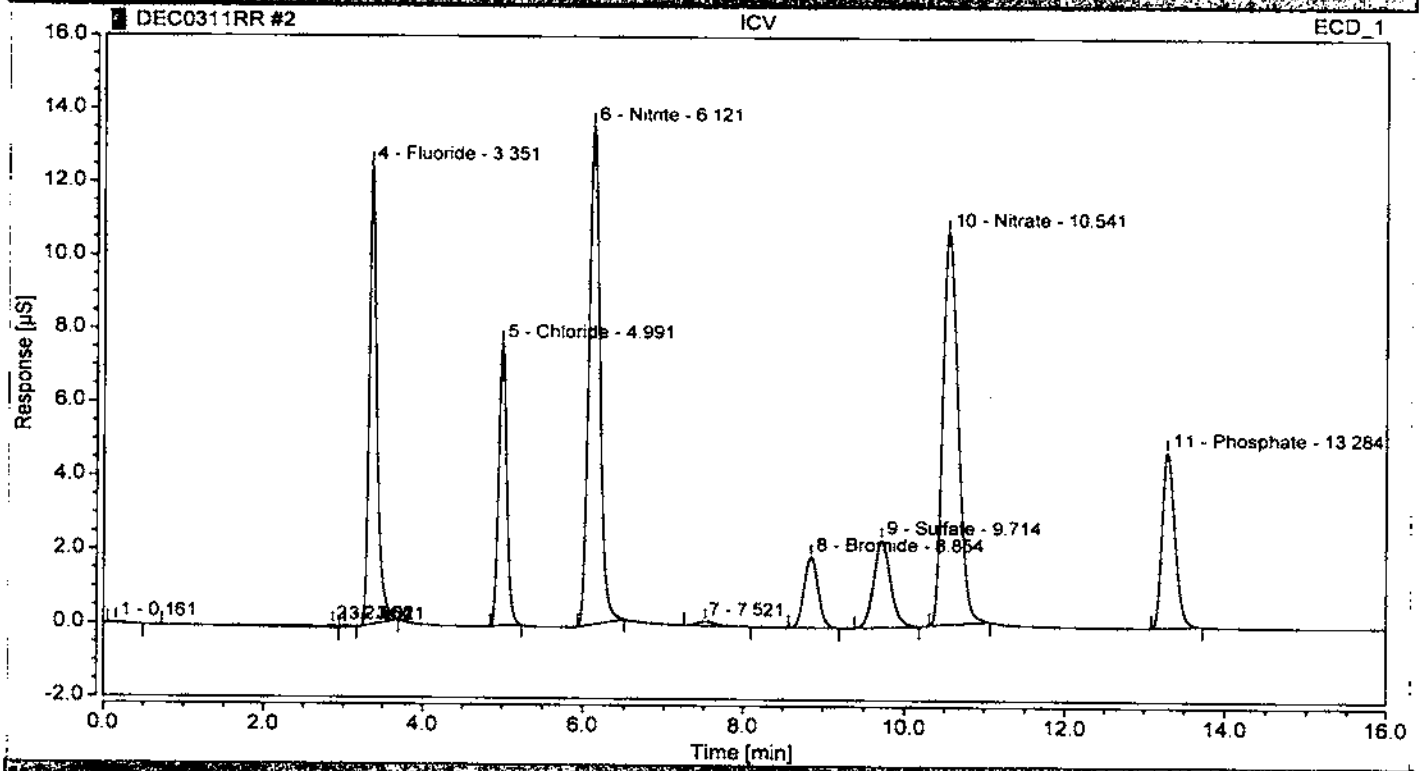
TZ83 : 00184

Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 10:55*		



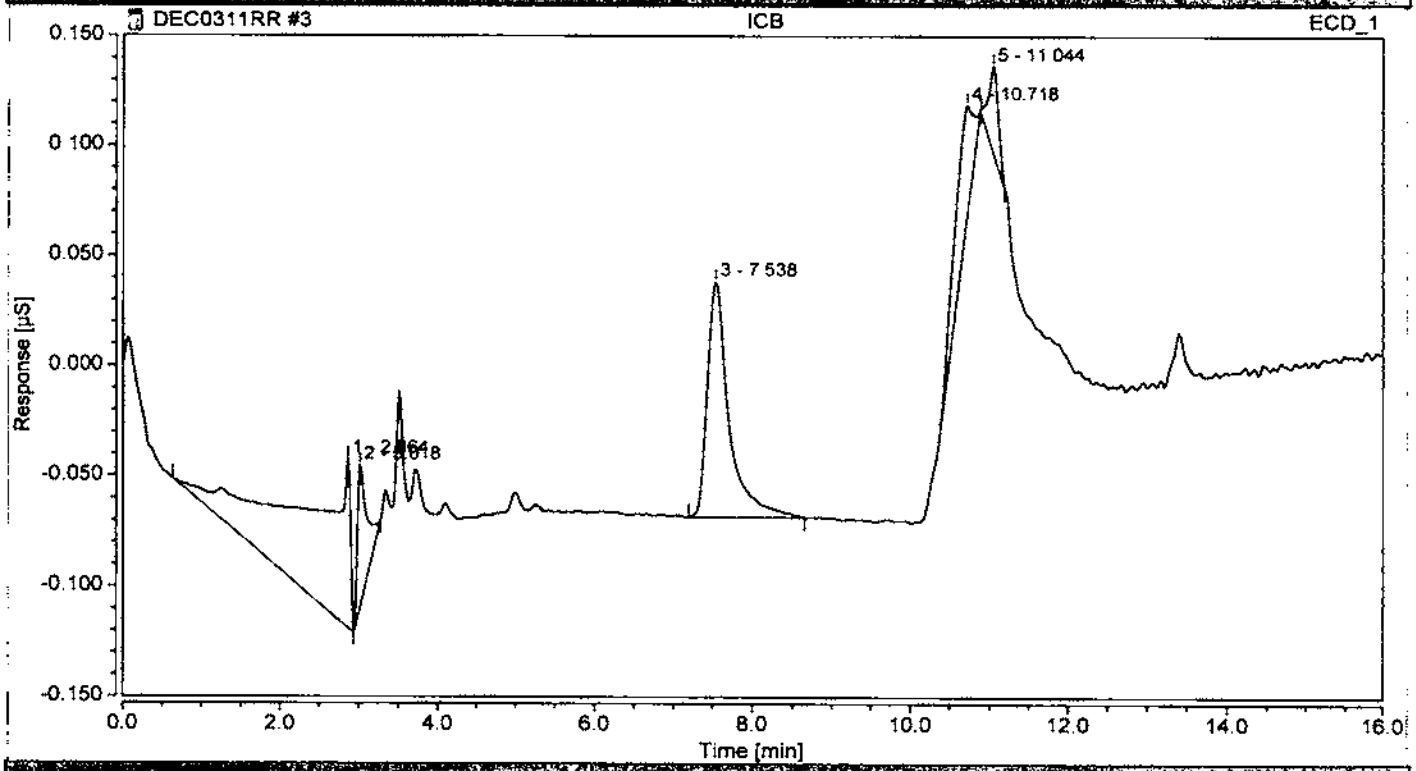
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.83	0.115	0.082	FALSE	n.a.
2		1.0	n.a.	3.02	0.019	0.092	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.51	0.028	0.102	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Nitrate	1.0	0.067	10.56	0.050	0.085	FALSE	n.a.
5		1.0	n.a.	11.09	0.009	0.026	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 11:14*		



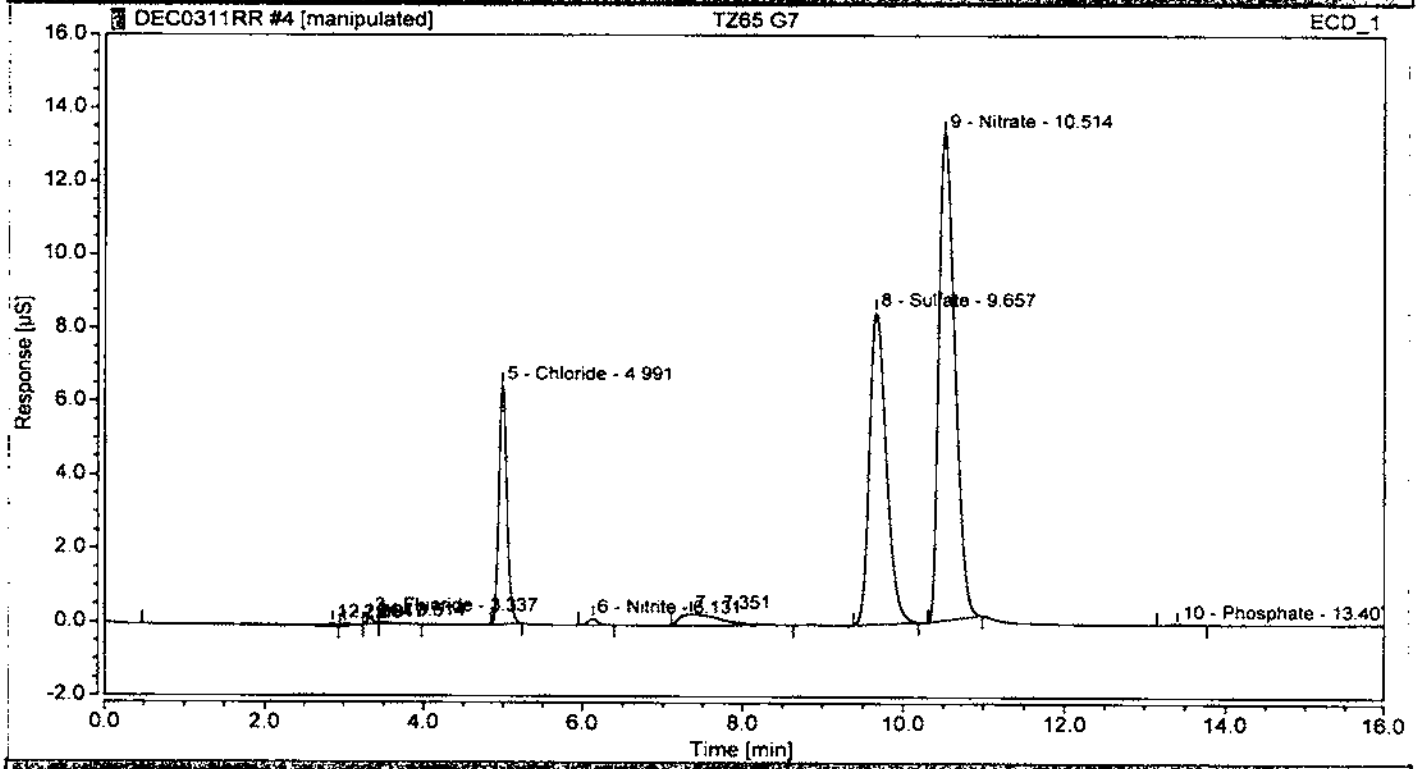
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.16	0.007	0.037	FALSE	n.a.
2		1.0	n.a.	2.86	0.058	0.076	FALSE	n.a.
3		1.0	n.a.	3.92	0.006	0.057	FALSE	n.a.
4	Fluoride	1.0	2.986	3.35	1.434	12.492	FALSE	-0.45
5	Chloride	1.0	3.037	4.99	0.899	7.658	FALSE	1.22
6	Nitrite	1.0	3.171	6.12	2.119	13.545	FALSE	5.70
7		1.0	n.a.	7.52	0.030	0.112	FALSE	n.a.
8	Bromide	1.0	3.015	8.85	0.385	1.916	FALSE	0.50
9	Sulfate	1.0	2.601	9.71	0.567	2.368	FALSE	-13.30
10	Nitrate	1.0	3.132	10.54	2.370	10.661	FALSE	4.41
11	Phosphate	1.0	2.925	13.28	0.883	4.745	FALSE	-2.49

Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 11:33*		



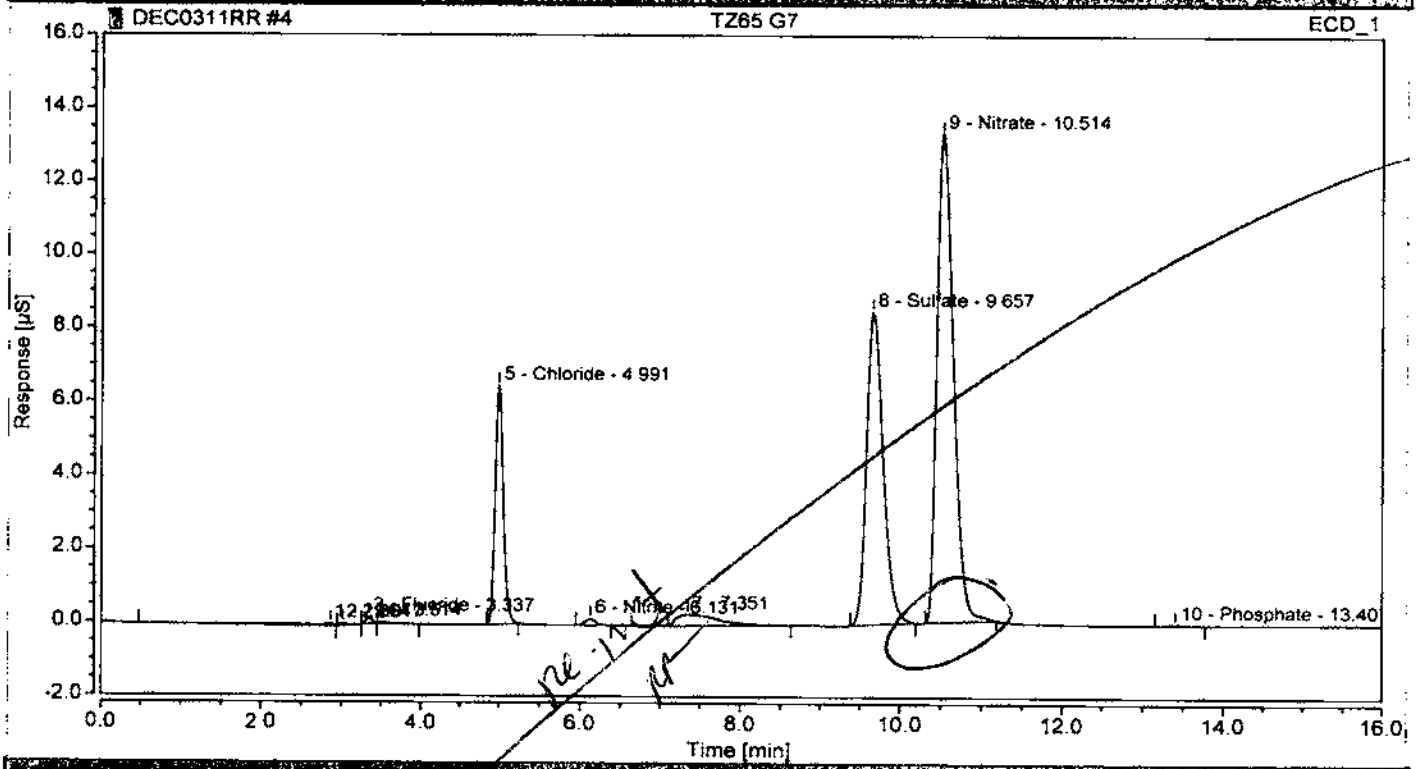
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.056	0.076	FALSE	n.a.
2		1.0	n.a.	3.02	0.008	0.064	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.54	0.034	0.107	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	10.72	0.015	0.049	FALSE	n.a.
5		1.0	n.a.	11.04	0.006	0.039	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ65 G7*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 11:53*		



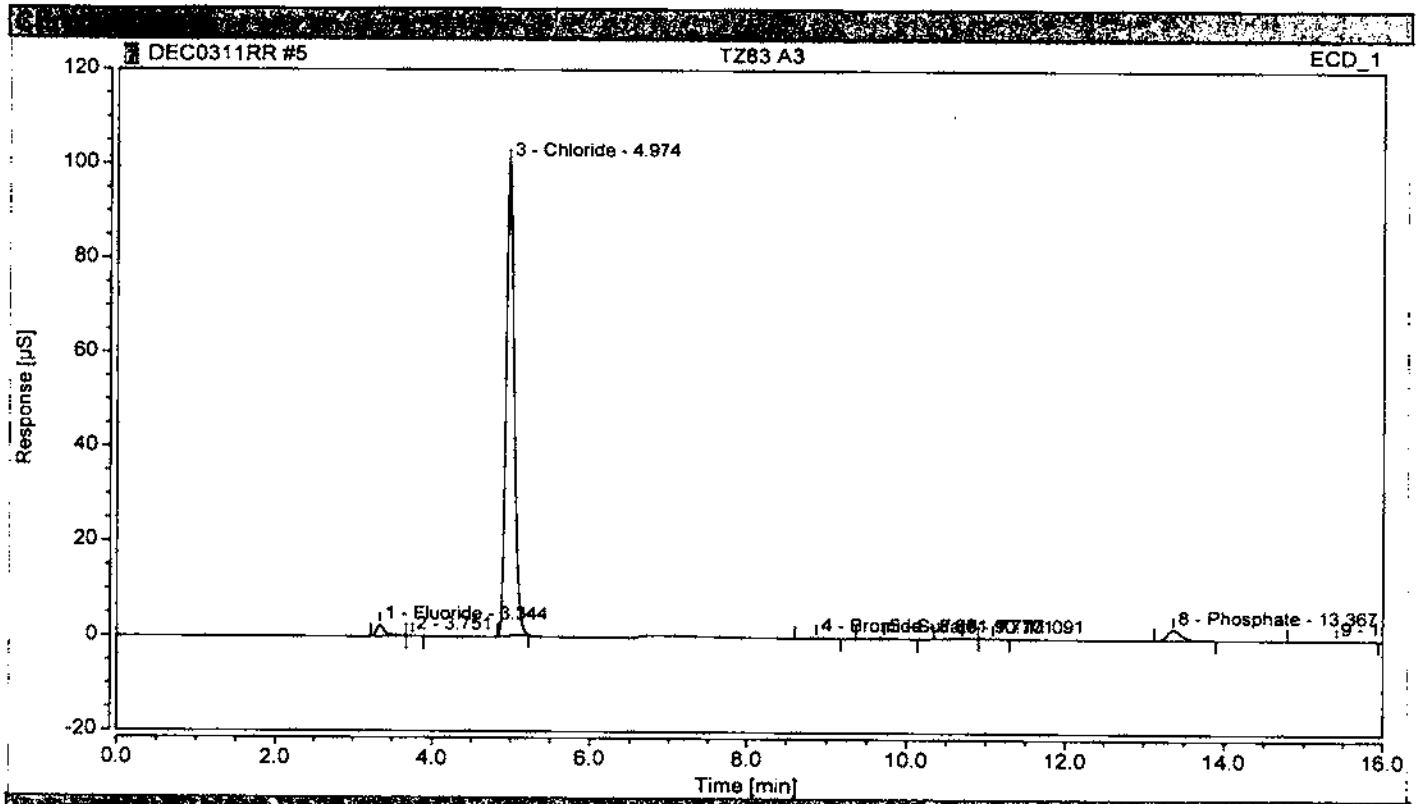
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.86	0.060	0.074	FALSE	n.a.
2		2.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
3	Fluoride	2.0	0.069	3.34	0.017	0.197	FALSE	n.a.
4		2.0	n.a.	3.51	0.007	0.046	FALSE	n.a.
5	Chloride	2.0	5.161	4.99	0.764	6.479	FALSE	n.a.
6	Nitrite	2.0	0.071	6.13	0.024	0.169	FALSE	n.a.
7		2.0	n.a.	7.35	0.191	0.304	FALSE	n.a.
n.a.	Bromide	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Sulfate	2.0	18.944	9.86	2.065	8.497	FALSE	n.a.
9	Nitrate	2.0	8.052	10.51	3.046	13.250	TRUE	n.a.
10	Phosphate	2.0	0.035	13.41	0.005	0.028	FALSE	n.a.

Injection Name:	*TZ65 G7*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 11:53*		



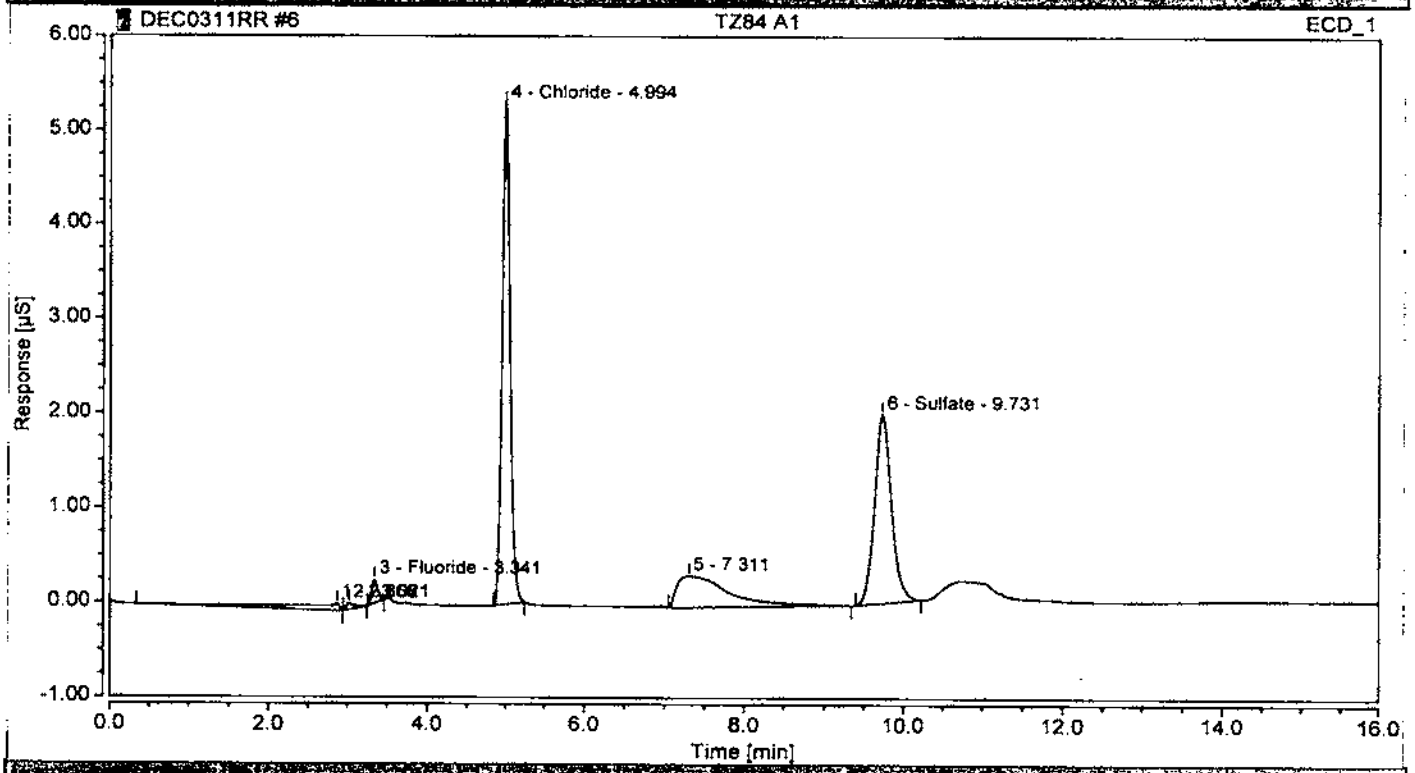
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.86	0.060	0.074	FALSE	n.a.
2		2.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
3	Fluoride	2.0	0.069	3.34	0.017	0.197	FALSE	n.a.
4		2.0	n.a.	3.51	0.007	0.046	FALSE	n.a.
5	Chloride	2.0	5.161	4.99	0.764	6.479	FALSE	n.a.
6	Nitrite	2.0	0.071	6.13	0.024	0.169	FALSE	n.a.
7		2.0	n.a.	7.35	0.191	0.304	FALSE	n.a.
n.a.	Bromide	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8	Sulfate	2.0	18.944	9.66	2.065	8.497	FALSE	n.a.
9	Nitrate	2.0	8.213	10.51	3.107	13.291	FALSE	n.a.
10	Phosphate	2.0	0.035	13.41	0.005	0.026	FALSE	n.a.

Injection Name:	*TZ83 A3*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 12:12*		



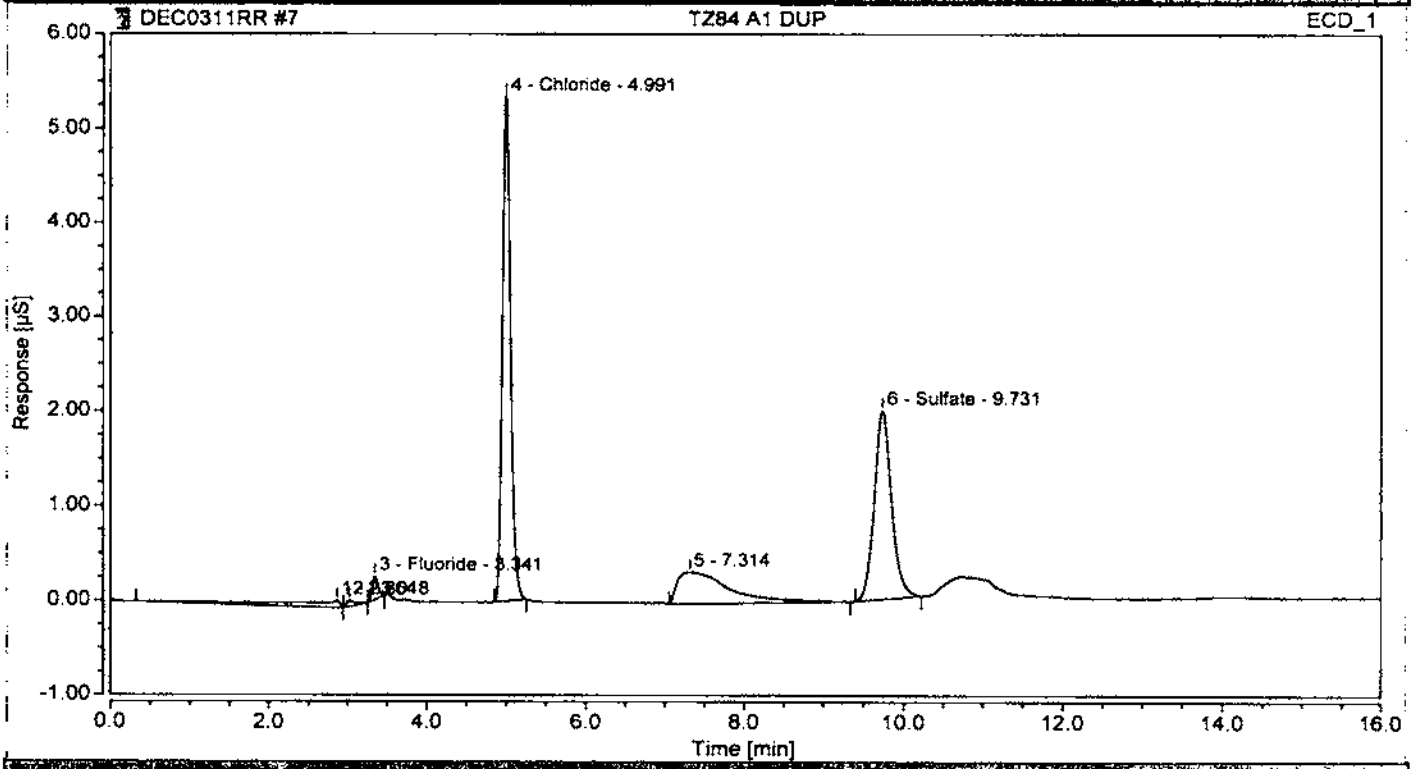
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.607	3.34	0.292	2.315	FALSE	n.a.
2		1.0	n.a.	3.75	0.008	0.088	FALSE	n.a.
3	Chloride	1.0	41.066	4.97	12.153	190.340	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.316	8.67	0.040	0.199	FALSE	n.a.
5	Sulfate	1.0	0.278	9.72	0.061	0.218	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	10.70	0.026	0.094	FALSE	n.a.
7		1.0	n.a.	11.09	0.014	0.082	FALSE	n.a.
8	Phosphate	1.0	1.508	13.37	0.455	2.192	FALSE	n.a.
9		1.0	n.a.	15.41	0.025	0.077	FALSE	n.a.

Injection Name:	*TZ84 A1*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 12:31*		



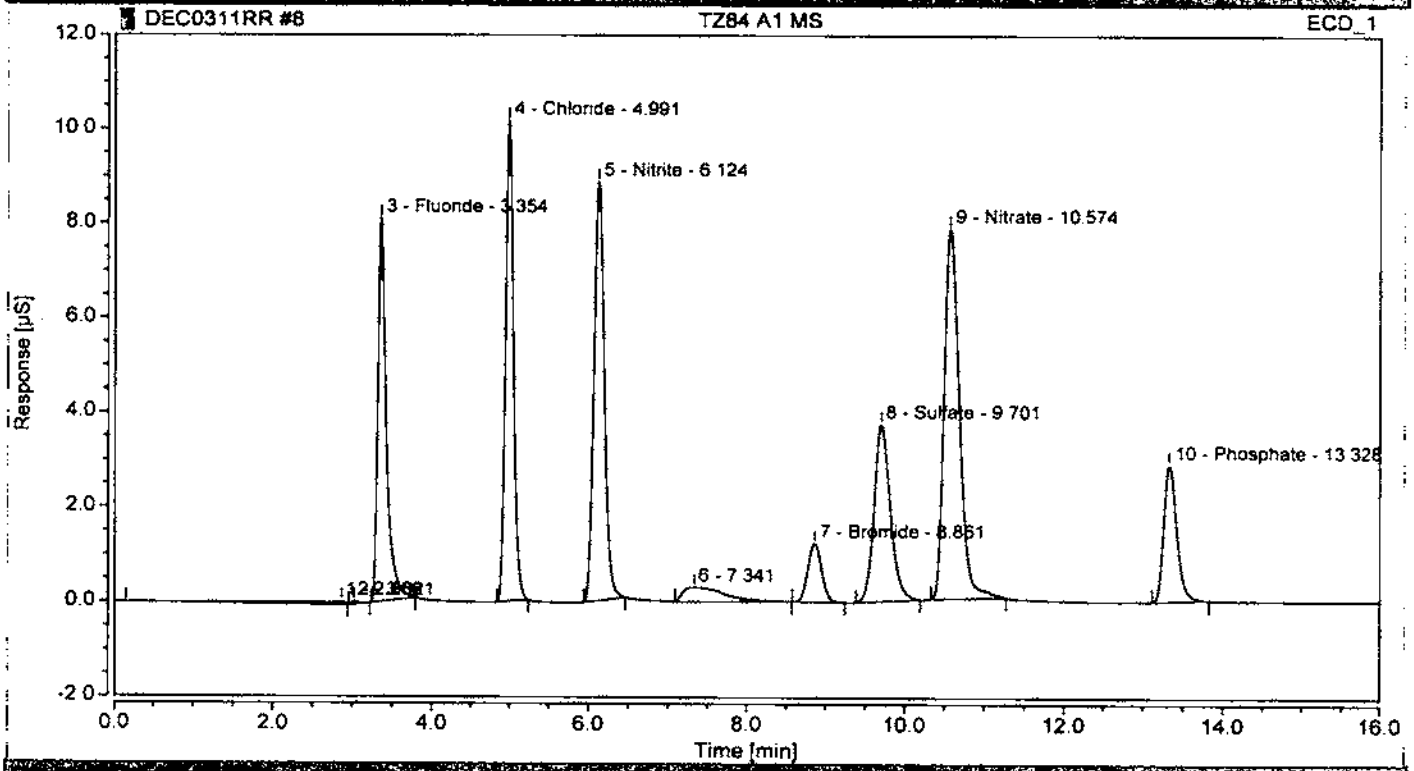
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.065	0.073	FALSE	n.a.
2		5.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
3	Fluoride	5.0	0.221	3.34	0.021	0.249	FALSE	n.a.
4	Chloride	5.0	0.561	4.99	0.624	5.299	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		5.0	n.a.	7.31	0.255	0.330	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	5.0	11.322	9.73	0.494	1.992	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 DUP*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 12:51*		



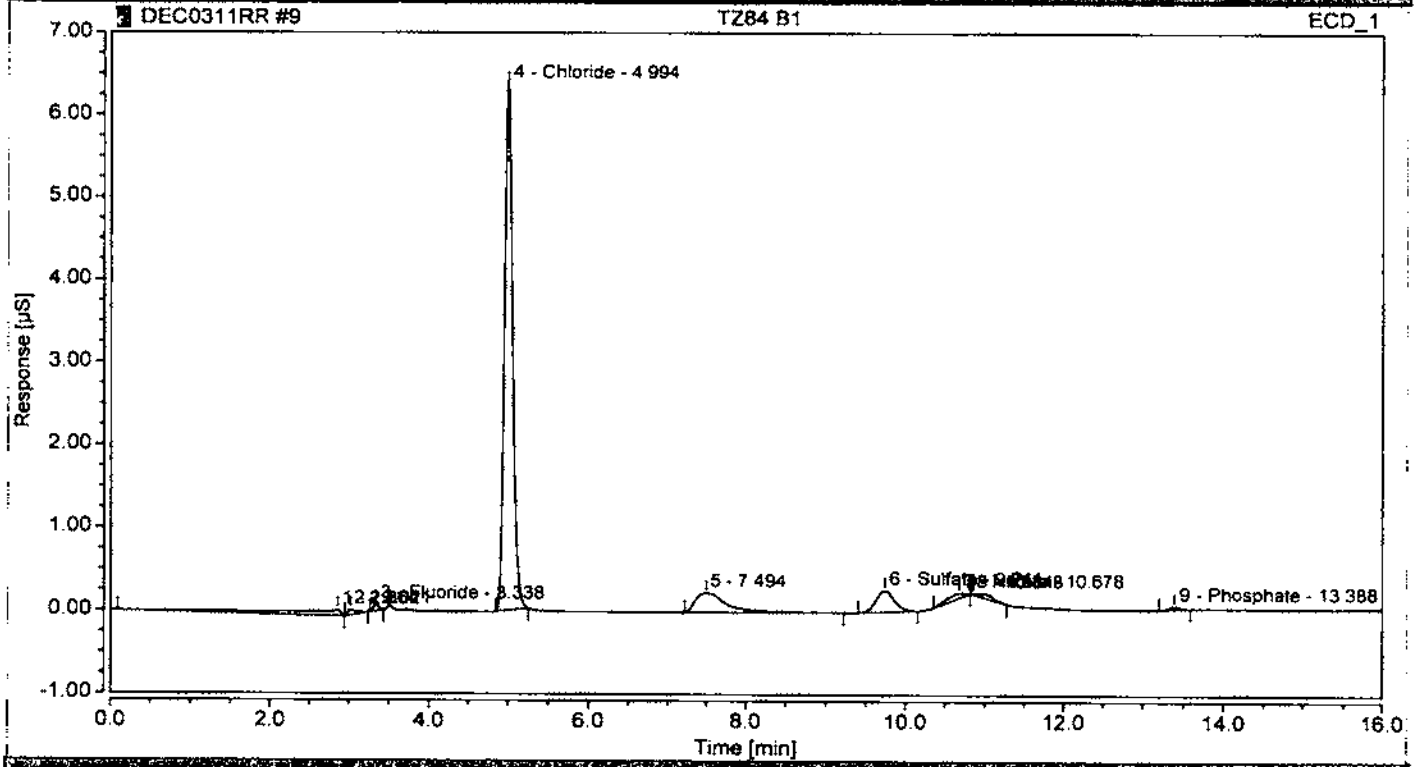
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.86	0.067	0.072	FALSE	n.a.
2		5.0	n.a.	3.02	0.006	0.063	FALSE	n.a.
3	Fluoride	5.0	0.818	3.34	0.021	0.246	FALSE	n.a.
4	Chloride	5.0	10.847	4.99	0.630	5.340	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		5.0	n.a.	7.31	0.256	0.330	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	5.0	11.325	9.73	0.494	1.993	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 MS*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 13:11*		



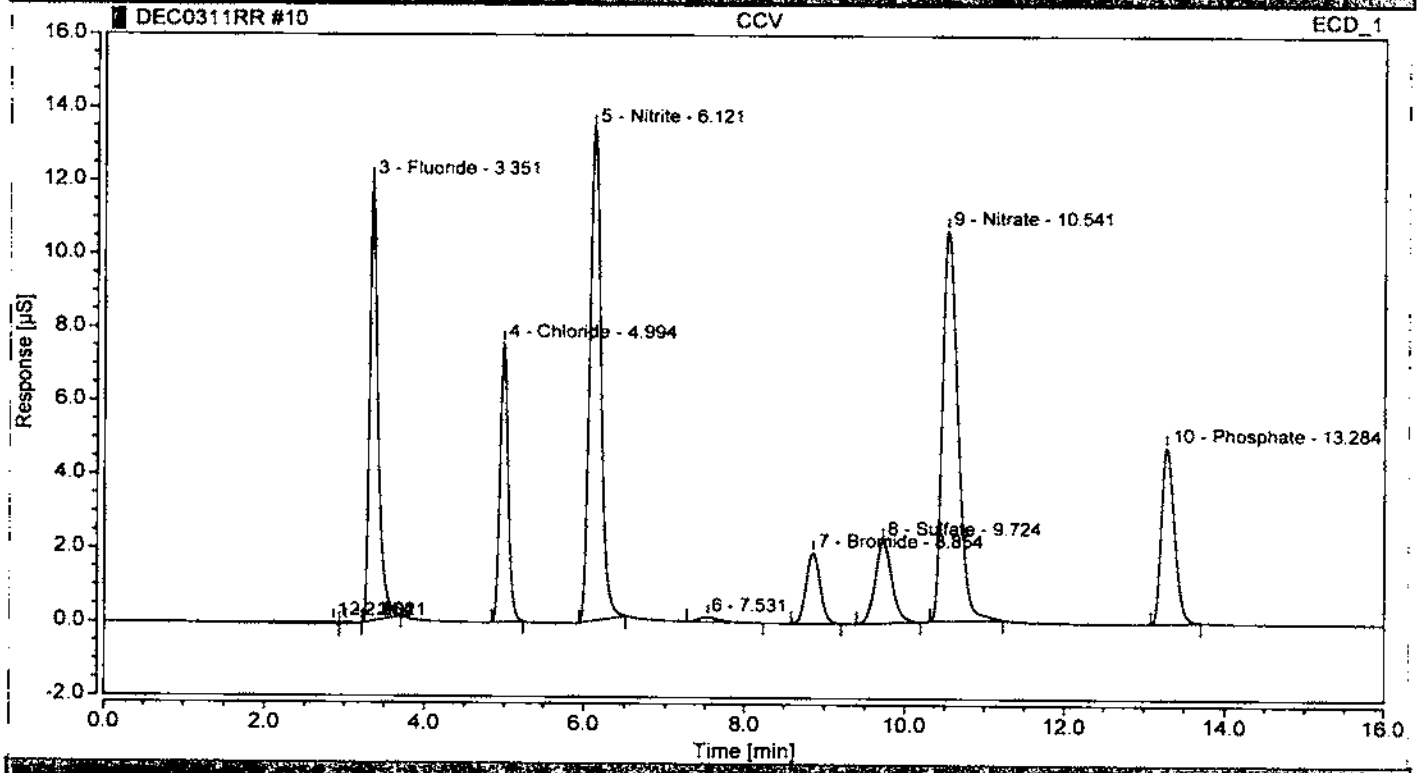
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.068	0.070	FALSE	n.a.
2		5.0	n.a.	3.02	0.007	0.061	FALSE	n.a.
3	Fluoride	5.0	10.472	3.35	1.006	8.094	FALSE	n.a.
4	Chloride	5.0	20.363	4.99	1.205	10.160	FALSE	n.a.
5	Nitrite	5.0	18.023	6.12	1.340	8.850	FALSE	n.a.
6		5.0	n.a.	7.34	0.186	0.301	FALSE	n.a.
7	Bromide	5.0	9.669	8.86	0.247	1.226	FALSE	n.a.
8	Sulfate	5.0	20.619	9.70	0.899	3.735	FALSE	n.a.
9	Nitrate	5.0	11.412	10.57	1.727	7.815	FALSE	n.a.
10	Phosphate	5.0	8.956	13.33	0.541	2.877	FALSE	n.a.

Injection Name:	*TZ84 B1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 13:30*		



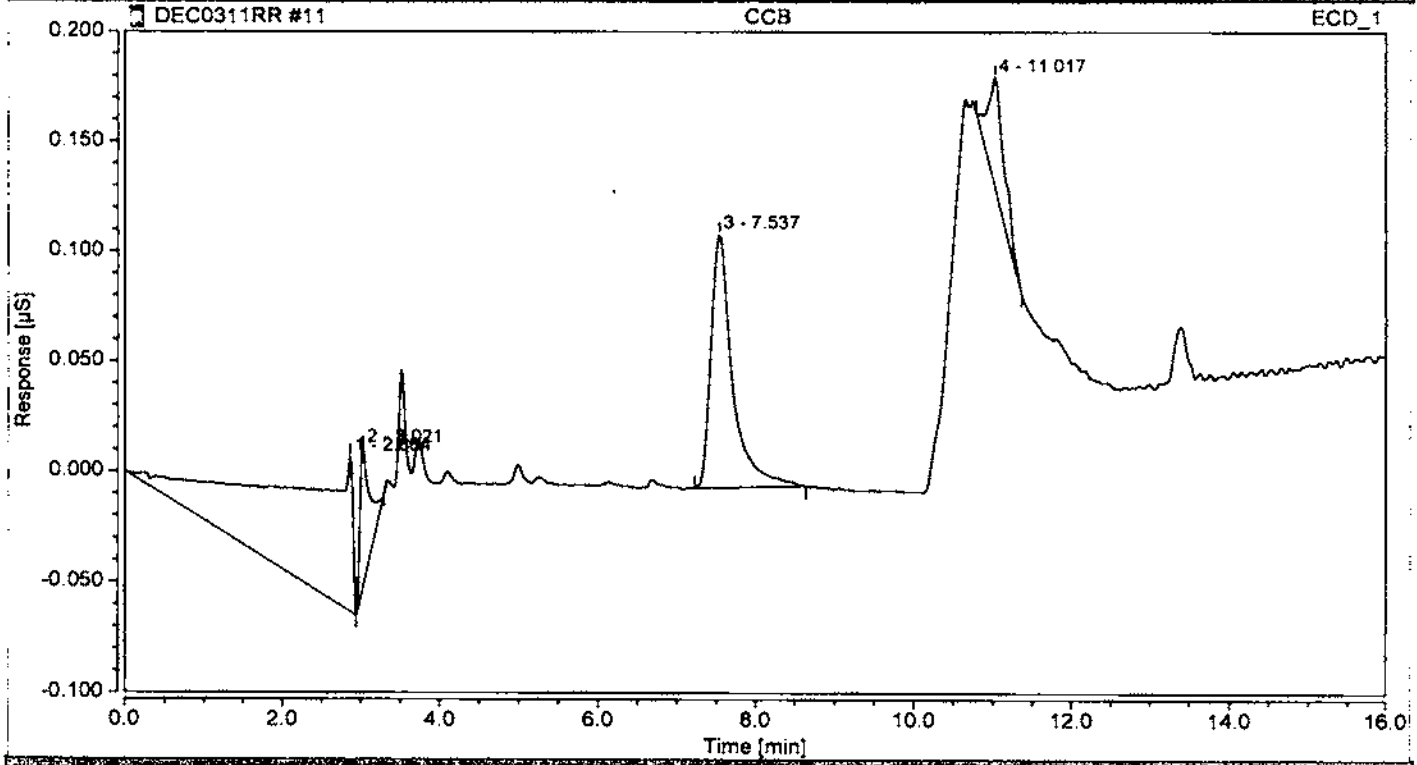
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.86	0.072	0.072	FALSE	n.a.
2		20.0	n.a.	3.02	0.008	0.062	FALSE	n.a.
3	Fluoride	20.0	0.255	3.34	0.006	0.077	FALSE	n.a.
4	Chloride	20.0	51.078	4.99	0.768	8.372	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		20.0	n.a.	7.49	0.113	0.235	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	20.0	6.499	9.74	0.071	0.257	FALSE	n.a.
7	Nitrate	20.0	0.440	10.66	0.017	0.059	FALSE	n.a.
8		20.0	n.a.	10.85	0.012	0.012	FALSE	n.a.
9	Phosphate	20.0	0.382	13.39	0.006	0.036	FALSE	n.a.

Injection Name:	*CCV*	Inject Number:	10
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*03/12/11 13:50*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.077	0.070	FALSE	n.a.
2		1.0	n.a.	3.02	0.008	0.062	FALSE	n.a.
3	Fluoride	1.0	2.983	3.35	1.433	11.990	FALSE	-0.56
4	Chloride	1.0	3.038	4.99	0.699	7.561	FALSE	1.27
5	Nitrite	1.0	3.158	6.12	2.111	13.397	FALSE	5.26
6		1.0	n.a.	7.53	0.036	0.123	FALSE	n.a.
7	Bromide	1.0	3.017	8.85	0.385	1.904	FALSE	0.56
8	Sulfate	1.0	2.493	9.72	0.543	2.225	FALSE	-16.90
9	Nitrate	1.0	3.181	10.54	2.406	10.802	FALSE	6.02
10	Phosphate	1.0	2.943	13.28	0.889	4.770	FALSE	-1.89

Injection Name:	*CCB*	Inject Number:	11
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 14:10*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.077	0.070	FALSE	n.a.
2		1.0	n.a.	3.02	0.008	0.063	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.54	0.037	0.115	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	11.02	0.012	0.050	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*STOP*	Inject Number:	12
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC0311RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*03/12/11 14:31*		

Can't read channel ECD_1 from injection #12 - STOP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	natogram in con	matogram in		n.a.

TZ83 00197

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.4603
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9996

No.	Injection Name	Calibration Level	X Value Fluoride	Y Value Fluoride	Amount mg/l Fluoride	Area µS*min Fluoride	Height µS Fluoride
1	STD1	01	0.1000	0.0478	0.0991	0.048	0.532
2	STD2	02	0.5000	0.2412	0.5022	0.241	2.740
3	STD3	03	1.0000	0.4992	1.0384	0.499	5.679
4	STD4	04	2.5000	1.2264	2.5577	1.228	13.746
5	STD5	05	5.0000	2.3837	4.9631	2.384	25.998

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2959
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Chloride	Y Value Chloride	Amount mg/l Chloride	Area µS*min Chloride	Height µS Chloride
1	STD1	01	0.1000	0.0295	0.0996	0.029	0.246
2	STD2	02	0.5000	0.1390	0.4696	0.139	1.172
3	STD3	03	1.0000	0.2864	0.9678	0.286	2.426
4	STD4	04	2.5000	0.7316	2.4721	0.732	6.232
5	STD5	05	5.0000	1.4868	5.0234	1.487	12.625

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.6684
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9996

No.	Injection Name	Calibration Level	X Value Nitrite	Y Value Nitrite	Amount mg/l Nitrite	Area µS*min Nitrite	Height µS Nitrite
1	STD1	01	0.1000	0.0614	0.0918	0.061	0.405
2	STD2	02	0.5000	0.3342	0.5000	0.334	2.240
3	STD3	03	1.0000	0.6969	1.0427	0.697	4.634
4	STD4	04	2.5000	1.7087	2.5564	1.709	10.970
5	STD5	05	5.0000	3.3174	4.9634	3.317	20.325

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1276
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9995

No.	Injection Name	Calibration Level	X Value Bromide	Y Value Bromide	Amount mg/l Bromide	Area µS*min Bromide	Height µS Bromide
1	STD1	01	0.1000	0.0116	0.0905	0.012	0.052
2	STD2	02	0.5000	0.0576	0.4515	0.058	0.262
3	STD3	03	1.0000	0.1212	0.9496	0.121	0.553
4	STD4	04	2.5000	0.3135	2.4568	0.313	1.449
5	STD5	05	5.0000	0.6427	5.0367	0.643	3.000

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2180
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Sulfate	Y Value Sulfate	Amount mg/l Sulfate	Area µS*min Sulfate	Height µS Sulfate
1	STD1	01	0.1000	0.0248	0.1137	0.025	0.147
2	STD2	02	0.5000	0.1078	0.4946	0.108	0.692
3	STD3	03	1.0000	0.2162	0.9918	0.216	1.430
4	STD4	04	2.5000	0.5378	2.4673	0.538	3.653
5	STD5	05	5.0000	1.0939	5.0183	1.094	7.341

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.7586
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Nitrate	Y Value Nitrate	Amount mg/l Nitrate	Area µS*min Nitrate	Height µS Nitrate
1	STD1	01	0.1000	0.0781	0.1032	0.078	0.427
2	STD2	02	0.5000	0.3541	0.4681	0.354	2.154
3	STD3	03	1.0000	0.7404	0.9786	0.740	4.473
4	STD4	04	2.5000	1.8749	2.4781	1.875	10.705
5	STD5	05	5.0000	3.7967	5.0183	3.797	19.625

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.3019
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Phosphate	Y Value Phosphate	Amount mg/l Phosphate	Area µS*min Phosphate	Height µS Phosphate
1	STD1	01	0.1000	0.0247	0.0818	0.025	0.120
2	STD2	02	0.5000	0.1414	0.4683	0.141	0.687
3	STD3	03	1.0000	0.2933	0.9712	0.293	1.464
4	STD4	04	2.5000	0.7448	2.4668	0.745	3.618
5	STD5	05	5.0000	1.5175	5.0259	1.518	6.679

TZ83 : 00136

ALKALINITY BENCHSHEET

methods: **SM 2320 B-97**

Date/Time: 12/12/11 18:02

pH meter verification — **pH meter ID:** **ACCUMET AR60** — **Buret ID:** **01G30627** — Analyst: KE

Buffer pH	**7.00**	**pH Probe ID :**	**AR60**
Measured pH	7.01	*Calibration OK*	**HIGH CURVE**

Standardization of acid titrant ***(titration to pH 4.5)***

ARI ID:	***00122 - 1***			
grams Na2CO3 =	**0.6250**	*to*	**250**	*ml DI*
Normality Na2CO3 =	0.0472			
Assumed Acid Normality =	**0.1**			
Standardized Acid Normality=	0.1004	***OK!***		

BLANK		STANDARD TITRATION			Partitioning Calculations (T=Total, P=Phenolphthalein)			
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4	*Obs*	*HCO3*	*CO3*	*OH*
1	0.03	**5**	2.40	0.100	*P =0*	T	0	0
2	0.03	**5**	2.36	0.101	*P< 0.5T*	T - 2P	2P	0
3	0.03	**5**	2.38	0.100	*P= 0.5T*	0	2P	0
AVERAGE	0.03			0.100	*P> 0.5T*	0	2(T - P)	2P - T
					P =T	0	0	T

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID:	***00133 - 2***			*mg/L CaCO3*	
grams Na2CO3 =	**0.6260**	*grams in*	**250**	*mL =*	*2363*
dilution:	**5.0**	*mL to*	**100**	*CVS =*	**118.1**
DQL Std (2ppm)	*dilute*	**0.085**	*mL stock to 100 mL DI =*		**2.0**

Laboratory Control Standard (LCS)

Source: ***P194 - 506*** — *mg/L CaCO3* **49.20**

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample (shaded cells are calculated, make no entries)

low level = {((2 X mL4.5)-mL4.2] X Nacid) X 50,000} / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.46	100	20.1	1.13	2.38	0.00	56.7	117.9		*99.8%*	*OK!*		
ICB		5.41	100	21.3	0.00	0.03	0.06	0.0		0.0	0.0	0.0	0.0	0.0
LCS		8.90	50	21.0	0.28	0.51	0.54	28.1	51.2		*104.0%*	*OK!*		
TZ83 A4		6.74	100	21.2	0.00	8.61	0.00	0.0	432.1		432.1	0.0	0.0	157.3
TZ84 A8		6.52	100	20.8	0.00	5.04	0.00	0.0	253.0		253.0	0.0	0.0	152.8
TZ84 A8 dup		6.55	100	20.8	0.00	5.07	0.00	0.0	254.5		254.5	0.0	0.0	143.4
RPD =									*0.6%*		*0.6%*			*6.3%*
TZ97 A3		6.74	100	21.0	0.00	4.34	0.00	0.0	217.8		217.8	0.0	0.0	79.3
UA17 A3		6.50	100	21.0	0.00	5.79	0.00	0.0	290.6		290.6	0.0	0.0	183.8
UA31 A4		7.22	100	20.9	0.00	9.39	0.00	0.0	471.3		471.3	0.0	0.0	56.8
UA31 A4 dup		7.20	100	20.8	0.00	9.32	0.00	0.0	467.8		467.8	0.0	0.0	59.0
RPD =									*0.7%*		*0.7%*			*3.9%*
UA31 B4		7.36	100	20.8	0.00	6.26	0.00	0.0	314.2		314.2	0.0	0.0	27.4
UA43 A5		7.12	100	20.8	0.00	5.61	0.00	0.0	281.6		281.6	0.0	0.0	42.7
UA43 B5		7.28	100	20.8	0.00	5.50	0.00	0.0	276.0		276.0	0.0	0.0	29.0
CCV		10.46	100	20.2	1.15	2.41	0.00	57.7	119.4		*101.1%*	*OK!*		0.0
UA43 E5		6.92	100	20.7	0.00	10.51	0.00	0.0	527.5		527.5	0.0	0.0	126.8
UA43 F5		7.04	100	20.6	0.00	10.58	0.00	0.0	531.0		531.0	0.0	0.0	96.9
UA67 A3		7.46	100	20.6	0.00	6.03	0.00	0.0	302.6		302.6	0.0	0.0	21.0
UA67 C3		7.24	100	20.5	0.00	7.93	0.00	0.0	398.0		398.0	0.0	0.0	45.8
UA74 A5		6.72	100	20.4	0.00	6.47	0.00	0.0	324.7		324.7	0.0	0.0	123.7
UA74 B5		7.28	100	20.5	0.00	4.40	0.00	0.0	220.8		220.8	0.0	0.0	23.2
UA42 C3		6.74	100	20.9	0.00	12.56	0.00	0.0	630.4		630.4	0.0	0.0	229.4
CCV		10.44	100	20.0	1.15	2.39	0.00	57.7	118.4		*100.3%*	*OK!*		0.0

06209 - 6971

ALKALINITY BENCHSHEET

methods: **SM 2320 B-97**

Date/Time: 12-12-11

Analyst: KE 1802

pH meter verification — pH meter ID: **ACCUMET AR60** — Buret ID: **01G30627**

Buffer pH: 7.00 — Measured pH: 7.01 (must agree within 0.1 pH unit) — pH Probe ID: **AR60** — **HIGH CURVE**

Partitioning Calculations (T=Total, P=Phenolphthalein)			
Obs	HCO3	CO3	OH
P=0	T	0	0
P< 0.5T	T - 2P	2P	0
P= 0.5T	0	2P	0
P> 0.5T	0	2(T - P)	2P - T
P=T	0	0	T

Standardization of acid titrant *(titration to pH 4.5)*

ARI ID: **00122 - 1**

grams Na2CO3 = 0.6250 to 250 ml DI

Normality Na2CO3 = 0.0472

Assumed Acid Normality = 0.1

Standardized Acid Normality=

BLANK		STANDARD TITRATION		
BLANK	ml ACID	ml Na2CO3	ml ACID	N H2SO4
1	0.03	5	2.40	
2	0.03	5	2.36	
3	0.03	5	2.38	
AVERAGE				

Calibration Verification Standard (second source sodium carbonate solution)

ARI ID: **00133 - 2** — mg/L CaCO3

grams Na2CO3 = 0.6260 — grams in 250 — mL = 2363

dilution: 5.0 — mL to 100 — CVS = 118.1

DQL Std (2ppm) — dilute 0.085 mL stock to 100 mL DI = 2.0

Laboratory Control Standard (LCS)

Source: **P194 - 506** — mg/L CaCO3 **49.20**

SAMPLE DATA

Alk (mg/L CaCO3 = [(mL acid X Nacid) X 50,000] / mL sample — (shaded cells are calculated, make no entries)

low level = ((((2 X mL4.5)-mL4.2] X Nacid) X 50,000) / mL sample

Sample Number	Sample ID	Initial pH	Volume (ml)	TEMP (C)	ml H2SO4 pH=8.3	ml H2SO4 pH =4.5	ml H2SO4 pH=4.2	ALK (mg CaCO3/l) Phenolph	ALK (mg CaCO3/l) TOT HIGH	ALK (mg CaCO3/l) TOT LOW	Partitioning (mg/l CaCO3) HCO3	Partitioning (mg/l CaCO3) CO3	Partitioning (mg/l CaCO3) OH	(mg/l) FREE CO2
ICV		10.46	100	20.1	1.13	2.38	0.00							
ICB		5.41	100	21.3	0.00	0.03	0.06							
~~DQL Std (2ppm)~~								12-12-11 (2)						
LCS		8.90	50	21.0	0.28	0.51 (1)	0.54							
T283	A4	6.74	100	21.2	0.00	8.01	0.00							
T284	B3	6.52	100	20.8	0.00	5.04	0.00							
↓	A3	6.55	100	20.8	0.00	5.07	0.00							
T297	C1	6.24	100	21.0	0.00	4.34	0.00							
AU17	A3	6.50	100	21.0	0.00	5.79	0.00							
UA73	A4	7.22	100	20.9	0.00	9.39	0.00							
↓	dup A4	7.20	100	20.8	0.00	9.38	0.00							
	B4	7.36	100	20.8	0.00	6.36	0.00							
UA43	A5	7.12	100	20.8	0.00	5.61	0.00							
↓	B5	7.28	100	20.8	0.00	5.50	0.00							
CCV		10.46	100	20.2	1.15	2.41	0.00							
UA03	E5	6.92	100	20.7	0.00	10.51	0.00							
↓	F5	7.04	100	20.6	0.00	10.58	0.00							
UA07	A3	7.46	100	20.6	0.00	6.03	0.00							
↓	C3	7.34	100	20.5	0.00	7.93	0.00							
UA74	A5	6.72	100	20.4	0.00	6.47	0.00							
↓	B5	7.28	100	20.5	0.00	6.40	0.00							
UA42	C3	6.74	100	20.9	0.00	12.56	0.00							
CCV		10.49	100	20.0	1.15	2.39	0.00							
						12-17-11 (2)								
CCV														

(2) 0.51 12-12-11 (W)

7283 : 00201

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.4737
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9997

No.	Injection Name	Calibration Level	X Value Fluoride	Y Value Fluoride	Amount mg/l Fluoride	Area µS*min Fluoride	Height µS Fluoride
1	STD1	01	0.1000	0.0399	0.0843	0.040	0.301
2	STD2	02	0.5000	0.2347	0.4955	0.235	1.688
3	STD3	03	1.0000	0.4982	1.0518	0.498	3.502
4	STD4	04	2.5000	1.1985	2.5298	1.198	9.167
5	STD5	05	5.0000	2.3571	4.9755	2.357	19.418

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	n.a.	*Slope (C1)*	0.3028
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Chloride	Y Value Chloride	Amount mg/l Chloride	Area µS*min Chloride	Height µS Chloride
1	STD1	01	0.1000	0.0295	0.0975	0.030	0.248
2	STD2	02	0.5000	0.1435	0.4739	0.144	1.203
3	STD3	03	1.0000	0.2953	0.9752	0.295	2.473
4	STD4	04	2.5000	0.7452	2.4609	0.745	6.210
5	STD5	05	5.0000	1.5222	5.0272	1.522	12.630

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.6962
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9998

No.	Injection Name	Calibration Level	X Value Nitrite	Y Value Nitrite	Amount mg/l Nitrite	Area µS*min Nitrite	Height µS Nitrite
1	STD1	01	0.1000	0.0619	0.0890	0.062	0.424
2	STD2	02	0.5000	0.3528	0.5068	0.353	2.375
3	STD3	03	1.0000	0.7198	1.0339	0.720	4.752
4	STD4	04	2.5000	1.7599	2.5280	1.760	11.100
5	STD5	05	5.0000	3.4660	4.9788	3.466	20.655

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1286
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9994

No.	Injection Name	Calibration Level	X Value Bromide	Y Value Bromide	Amount mg/l Bromide	Area µS*min Bromide	Height µS Bromide
1	STD1	01	0.1000	0.0113	0.0878	0.011	0.054
2	STD2	02	0.5000	0.0591	0.4601	0.059	0.283
3	STD3	03	1.0000	0.1225	0.9528	0.122	0.590
4	STD4	04	2.5000	0.3133	2.4372	0.313	1.521
5	STD5	05	5.0000	0.6486	5.0451	0.649	3.160

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.1854
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9861

No.	Injection Name	Calibration Level	X Value Sulfate	Y Value Sulfate	Amount mg/l Sulfate	Area µS*min Sulfate	Height µS Sulfate
1	STD1	01	0.1000	0.0089	0.0480	0.009	0.032
2	STD2	02	0.5000	0.0512	0.2761	0.051	0.175
3	STD3	03	1.0000	0.1271	0.6855	0.127	0.417
4	STD4	04	2.5000	0.4181	2.2550	0.418	1.514
5	STD5	05	5.0000	0.9657	5.2089	0.966	3.775

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.7586
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9999

No.	Injection Name	Calibration Level	X Value Nitrate	Y Value Nitrate	Amount mg/l Nitrate	Area µS*min Nitrate	Height µS Nitrate
1	STD1	01	0.1000	0.0714	0.0941	0.071	0.362
2	STD2	02	0.5000	0.3658	0.4822	0.366	1.823
3	STD3	03	1.0000	0.7513	0.9904	0.751	3.664
4	STD4	04	2.5000	1.6769	2.4741	1.877	8.565
5	STD5	05	5.0000	3.8058	5.0168	3.806	15.377

Calibration Type	Lin	*Offset (C0)*	0.0000
Evaluation Type	Area	*Slope (C1)*	0.2958
Number of Calibration Points	5	*Curve (C2)*	0.0000
Number of disabled Calibration Points	0	*R-Square*	0.9995

No.	Injection Name	Calibration Level	X Value Phosphate	Y Value Phosphate	Amount mg/l Phosphate	Area µS*min Phosphate	Height µS Phosphate
1	STD1	01	0.1000	0.0239	0.0809	0.024	0.127
2	STD2	02	0.5000	0.1351	0.4566	0.135	0.741
3	STD3	03	1.0000	0.2837	0.9589	0.284	1.575
4	STD4	04	2.5000	0.7228	2.4434	0.723	3.903
5	STD5	05	5.0000	1.4912	5.0413	1.491	7.383

Name:	**DEC1011RR**	*Calibration:*	**DEC0811RR** **ARI # 586-7**
Directory:	**Instrument Data\DEC 2011**	*Calibration exp:*	**3/8/2011**
Data Vault:	**ChromeleonLocal**	*Queue Start:*	12/10/2011 9:53
No. of Injections:	**51.000**	*User:*	**RR**

		ERA 161110	ERA 411010	ERA 401010	ERA 111109	ERA 160111	ERA 230511	ERA 200610
Name	Dilution	Amount n.a. Fluoride	Amount n.a. Chloride	Amount n.a. Nitrite	Amount n.a. Bromide	Amount n.a. Sulfate	Amount n.a. Nitrate	Amount n.a. Phosphate
RINSE	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
ICV	1.0	3.044	2.944	3.042	3.005	2.999	3.039	2 995
%R=		**101.5%**	**98.1%**	**101.4%**	**100.2%**	**100.0%**	**101.3%**	**99.8%**
ICB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
			55.640	n.a.	0.139	n.a.		
			55.722	n.a.	0.139	n.a.		
%RPD=		**2.23%**	**0.15%**		**0.41%**		**0.40%**	
			57.184	2.038	1.978	n.a.		
%R=		**96.7%**	**77.2%**	**101.9%**	**92.0%**		**102.1%**	**81.0%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
			16.580	n.a.	0.052	n.a.		
			8.418	n.a.	n.a.	20.898	9.279	
			14.589	n.a.	0.060	22.492		
		0.198		n.a.	n.a.	20.612	1.266	n.a.
		0.200		n.a.	n a.	20.718	1.279	n.a.
%RPD=		**1.12%**	**0.09%**			**0.51%**	**1.01%**	
		10.355		9.933	9.446	30.928	11.766	9.181
%R=		**101.6%**	**88.7%**	**99.3%**	**94.5%**	**103.2%**	**105.0%**	**91.8%**
SPK=	**0.25mL*200ppm/5mL**		**=10ppm**					
		0.035		n.a.	0.099	20.064		n.a.
CCV	1.0	3.047	2.947	3.025	3.008	2.909	3.034	2.987
%R=		**101.6%**	**98.2%**	**100.8%**	**100.3%**	**97.0%**	**101.1%**	**99.5%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
UA74 A1	20.0	1.750	54.533	n.a.	n.a.	41.649	2.243	n.a
UA74 A1 DUP	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n a.	n.a.
UA74 A1 MS	20.0	n.a.	96.018	n.a.	n.a.	82.702	5.651	n.a.
		0.066		n.a.	n.a.	48.504	1.162	n.a.
		n.a.	15.781	n.a.	n.a.		4.379	n.a
		n.a.	8.198	n.a.	n.a.		9 936	n.a.
		0.118		n.a.	n.a.		n.a.	n.a.
		0.696	40.173	n.a.	0.306		n.a.	1 480
		0.217	10.438	n.a.	n.a.		n.a.	n.a.
		0.214	10.366	n.a.	n.a.		n.a.	n.a.
%RPD=		**1.27%**	**0.69%**			**1.31%**		
CCV	1.0	3.045	2.949	3.030	3.002	2.901	3.187	2.979
%R=		**101.5%**	**98.3%**	**101.0%**	**100.1%**	**96.7%**	**106.2%**	**99.3%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		10.194	19.964	10.129	9.553		10.827	9 403
%R=		**98.8%**	**95.3%**	**101.3%**	**95.5%**	**108.5%**	**108.3%**	**94.0%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
		0.262	50.158	n.a.	n.a.		n.a.	0.087
		n.a.		n.a.	n.a.		5.985	n.a.
		n.a.		n.a.	n.a		6 149	n.a.
%RPD=			**0.62%**			**0.88%**		
		n.a.		n.a.	n.a.		5.896	n.a.
%R=			**103.6%**			**121.6%**		
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
		n.a.	19.341	n.a.	n.a.		4.648	n.a.
		0.022	6.785	n.a.	n.a.		0.860	n.a.
		0.469	6.770	0 029	0.050		0.355	n.a

[redacted]		0.474	[redacted]	0.028	n.a.	1.389	0.586	n.a.
[redacted]		0.202	3.248	n.a.	n.a.	[redacted]	1.100	n.a.
CCV	1.0	3.039	2.949	3.036	3.009	2.908	3.054	2.979
%R=		**101.3%**	**98.3%**	**101.2%**	**100.3%**	**96.9%**	**101.8%**	**99.3%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.017
[redacted]		0.202	3.239	n.a.	n.a.	[redacted]	1.151	n.a.
%RPD=		**0.02%**	**0.27%**			**0.50%**	**4.53%**	
[redacted]		20.125	23.038	20.445	19.597	[redacted]	22.066	19.094
%R=		**99.6%**	**99.0%**	**102.2%**	**98.0%**	**90.9%**	**104.8%**	**95.5%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
[redacted]		0.364	3.393	0.012	n.a.	[redacted]	n.a	1.031
[redacted]		n.a.	2.342	n.a.	n.a.	[redacted]	1.330	0.272
[redacted]		n.a.	2.341	n.a.	n.a.	[redacted]	2.889	n.a
%RPD=			**0.07%**			**0.68%**	**73.92%**	
[redacted]		20.508	21.988	20.249	19.428	[redacted]	22.755	19.203
%R=		**102.5%**	**98.2%**	**101.2%**	**97.1%**	**103.2%**	**107.1%**	**94.7%**
SPK=	**0.05mL*200ppm/5mL**		**=2ppm**					
[redacted]		n.a.	571.775	n.a.	1.701	[redacted]	n.a.	n.a.
[redacted]		0.070	2.158	n.a.	n.a.	[redacted]	0.414	n.a.
[redacted]		0.240	3.355	n.a.	n.a.	[redacted]	0.218	n.a.
CCV	1.0	3.047	2.952	3.030	3.009	2.868	3.041	3.000
%R=		**101.6%**	**98.4%**	**101.0%**	**100.3%**	**95.6%**	**101.4%**	**100.0%**
CCB	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0.020
STOP	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a	n.a.

Sequence Overview

Sequence Details

Name:	**DEC1011RR**	*Queue Start:*	**2011-12-10T09:53:23-**
Directory:	**Instrument Data\DEC 2011**	*Created By:*	**pat**
Data Vault:	**ChromeleonLocal**		
No. of Injections:	**51**		

Injection Details

No.	Injection Name	Position	Type	Level	Dilution	Inject Time
1	RINSE	1	Unknown		1.0	10/Dec/11 09:53:23
2	ICV	2	Check Standard	06	1.0	10/Dec/11 10:12:17
3	ICB	3	Blank		1.0	10/Dec/11 10:31:26
4	UA74 A1	4	Unknown		1.0	10/Dec/11 10:50:41
5	UA74 A1 DUP	5	Unknown		1.0	10/Dec/11 11:10:37
6	UA74 A1 MS	6	Unknown		1.0	10/Dec/11 11:30:05
7	UA74 B1	7	Unknown		1.0	10/Dec/11 11:49:36
8	UA74 C1	8	Unknown		1.0	10/Dec/11 12:09:14
9	UA74 D1	9	Unknown		1.0	10/Dec/11 12:28:56
10	UA09 B4	10	Unknown		5.0	10/Dec/11 12:48:45
11	UA09 B4 DUP	11	Unknown		5.0	10/Dec/11 13:08:41
12	UA09 B4 MS	12	Unknown		5.0	10/Dec/11 13:28:41
13	UA74 C1	13	Unknown		2.0	10/Dec/11 13:48:48
14	CCV	2	Check Standard	06	1.0	10/Dec/11 14:08:59
15	CCB	3	Blank		1.0	10/Dec/11 14:29:35
16	UA74 A1	14	Unknown		20.0	10/Dec/11 15:52:19
17	UA74 A1 DUP	15	Unknown		20.0	10/Dec/11 14:53:26
18	UA74 A1 MS	16	Unknown		20.0	10/Dec/11 16:12:32
19	UA74 B1	17	Unknown		5.0	10/Dec/11 16:33:10
20	UA74 B1	18	Unknown		20.0	10/Dec/11 16:53:54
21	UA74 C1	19	Unknown		5.0	10/Dec/11 17:14:43
22	UA74 D1	20	Unknown		5.0	10/Dec/11 17:34:04
23	TZ83 A3	21	Unknown		1.0	10/Dec/11 17:53:30
24	TZ84 A1	22	Unknown		5.0	10/Dec/11 18:13:01
25	TZ84 A1 DUP	23	Unknown		5.0	10/Dec/11 18:32:37
26	CCV	2	Check Standard	06	1.0	10/Dec/11 18:52:18
27	CCB	3	Blank		1.0	10/Dec/11 19:12:43
28	TZ84 A1 MS	24	Unknown		5.0	10/Dec/11 19:33:17
29	TZ84 B1	25	Unknown		5.0	10/Dec/11 19:53:17
30	UA74 A1	14	Unknown		20.0	10/Dec/11 20:13:17
31	UA74 A1 DUP	15	Unknown		20.0	10/Dec/11 20:33:42
32	UA74 A1 MS	16	Unknown		20.0	10/Dec/11 20:53:52
33	TZ94 A5	26	Unknown		5.0	10/Dec/11 21:14:24
34	TZ94 B5	27	Unknown		1.0	10/Dec/11 21:34:45
35	TZ97 A1	28	Unknown		1.0	10/Dec/11 21:55:06
36	TZ97 A1	29	Unknown		2.0	10/Dec/11 22:15:31
37	TZ97 B1	30	Unknown		5.0	10/Dec/11 22:36:00
38	CCV	31	Check Standard	06	1.0	10/Dec/11 22:56:32
39	CCB	32	Blank		1.0	10/Dec/11 23:17:08
40	TZ97 B1 DUP	33	Unknown		5.0	10/Dec/11 23:37:49
41	TZ97 B1 MS	34	Unknown		10.0	10/Dec/11 23:58:34
42	TZ97 C1	35	Unknown		1.0	11/Dec/11 00:17:49
43	TZ99 A1	36	Unknown		10.0	11/Dec/11 00:37:09

44	TZ99 A1 DUP	37	Unknown		10.0	11/Dec/11 00:56:31
45	TZ99 A1 MS	38	Unknown		10.0	11/Dec/11 01:15:59
46	TZ99 B1	39	Unknown		10.0	11/Dec/11 01:35:30
47	UA20 A1	40	Unknown		5.0	11/Dec/11 01:55:06
48	UA20 B1	41	Unknown		1.0	11/Dec/11 02:14:45
49	CCV	31	Check Standard	06	1.0	11/Dec/11 02:34:27
50	CCB	32	Blank		1.0	11/Dec/11 02:54:41
51	STOP	1	Unknown		1.0	11/Dec/11 03:15:10

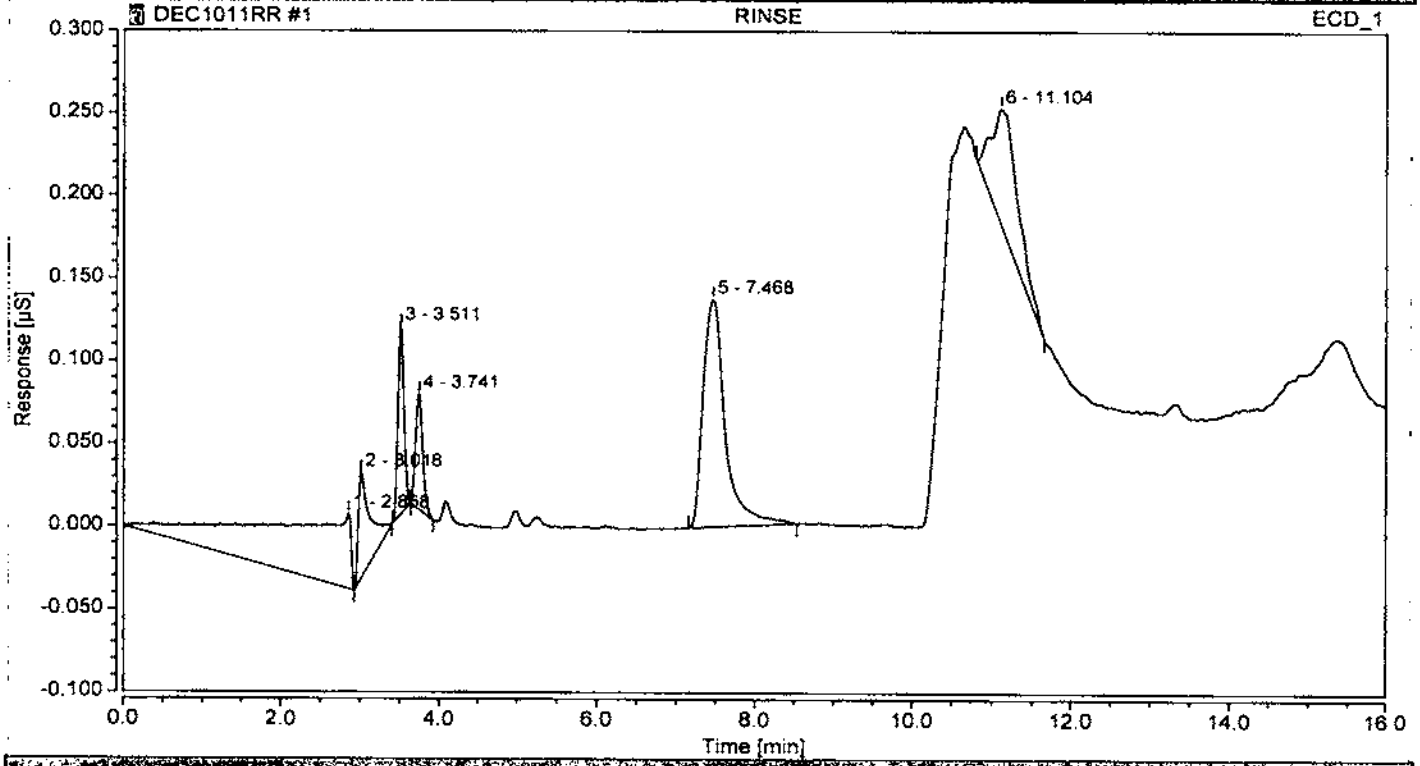
TZ83 : 00267

Chromatography Results

Injection Results

Injection Name:	*RINSE*	Inject Number:	1
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 09:53*		

Chromatogram



Integration Results

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.86	0.057	0.045	FALSE	n.a.
2		1.0	n.a.	3.02	0.011	0.064	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.010	0.114	FALSE	n.a.
4		1.0	n.a.	3.74	0.007	0.070	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.47	0.045	0.138	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		1.0	n.a.	11.10	0.028	0.070	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

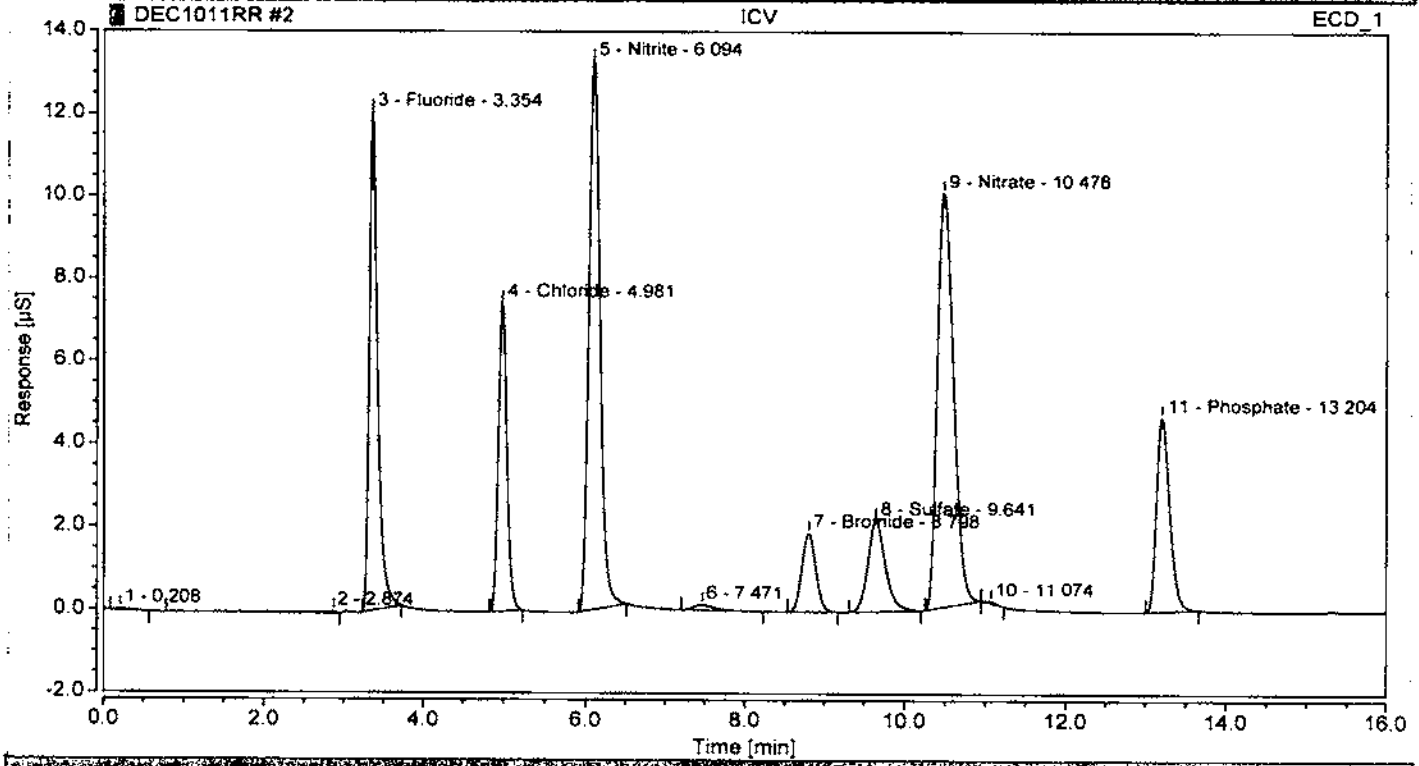
TZ83 : 00208

Chromatogram and Results

Injection Details

Injection Name:	*ICV*	Inject Number:	2
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 10:12*		

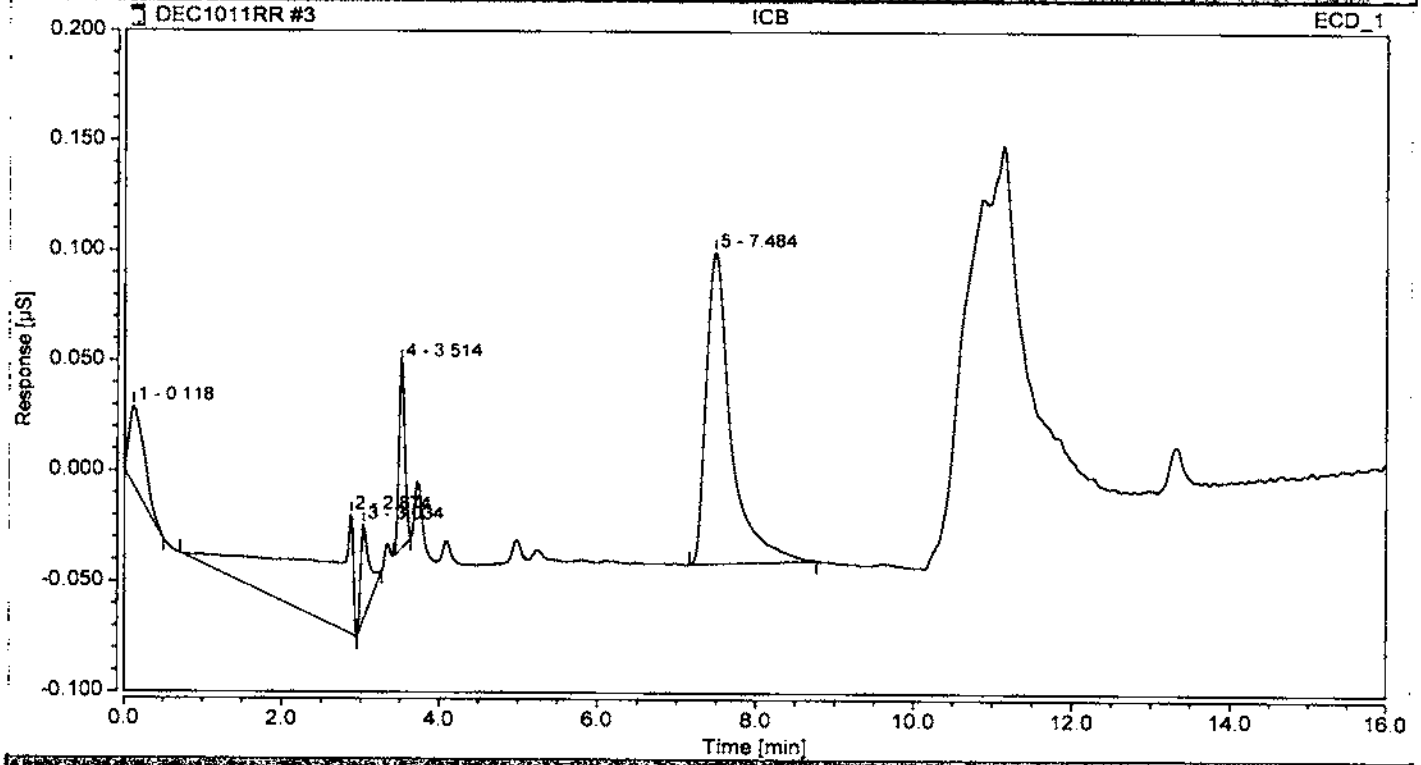
Chromatogram



Integration Results

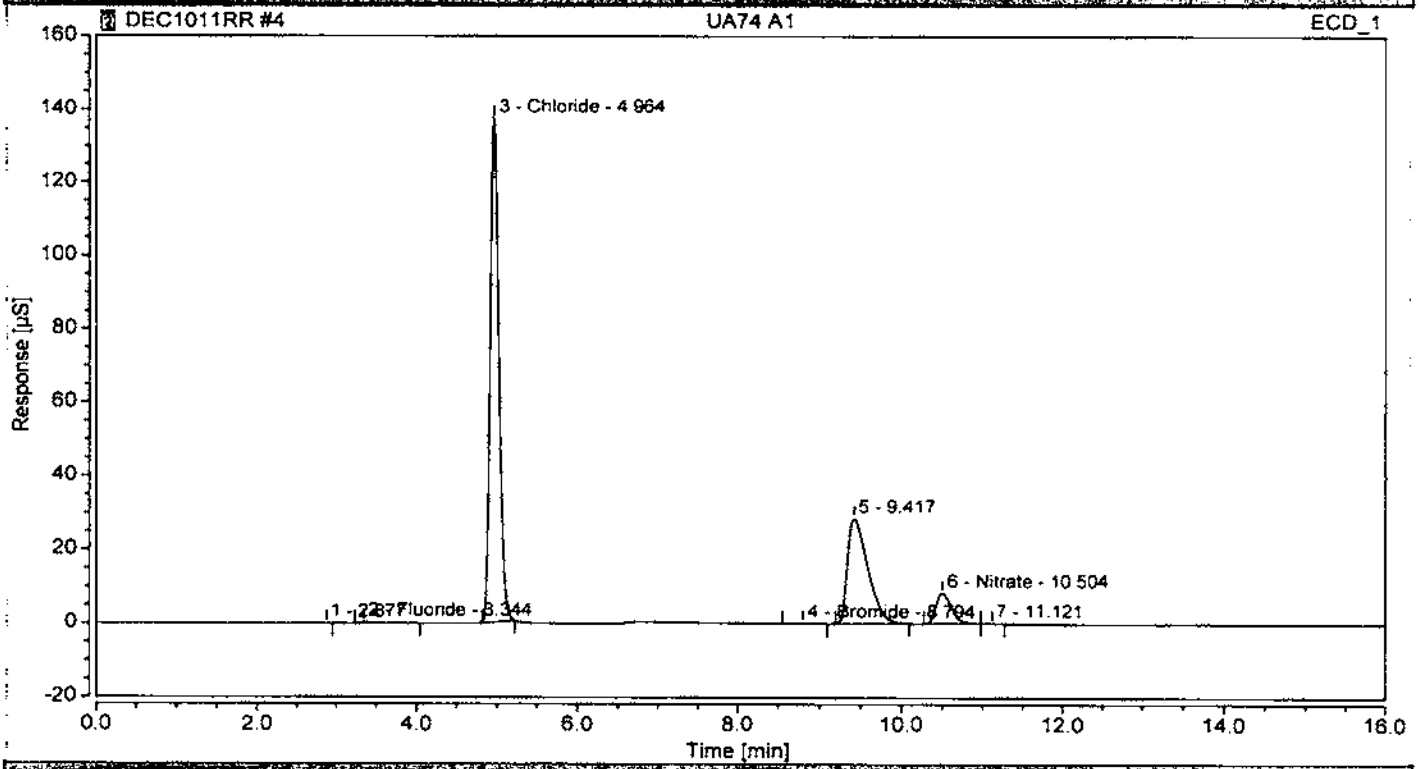
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.21	0.007	0.032	FALSE	n.a.
2		1.0	n.a.	2.87	0.037	0.053	FALSE	n.a.
3	Fluoride	1.0	3.044	3.35	1.442	12.058	FALSE	1.48
4	Chloride	1.0	2.944	4.98	0.892	7.443	FALSE	-1.86
5	Nitrite	1.0	3.042	6.09	2.118	13.261	FALSE	1.39
6		1.0	n.a.	7.47	0.039	0.128	FALSE	n.a.
7	Bromide	1.0	3.005	8.80	0.386	1.890	FALSE	0.16
8	Sulfate	1.0	2.999	9.64	0.556	2.185	FALSE	-0.03
9	Nitrate	1.0	3.039	10.48	2.306	9.997	FALSE	1.31
10		1.0	n.a.	11.07	0.006	0.045	FALSE	n.a.
11	Phosphate	1.0	2.995	13.20	0.886	4.671	FALSE	-0.16

Injection Name:	*ICB*	Inject Number:	3
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 10:31*		



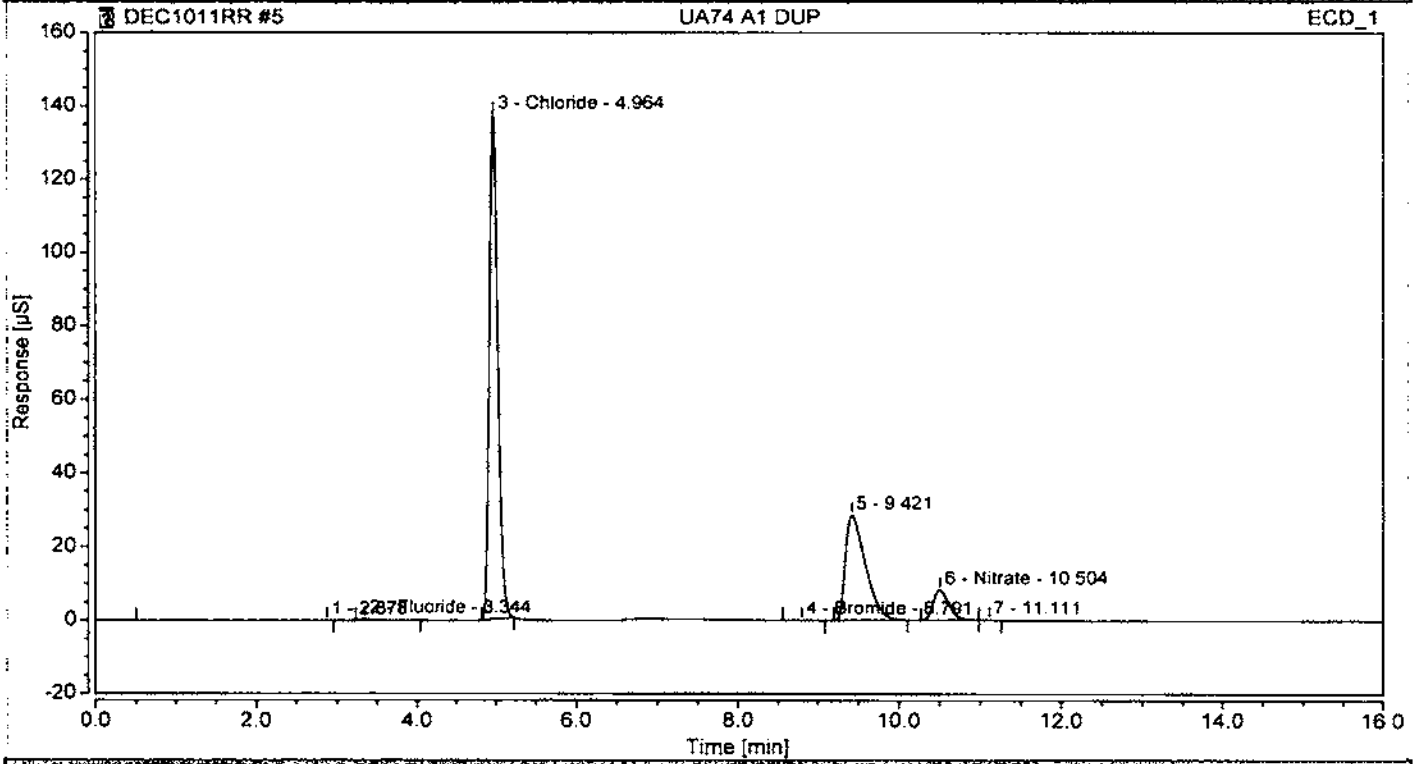
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	0.12	0.008	0.036	FALSE	n.a.
2		1.0	n.a.	2.87	0.037	0.054	FALSE	n.a.
3		1.0	n.a.	3.03	0.005	0.042	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.48	0.051	0.141	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1*	Inject Number:	4
Vial Number:	*4*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 10:50*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.049	0.044	FALSE	n.a.
2	Fluoride	1.0	0.125	3.34	0.059	0.408	FALSE	n.a.
3	Chloride	1.0	55.640	4.96	16.848	137.278	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.139	8.79	0.018	0.091	FALSE	n.a.
5		1.0	n.a.	9.42	8.179	28.520	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	2.425	10.50	1.840	8.211	FALSE	n.a.
7		1.0	n.a.	11.12	0.006	0.045	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1 DUP*	Inject Number:	5
Vial Number:	*5*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:10*		

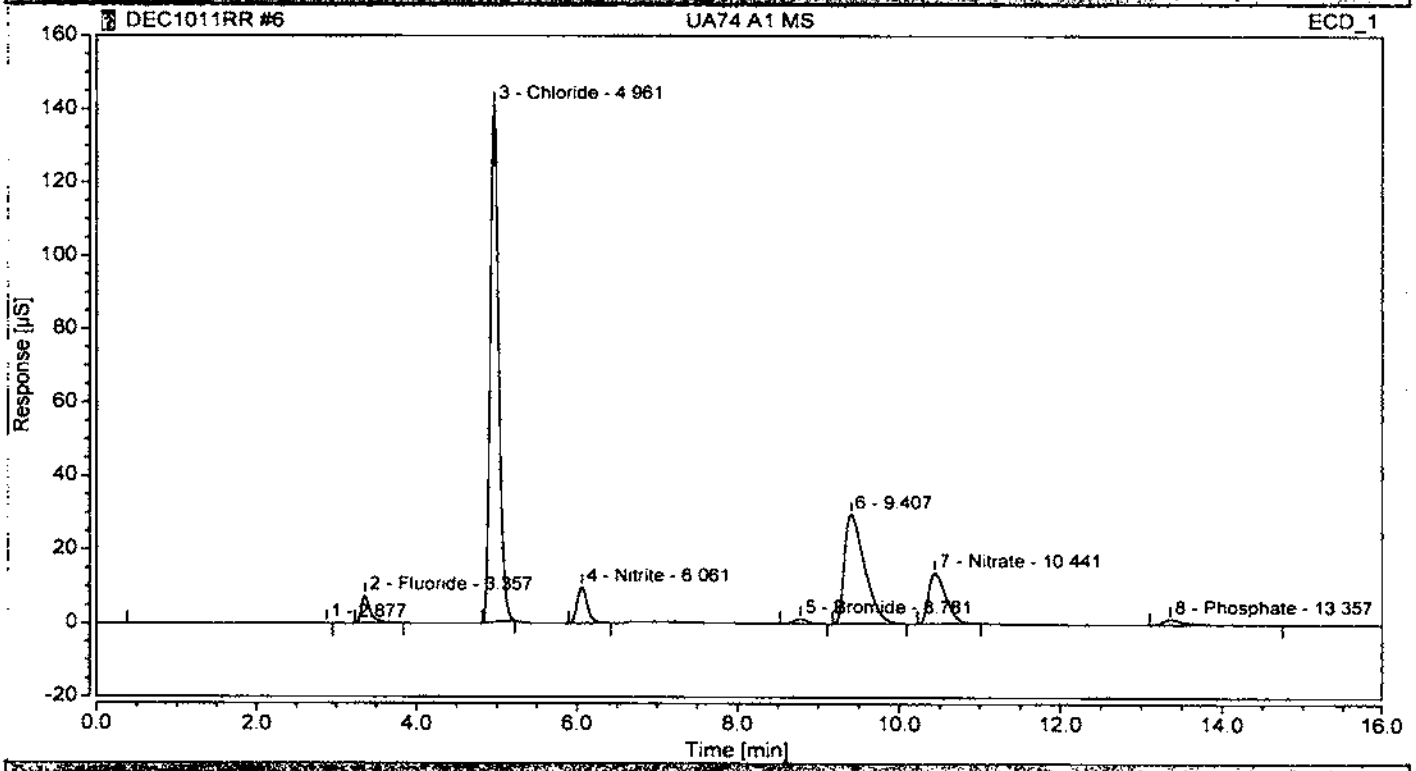


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.042	0.045	FALSE	n.a.
2	Fluoride	1.0	0.122	3.34	0.058	0.395	FALSE	n.a.
3	Chloride	1.0	55.722	4.96	16.873	137.325	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Bromide	1.0	0.139	8.79	0.018	0.090	FALSE	n.a.
5		1.0	n.a.	9.42	8.190	28.526	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Nitrate	1.0	2.435	10.50	1.847	8.238	FALSE	n.a.
7		1.0	n.a.	11.11	0.005	0.042	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted] Injection and Results

Injection Name:	*UA74 A1 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:30*		

[redacted]

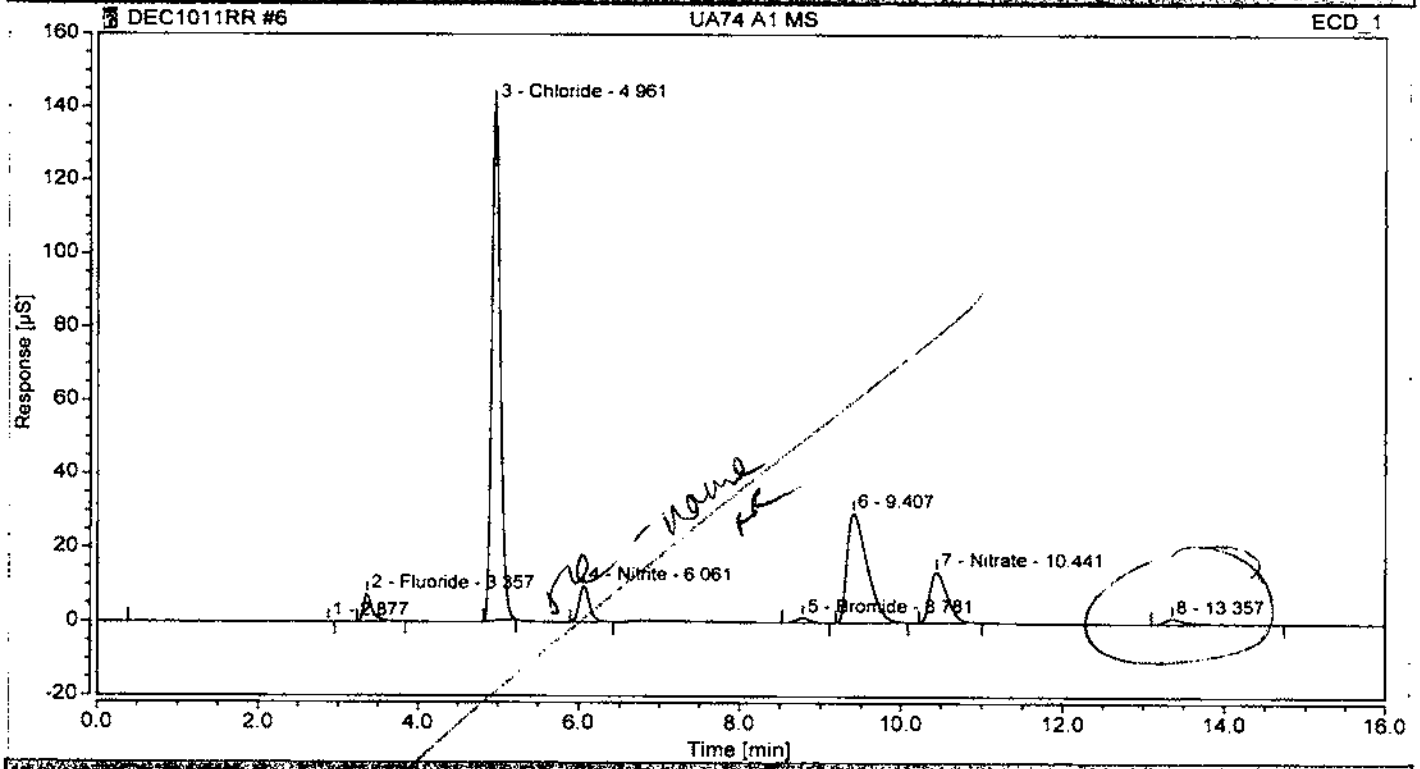


[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.041	0.044	FALSE	n.a.
2	Fluoride	1.0	2.060	3.36	0.976	7.443	FALSE	n.a.
3	Chloride	1.0	57.184	4.96	17.315	140.867	FALSE	n.a.
4	Nitrite	1.0	2.038	6.06	1.419	9.749	FALSE	n.a.
5	Bromide	1.0	1.978	8.78	0.254	1.302	FALSE	n.a.
6		1.0	n.a.	9.41	8.563	29.641	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Nitrate	1.0	4.467	10.44	3.388	13.720	FALSE	n.a.
8	Phosphate	1.0	1.619	13.36	0.479	1.444	FALSE	n.a.

TZ83 : 00213

Injection Name:	*UA74 A1 MS*	Inject Number:	6
Vial Number:	*6*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:30*		



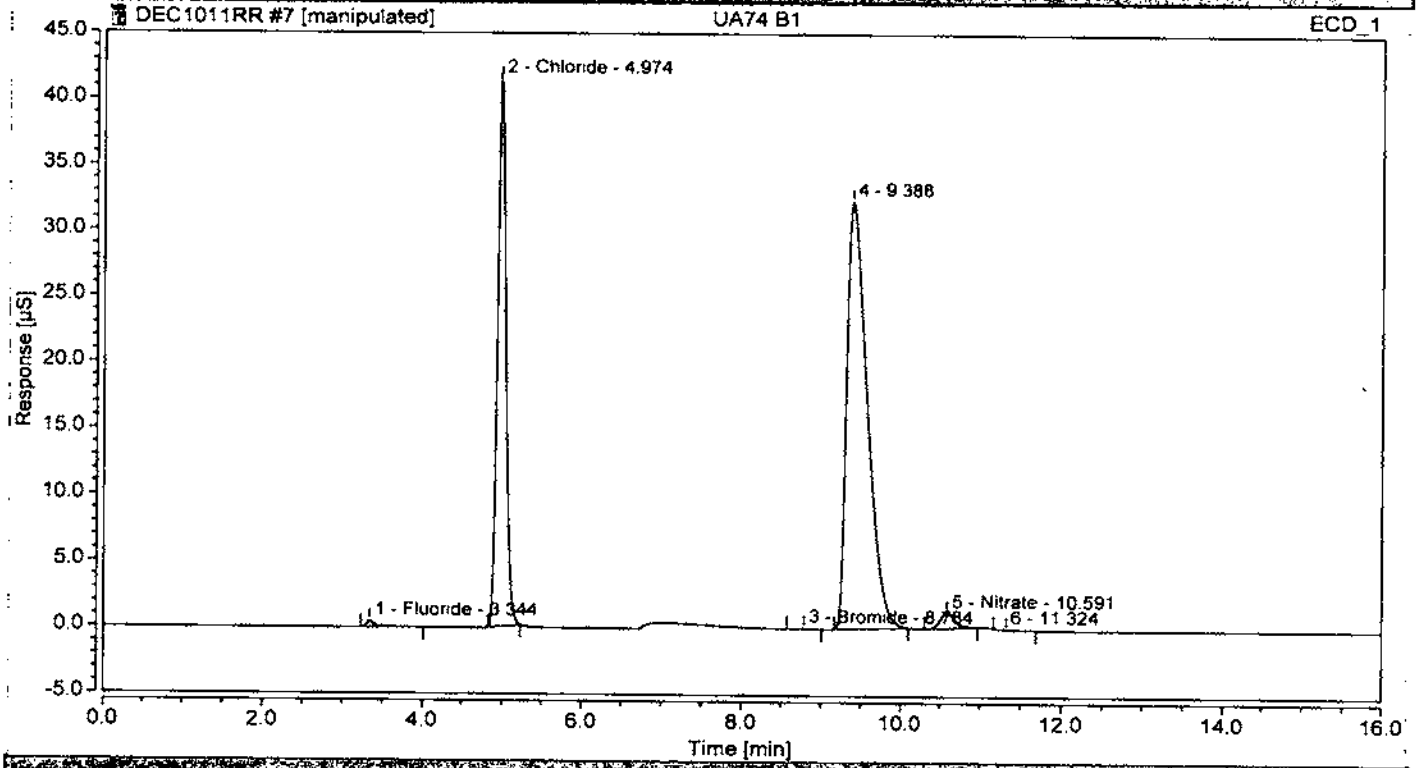
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.041	0.044	FALSE	n.a.
2	Fluoride	1.0	2.060	3.36	0.976	7.443	FALSE	n.a.
3	Chloride	1.0	57.184	4.96	17.315	140.867	FALSE	n.a.
4	Nitrite	1.0	2.038	6.06	1.419	9.749	FALSE	n.a.
5	Bromide	1.0	1.978	8.78	0.254	1.302	FALSE	n.a.
6		1.0	n.a.	9.41	8.563	29.641	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	Nitrate	1.0	4.467	10.44	3.388	13.720	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
8		1.0	n.a.	13.36	0.479	1.444	FALSE	n.a.

TZ83 : 00214

[redacted]

Injection Name:	*UA74 B1*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:49*		

[redacted]



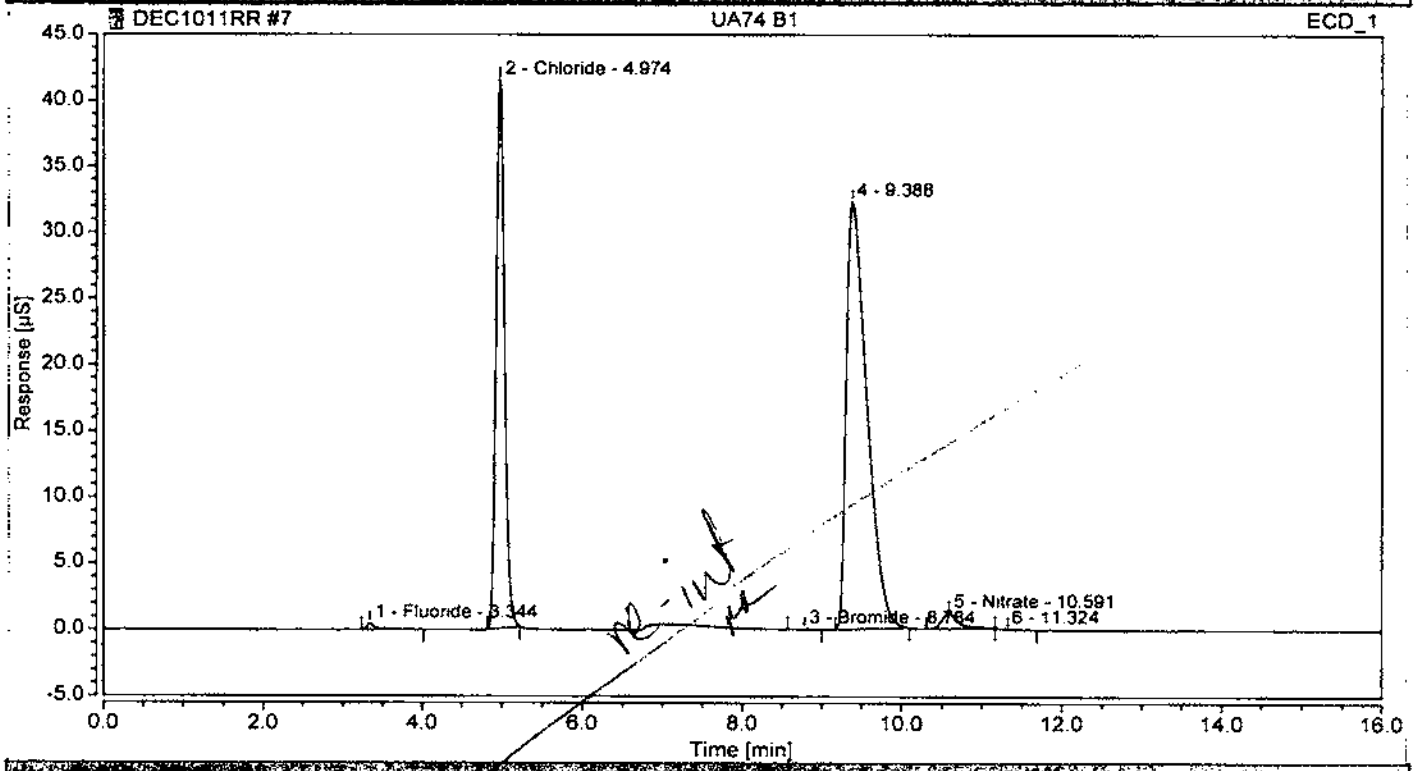
[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.134	3.34	0.064	0.449	FALSE	n.a.
2	Chloride	1.0	16.580	4.97	5.020	41.454	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.062	8.78	0.007	0.035	FALSE	n.a.
4		1.0	n.a.	9.39	9.597	32.258	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.319	10.59	0.242	1.127	TRUE	n.a.
6		1.0	n.a.	11.32	0.016	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 B1*	Inject Number:	7
Vial Number:	*7*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 11:49*		

[redacted]

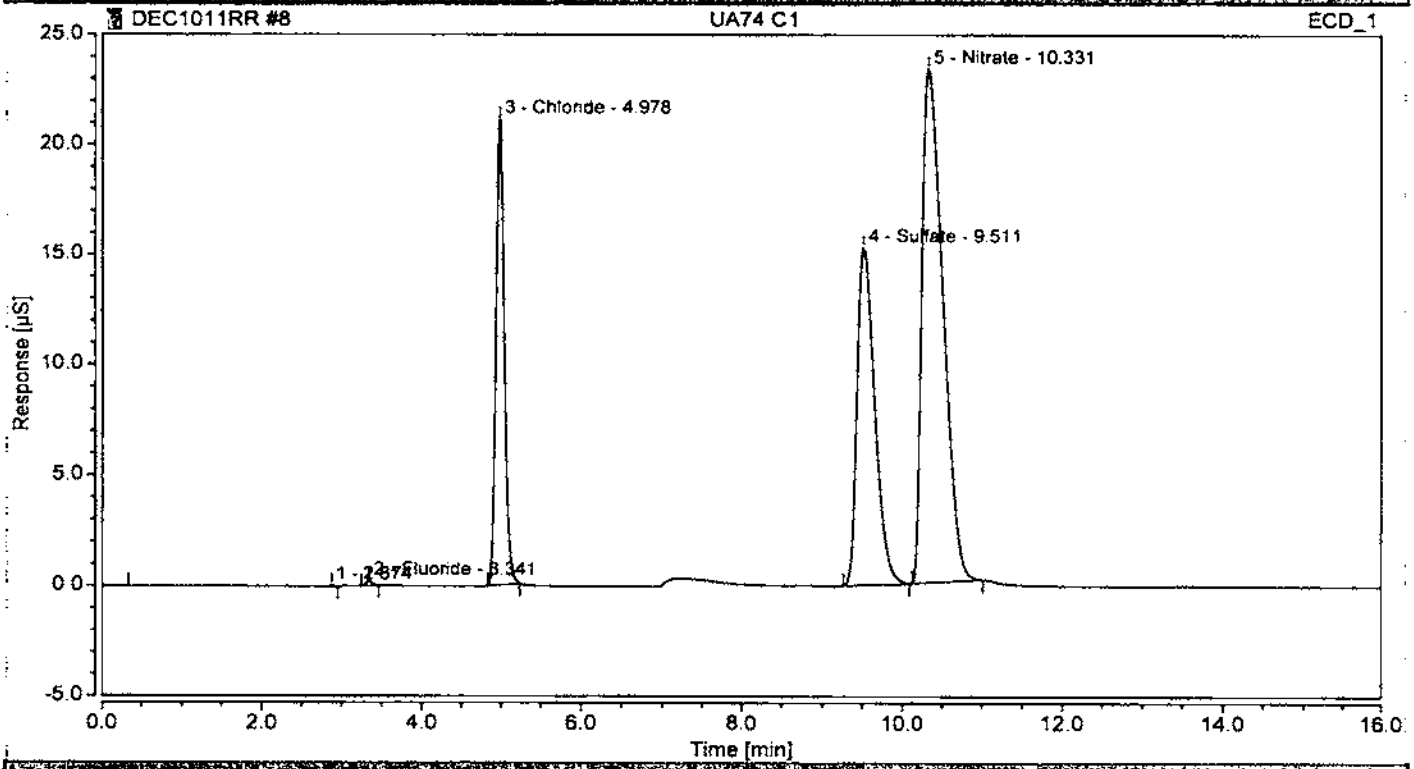


[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.134	3.34	0.064	0.449	FALSE	n.a.
2	Chloride	1.0	16.580	4.97	5.020	41.454	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.052	8.78	0.007	0.035	FALSE	n.a.
4		1.0	n.a.	9.39	9.597	32.258	FALSE	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Nitrate	1.0	0.380	10.59	0.288	1.170	FALSE	n.a.
6		1.0	n.a.	11.32	0.016	0.044	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

TZ83 : 00216

Injection Name:	*UA74 C1*	Inject Number:	8
Vial Number:	*8*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 12:09*		

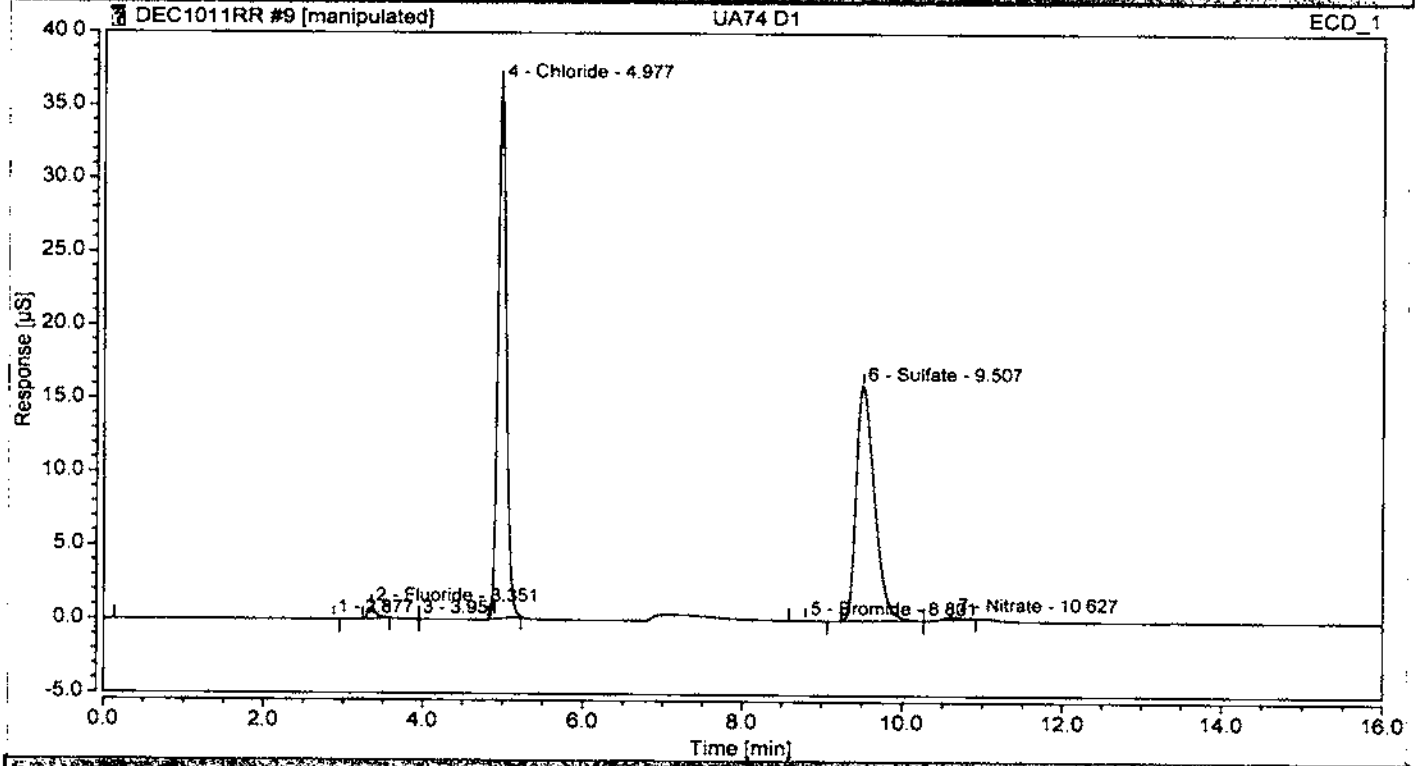


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.044	0.049	FALSE	n.a.
2	Fluoride	1.0	0.037	3.34	0.017	0.205	FALSE	n.a.
3	Chloride	1.0	8.418	4.98	2.549	21.107	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	20.898	9.51	3.874	15.268	FALSE	n.a.
5	Nitrate	1.0	9.279	10.33	7.039	23.275	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[redacted]

Injection Name:	*UA74 D1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 12:28*		

[redacted]

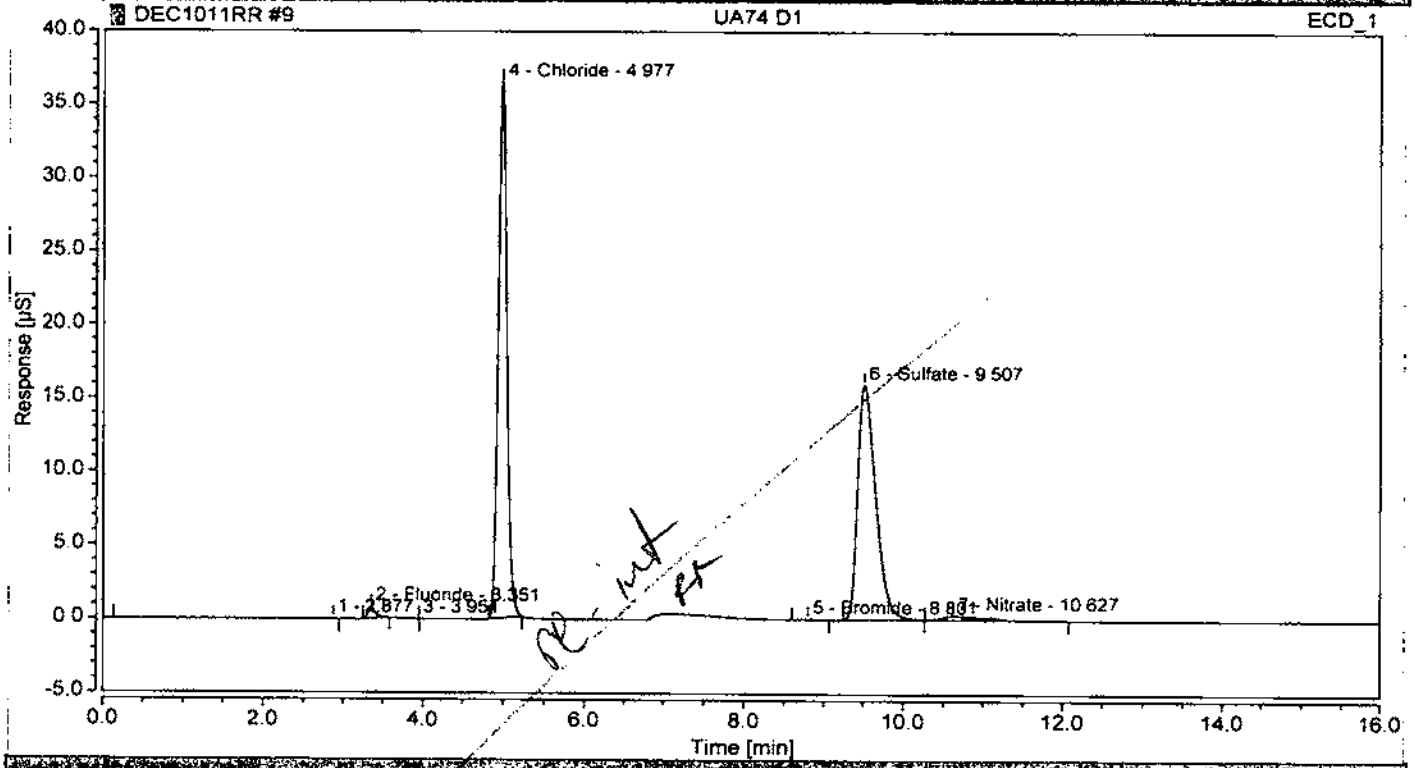


[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.046	0.047	FALSE	n.a.
2	Fluoride	1.0	0.183	3.35	0.087	0.787	FALSE	n.a.
3		1.0	n.a.	3.95	0.000	0.057	FALSE	n.a.
4	Chloride	1.0	14.589	4.98	4.417	36.453	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.060	8.80	0.008	0.039	FALSE	n.a.
6	Sulfate	1.0	22.492	9.51	4.170	15.938	FALSE	n.a.
7	Nitrate	1.0	0.054	10.63	0.041	0.167	TRUE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

TZ83 : 00218

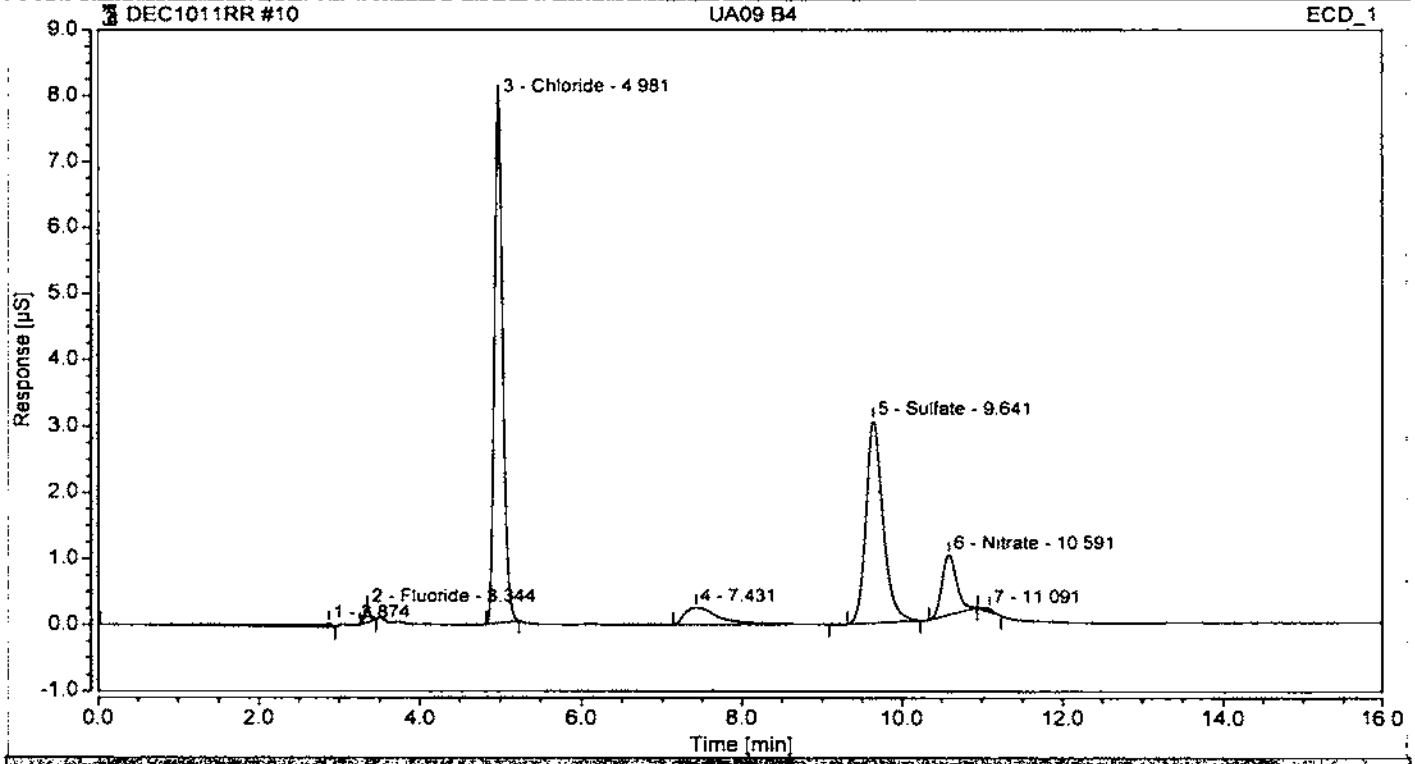
Injection Name:	*UA74 D1*	Inject Number:	9
Vial Number:	*9*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 12:28*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.88	0.046	0.047	FALSE	n.a.
2	Fluoride	1.0	0.183	3.35	0.067	0.787	FALSE	n.a.
3		1.0	n.a.	3.95	0.000	0.057	FALSE	n.a.
4	Chloride	1.0	14.589	4.98	4.417	36.453	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Bromide	1.0	0.060	8.80	0.008	0.039	FALSE	n.a.
6	Sulfate	1.0	22.492	9.51	4.170	15.938	FALSE	n.a.
7	Nitrate	1.0	0.221	10.63	0.168	0.275	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Chromatogram

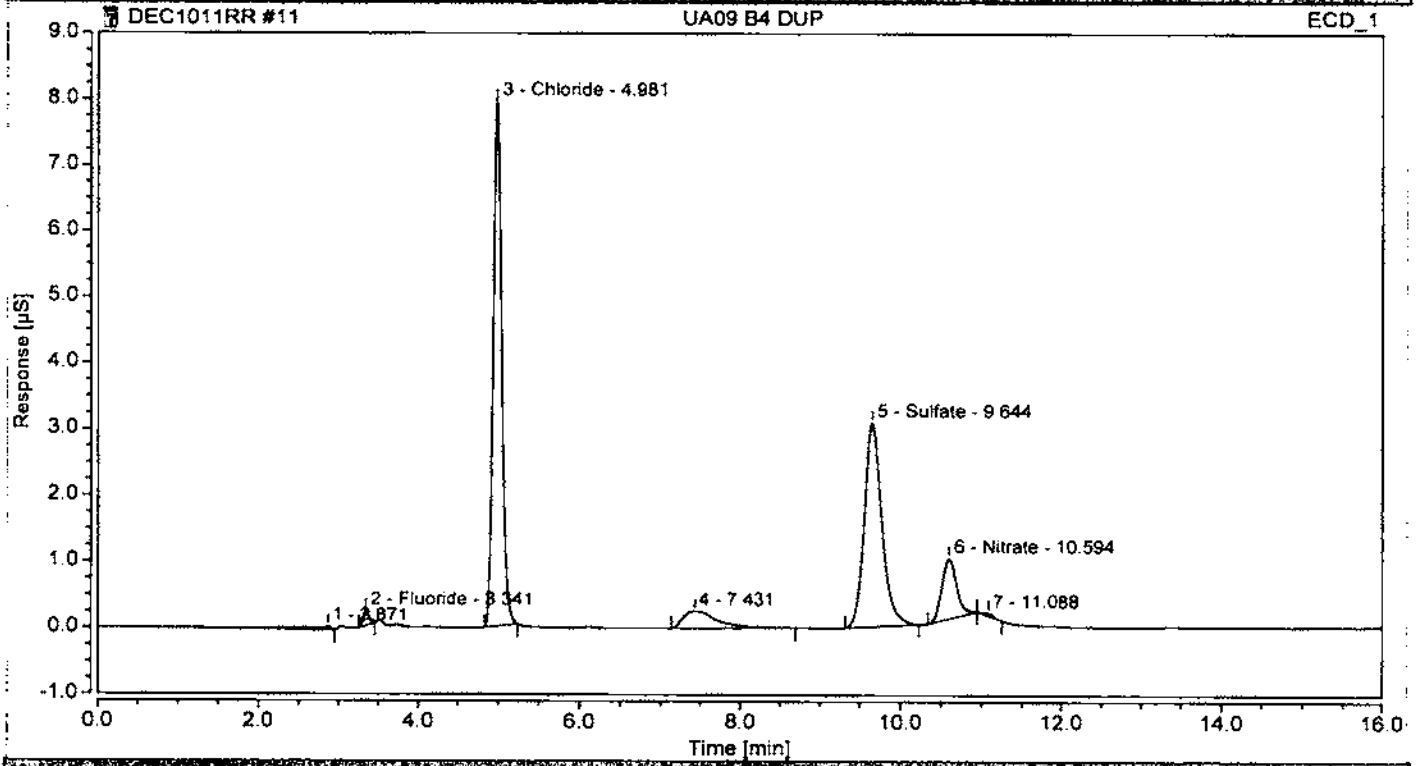
Injection Name:	*UA09 B4*	Inject Number:	10
Vial Number:	*10*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 12:48*		



Integration Results

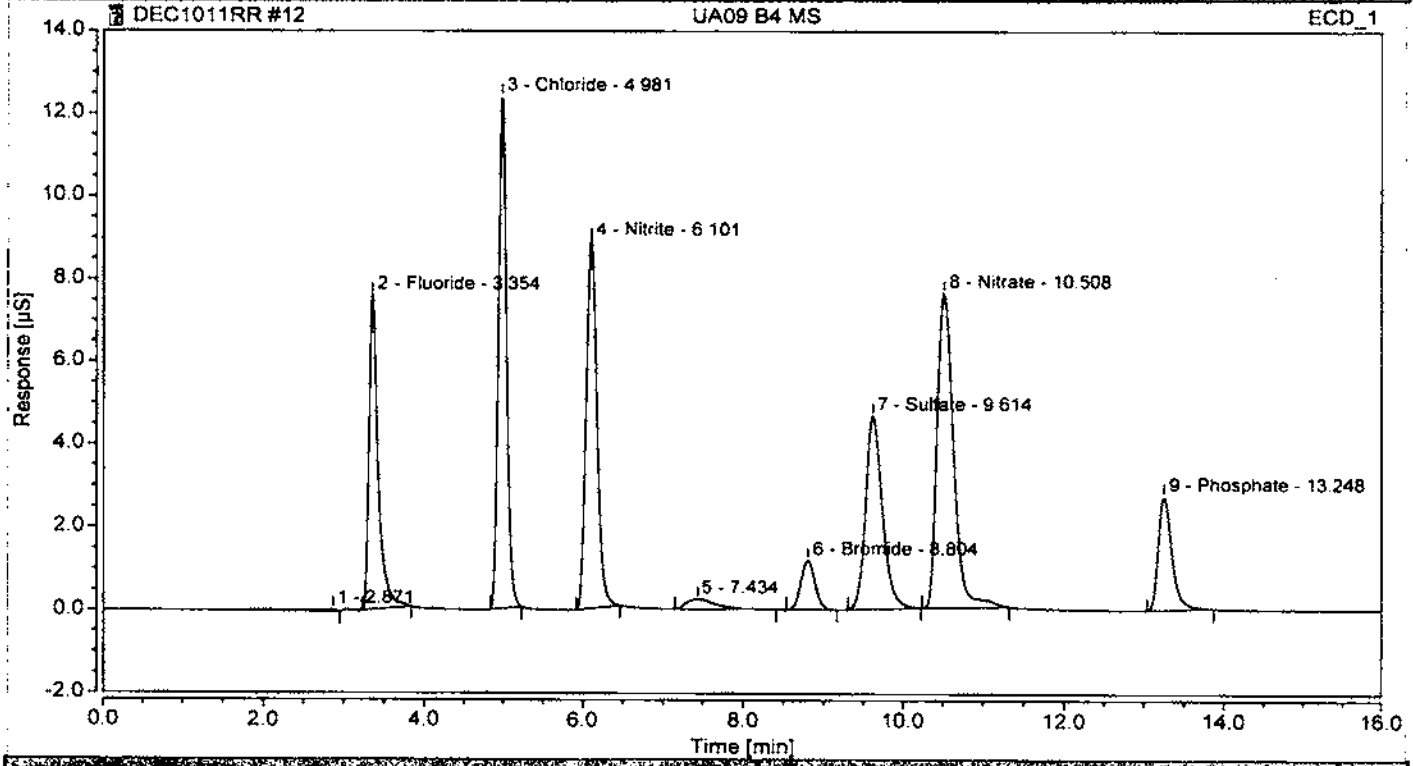
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.047	0.049	FALSE	n.a.
2	Fluoride	5.0	0.198	3.34	0.019	0.223	FALSE	n.a.
3	Chloride	5.0	15.852	4.98	0.960	7.943	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.43	0.134	0.257	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	20.612	9.64	0.764	3.057	FALSE	n.a.
6	Nitrate	5.0	1.266	10.59	0.192	0.908	FALSE	n.a.
7		5.0	n.a.	11.09	0.007	0.049	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA09 B4 DUP*	Inject Number:	11
Vial Number:	*11*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 13:08*		



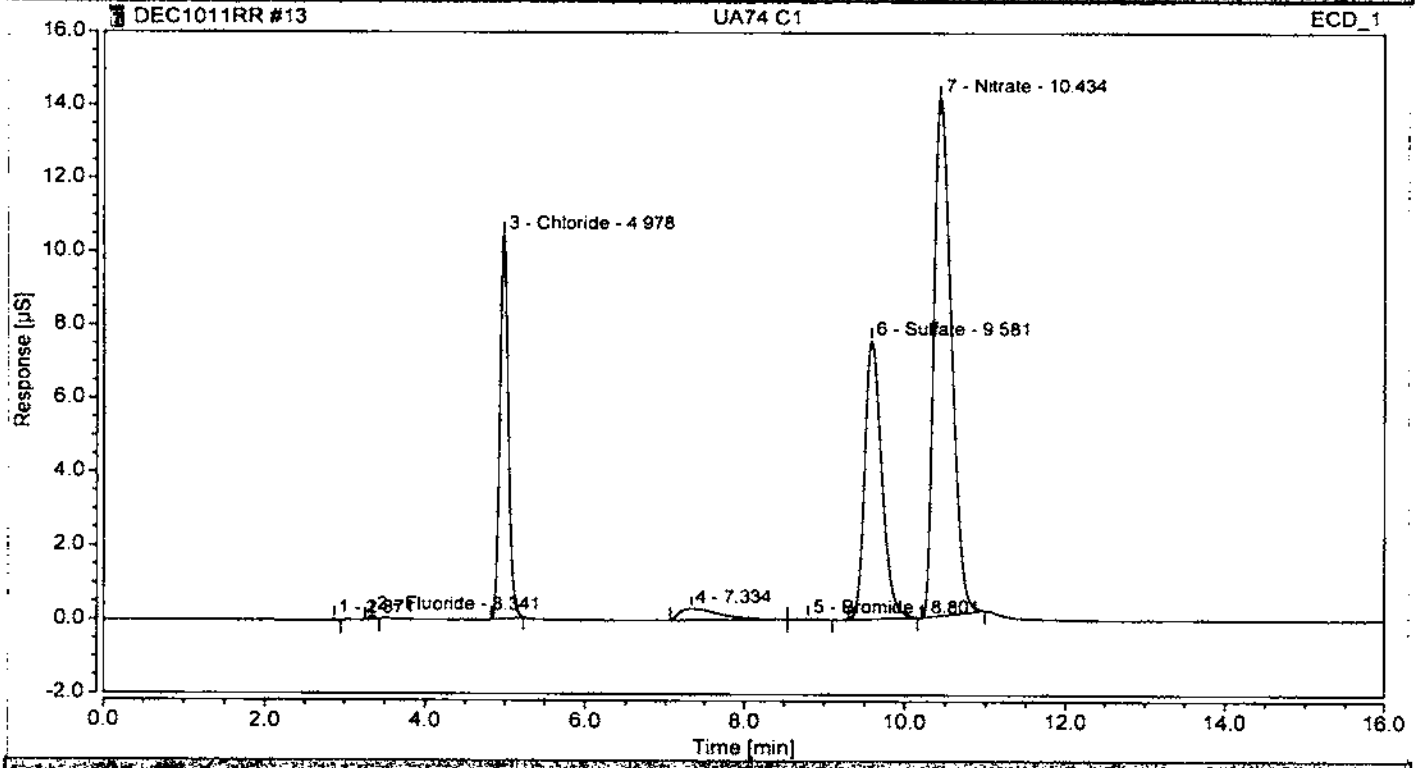
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.049	FALSE	n.a.
2	Fluoride	5.0	0.200	3.34	0.019	0.226	FALSE	n.a.
3	Chloride	5.0	15.838	4.98	0.959	7.940	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.43	0.127	0.257	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	20.718	9.64	0.768	3.076	FALSE	n.a.
6	Nitrate	5.0	1.279	10.59	0.194	0.911	FALSE	n.a.
7		5.0	n.a.	11.09	0.006	0.046	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA09 B4 MS*	Inject Number:	12
Vial Number:	*12*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 13:28*		



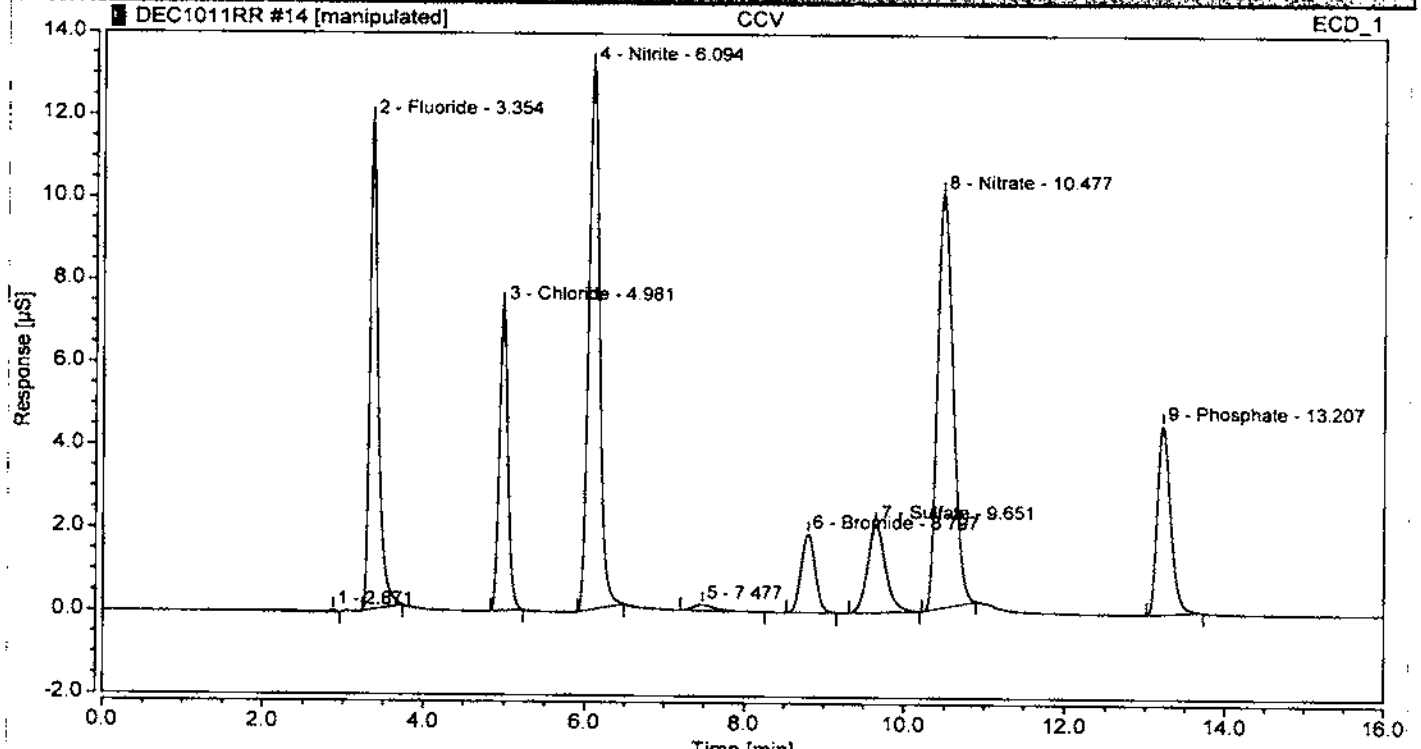
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.049	0.048	FALSE	n.a.
2	Fluoride	5.0	10.355	3.35	0.981	7.590	FALSE	n.a.
3	Chloride	5.0	24.723	4.98	1.497	12.366	FALSE	n.a.
4	Nitrite	5.0	9.933	6.10	1.383	8.871	FALSE	n.a.
5		5.0	n.a.	7.43	0.107	0.239	FALSE	n.a.
6	Bromide	5.0	9.446	8.80	0.243	1.188	FALSE	n.a.
7	Sulfate	5.0	30.928	9.61	1.147	4.647	FALSE	n.a.
8	Nitrate	5.0	11.766	10.51	1.785	7.588	FALSE	n.a.
9	Phosphate	5.0	9.181	13.25	0.543	2.737	FALSE	n.a.

Injection Name:	*UA74 C1*	Inject Number:	13
Vial Number:	*13*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 13:48*		



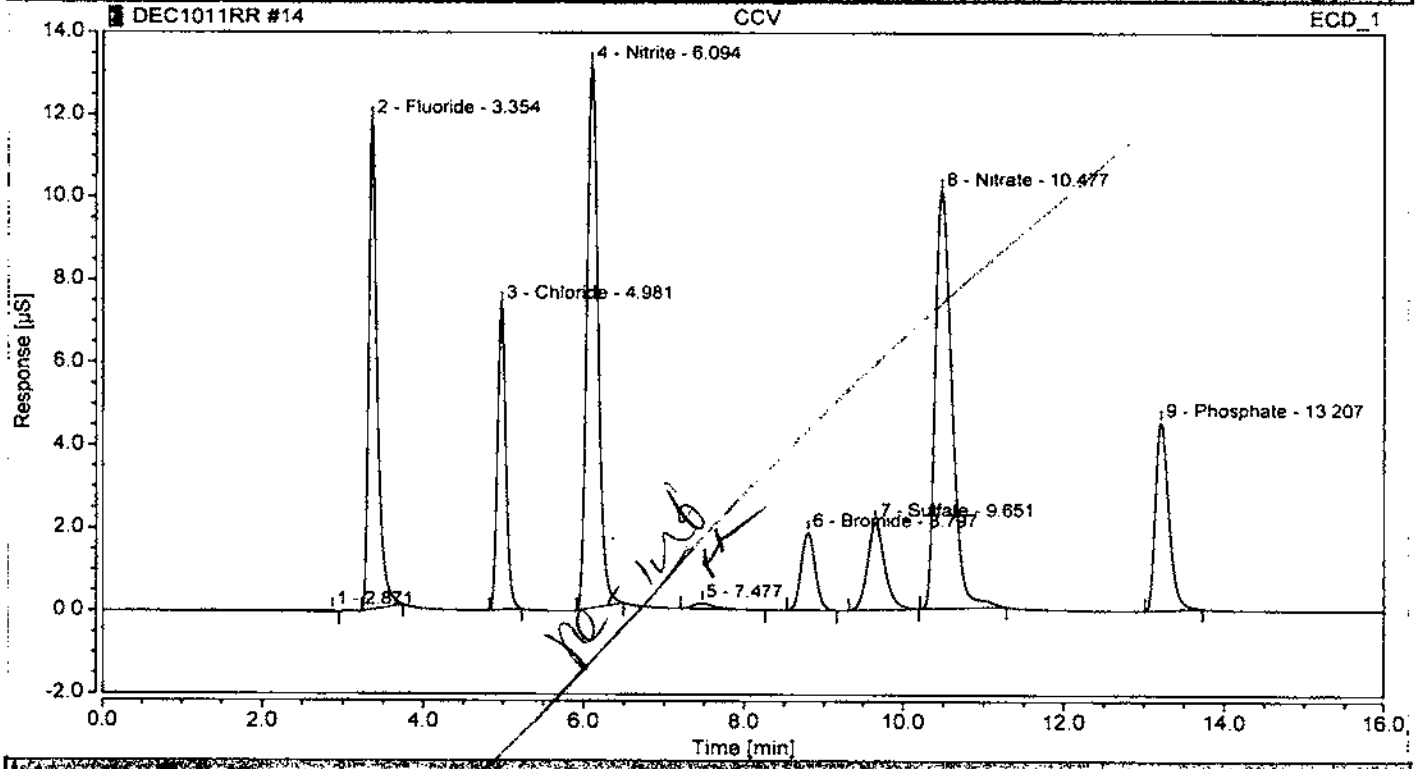
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.87	0.049	0.047	FALSE	n.a.
2	Fluoride	2.0	0.035	3.34	0.008	0.103	FALSE	n.a.
3	Chloride	2.0	8.332	4.98	1.262	10.435	FALSE	n.a.
n.a.	Nitrite	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		2.0	n.a.	7.33	0.190	0.310	FALSE	n.a.
5	Bromide	2.0	0.099	8.80	0.006	0.025	FALSE	n.a.
6	Sulfate	2.0	20.064	9.58	1.860	7.550	FALSE	n.a.
7	Nitrate	2.0	9.298	10.43	3.527	14.084	FALSE	n.a.
n.a.	Phosphate	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 14:08*		



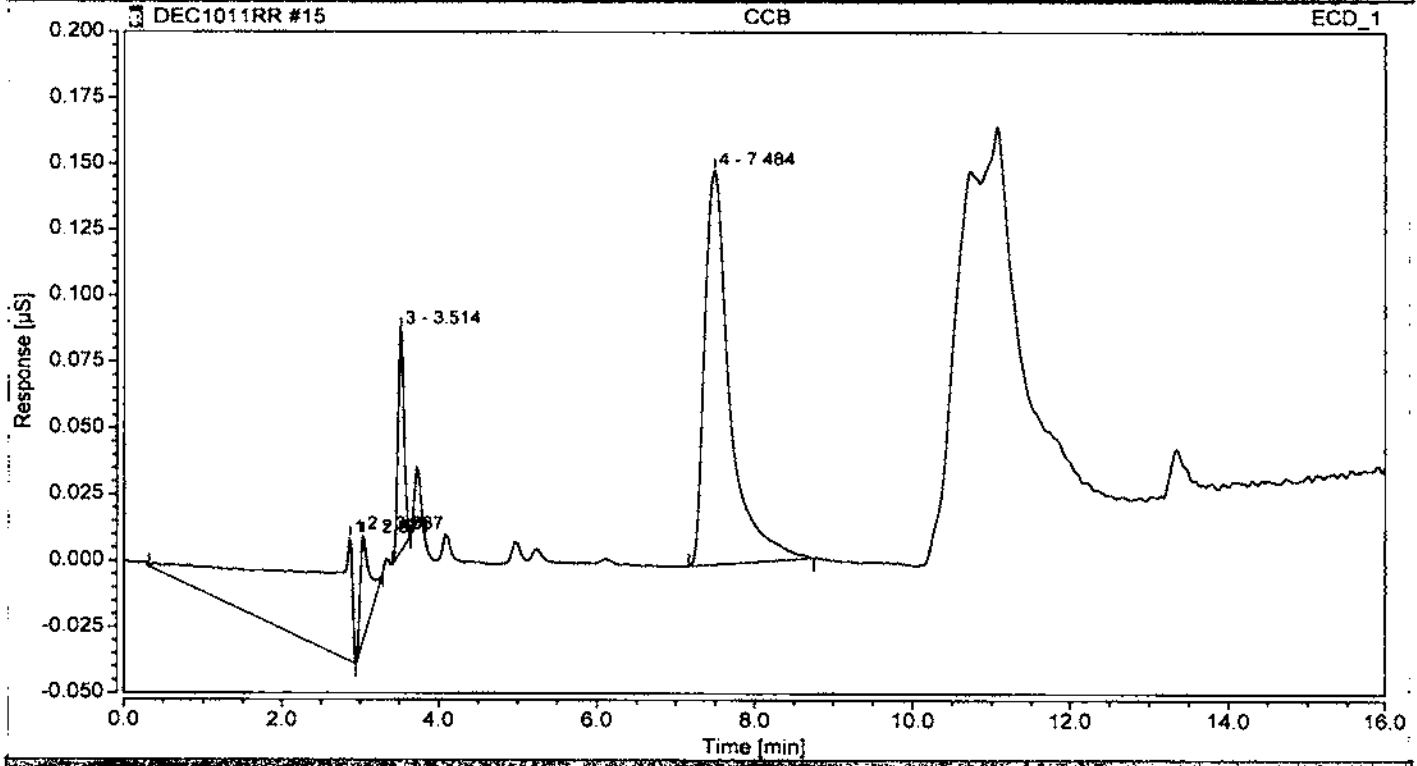
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.67	0.049	0.046	FALSE	n.a.
2	Fluoride	1.0	3.047	3.35	1.443	11.858	FALSE	1.56
3	Chloride	1.0	2.947	4.98	0.892	7.378	FALSE	-1.76
4	Nitrite	1.0	3.025	6.09	2.106	13.148	FALSE	0.85
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.008	8.80	0.387	1.883	FALSE	0.26
7	Sulfate	1.0	2.909	9.65	0.539	2.120	FALSE	-3.02
8	Nitrate	1.0	3.034	10.48	2.301	9.987	TRUE	1.13
9	Phosphate	1.0	2.987	13.21	0.884	4.545	FALSE	-0.42

Injection Name:	*CCV*	Inject Number:	14
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 14:08*		



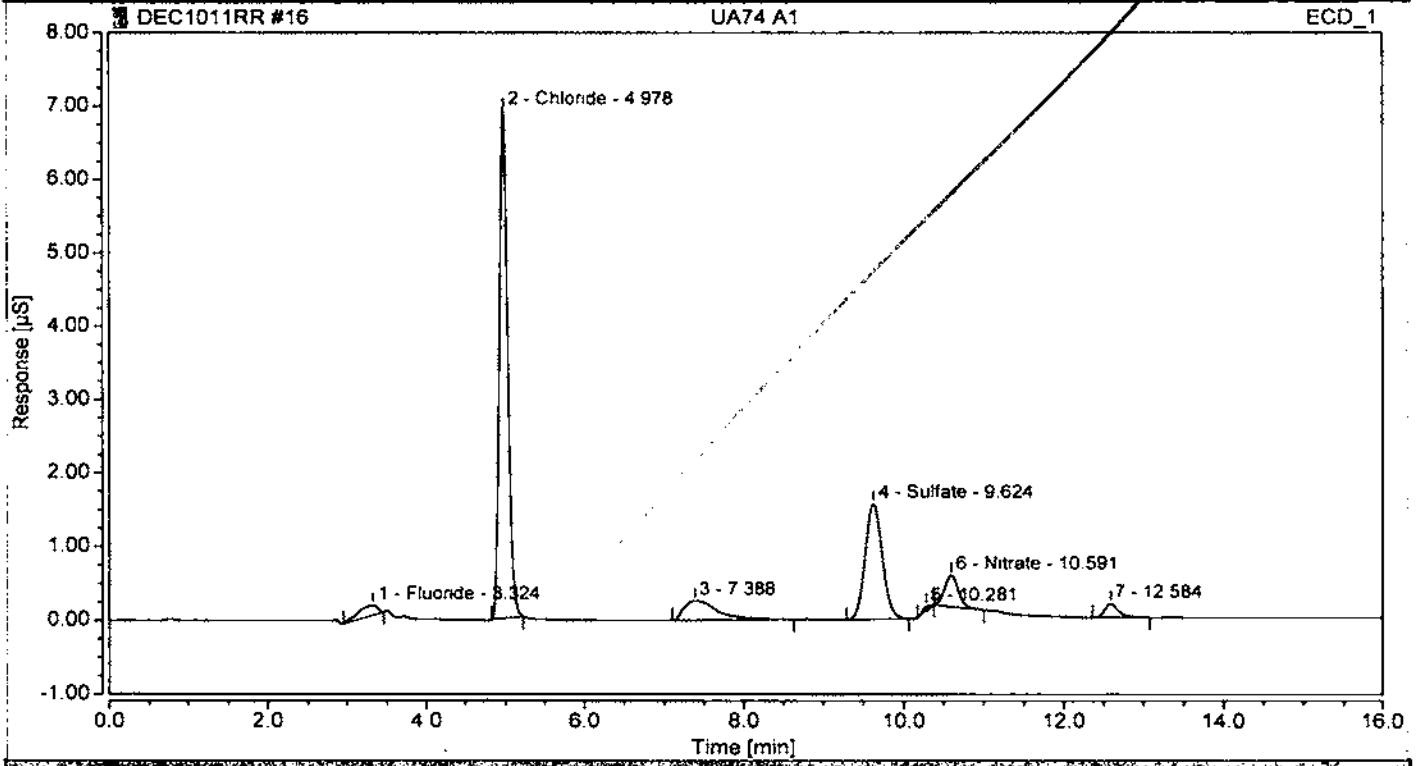
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.049	0.046	FALSE	n.a.
2	Fluoride	1.0	3.047	3.35	1.443	11.858	FALSE	1.56
3	Chloride	1.0	2.947	4.98	0.892	7.378	FALSE	-1.76
4	Nitrite	1.0	3.025	6.09	2.106	13.148	FALSE	0.85
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.008	8.80	0.387	1.883	FALSE	0.26
7	Sulfate	1.0	2.909	9.65	0.539	2.120	FALSE	-3.02
8	Nitrate	1.0	3.191	10.48	2.421	10.071	FALSE	6.36
9	Phosphate	1.0	2.987	13.21	0.884	4.545	FALSE	-0.42

Injection Name:	*CCB*	Inject Number:	15
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 14:29*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.045	0.046	FALSE	n.a.
2		1.0	n.a.	3.04	0.005	0.040	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	7.48	0.055	0.149	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 A1*	Inject Number:	16
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 15:52*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	20.0	1.750	3.32	0.041	0.135	FALSE	n.a.
2	Chloride	20.0	54.533	4.98	0.826	6.915	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		20.0	n.a.	7.39	0.132	0.263	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	20.0	41.649	9.62	0.386	1.564	FALSE	n.a.
5		20.0	n.a.	10.28	0.006	0.058	FALSE	n.a.
6	Nitrate	20.0	2.243	10.59	0.085	0.423	FALSE	n.a.
7		20.0	n.a.	12.58	0.037	0.189	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

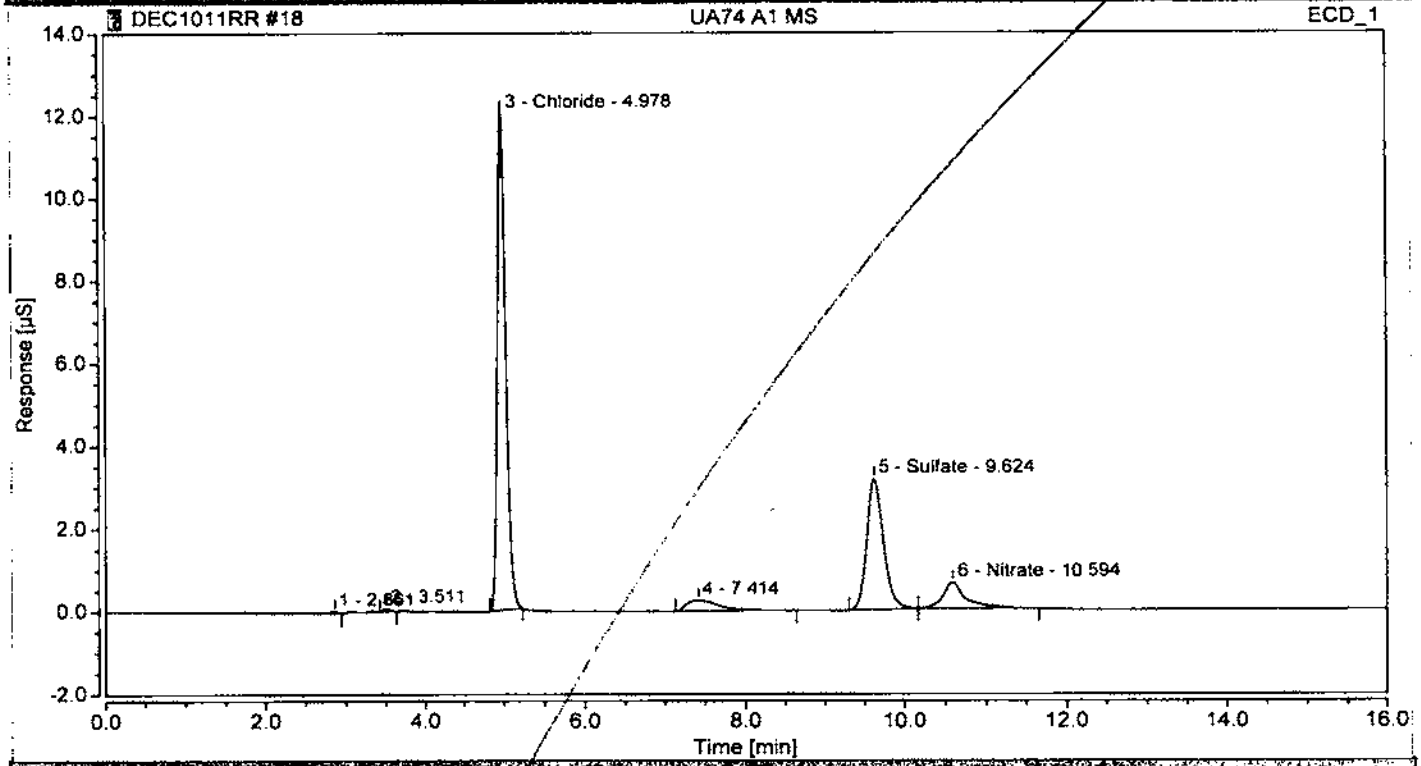
Injection Name:	*UA74 A1 DUP*	Inject Number:	17
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 14:53*		

Can't read channel ECD_1 from injection #17 - UA74 A1 DUP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			n.a.	min	natogram in con	natogram in		n.a.

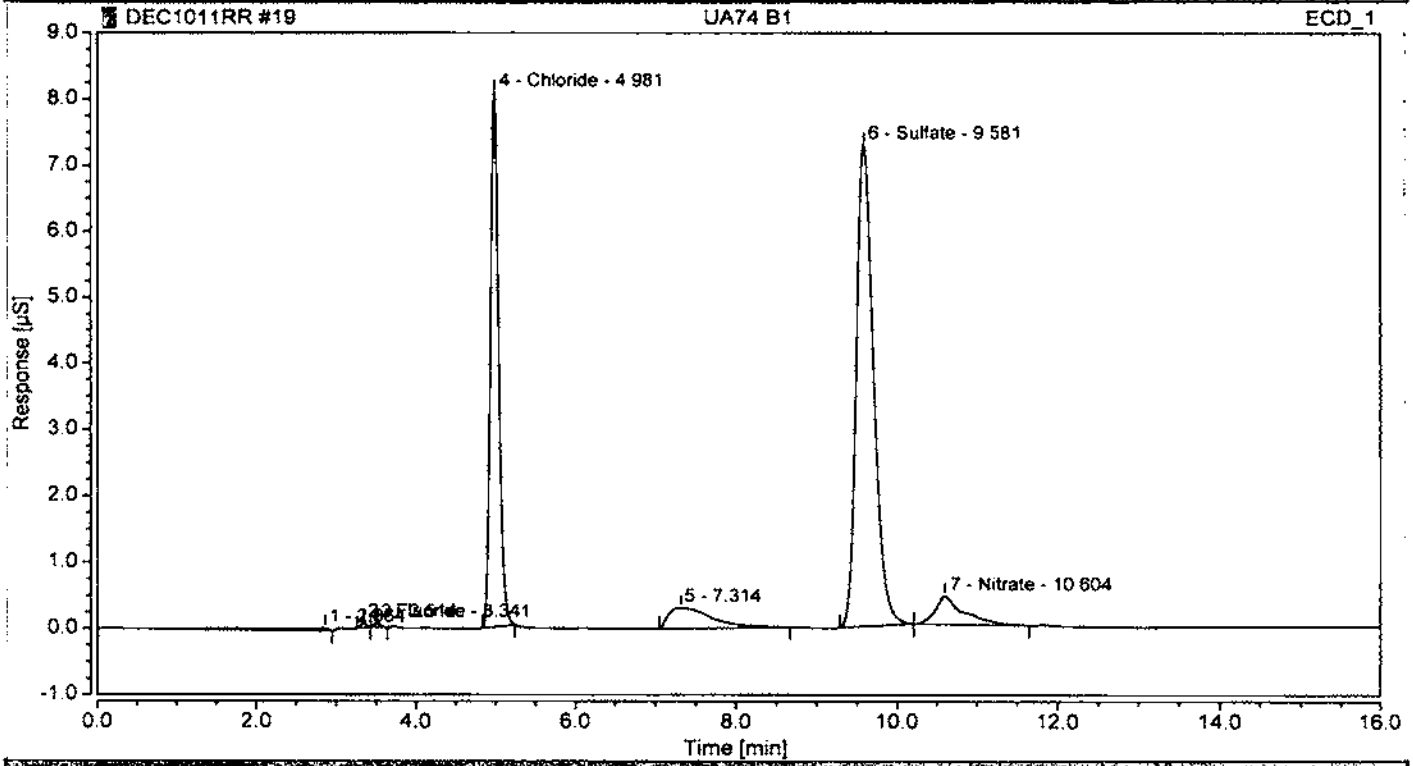
TZ83 : 00228

Injection Name:	*UA74 A1 MS*	Inject Number:	18
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 16:12*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.86	0.052	0.046	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.077	FALSE	n.a.
3	Chloride	20.0	96.018	4.98	1.454	12.027	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.131	0.263	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	62.702	9.62	0.767	3.157	FALSE	n.a.
6	Nitrate	20.0	5.651	10.59	0.214	0.631	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*UA74 B1*	Inject Number:	19
Vial Number:	*17*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 16:33*		



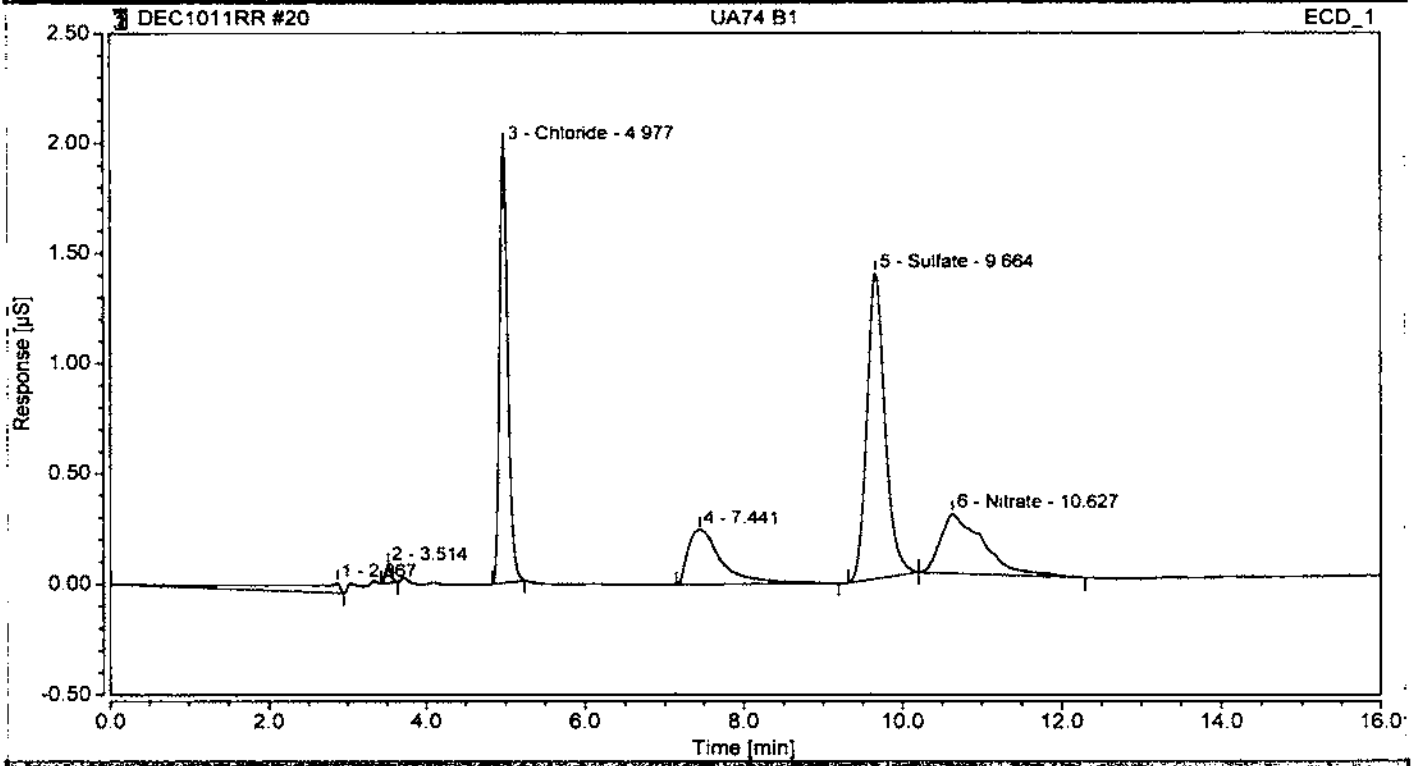
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.86	0.050	0.044	FALSE	n.a.
2	Fluoride	5.0	0.066	3.34	0.006	0.078	FALSE	n.a.
3		5.0	n.a.	3.51	0.005	0.063	FALSE	n.a.
4	Chloride	5.0	16.108	4.98	0.975	8.081	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		5.0	n.a.	7.31	0.199	0.318	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	5.0	48.504	9.58	1.798	7.276	FALSE	n.a.
7	Nitrate	5.0	1.162	10.60	0.176	0.428	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Chromeleon (c) Dionex Version 7.0.1.272
TZ83 : 00230

[redacted]

Injection Name:	*UA74 B1*	Inject Number:	20
Vial Number:	*18*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 16:53*		

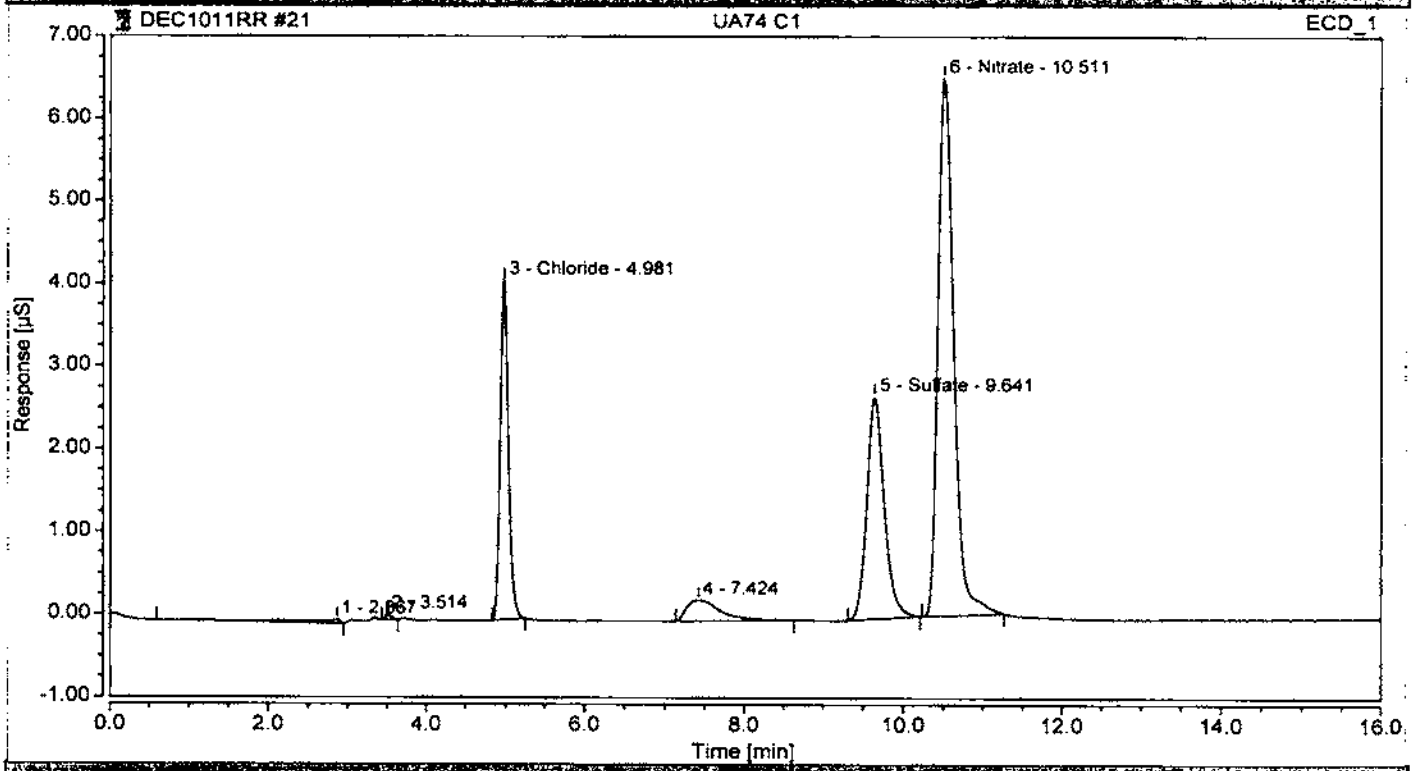
[redacted]



[redacted]

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.048	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	15.781	4.98	0.239	1.984	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.44	0.122	0.245	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	39.310	9.66	0.364	1.383	FALSE	n.a.
6	Nitrate	20.0	4.379	10.63	0.166	0.269	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

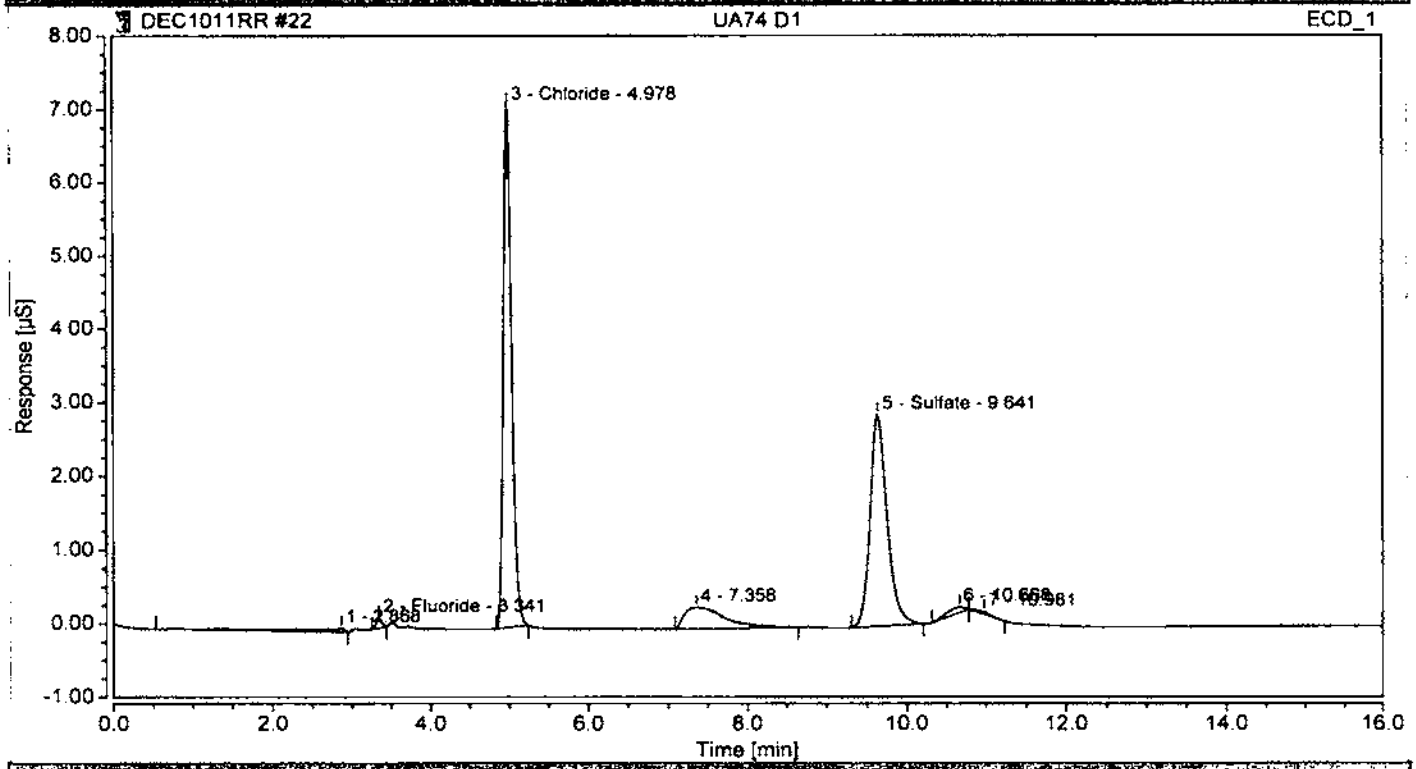
Injection Name:	*UA74 C1*	Inject Number:	21
Vial Number:	*19*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 17:14*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.042	0.049	FALSE	n.a.
n.a.	Fluoride	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.0	n.a.	3.51	0.006	0.069	FALSE	n.a.
3	Chloride	5.0	8.198	4.98	0.496	4.106	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.42	0.128	0.254	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	17.999	9.64	0.667	2.688	FALSE	n.a.
6	Nitrate	5.0	9.936	10.51	1.508	6.504	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

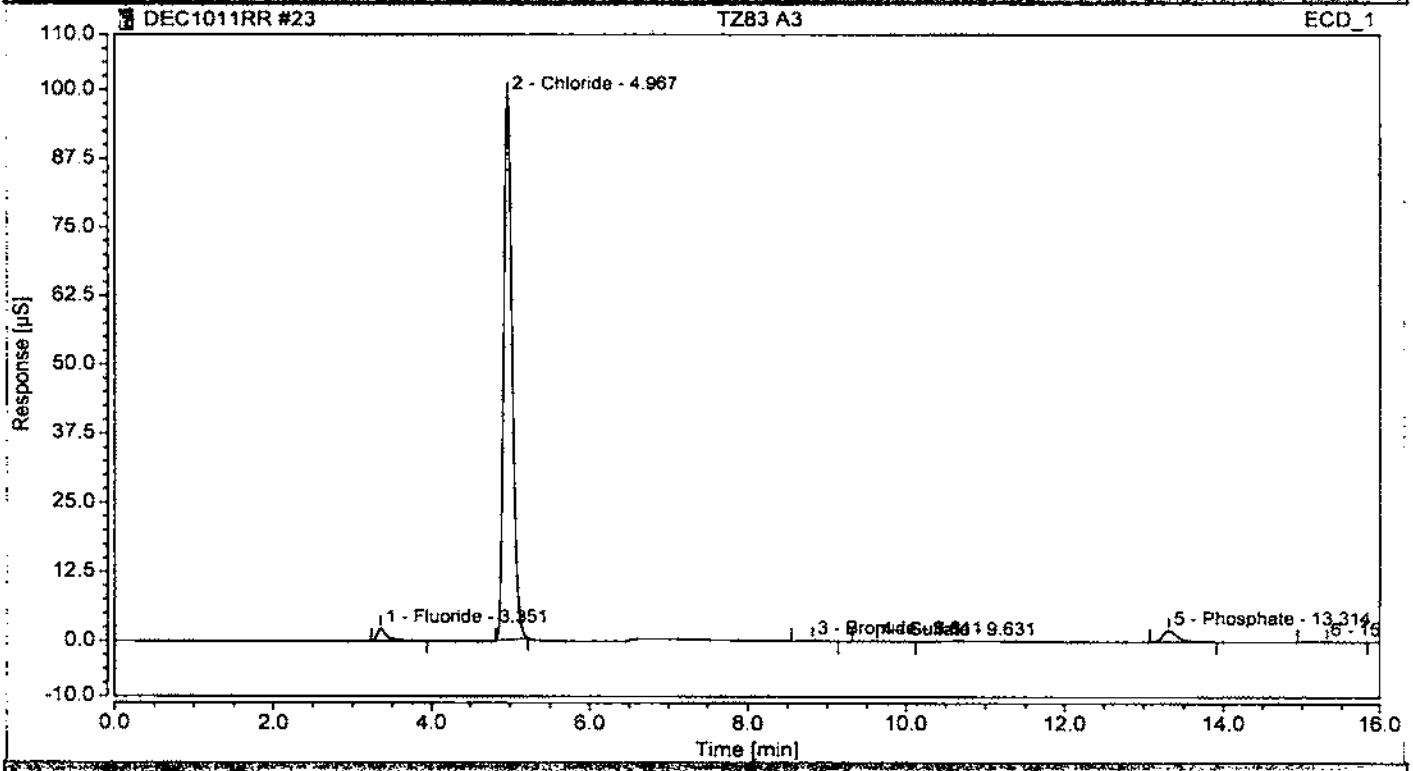
TZ83 : 00232

Injection Name:	*UA74 D1*	Inject Number:	22
Vial Number:	*20*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 17:34*		



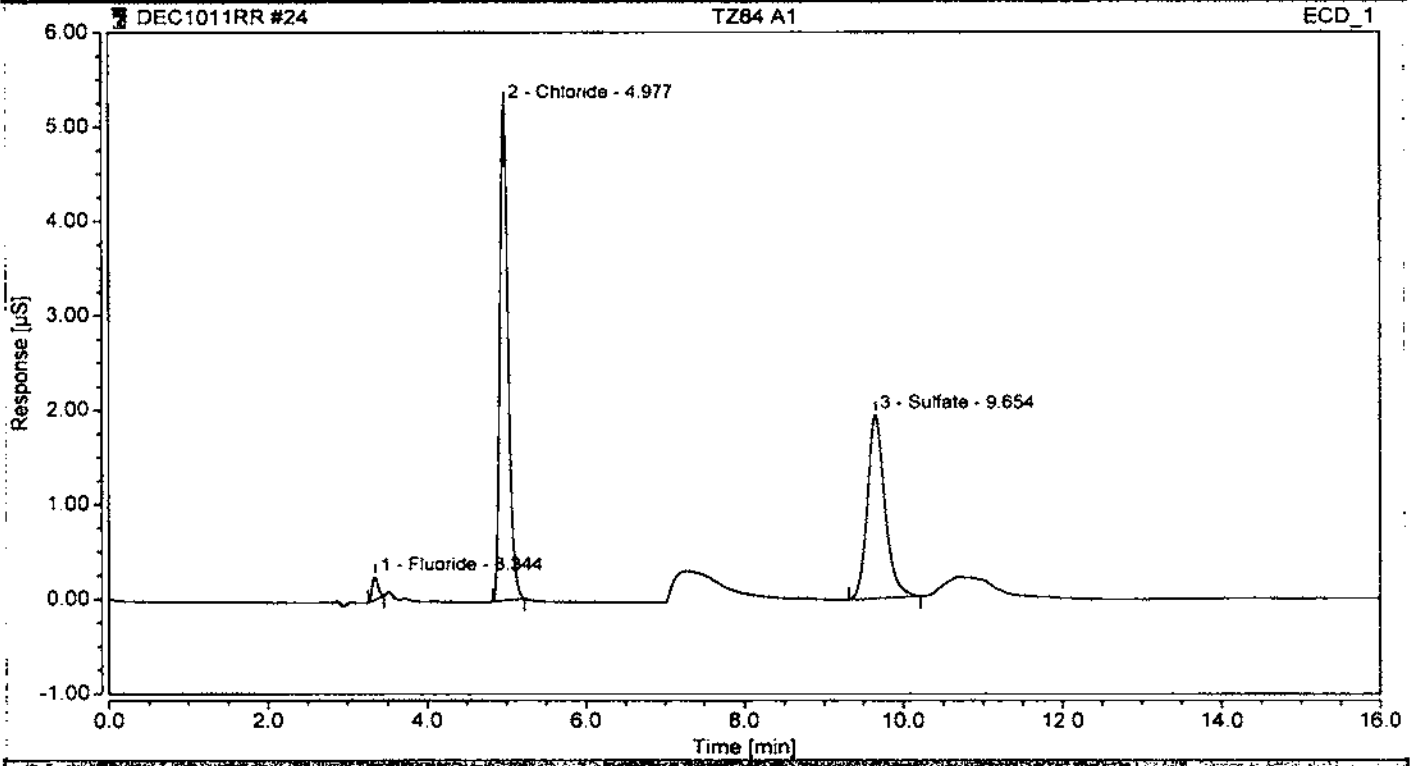
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.049	FALSE	n.a.
2	Fluoride	5.0	0.118	3.34	0.011	0.137	FALSE	n.a.
3	Chloride	5.0	14.153	4.98	0.857	7.099	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.172	0.290	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.196	9.64	0.712	2.865	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6		5.0	n.a.	10.67	0.021	0.076	FALSE	n.a.
7		5.0	n.a.	10.98	0.007	0.034	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ83 A3*	Inject Number:	23
Vial Number:	*21*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 17:53*		



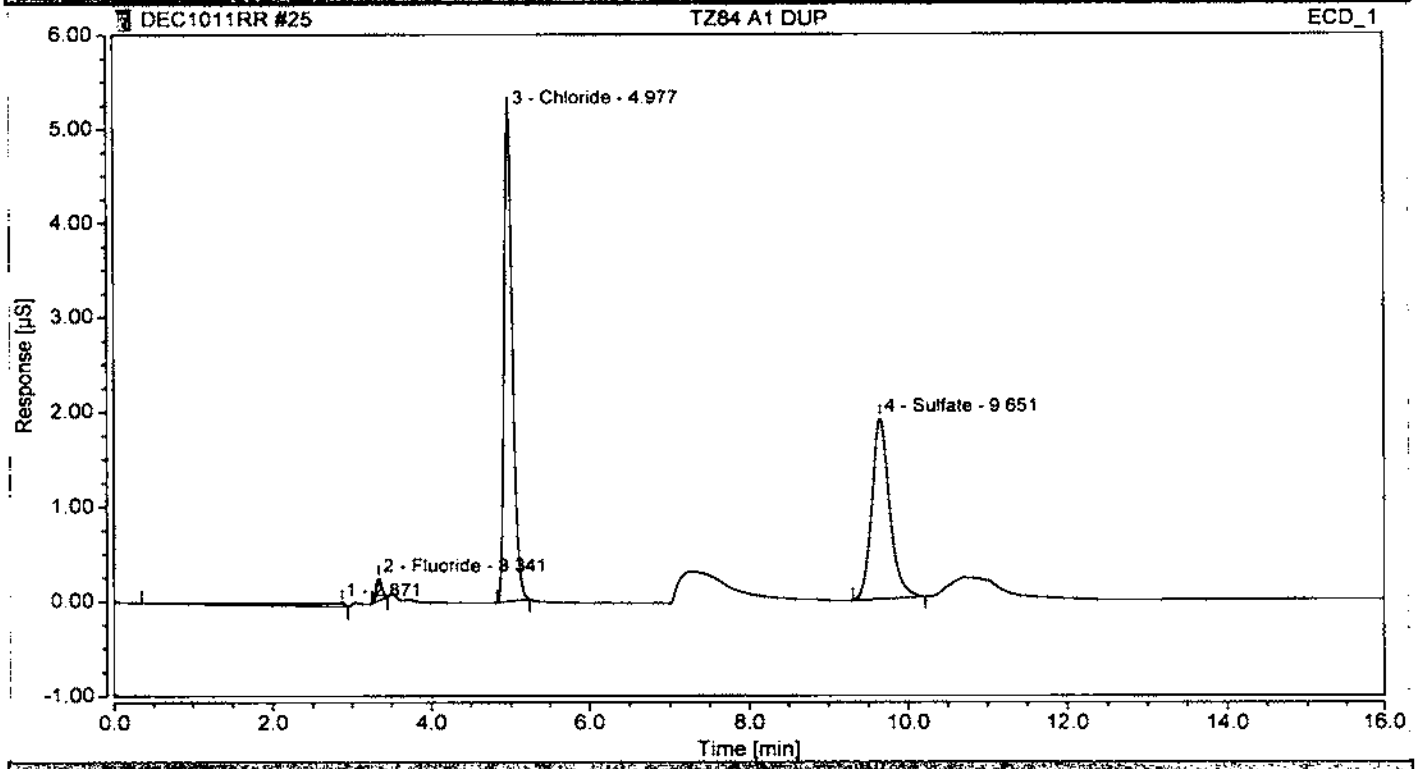
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.696	3.35	0.330	2.244	FALSE	n.a.
2	Chloride	1.0	40.173	4.97	12.164	98.782	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Bromide	1.0	0.306	8.81	0.039	0.193	FALSE	n.a.
4	Sulfate	1.0	0.120	9.63	0.022	0.079	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	1.480	13.31	0.438	2.034	FALSE	n.a.
6		1.0	n.a.	15.31	0.024	0.088	FALSE	n.a.

Injection Name:	*TZ84 A1*	Inject Number:	24
Vial Number:	*22*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 18:13*		



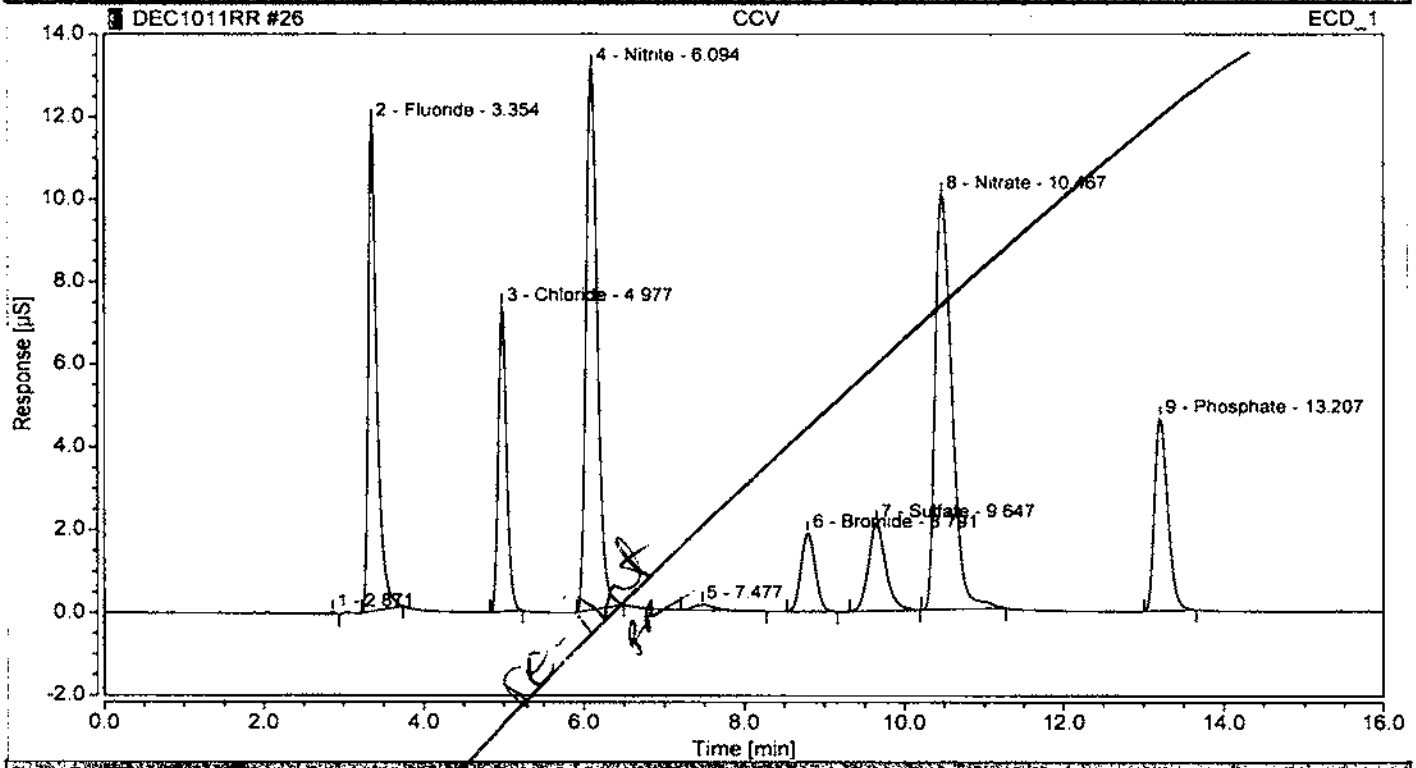
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	5.0	0.217	3.34	0.021	0.242	FALSE	n.a.
2	Chloride	5.0	10.438	4.98	0.632	5.253	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Sulfate	5.0	13.407	9.65	0.497	1.947	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 DUP*	Inject Number:	25
Vial Number:	*23*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 18:32*		



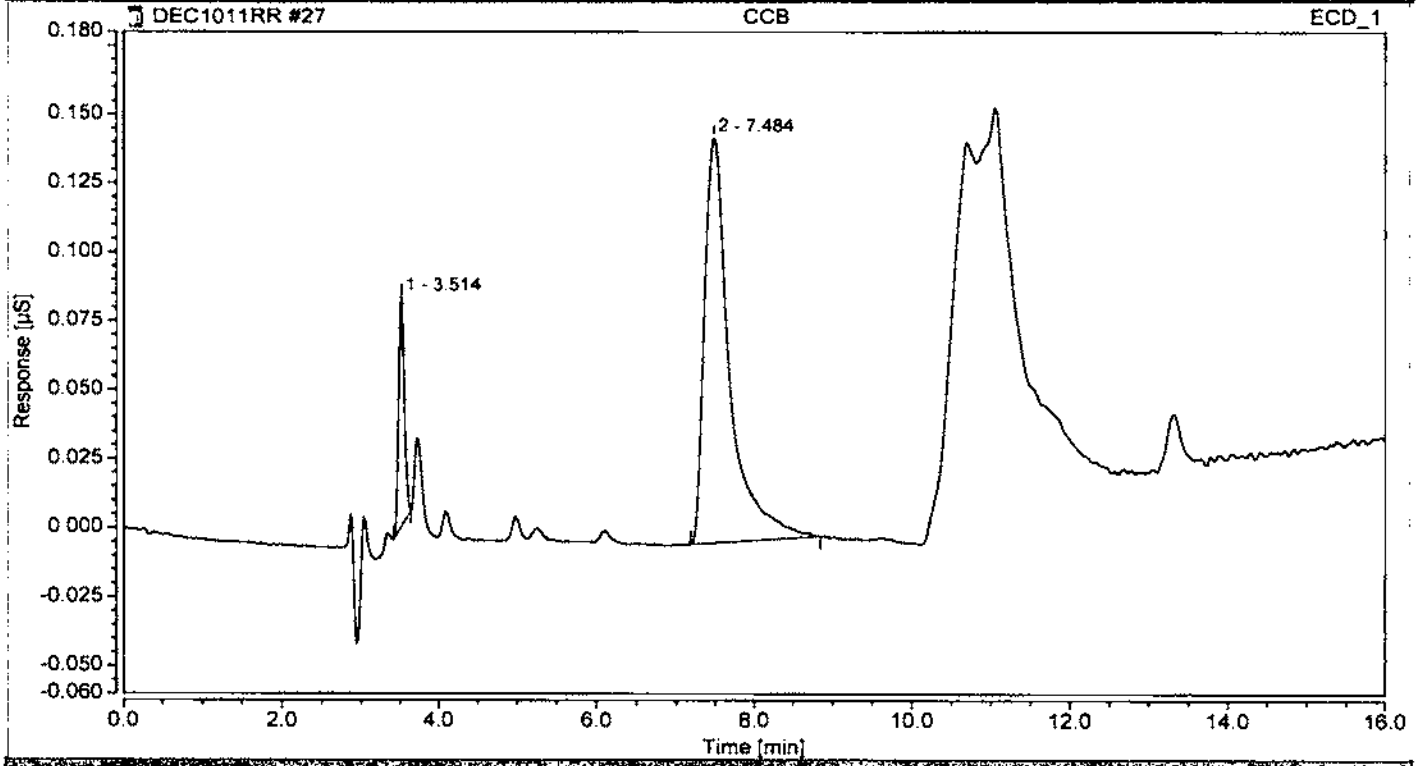
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.045	0.047	FALSE	n.a.
2	Fluoride	5.0	0.214	3.34	0.020	0.240	FALSE	n.a.
3	Chloride	5.0	10.366	4.98	0.628	5.204	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	5.0	13.233	9.65	0.491	1.914	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*CCV*	Inject Number:	26
Vial Number:	*2*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 18:52*		



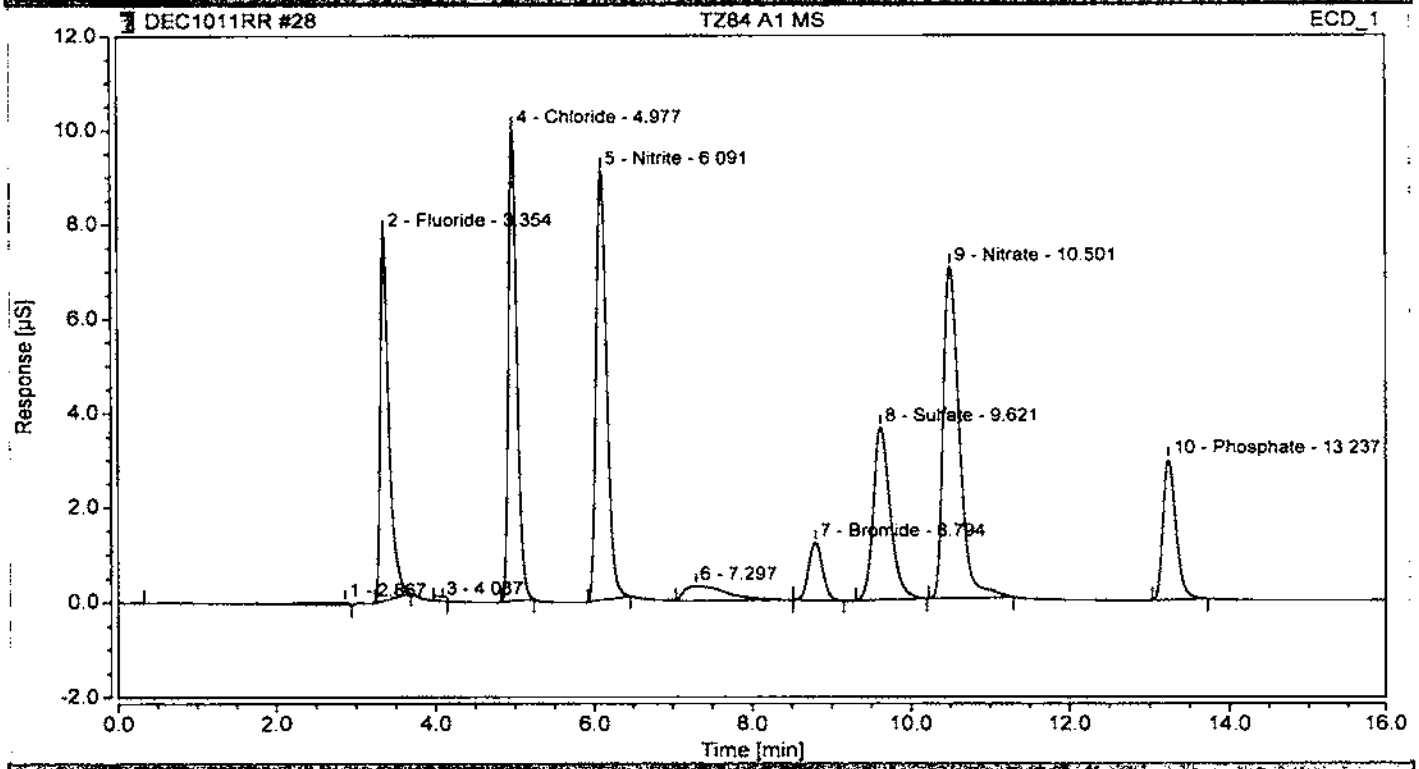
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.045	FALSE	n.a.
2	Fluoride	1.0	3.045	3.35	1.443	11.843	FALSE	1.51
3	Chloride	1.0	2.949	4.98	0.893	7.361	FALSE	-1.71
4	Nitrite	1.0	3.030	6.09	2.109	13.131	FALSE	0.99
5		1.0	n.a.	7.48	0.044	0.138	FALSE	n.a.
6	Bromide	1.0	3.002	8.79	0.386	1.881	FALSE	0.07
7	Sulfate	1.0	2.901	9.65	0.538	2.118	FALSE	-3.29
8	Nitrate	1.0	3.187	10.47	2.418	10.021	FALSE	6.24
9	Phosphate	1.0	2.979	13.21	0.881	4.843	FALSE	-0.69

Injection Name:	*CCB*	Inject Number:	27
Vial Number:	*3*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:12*		



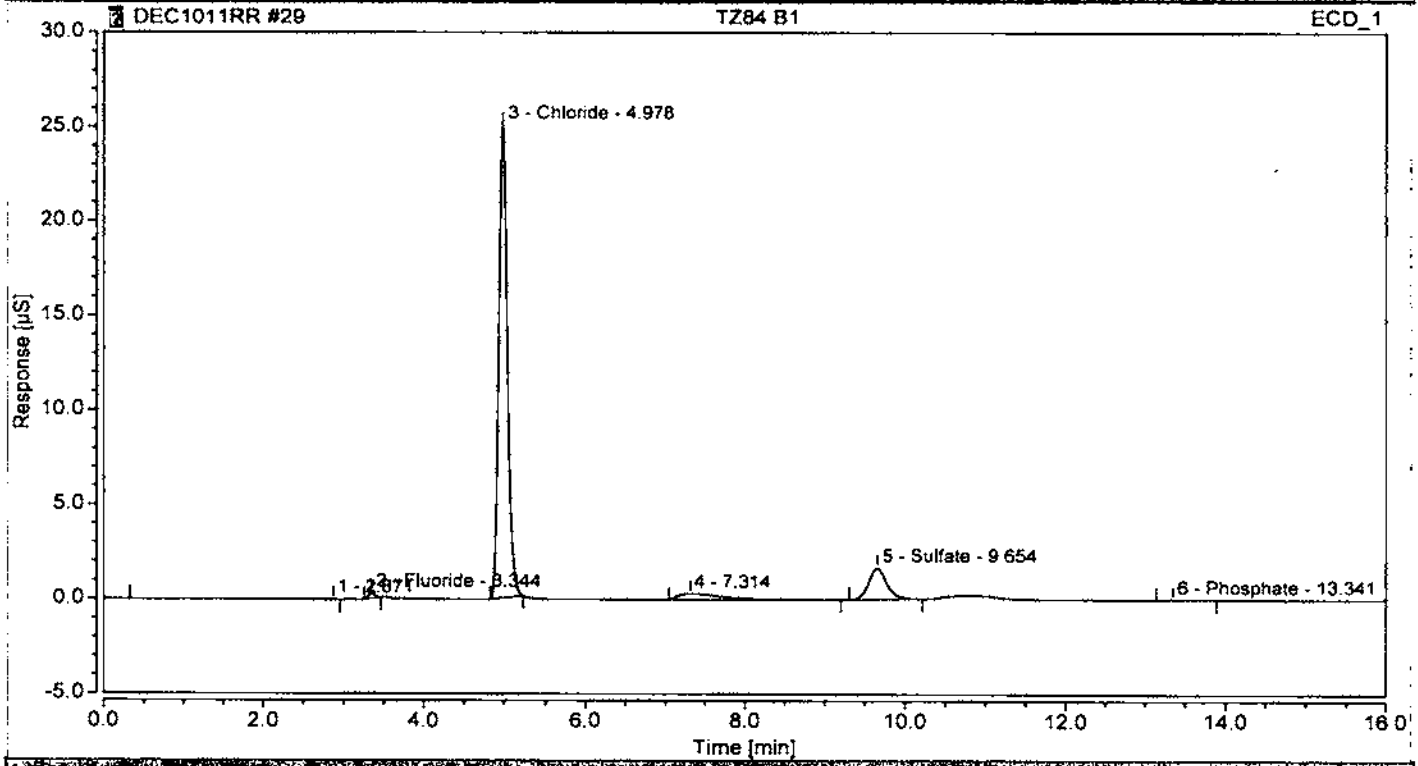
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		1.0	n.a.	3.51	0.007	0.084	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	7.48	0.055	0.147	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ84 A1 MS*	Inject Number:	28
Vial Number:	*24*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 19:33*		



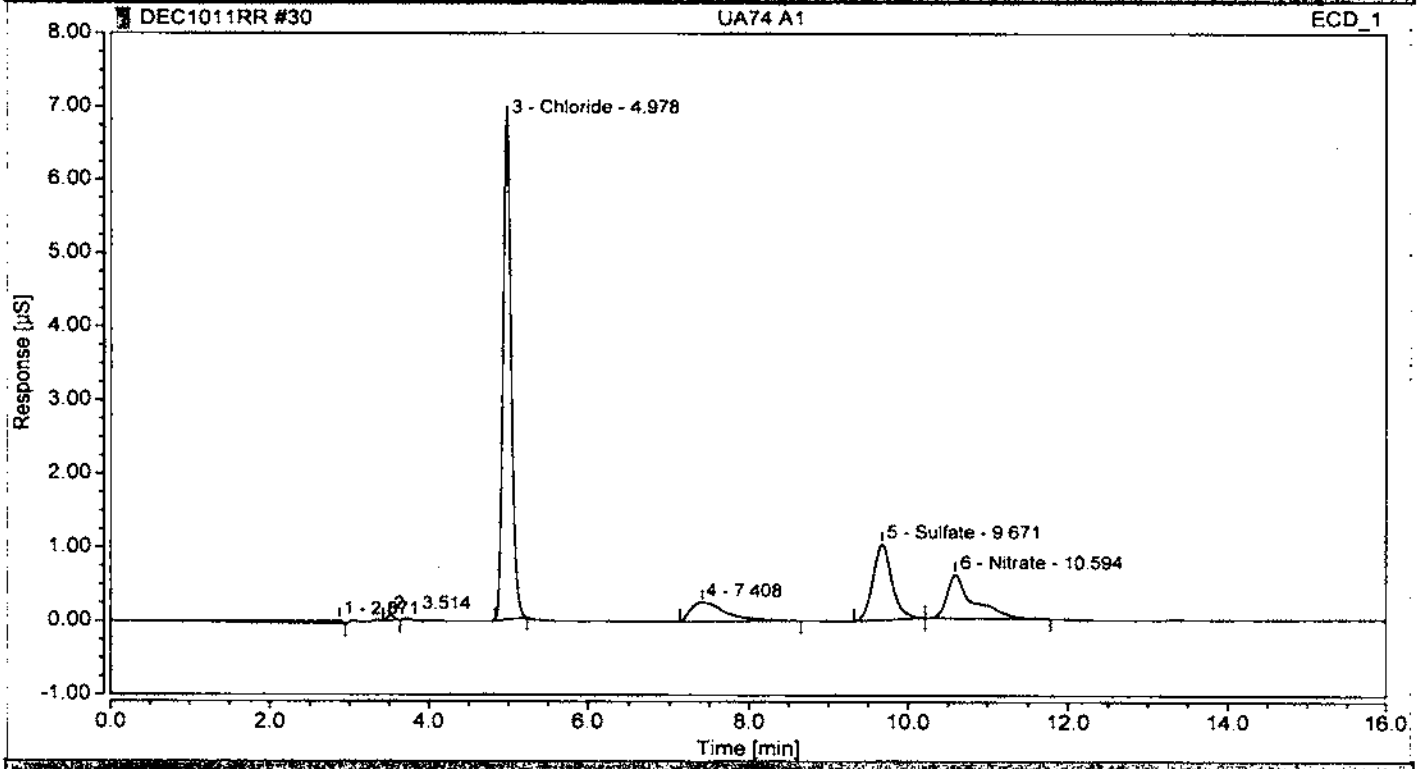
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.046	0.046	FALSE	n.a.
2	Fluoride	5.0	10.194	3.35	0.966	7.787	FALSE	n.a.
3		5.0	n.a.	4.09	0.016	0.087	FALSE	n.a.
4	Chloride	5.0	19.964	4.98	1.209	9.992	FALSE	n.a.
5	Nitrite	5.0	10.129	6.09	1.410	9.094	FALSE	n.a.
6		5.0	n.a.	7.30	0.189	0.301	FALSE	n.a.
7	Bromide	5.0	9.553	8.79	0.246	1.205	FALSE	n.a.
8	Sulfate	5.0	24.259	9.62	0.899	3.636	FALSE	n.a.
9	Nitrate	5.0	10.827	10.50	1.643	7.009	FALSE	n.a.
10	Phosphate	5.0	9.403	13.24	0.556	2.963	FALSE	n.a.

Injection Name:	*TZ84 B1*	Inject Number:	29
Vial Number:	*25*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 19:53*		



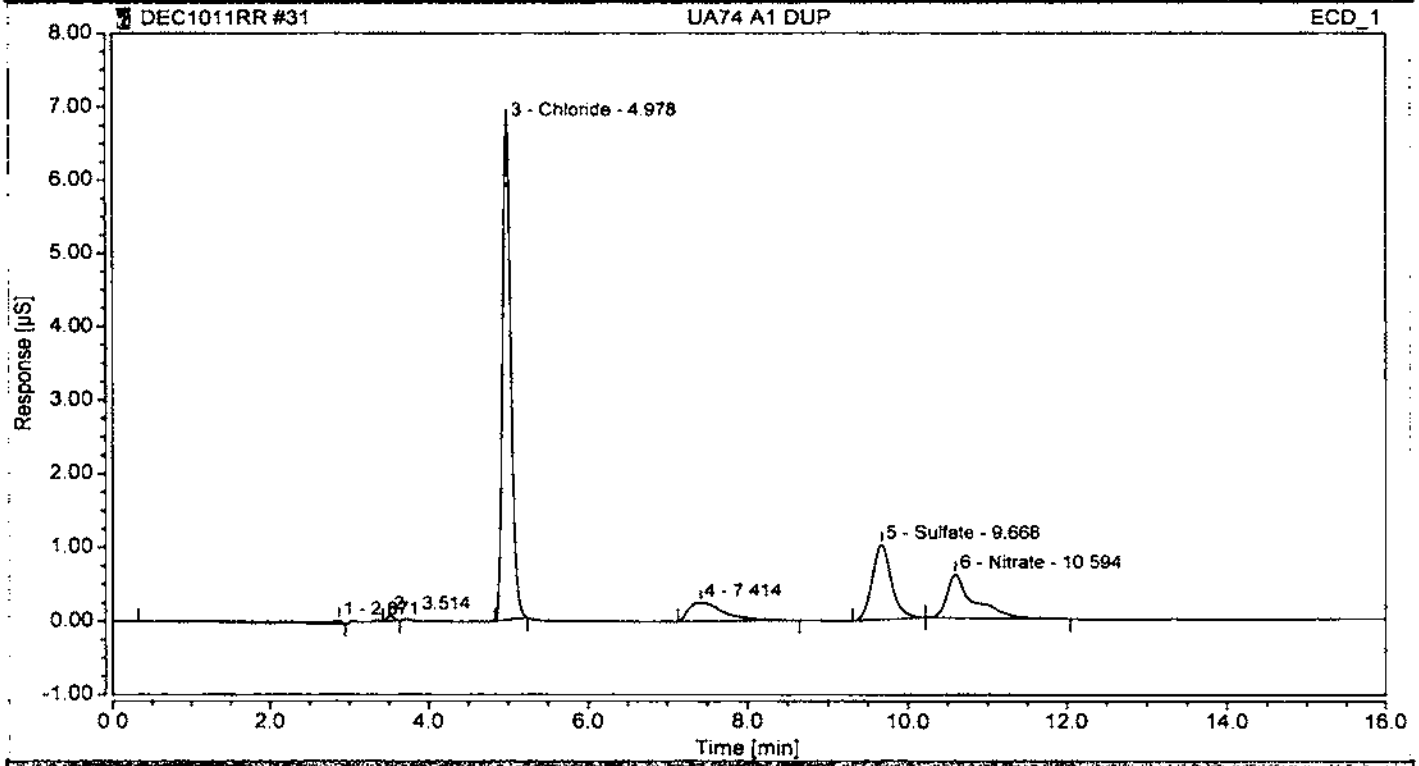
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.044	0.046	FALSE	n.a.
2	Fluoride	5.0	0.282	3.34	0.025	0.288	FALSE	n.a.
3	Chloride	5.0	50.158	4.98	3.038	25.046	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.31	0.216	0.310	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	11.635	9.65	0.431	1.650	FALSE	n.a.
n.a.	Nitrate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Phosphate	5.0	0.087	13.34	0.005	0.021	FALSE	n.a.

Injection Name:	*UA74 A1*	Inject Number:	30
Vial Number:	*14*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 20:13*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.047	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	54.420	4.98	0.824	6.816	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.136	0.258	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	30.725	9.67	0.285	1.028	FALSE	n.a.
6	Nitrate	20.0	5.985	10.59	0.227	0.591	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

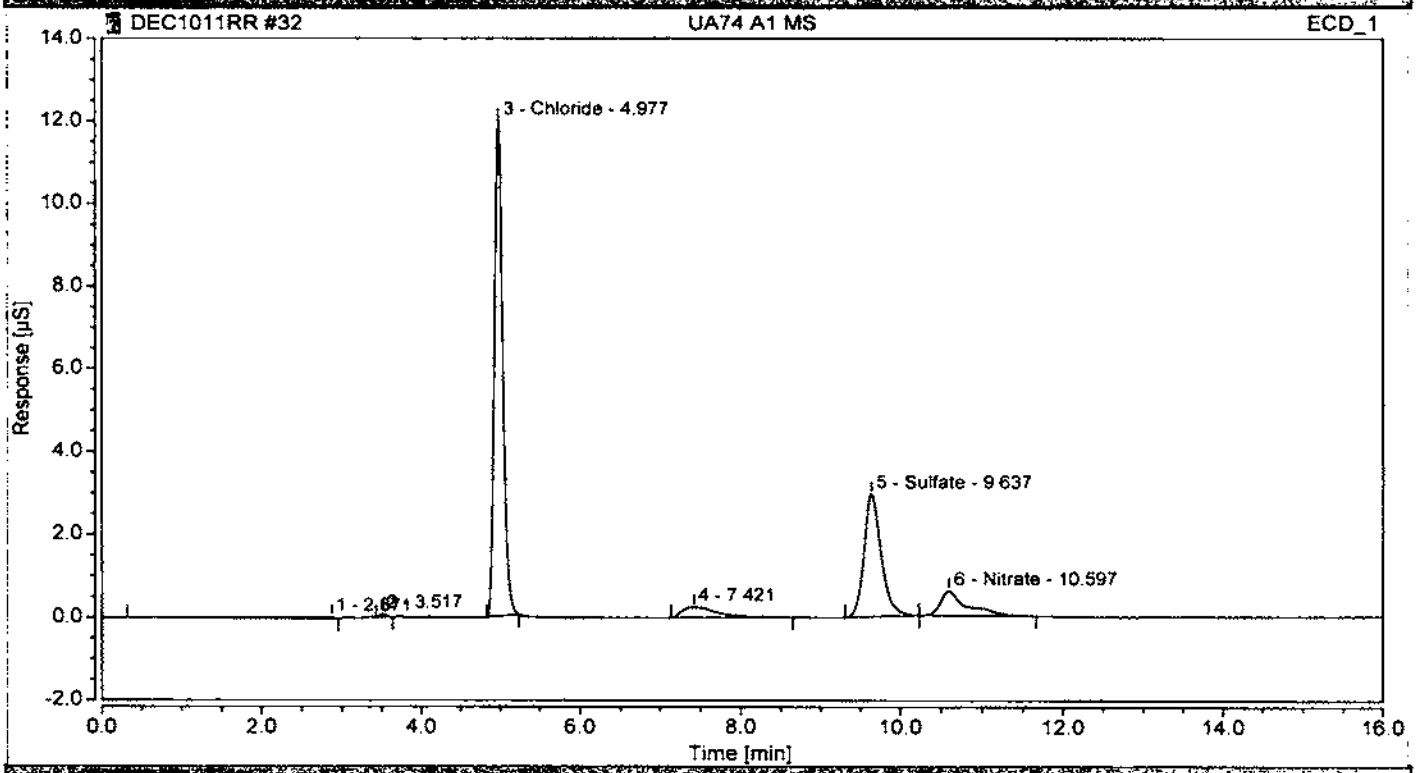
Injection Name:	*UA74 A1 DUP*	Inject Number:	31
Vial Number:	*15*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 20:33*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.044	0.045	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.51	0.007	0.076	FALSE	n.a.
3	Chloride	20.0	54.138	4.98	0.820	6.777	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.41	0.132	0.255	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	30.456	9.67	0.282	1.013	FALSE	n.a.
6	Nitrate	20.0	6.149	10.59	0.233	0.589	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

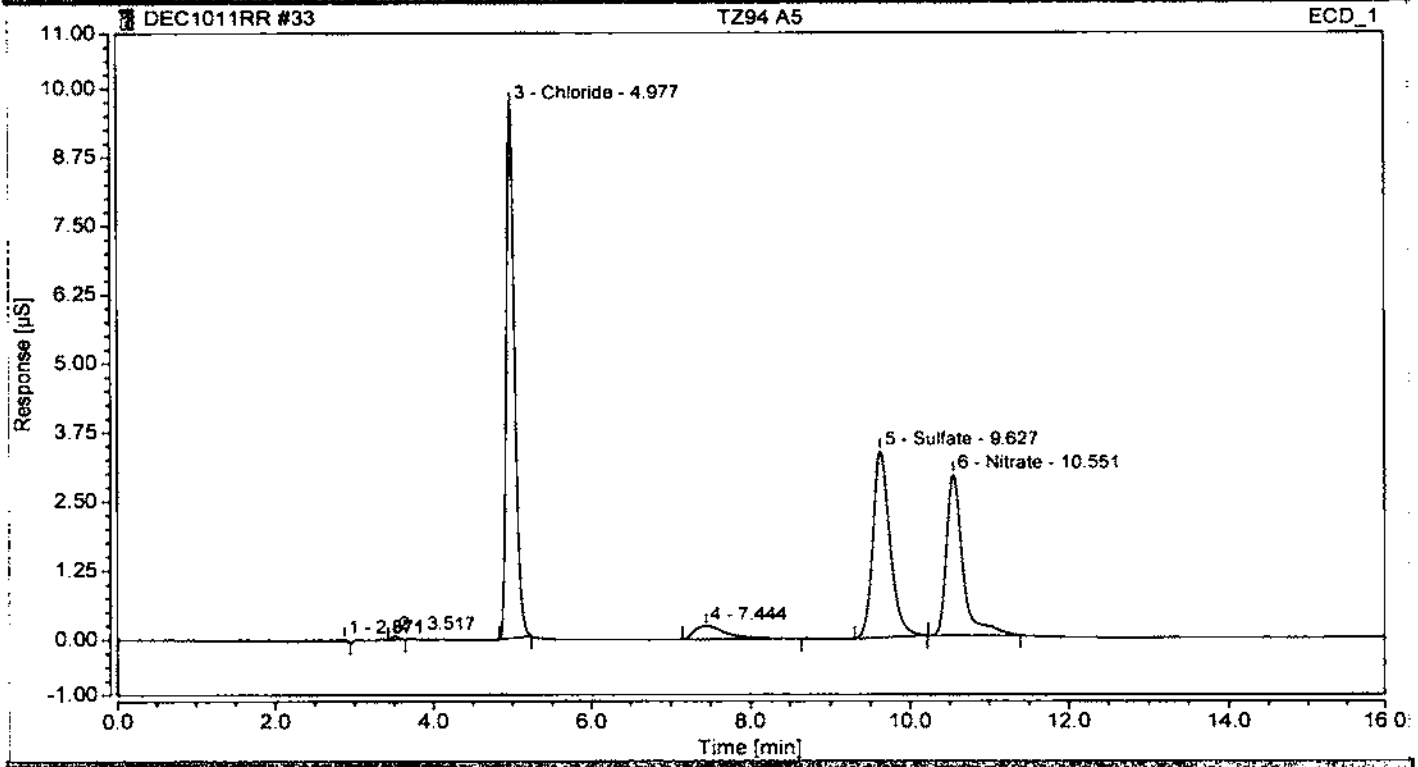
[redacted]

Injection Name:	*UA74 A1 MS*	Inject Number:	32
Vial Number:	*16*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*20.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 20:53*		



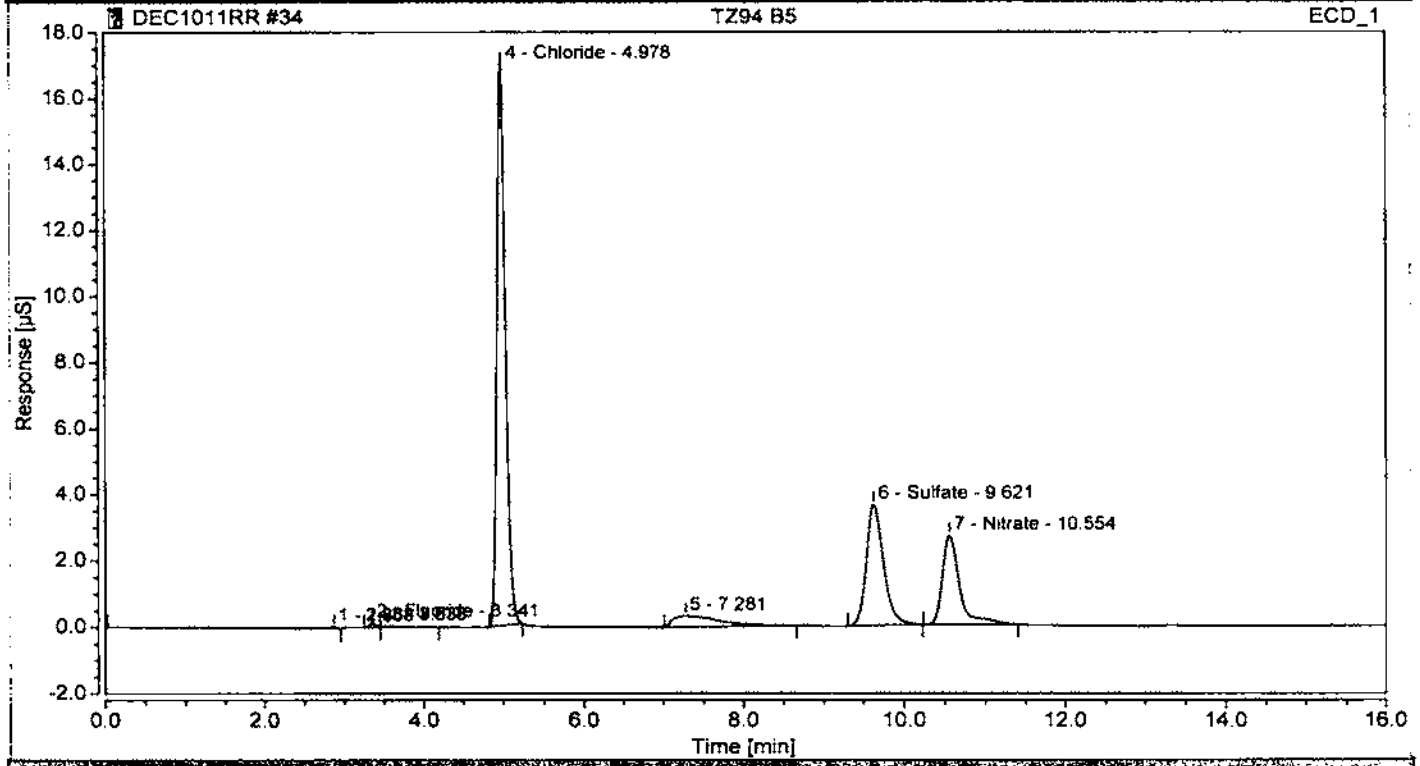
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		20.0	n.a.	2.87	0.045	0.044	FALSE	n.a.
n.a.	Fluoride	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		20.0	n.a.	3.52	0.007	0.075	FALSE	n.a.
3	Chloride	20.0	95.663	4.98	1.451	11.979	FALSE	n.a.
n.a.	Nitrite	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		20.0	n.a.	7.42	0.130	0.254	FALSE	n.a.
n.a.	Bromide	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	20.0	79.363	9.64	0.736	2.949	FALSE	n.a.
6	Nitrate	20.0	5.896	10.60	0.224	0.590	FALSE	n.a.
n.a.	Phosphate	20.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ94 A5*	Inject Number:	33
Vial Number:	*26*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 21:14*		



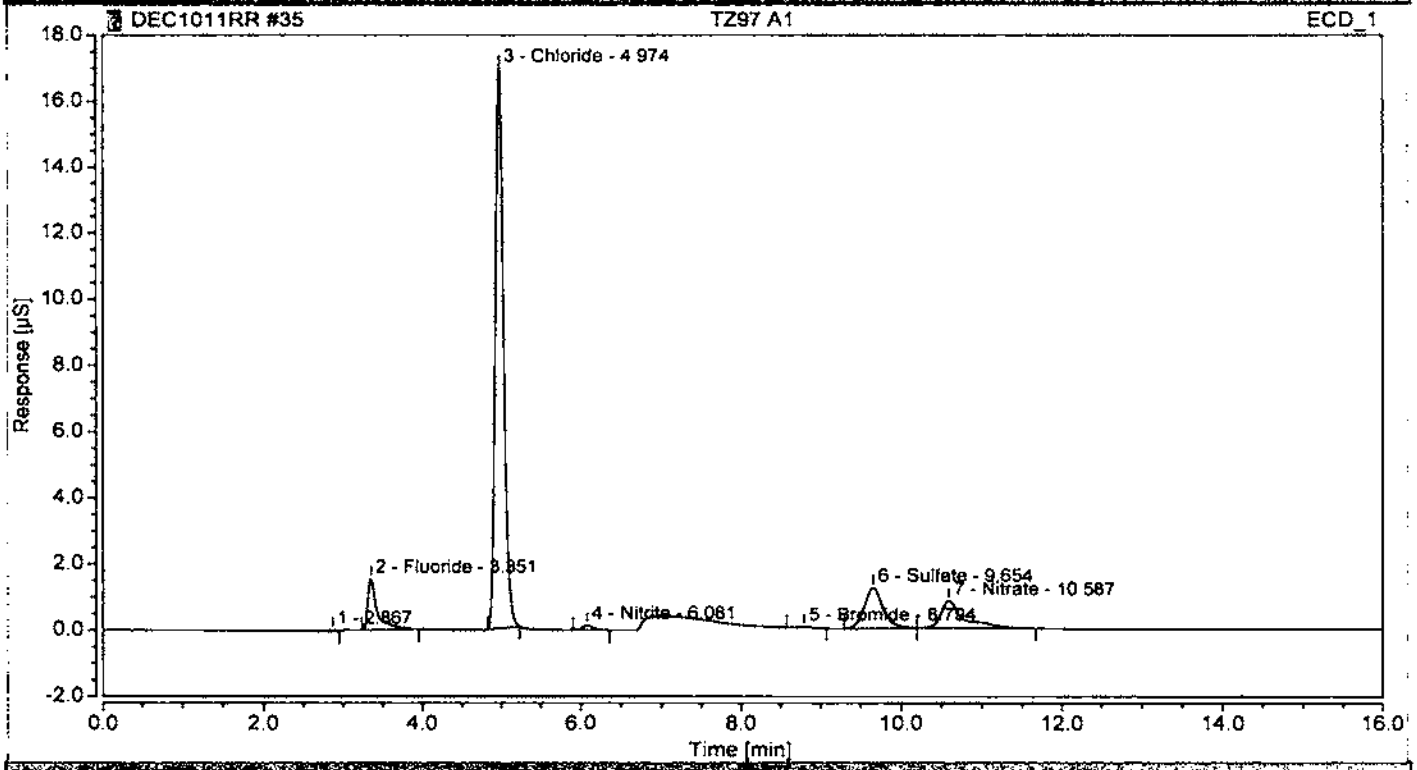
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.048	0.045	FALSE	n.a.
n.a.	Fluoride	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		5.0	n.a.	3.52	0.006	0.071	FALSE	n.a.
3	Chloride	5.0	19.341	4.98	1.171	9.676	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.44	0.114	0.237	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	22.507	9.63	0.835	3.375	FALSE	n.a.
6	Nitrate	5.0	4.648	10.55	0.705	2.908	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ94 B5*	Inject Number:	34
Vial Number:	*27*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 21:34*		



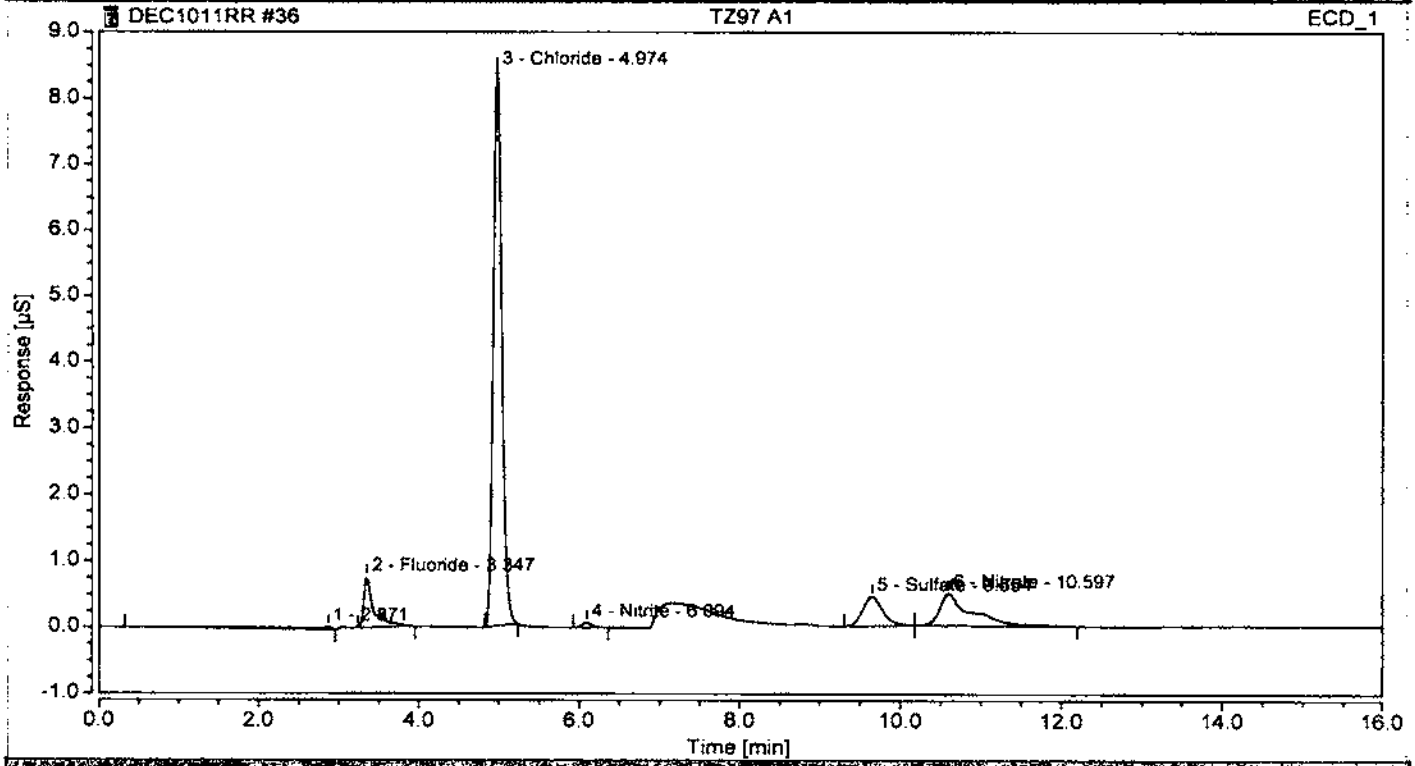
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.044	FALSE	n.a.
2	Fluoride	1.0	0.022	3.34	0.011	0.129	FALSE	n.a.
3		1.0	n.a.	3.54	0.006	0.025	FALSE	n.a.
4	Chloride	1.0	6.795	4.98	2.057	16.982	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5		1.0	n.a.	7.28	0.225	0.324	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Sulfate	1.0	4.839	9.62	0.897	3.644	FALSE	n.a.
7	Nitrate	1.0	0.860	10.55	0.653	2.674	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 A1*	Inject Number:	35
Vial Number:	*28*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 21:55*		



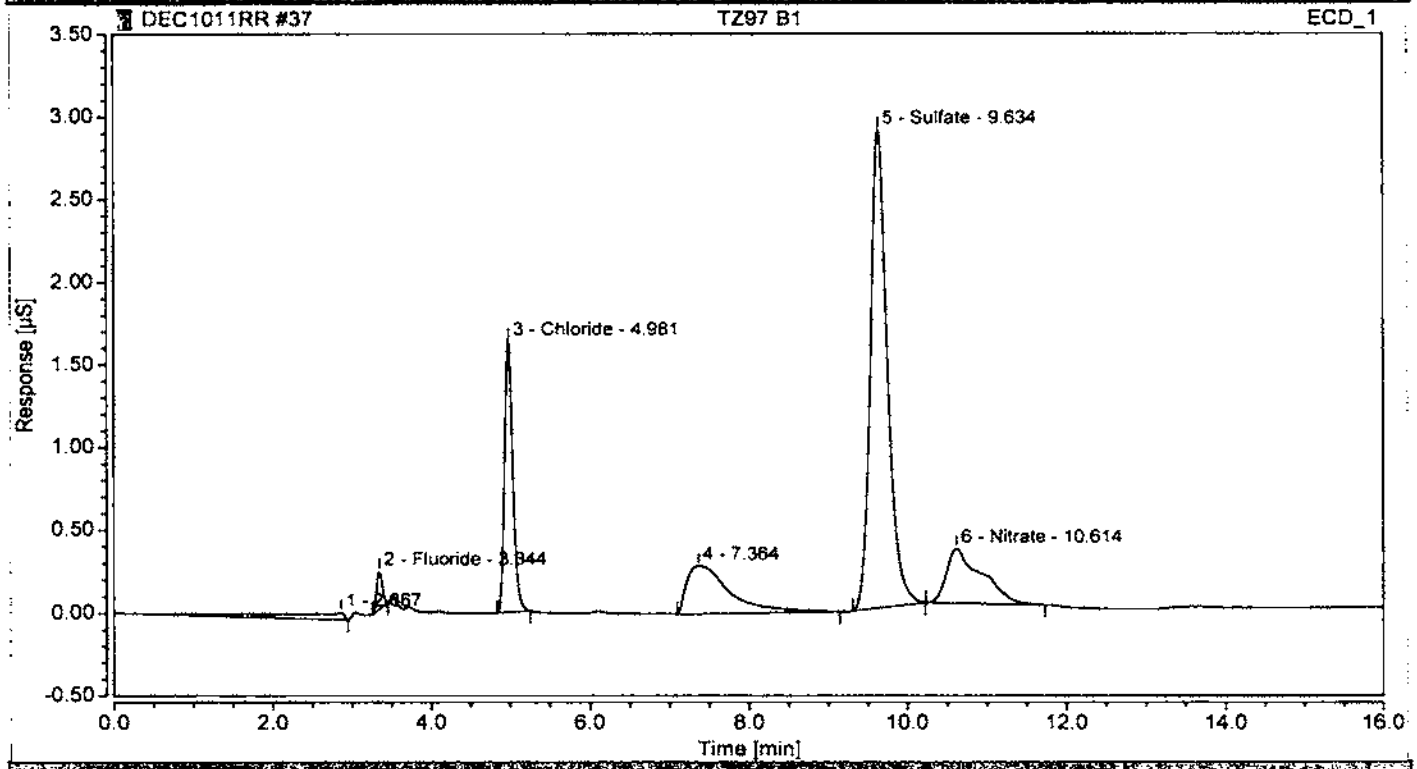
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.048	0.042	FALSE	n.a.
2	Fluoride	1.0	0.489	3.35	0.222	1.549	FALSE	n.a.
3	Chloride	1.0	6.770	4.97	2.050	16.959	FALSE	n.a.
4	Nitrite	1.0	0.029	6.08	0.020	0.144	FALSE	n.a.
5	Bromide	1.0	0.050	8.79	0.006	0.032	FALSE	n.a.
6	Sulfate	1.0	1.780	9.65	0.330	1.228	FALSE	n.a.
7	Nitrate	1.0	0.355	10.59	0.270	0.820	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 A1*	Inject Number:	36
Vial Number:	*29*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*2.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 22:15*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		2.0	n.a.	2.87	0.045	0.043	FALSE	n.a.
2	Fluoride	2.0	0.474	3.35	0.112	0.761	FALSE	n.a.
3	Chloride	2.0	8.694	4.97	1.014	8.397	FALSE	n.a.
4	Nitrite	2.0	0.028	6.09	0.010	0.070	FALSE	n.a.
n.a.	Bromide	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	2.0	1.560	9.65	0.129	0.443	FALSE	n.a.
6	Nitrate	2.0	0.568	10.60	0.223	0.486	FALSE	n.a.
n.a.	Phosphate	2.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 B1*	Inject Number:	37
Vial Number:	*30*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 22:36*		

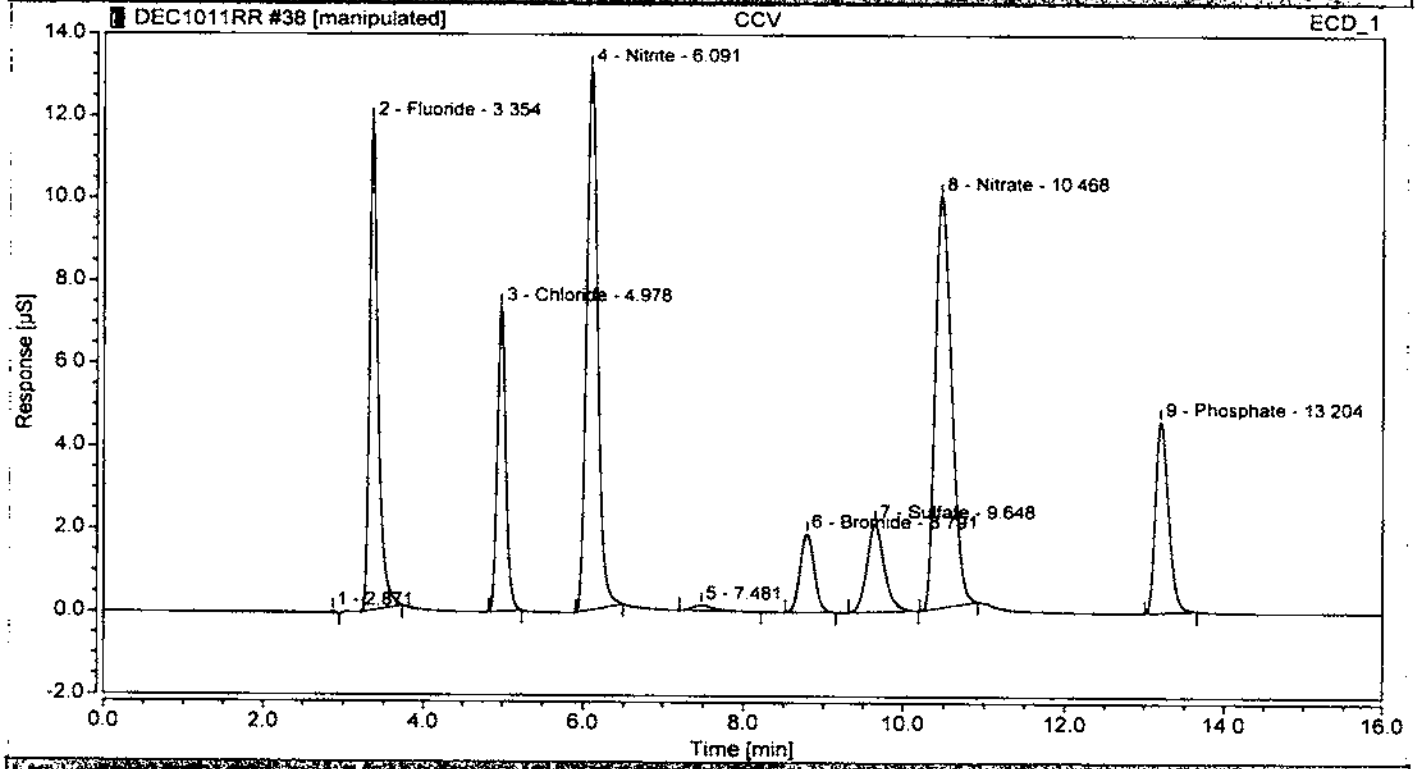


No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	5.0	0.202	3.34	0.019	0.228	FALSE	n.a.
3	Chloride	5.0	3.248	4.98	0.197	1.636	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.182	0.288	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.374	9.63	0.718	2.890	FALSE	n.a.
6	Nitrate	5.0	1.100	10.61	0.167	0.327	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

[illegible]

Injection Name:	*CCV*	Inject Number:	38
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodai*		
Injection Date/Time:	*10/12/11 22:56*		

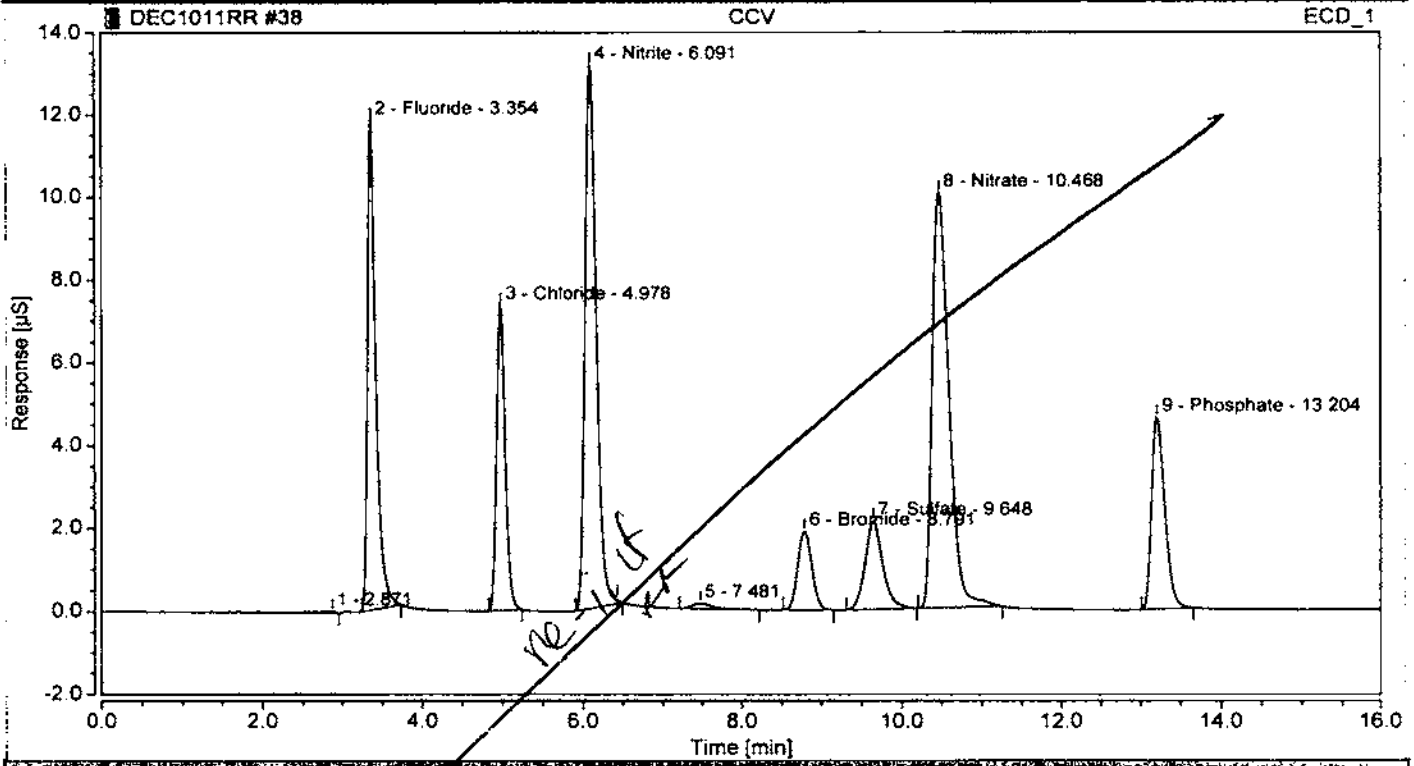
[illegible]



[illegible]

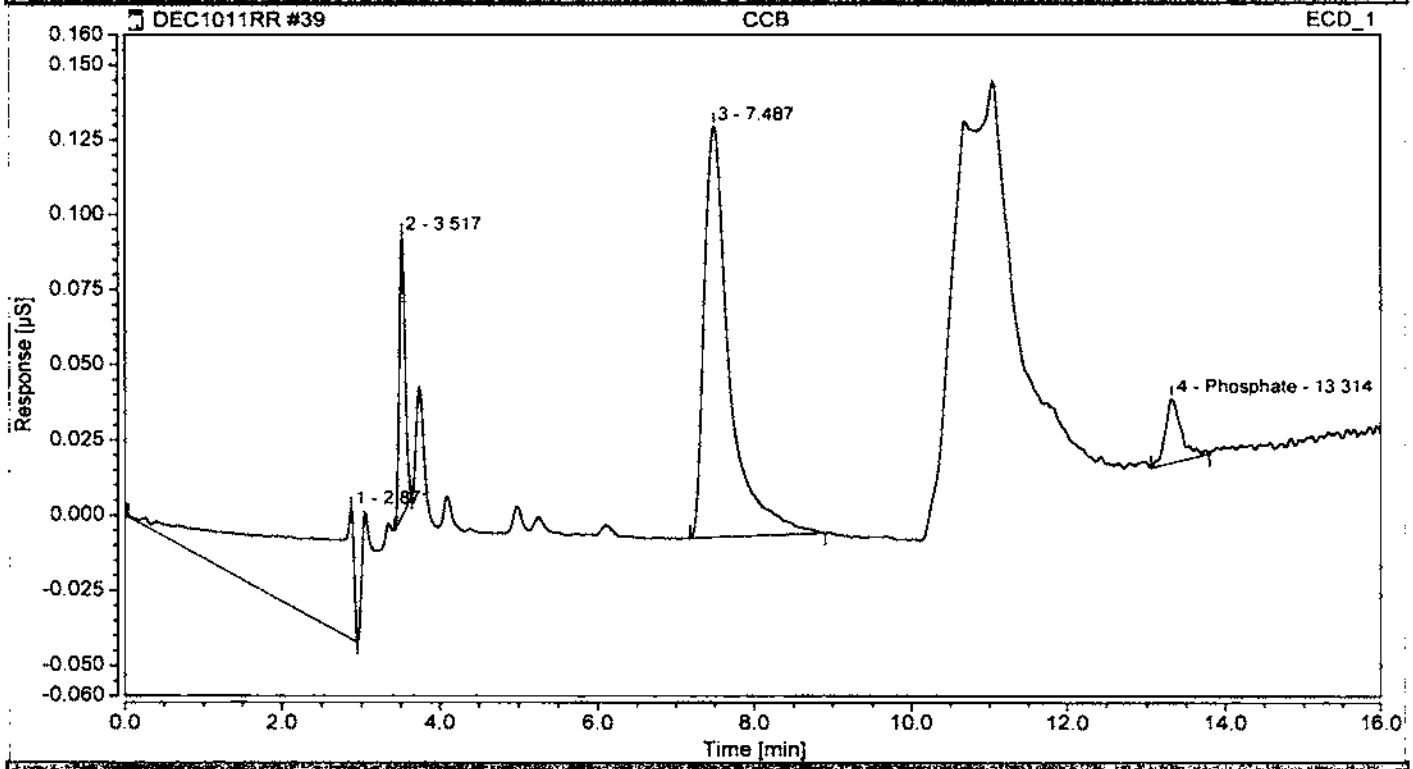
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	1.0	3.039	3.35	1.440	11.843	FALSE	1.30
3	Chloride	1.0	2.949	4.98	0.893	7.362	FALSE	-1.68
4	Nitrite	1.0	3.036	6.09	2.113	13.134	FALSE	1.19
5		1.0	n.a.	7.48	0.038	0.125	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.887	FALSE	0.32
7	Sulfate	1.0	2.908	9.65	0.539	2.123	FALSE	-3.06
8	Nitrate	1.0	3.054	10.47	2.317	9.940	TRUE	1.80
9	Phosphate	1.0	2.979	13.20	0.881	4.619	FALSE	-0.70

Injection Name:	*CCV*	Inject Number:	38
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 22:56*		



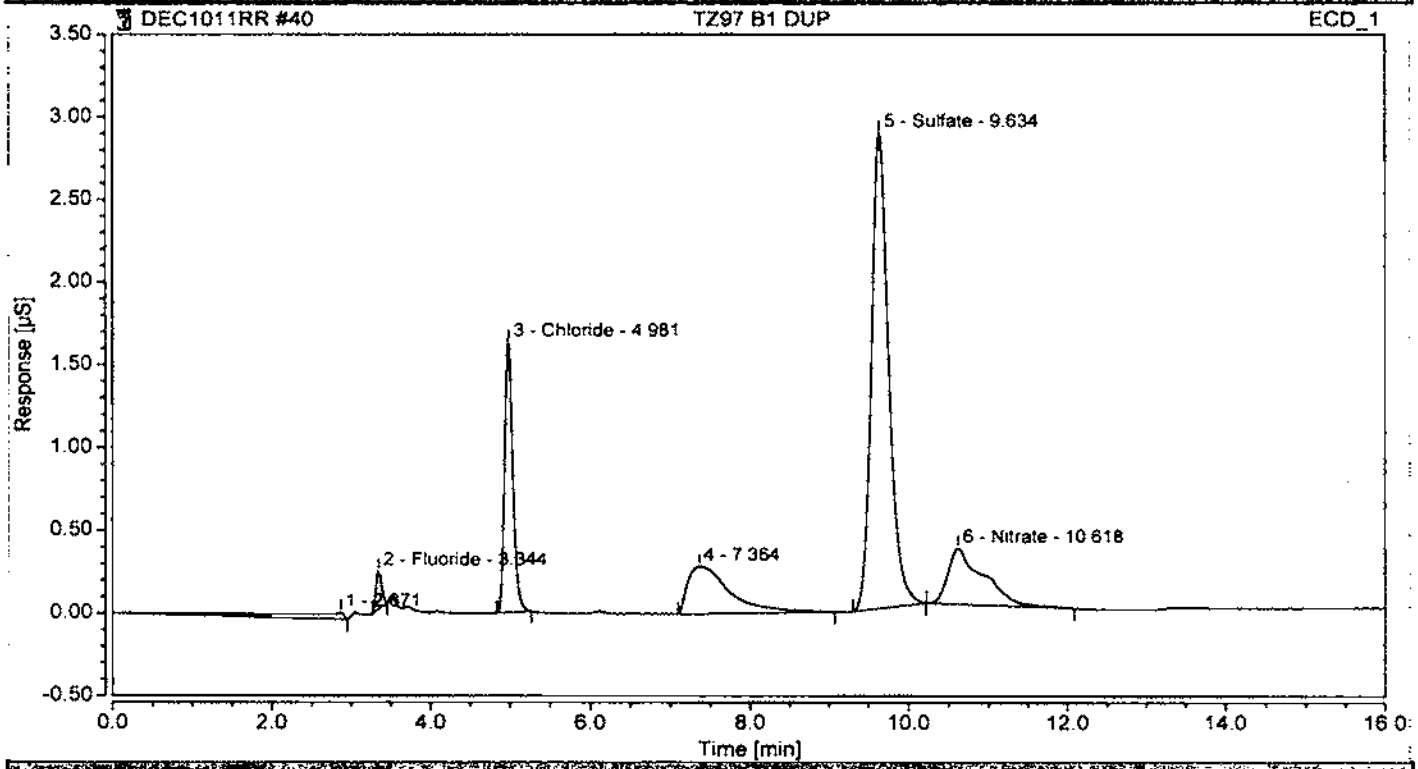
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.047	0.043	FALSE	n.a.
2	Fluoride	1.0	3.039	3.35	1.440	11.843	FALSE	1.30
3	Chloride	1.0	2.949	4.98	0.893	7.362	FALSE	-1.68
4	Nitrite	1.0	3.035	6.09	2.113	13.134	FALSE	1.19
5		1.0	n.a.	7.48	0.038	0.125	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.887	FALSE	0.32
7	Sulfate	1.0	2.908	9.65	0.539	2.123	FALSE	-3.06
8	Nitrate	1.0	3.188	10.47	2.419	10.012	FALSE	6.28
9	Phosphate	1.0	2.979	13.20	0.881	4.619	FALSE	-0.70

Injection Name:	*CCB*	Inject Number:	39
Vial Number:	*32*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 23:17*		



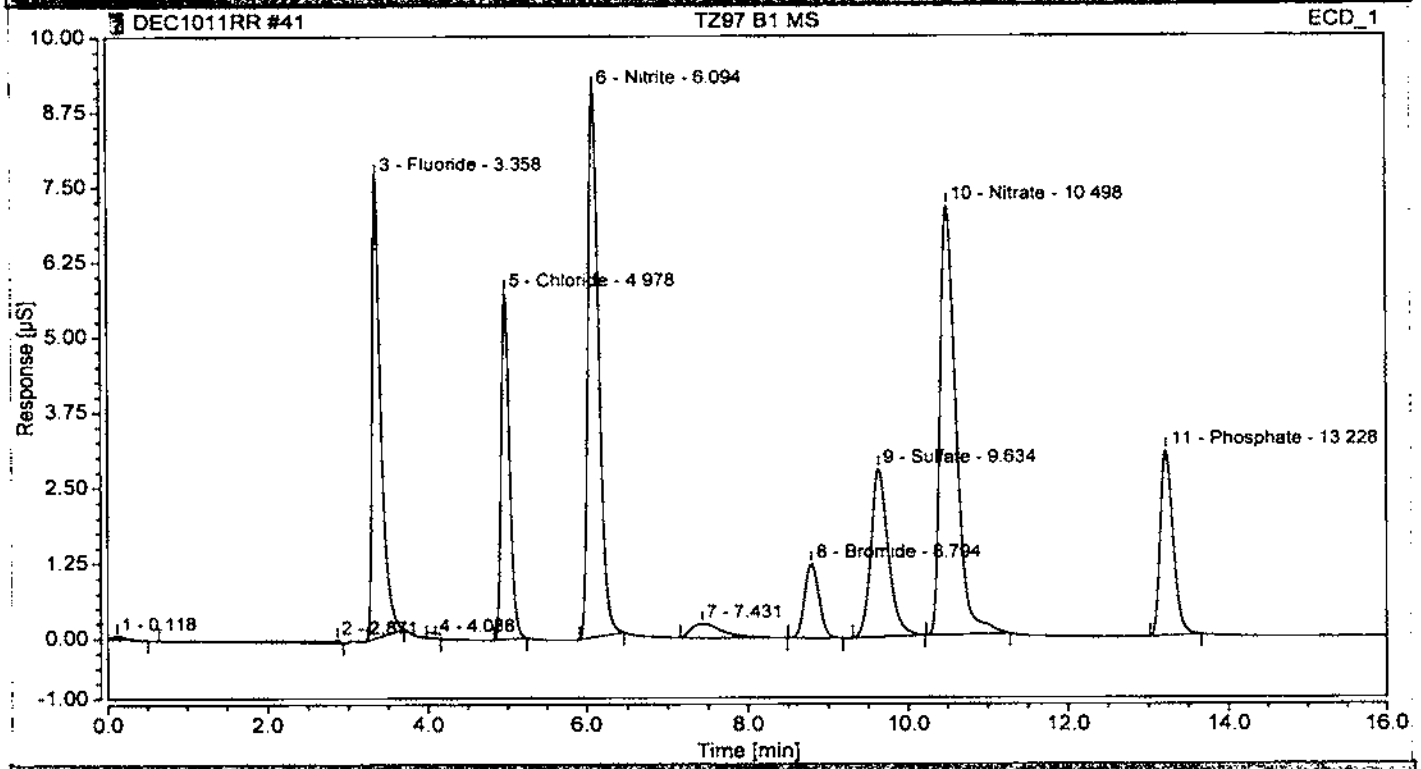
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.045	0.043	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.52	0.008	0.093	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.49	0.051	0.137	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Phosphate	1.0	0.017	13.31	0.005	0.021	FALSE	n.a.

Injection Name:	*TZ97 B1 DUP*	Inject Number:	40
Vial Number:	*33*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*10/12/11 23:37*		



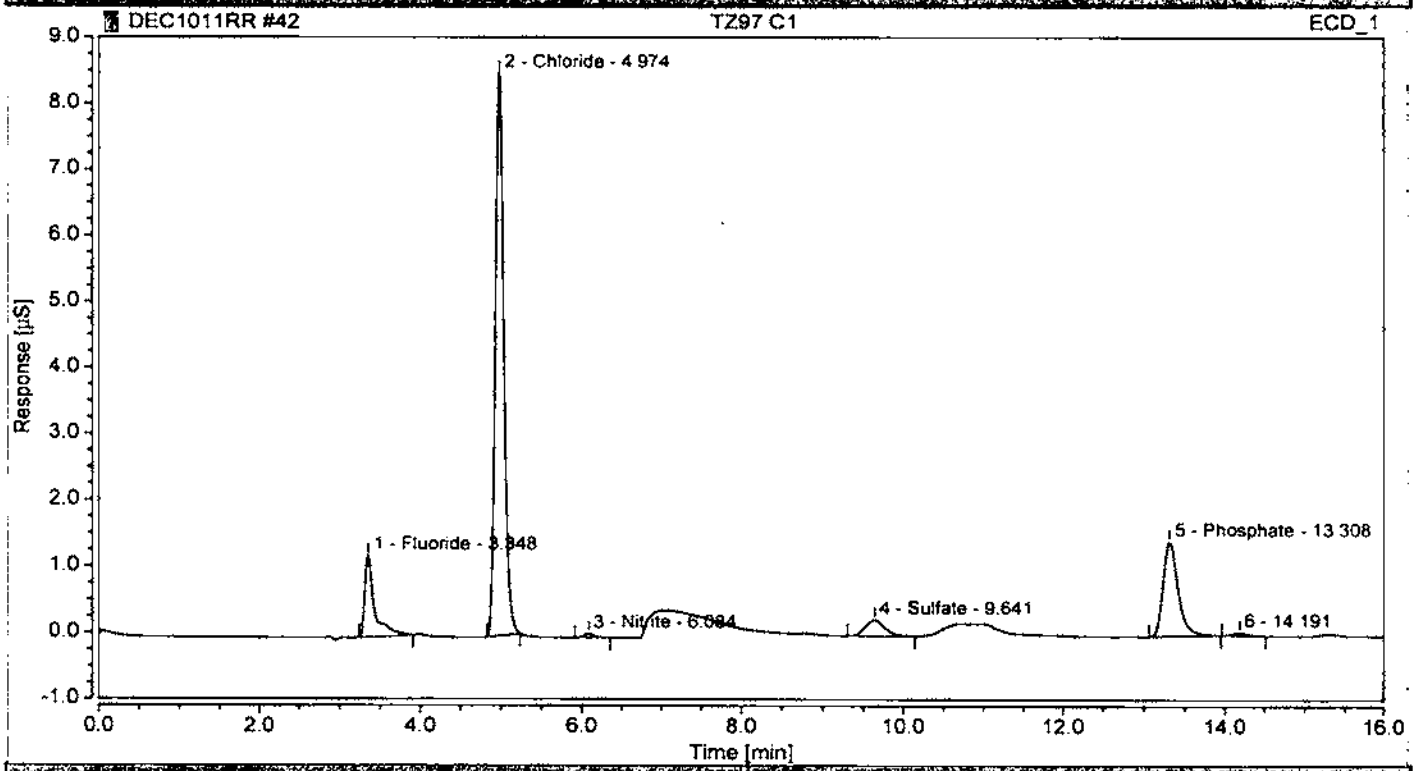
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.046	0.042	FALSE	n.a.
2	Fluoride	5.0	0.202	3.34	0.019	0.229	FALSE	n.a.
3	Chloride	5.0	3.239	4.98	0.196	1.631	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.36	0.179	0.287	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	19.278	9.63	0.715	2.874	FALSE	n.a.
6	Nitrate	5.0	1.151	10.62	0.175	0.336	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ97 B1 MS*	Inject Number:	41
Vial Number:	*34*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*10/12/11 23:58*		



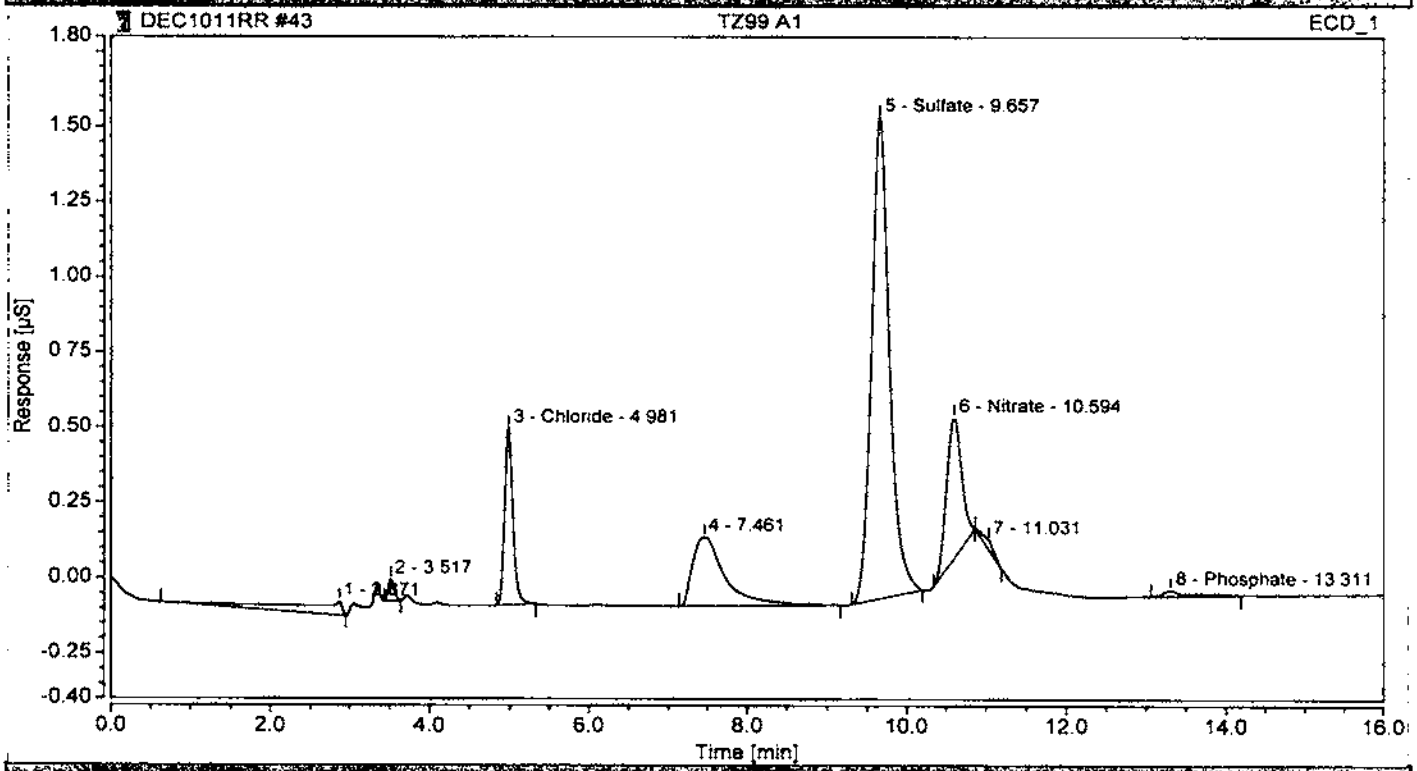
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	0.12	0.011	0.050	FALSE	n.a.
2		10.0	n.a.	2.87	0.035	0.045	FALSE	n.a.
3	Fluoride	10.0	20.125	3.36	0.953	7.666	FALSE	n.a.
4		10.0	n.a.	4.09	0.016	0.085	FALSE	n.a.
5	Chloride	10.0	23.038	4.98	0.698	5.753	FALSE	n.a.
6	Nitrite	10.0	20.445	6.09	1.423	9.099	FALSE	n.a.
7		10.0	n.a.	7.43	0.105	0.230	FALSE	n.a.
8	Bromide	10.0	19.597	8.79	0.252	1.228	FALSE	n.a.
9	Sulfate	10.0	37.545	9.63	0.696	2.782	FALSE	n.a.
10	Nitrate	10.0	22.066	10.50	1.674	7.124	FALSE	n.a.
11	Phosphate	10.0	19.094	13.23	0.565	3.064	FALSE	n.a.

Injection Name:	*TZ97 C1*	Inject Number:	42
Vial Number:	*35*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 00:17*		



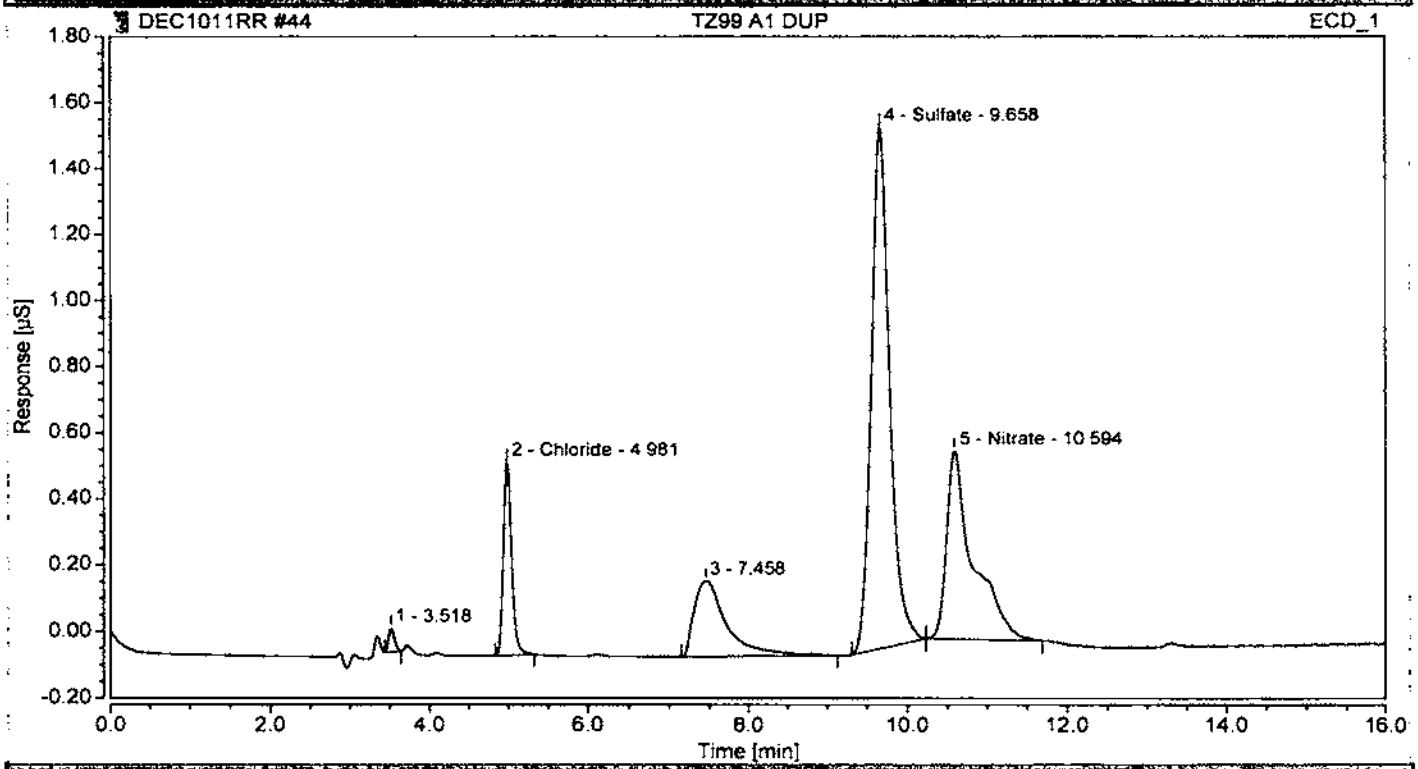
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1	Fluoride	1.0	0.364	3.35	0.172	1.227	FALSE	n.a.
2	Chloride	1.0	3.393	4.97	1.027	8.499	FALSE	n.a.
3	Nitrite	1.0	0.012	6.08	0.008	0.058	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	0.376	9.64	0.070	0.242	FALSE	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Phosphate	1.0	1.031	13.31	0.305	1.416	FALSE	n.a.
6		1.0	n.a.	14.19	0.009	0.042	FALSE	n.a.

Injection Name:	*TZ99 A1*	Inject Number:	43
Vial Number:	*36*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 00:37*		



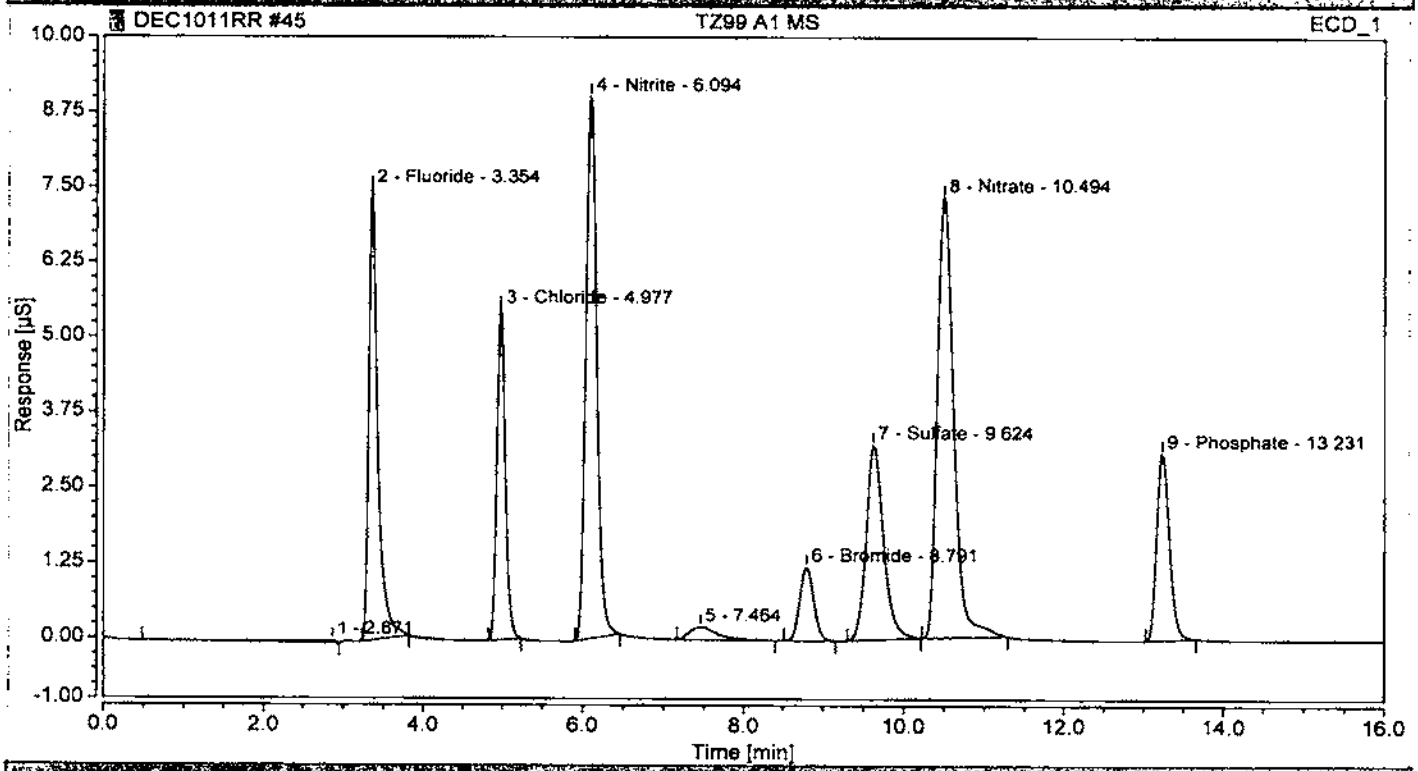
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.87	0.035	0.045	FALSE	n.a.
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		10.0	n.a.	3.52	0.006	0.071	FALSE	n.a.
3	Chloride	10.0	2.342	4.98	0.071	0.585	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		10.0	n.a.	7.46	0.110	0.227	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	10.0	22.857	9.66	0.420	1.598	FALSE	n.a.
6	Nitrate	10.0	1.330	10.59	0.101	0.465	FALSE	n.a.
7		10.0	n.a.	11.03	0.006	0.033	FALSE	n.a.
8	Phosphate	10.0	0.272	13.31	0.008	0.019	FALSE	n.a.

Injection Name:	*TZ99 A1 DUP*	Inject Number:	44
Vial Number:	*37*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 00:56*		



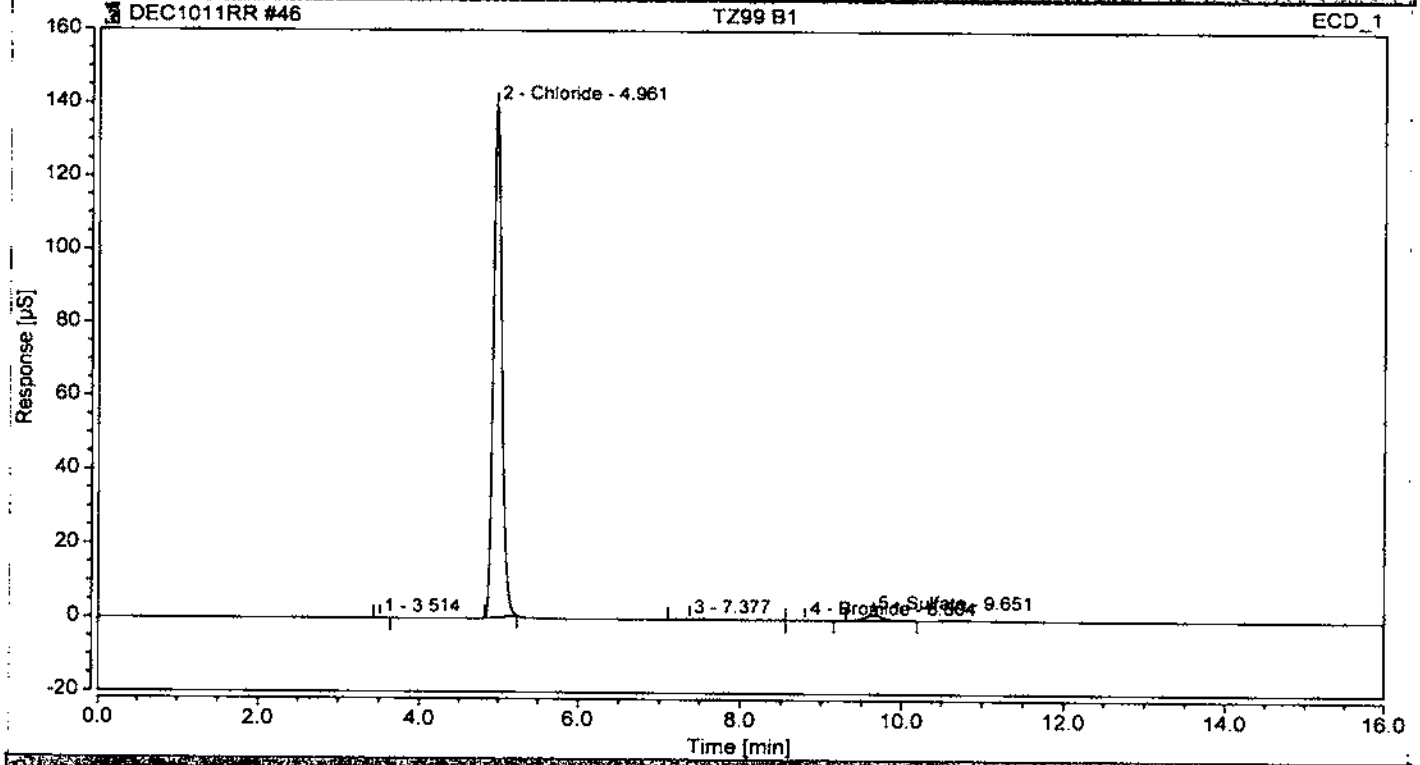
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		10.0	n.a.	3.52	0.006	0.072	FALSE	n.a.
2	Chloride	10.0	2.341	4.98	0.071	0.585	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		10.0	n.a.	7.46	0.110	0.228	FALSE	n.a.
n.a.	Bromide	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	10.0	22.526	9.66	0.418	1.577	FALSE	n.a.
5	Nitrate	10.0	2.889	10.59	0.219	0.569	FALSE	n.a.
n.a.	Phosphate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Injection Name:	*TZ99 A1 MS*	Inject Number:	45
Vial Number:	*38*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 01:15*		



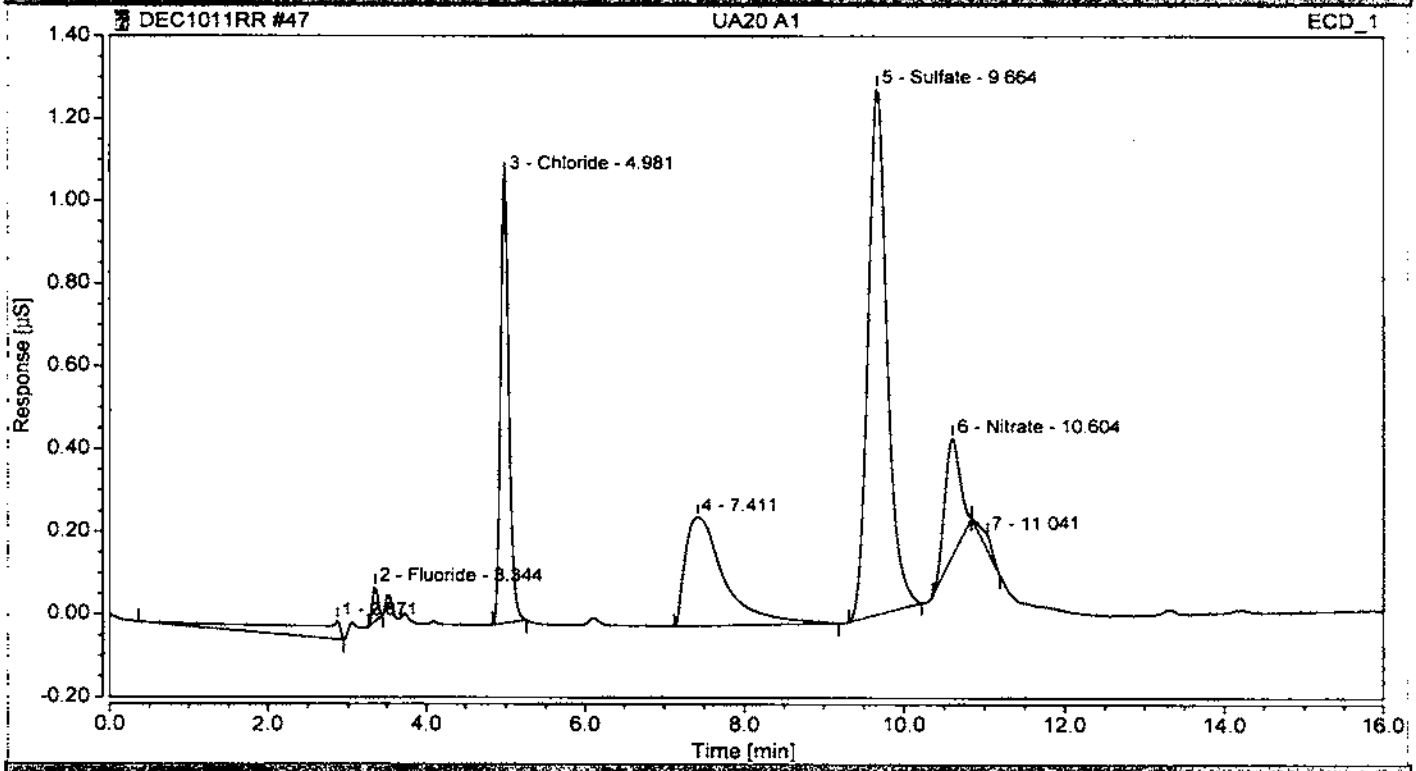
No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		10.0	n.a.	2.87	0.037	0.044	FALSE	n.a.
2	Fluoride	10.0	20.509	3.35	0.972	7.508	FALSE	n.a.
3	Chloride	10.0	21.988	4.98	0.666	5.492	FALSE	n.a.
4	Nitrite	10.0	20.249	6.09	1.410	9.007	FALSE	n.a.
5		10.0	n.a.	7.46	0.086	0.208	FALSE	n.a.
6	Bromide	10.0	19.428	8.79	0.250	1.219	FALSE	n.a.
7	Sulfate	10.0	43.303	9.62	0.803	3.236	FALSE	n.a.
8	Nitrate	10.0	22.755	10.49	1.726	7.306	FALSE	n.a.
9	Phosphate	10.0	19.203	13.23	0.568	3.098	FALSE	n.a.

Injection Name:	*TZ99 B1*	Inject Number:	46
Vial Number:	*39*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*10.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 01:35*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
n.a.	Fluoride	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1		10.0	n.a.	3.51	0.006	0.074	FALSE	n.a.
2	Chloride	10.0	571.775	4.96	17.313	139.396	FALSE	n.a.
n.a.	Nitrite	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		10.0	n.a.	7.38	0.151	0.276	FALSE	n.a.
4	Bromide	10.0	1.701	8.80	0.022	0.106	FALSE	n.a.
5	Sulfate	10.0	23.966	9.65	0.444	1.692	FALSE	n.a.
n.a.	Nitrate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Phosphate	10.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

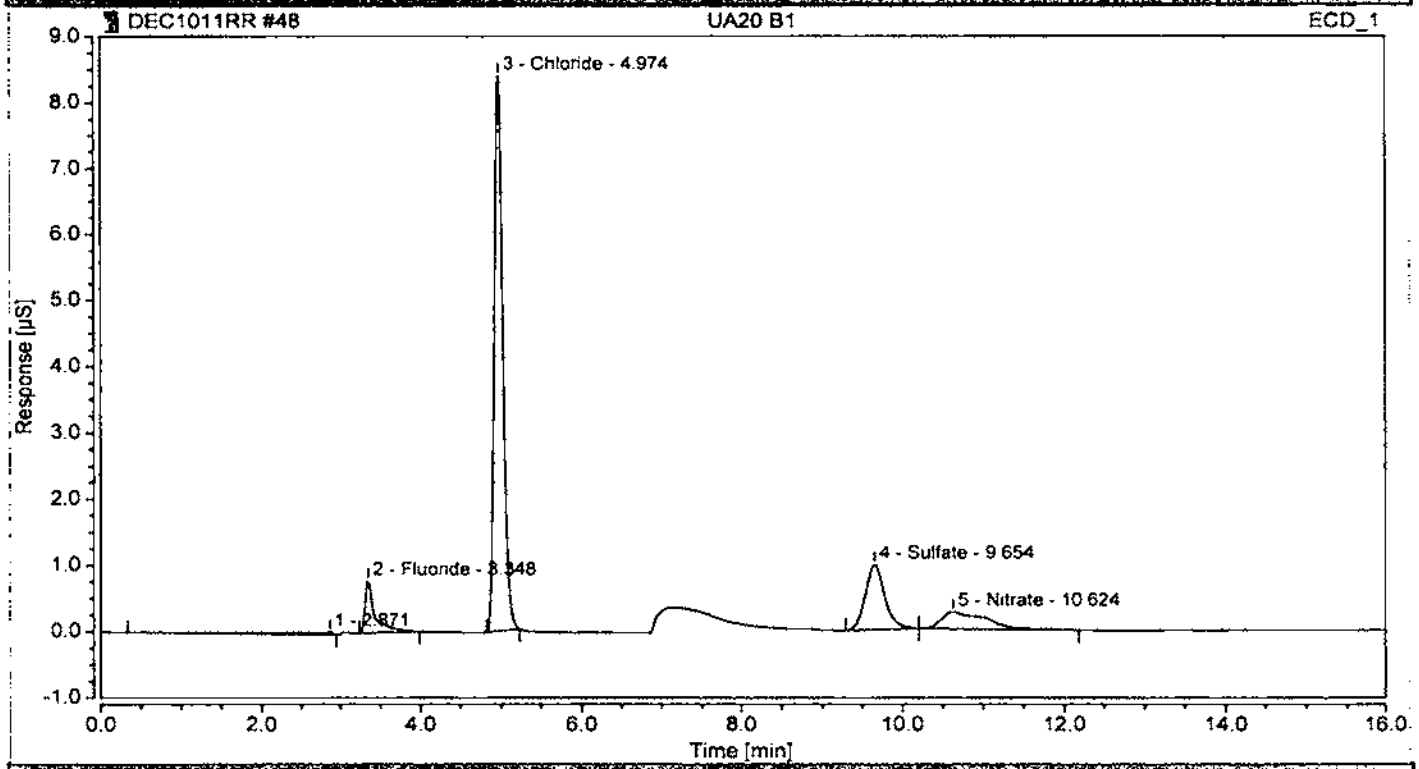
Injection Name:	*UA20 A1*	Inject Number:	47
Vial Number:	*40*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*5.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 01:55*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		5.0	n.a.	2.87	0.039	0.043	FALSE	n.a.
2	Fluoride	5.0	0.070	3.34	0.007	0.083	FALSE	n.a.
3	Chloride	5.0	2.158	4.98	0.131	1.085	FALSE	n.a.
n.a.	Nitrite	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		5.0	n.a.	7.41	0.149	0.263	FALSE	n.a.
n.a.	Bromide	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Sulfate	5.0	9.372	9.66	0.347	1.272	FALSE	n.a.
6	Nitrate	5.0	0.414	10.60	0.063	0.284	FALSE	n.a.
7		5.0	n.a.	11.04	0.007	0.038	FALSE	n.a.
n.a.	Phosphate	5.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

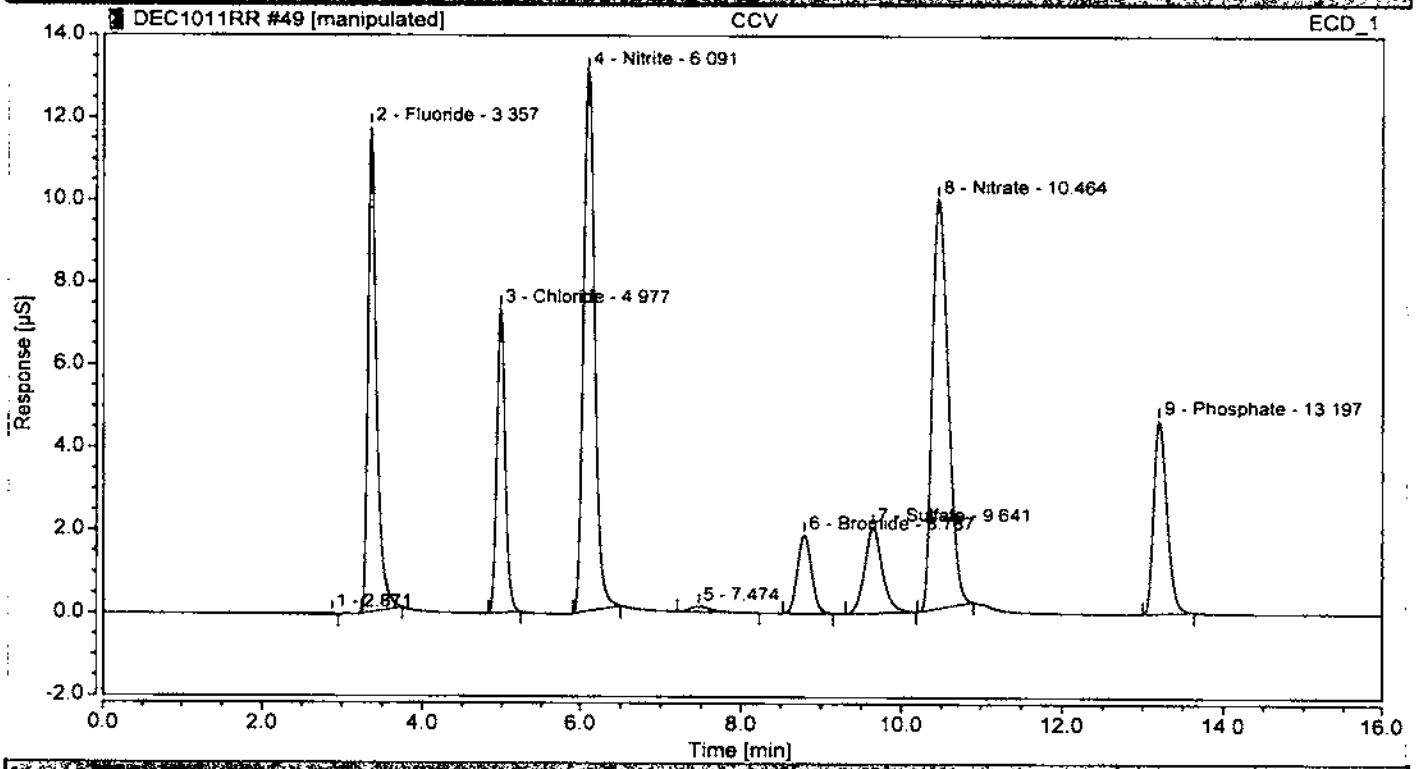
Chromeleon (c) Dionex Version 7.0.1.272
TZ83 : 00259

Injection Name:	*UA20 B1*	Inject Number:	48
Vial Number:	*41*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:14*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.041	0.042	FALSE	n.a.
2	Fluoride	1.0	0.249	3.35	0.114	0.784	FALSE	n.a.
3	Chloride	1.0	3.355	4.97	1.016	8.396	FALSE	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Sulfate	1.0	1.483	9.65	0.275	0.984	FALSE	n.a.
5	Nitrate	1.0	0.218	10.62	0.165	0.260	FALSE	n.a.
n.a.	Phosphate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

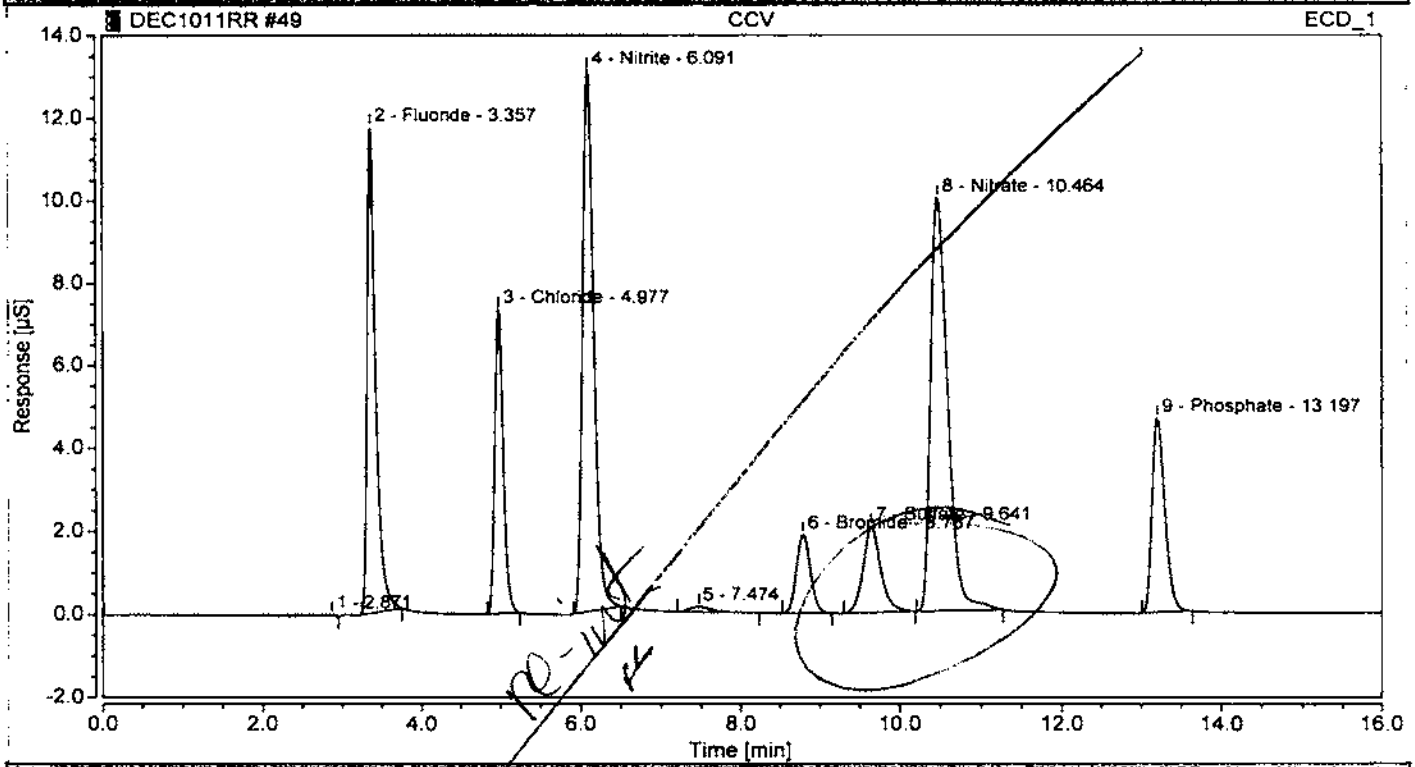
Injection Name:	*CCV*	Inject Number:	49
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:34*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
2	Fluoride	1.0	3.047	3.36	1.444	11.752	FALSE	1.58
3	Chloride	1.0	2.952	4.98	0.894	7.352	FALSE	-1.60
4	Nitrite	1.0	3.030	6.09	2.109	13.090	FALSE	1.00
5		1.0	n.a.	7.47	0.041	0.130	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.885	FALSE	0.31
7	Sulfate	1.0	2.868	9.64	0.532	2.078	FALSE	-4.40
8	Nitrate	1.0	3.041	10.46	2.307	9.897	TRUE	1.38
9	Phosphate	1.0	3.000	13.20	0.887	4.677	FALSE	-0.02

TZ83 : 00261

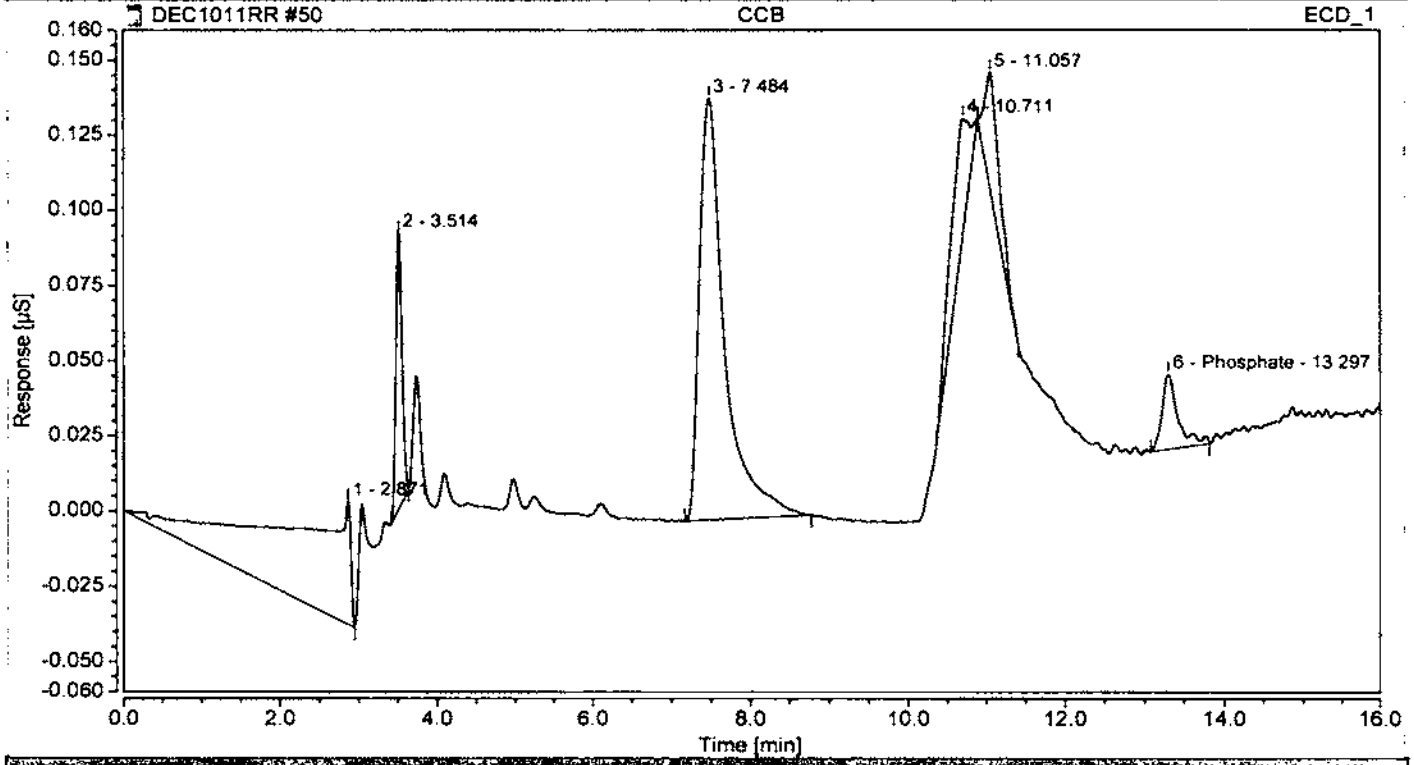
Injection Name:	*CCV*	Inject Number:	49
Vial Number:	*31*	User:	pat
Injection Type:	*Check Standard*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:34*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt.Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
2	Fluoride	1.0	3.047	3.36	1.444	11.752	FALSE	1.58
3	Chloride	1.0	2.952	4.98	0.894	7.352	FALSE	-1.60
4	Nitrite	1.0	3.030	6.09	2.109	13.090	FALSE	1.00
5		1.0	n.a.	7.47	0.041	0.130	FALSE	n.a.
6	Bromide	1.0	3.009	8.79	0.387	1.885	FALSE	0.31
7	Sulfate	1.0	2.868	9.64	0.532	2.078	FALSE	-4.40
8	Nitrate	1.0	3.190	10.46	2.420	9.976	FALSE	6.34
9	Phosphate	1.0	3.000	13.20	0.887	4.677	FALSE	-0.02

TZ83 : 00262

Injection Name:	*CCB*	Inject Number:	50
Vial Number:	*32*	User:	pat
Injection Type:	*Blank*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*INSTRMETH*		
Processing Method:	*processmethodal*		
Injection Date/Time:	*11/12/11 02:54*		



No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			mg/l	min	µS*min	µS		mg/l
1		1.0	n.a.	2.87	0.043	0.041	FALSE	n.a.
n.a.	Fluoride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2		1.0	n.a.	3.51	0.008	0.092	FALSE	n.a.
n.a.	Chloride	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrite	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3		1.0	n.a.	7.48	0.052	0.140	FALSE	n.a.
n.a.	Bromide	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Sulfate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
n.a.	Nitrate	1.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4		1.0	n.a.	10.71	0.012	0.038	FALSE	n.a.
5		1.0	n.a.	11.06	0.008	0.039	FALSE	n.a.
6	Phosphate	1.0	0.020	13.30	0.006	0.025	FALSE	n.a.

Injection Name:	*STOP*	Inject Number:	51
Vial Number:	*1*	User:	pat
Injection Type:	*Unknown*	Sequence:	DEC1011RR
Dilution Factor:	*1.0*		
Instrument Method:	*SHUTDOWN*		
Processing Method:	*processmethodat*		
Injection Date/Time:	*11/12/11 03:15*		

Can't read channel ECD_1 from injection #51 - STOP
Channel is not available

No.	Peak Name	Dilution	Amount	Retention	Area	Height	anipulated	Amnt Dev.
			n.a.	min	natogram in con	matogram in		n.a.

TZ83 : 00264

Table of Contents: ARI Job TZ73, TZ86

Client: ERM-West Project: 128296.07 RG

	Page From:	Page To:
Inventory Sheet		
Cover Letter	1	1
Chain of Custody Documentation	2	11
Case Narrative, Data Qualifiers, Control Limits	12	28
Semivolatile Analysis		
Report and Summary QC Forms	29	72
Metals Analysis		
Report and Summary QC Forms	73	196

BC

Signature

December-19-2011

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

December 20, 2011

Michael F. Mendes
ERM-West, Inc.
1218 3rd Avenue, Suite 1412
Seattle, WA 98101

RE: RG Fall GW Sampling, 128296.07
ARI Job Nos.: TZ73 & TZ86

Dear Mr. Mendes:

Please find enclosed Chain-of-Custody (COC) records, sample receipt documentation, and the final data package for samples from the project referenced above.

Sample receipt and details of these analyses are discussed in the Case Narrative.

Please note that current ARI control limits are available at www.arilabs.com.

An electronic copy of this package will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Susan D. Dunnihoo
Director, Client Services
206-695-6207
sue@arilabs.com

Enclosures

cc: eFile TZ73_TZ86

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Documentation

ARI Job ID: TZ73, TZ86

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: TZ73	Turn-around Requested: standard	Page: 1 of 1	
ARI Client Company: ERM	Phone: 425 214 0458	Date:	Ice Present? Y
Client Contact: Mike Mendes		No. of Coolers: 3	Cooler Temps: 3.9, 3.4, 3.3
Client Project Name: RG			
Client Project #: 128296.07	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Phenol / Chlorinated Phenols	Total As	Dissolved As	Total Metals ①	*Dissolved Metals ①	MS/MSD for all metals dissolved	Total Cr, Cu, Ag, Zn	Dissolved Cr, Cu, Ag, Zn ★	VOCs 8260	
MW-3S-120111	12/1/11	0707	water	8	X	X	X	X	X	X				
MW-3D-120111	12/1/11	0808	water	4	X	X	X				X	X		
MW-27-120111	12/1/11	0928	water	4	X	X	X	X	X					
MW-26-120111	12/1/11	1012	water	4	X	X	X	X	X					
MW-16-120111	12/1/11	1121	water	5	X	[redacted]							X	
TB-120111-1	12/1/11	1122	water	2									X	
MW-55-120111	12/1/11	1235	water	4	X	X	X							
MW-11-120111	12/1/11	1310	water	4	X	X	X							
MW-12-120111	12/1/11	1347	water	4	X	X	X							
MW-19-120111	12/1/11	1429	water	4	X	X	X							

Five, letter "S"

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
* Dissolved metal samples filtered in the field	Printed Name: Matt Crandell	Printed Name: A. Volgardsen	Printed Name	Printed Name
	Company: ERM	Company: ARI	Company	Company
	Date & Time: 12/01/2011, 1524	Date & Time: 12/1/11 1524	Date & Time	Date & Time

E0000:TZ73

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

① Metals = Cr, Cu, Ag, Zn, Sb, Be, Cd, Pb, Ni, Se, Tl & Hg

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: ERM Project Name: RG

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No.: TZ73 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 3.9 3.4 3.3 ___ ___		
If cooler temperature is out of compliance fill out form 00070F	Temp Gun ID#: 90741619	

Cooler Accepted by: AV Date: 12/1/11 Time: 1524

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	(Bubble Wrap) (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JM Date: 12/2/11 Time: 1302

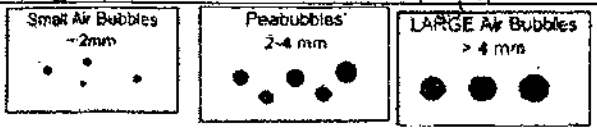
*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

Mike M called on 12/2/11 @ 910 + cancelled analysis for MW-16-120111 + Said to discard sample. Put sample + TB on hold.

By: JM Date: 12/2/11



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

PRESERVATION VERIFICATION 12/02/11
Page 1 of 2

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ73**

Inquiry Number: NONE
Analysis Requested: 12/02/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: JM
Sample Set Used: Yes-481
Validatable Package: Yes
Deliverables:

PC: Sue D.
VTSR: 12/01/11

Project #: 128296.07
Project: RG
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27809 **TZ73A**	MW-3S-120111						TOT															
11-27810 **TZ73B**	MW-27-120111						TOT															
11-27811 **TZ73C**	MW-26-120111						TOT															
11-27812 **TZ73D**	MW-5S-120111						TOT															
11-27813 **TZ73E**	MW-11-120111						TOT															
11-27814 **TZ73F**	MW-12-120111						TOT															
11-27815 **TZ73G**	MW-19-120111						TOT															
11-27816 **TZ73H**	MW-3D-120111						TOT															
11-27817 **TZ73I**	MW-3S-120111						DIS									Y						
11-27818 **TZ73J**	MW-27-120111						DIS									Y						
11-27819 **TZ73K**	MW-26-120111						DIS									Y						
11-27820 **TZ73L**	MW-5S-120111						DIS									Y						
11-27821 **TZ73M**	MW-11-120111						DIS									Y						
11-27822 **TZ73N**	MW-12-120111						DIS									Y						

Checked By JM Date 12/2/11

PRESERVATION VERIFICATION 12/02/11
Page 2 of 2

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ73**

Client: ERM-West

Project #: 128296.07
Project: RG

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27823 **TZ73O**	MW-19-120111						DIS									Y						
11-27824 **TZ73P**	MW-3D-120111						DIS									Y						

Checked By JM Date 12/2/11

TZ73 : 27211

(A)

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: T286	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: ERM	Phone: 425 214 0458	Date: 12/2/11	Ice Present? Y
Client Contact: Mike Mendes		No. of Coolers: 5	Cooler Temps: 0.6 - 3.7
Client Project Name: RG			
Client Project #: 128296.07	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Phenol / Chlorinated Phenols	Total / Dissolved* As	MS/MSD Phenol / Chlorinated Phenols						Notes/Comments
MW-14-120211	12/2/11	733	water	12	X	X	X						
DUP-120211-1	12/2/11	620	water	2		X							

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
* Dissolved metals samples filtered in the field	Printed Name: Cyrus Gorman	Printed Name: L. Vadgaard Olsen	Printed Name:	Printed Name:
	Company: ERM	Company: ARI	Company:	Company:
	Date & Time: 12/2/11 1510	Date & Time: 12/2/11 1510	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

T286 : 12000

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client ERM Project Name: RG

COC No(s) _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No TZ86 Tracking No. _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (NO)

Were custody papers included with the cooler? (YES) NO

Were custody papers properly filled out (ink, signed, etc) (YES) NO

Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry) 3.1 0.6 1.0 1.2 3.7

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941ce19

Cooler Accepted by TN Date 12/2/11 Time 1510

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)

What kind of packing material was used? (Bubble Wrap) (Wet Ice) Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA (YES) NO

Were all bottles sealed in individual plastic bags? YES (NO)

Did all bottles arrive in good condition (unbroken)? (YES) NO

Were all bottle labels complete and legible? (YES) NO

Did the number of containers listed on COC match with the number of containers received? (YES) NO

Did all bottle labels and tags agree with custody papers? (YES) NO

Were all bottles used correct for the requested analyses? (YES) NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA (YES) NO

Were all VOC vials free of air bubbles? (NA) YES NO

Was sufficient amount of sample sent in each bottle? (YES) NO

Date VOC Trip Blank was made at ARI (NA) _____

Was Sample Split by ARI (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by JM Date: 12/5/11 Time: 806

***** Notify Project Manager of discrepancies or concerns *****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By _____ Date _____

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles >4 mm
• •	• • •	● ● ●

Small → "sm"

Peabubbles → "pb"

Large → "lg"

Headspace → "hs"

Subject: RE TZ86 - RG Confirmation
From: Shira DeGrood <Shira DeGrood@erm.com>
Date: 8.56 AM
To: Eric Branson <eric@arilabs com>
CC: Cheronne Oreiro <cheronneo@arilabs com>, Sue Dunnihoo <sue@arilabs com>

Hi Eric,

There was one error on the chain of custody. I've added total and dissolved Cr, Cu, Ag, and Zn to sample MW-14-120211.

Thank you,
Shira

Shira DeGrood, R.G.
Main: +1 503 488-5282
Direct: +1 503 621-5911
Cell: +1 503 961-4845
Fax: +1 503 488-5142
shira.degrood@erm.com

-----Original Message-----
From: Eric Branson [mailto:eric@arilabs.com]
Sent: Monday, December 05, 2011 5:09 PM
To: Shira DeGrood
Cc: Cheronne Oreiro; Sue Dunnihoo
Subject: TZ86 - RG Confirmation

Shira,

Please find the above referenced confirmation attached, and let us know if you have any questions or concerns. Thanks.

-Eric-

--
Eric Branson
Project Manager
Analytical Resources, Inc.
eric@arilabs.com
(206) 695-6213

www.arilabs.com

This correspondence contains confidential information from Analytical Resources, Inc. (ARI) The information contained herein is intended solely for the use of the individual(s) named above. If you are not the intended recipient, any copying, distribution, disclosure, or use of the text and/or attached document(s) is strictly prohibited.

If you have received this correspondence in error, please notify sender immediately. Thank you.

This message contains information which may be confidential, proprietary, privileged, or otherwise protected by law from disclosure or use by a third party. If you have received this message in error, please contact us immediately at (925) 946-0455 and take the steps necessary to delete the message completely from your computer system. Thank you.

Please visit ERM's web site: http://www.erm.com

Attachments

20111206084342641 pdf 163 KB

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: T286	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: ERM	Phone: 425 214 0458	Date: 12/2/11	Ice Present? Y
Client Contact: Mike Mendes		No. of Coolers: 5	Cooler Temps: 0.6 - 3.7
Client Project Name: RG			
Client Project #: 128296.07	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: phenol / chlorinated phenols	Total / Dissolved **	MS/MSD phenol / chlorinated	Cr, Cu, Ag, Zn total + dissolved	SHD 12-6-11				Notes/Comments
MW-14-120211	12/2/11	733	water	12	X	X	X	X					
DUP-120211-1	12/2/11	620	water	2		X							

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
* Dissolved Metals Samples Filtered in the field				
	Printed Name: Cyrus Gorman	Printed Name: Lovdal Gaasen	Printed Name	Printed Name
	Company: ERM	Company: ARI	Company:	Company:
	Date & Time: 12/2/11 1510	Date & Time: 12/2/11 1516	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

T286 : 0901

PRESERVATION VERIFICATION 12/05/11
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ86**

Inquiry Number: NONE
Analysis Requested: 12/05/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: JM
Sample Set Used: Yes-481
Validatable Package: Yes
Deliverables:

PC: Sue D.
VTSR: 12/02/11

Project #: 128296.07
Project: RG
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27879 **TZ86A**	MW-14-120211						TOT DIS															
11-27880 **TZ86B**	DUP-120211-1						TOT															
11-27881 **TZ86C**	MW-14-120211						DIS									Y						
11-27882 **TZ86D**	DUP-120211-1						DIS									Y						

TZ73 : 00011

Checked By JM Date 12/5/11

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: TZ73, TZ86

ANALYTICAL
RESOURCES
INCORPORATED

Narrative

Client: ERM-West, Inc.
Project: RG Fall GW Sampling, 128296.07
ARI Job Nos.: TZ73 & TZ86

Sample receipt

Nine water samples and a trip blank were received on December 1, 2011 under ARI job TZ73. The cooler temperatures measured by IR thermometer following ARI SOP were 3.3 3.4, and 3.9°C. Select samples were archived as requested. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

Two water samples were received on December 2, 2011 under ARI job TZ86. The cooler temperatures measured by IR thermometer following ARI SOP were 0.6, 1.0, 1.2, 3.1, and 3.7°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

Semivolatiles by SW8270

The samples and associated laboratory QC were initially extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements for requested compounds.

The internal standard area of Di-n-octylphthalate-d4 area was outside control limits high for sample **MW-5S-120111**. This internal standard is not associated with requested compounds. No corrective action was taken.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits. The LCS and LCSD percent recoveries were within control limits.

The matrix spike and matrix spike duplicate percent recoveries were within advisory control limits.

Total and Dissolved Metals by SW6010/6020/7470

The samples and associated laboratory QC were digested and analyzed within recommended holding times.

Initial calibrations were within limits.

The sixth continuing calibration verification (CCV) on 12/8/11 was outside the control limits high for silver. No sample results were associated with this CCV. No corrective action was taken.

Chromium was present in the total metals method blank for ARI job TZ73 at a level that was greater than the reporting limit. The method blank, LCS, and associated samples were re-digested and re-analyzed with similar results. The project action level for chromium is 50ug/L. The method blank and sample results were well below this action level. No further corrective action was taken.

Chromium was present in the dissolved metals method blank for ARI job TZ86 at a level that was greater than the reporting limit. The associated sample was undetected for chromium. No corrective action was taken.

The LCS percent recoveries were within control limits.

The total and dissolved metals matrix spike percent recoveries of arsenic fell outside the control limits for samples **MW-3S-120111** and **MW-14-120211**. The sample concentrations exceeded the spike concentrations by a factor of four or more. No corrective action was taken.

The matrix spike percent recovery of silver fell outside the control limits low for sample **MW-3X-120111**. All relevant data have been flagged with an "N" qualifier on the appropriate Form V. No further corrective action was taken.

The duplicate RPDs were within control limits.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ73
Client: ERM-West
Project Event: 128296.07
Project Name: RG

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-3S-120111	TZ73A	11-27809	Water	12/01/11 07:07	12/01/11 15:24
2.	MW-27-120111	TZ73B	11-27810	Water	12/01/11 09:28	12/01/11 15:24
3.	MW-26-120111	TZ73C	11-27811	Water	12/01/11 10:12	12/01/11 15:24
4.	MW-5S-120111	TZ73D	11-27812	Water	12/01/11 12:35	12/01/11 15:24
5.	MW-11-120111	TZ73E	11-27813	Water	12/01/11 13:10	12/01/11 15:24
6.	MW-12-120111	TZ73F	11-27814	Water	12/01/11 13:47	12/01/11 15:24
7.	MW-19-120111	TZ73G	11-27815	Water	12/01/11 14:29	12/01/11 15:24
8.	MW-3D-120111	TZ73H	11-27816	Water	12/01/11 08:08	12/01/11 15:24
9.	MW-3S-120111	TZ73I	11-27817	Water	12/01/11 07:07	12/01/11 15:24
10.	MW-27-120111	TZ73J	11-27818	Water	12/01/11 09:28	12/01/11 15:24
11.	MW-26-120111	TZ73K	11-27819	Water	12/01/11 10:12	12/01/11 15:24
12.	MW-5S-120111	TZ73L	11-27820	Water	12/01/11 12:35	12/01/11 15:24
13.	MW-11-120111	TZ73M	11-27821	Water	12/01/11 13:10	12/01/11 15:24
14.	MW-12-120111	TZ73N	11-27822	Water	12/01/11 13:47	12/01/11 15:24
15.	MW-19-120111	TZ73O	11-27823	Water	12/01/11 14:29	12/01/11 15:24
16.	MW-3D-120111	TZ73P	11-27824	Water	12/01/11 08:08	12/01/11 15:24
17.	MW-16-120111	TZ73Q	11-27825	Water	12/01/11 11:21	12/01/11 15:24
18.	TB-120111-1	TZ73R	11-27826	Water	12/01/11	12/01/11 15:24

Printed 12/02/11

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ86
Client: ERM-West
Project Event: 128296.07
Project Name: RG

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-14-120211	TZ86A	11-27879	Water	12/02/11 07:33	12/02/11 15:10
2.	DUP-120211-1	TZ86B	11-27880	Water	12/02/11 06:20	12/02/11 15:10
3.	MW-14-120211	TZ86C	11-27881	Water	12/02/11 07:33	12/02/11 15:10
4.	DUP-120211-1	TZ86D	11-27882	Water	12/02/11 06:20	12/02/11 15:10

Printed 12/05/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

TZ73:00017

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

TZ73:00018

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

TZ73:00019

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1907-1	PCB 1660	20	ACETONE	11/01/12
2#		BCOC PEST	10	ACETONE	NA
3	1885-1	PEST	01/02/10	ACETONE	12/15/11
4	1885-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1902-4	EPH	1500	MECL2	10/04/12
6	1919-2	PCP	12.5/125	ACETONE	10/15/12
7	1888-1	ABN	100	MEOH	08/30/12
8	1916-2	TBT	2.5	MECL2	11/23/12
9	1918-2	PORE TBT	.125/.25	MECL2	11/23/12
10					
11	1860-4	TPHD	15000	ACETONE	05/12/12
12					
13	1838-4	LOW PCB	2	ACETONE	01/31/12
14					
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1906-4	1,4-DIOXANE	100	MEOH	04/30/12
17	1869-4	1248 PCB	10	ACETONE	06/14/12
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1873-2	AK103	7500	ACETONE	01/02/12
20	1886-4	PNA	100	ACETONE	01/07/12
21	1874-3	SKY/BHT	100	MEOH	01/14/12
22	1864-3	HERB	02 to 2500	MEOH	12/03/11
23	1887-2	EXTRA PNA	15	ACETONE	08/25/12
24					
25#		DIPHENYL	100	MEOH	NA
26	1904-2	OP-PEST	25	MEOH	02/10/12
27		STEROLS	200	MEOH	NA
28#		ADD. PEST	2	ACETONE	NA
29#		DECANES	100	MEOH	NA

TZ73:00020

LCS SOLUTIONS

30		EDB/DBCP	0.2	MEOH	NA
31	1909-2	TERPINEOL	100	MEOH	02/14/12
32	1876-1	GUAIACOL	50-200	ACETONE	01/05/12
33		RETENE	100	MEOH	NA
34	1867-3	CONGENERS	0.5	ACETONE	03/14/12
35	1875-3	ALKYL PNA A	10	MEOH	07/18/12
36		ALKYL PNA B	10	MEOH	NA
37		CAR/PERY	100	ACETONE	NA
38	1904-1	ABN ACID	200-450	MEOH	04/21/12
39	1853-4	BENZIDINE	500	MEOH	04/30/12
40	1851-3	PBDE	0.5	MEOH	04/22/12
50	1900-1	FULL RESIN	250	ACETONE	08/12/12
51		DDTS	0.01	ACETONE	NA
52		1232 PCB	20	ACETONE	NA
53	1919-1	DALAPON	50	MEOH	08/22/12
54		T-CHLORDANE	10	ACETONE	NA
55		TOXAPHENE	50	ACETONE	NA
56	1917-1	ABN BASE	50-200	MEOH	05/31/12
	#=PROJECT SPECIFIC SOLUTION				
	*=REVERIFIED SOLUTION				

TZ73 : 00021

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1906-5	ABN	100/150	MEOH	04/30/12
B	1917-2	SIM PNA	15/75	ACETONE	05/30/12
C	NA	SIM ABN	25/37.5	MEOH	NA
D	1907-4	LOW PCB	0.2	ACETONE	12/16/11
E	1900-2	HERB	62.5	MEOH	10/06/12
F	1896-2	PCP	12.5	ACETONE	12/09/11
G	1906-3	d8-DIOXANE	100	MEOH	04/30/12
H	1847-2	OP-PEST	25	ACETONE	03/23/12
I	1896-3	LOW S. PNA	1.5	ACETONE	09/22/12
J	1915-4	TBT-PORE	0.125	MECL2	11/23/12
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1915-3	TBT	2.5	MECL2	11/23/12
M	1888-4	EPH	1500	MECL2	04/04/12
N	1914-2	PCB	2	ACETONE	05/28/12
O	1914-4	TPH	450	MECL2	02/04/12
P	1895-4	HCID	2250	MECL2	02/04/12
Q	NA	EDB	1	MEOH	NA
R	1886-3	RESIN ACID	250	ACETONE	02/19/12
S	1864-1	PBDE	.5	MEOH	05/21/12
T	1884-2	ALKYL PNA	10	MEOH	07/15/12
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
LCS Spike Recovery [8]				
Phenol [3]	50 - **100**	43 - 103	16 - **100**	6 - **100**
Bis-(2-chloroethyl) ether	52 - **100**	45 - 105	41 - 112	29 - 124
2-Chlorophenol	56 - **100**	49 - 103	43 - 111	32 - 122
1,3-Dichlorobenzene	23 - **100**	15 - **100**	32 - **100**	22 - 103
1,4-Dichlorobenzene	25 - **100**	17 - **100**	32 - **100**	22 - 103
Benzyl Alcohol	19 - 100	**10** - 114	22 - 100	9 - 113
1,2-Dichlorobenzene	30 - **100**	22 - **100**	34 - **100**	24 - 104
2-Methylphenol	52 - **100**	44 - 106	36 - 110	24 - 122
2,2'-oxybis(1-chloropropane)	32 - 111	19 - 124	29 - 118	14 - 133
4-Methylphenol	53 - 102	45 - 110	38 - 104	27 - 115
N-Nitroso-di-n-propylamine	43 - 104	33 - 114	38 - 115	25 - 128
Hexachloroethane	12 - **100**	**10** - **100**	24 - **100**	13 - 100
Nitrobenzene	33 - 125	18 - 140	45 - 106	35 - 116
Isophorone	57 - 115	47 - 125	55 - 119	44 - 130
2-Nitrophenol	56 - 102	48 - 110	46 - 118	34 - 130
2,4-Dimethyphenol	29 - **100**	20 - **100**	28 - 105	15 - 118
Bis-(2-chloroethoxy) methane	54 - 101	46 - 109	44 - 118	32 - 130
Benzoic Acid [3]	**10** - 131	**10** - 151	11 - **100**	**10** - **100**
2,4-Dichlorophenol	56 - 104	48 - 112	43 - 121	30 - 134
1,2,4-Trichlorobenzene	27 - **100**	18 - **100**	35 - **100**	25 - 107
Naphthalene	45 - **100**	38 - **100**	36 - 111	24 - 124
4-Chloroaniline [3]	**10** - 139	**10** - 161	10 - 174	**10** - 201
2-Chloronaphthalene	45 - **100**	37 - 105	39 - 118	26 - 131
Hexachlorobutadiene	**10** - **100**	**10** - **100**	24 - **100**	12 - 108
4-Chloro-3-methylphenol	53 - 109	44 - 118	45 - 122	32 - 135
2-Methylnaphthalene	46 - **100**	38 - 100	45 - 103	35 - 113
Hexachlorocyclopentadiene	**10** - **100**	**10** - **100**	23 - 108	**10** - 122
2,4,6-Trichlorophenol	58 - 108	50 - 116	48 - 122	36 - 134
2,4,5-Trichlorophenol	58 - 107	50 - 115	48 - 122	36 - 134
2-Nitroaniline	50 - 107	41 - 117	48 - 118	36 - 130
Dimethylphthalate	58 - 107	50 - 115	50 - 120	38 - 132
Acenaphthylene	57 - 100	50 - 107	50 - 119	39 - 131
2,6-Dinitrotoluene	58 - 112	49 - 121	48 - 133	34 - 147
3-Nitroaniline [3]	21 - 150	**10** - 172	54 - 140	40 - 154
Acenaphthene	51 - **100**	43 - 106	41 - 120	28 - 133
2,4-Dinitrophenol	12 - 169	**10** - 195	23 - 176	**10** - 202

TZ73 : 00023

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Dibenzofuran	57 - 100	50 - 107	51 - 114	41 - 125
4-Nitrophenol [3]	35 - 119	21 - 133	13 - **100**	**10** - **100**
2,4-Dinitrotoluene	58 - 117	48 - 127	51 - 134	37 - 148
Fluorene	56 - 104	48 - 112	50 - 120	38 - 132
Diethylphthlalate	52 - 111	42 - 121	48 - 122	36 - 134
4-Chlorophenyl-phenyl ether	55 - 104	47 - 112	50 - 118	39 - 129
4-Nitroaniline	49 - 112	39 - 123	42 - 136	26 - 152
4,6-Dinitro-2-Methylphenol	13 - 139	**10** - 160	32 - 121	17 - 136
N-Nitrosodiphenylamine	60 - 136	47 - 149	58 - 141	44 - 155
4-Bromophenyl-phenyl ether	55 - 103	47 - 111	50 - 122	38 - 134
Hexachlorobenzene	54 - 106	45 - 115	47 - 125	34 - 138
Pentachlorophenol	46 - 114	35 - 125	35 - 130	19 - 146
Phenanthrene	56 - 102	48 - 110	49 - 120	37 - 132
Anthracene	56 - 101	49 - 109	53 - 116	43 - 127
Carbazole	60 - 108	52 - 116	57 - 122	46 - 133
Di-n-butylphthalate	56 - 112	47 - 121	57 - 121	46 - 132
Fluoranthene	57 - 110	48 - 119	56 - 119	46 - 130
Pyrene	48 - 119	36 - 131	37 - 143	19 - 161
Butylbenzylphthalate	51 - 114	41 - 125	34 - 152	14 - 172
Benzo(a)Anthracene	55 - 105	47 - 113	49 - 129	36 - 142
3,3'-Dichlorbenzidine [3]	**10** - 128	**10** - 148	50 - 128	37 - 141
Chrysene	55 - 104	47 - 112	45 - 128	31 - 142
bis(2-Ethylhexyl) phthalate	28 - 164	**10** - 187	57 - 133	44 - 146
Di-n-octylphthalate	57 - 107	49 - 115	52 - 120	41 - 131
Benzofluoranthene(s) (Total)	30 - 160[10]	30 - 160[10]	30 - 160[10]	30 - 160[10]
Benzo(a)Pyrene	45 - 103	35 - 113	46 - 109	36 - 120
Indeno(1,2,3-cd)Pyrene	35 - 118	21 - 132	34 - 136	17 - 153
Dibenz(a,h)anthracene	42 - 119	29 - 132	41 - 134	26 - 150
Benzo(g,h,i)Perylene	39 - 123	25 - 137	41 - 133	26 - 148
Aniline [3]	**10** - **100**	**10** - **100**	28 - 126	12 - 142
1,2-Diphenylhydrazine /Azobenzene	57 - 109	48 - 118	55 - 119	44 - 130
N-Nitrosodimethylamine	49 - **100**	41 - 104	31 - **100**	21 - 105
1-Methylnaphthalene	46 - **100**	37 - 107	43 - 115	31 - 127
1,4-Dioxane	40 - **100**	30 - 108	30 - 160 [4]	30 - 160 [4]
Pyridine	-	-	25 - **100**	15 - **100**
Tributyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Dibutyl Phenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]

TZ73:00024

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Butyl Diphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Triphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Butylated Hydroxytoluene (BHT)	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
MB / LCS Surrogate Recovery				
d4-2-Chlorophenol	53 - 100	(5)	49 - 101	(5)
d4-1,2-Dichlorobenzene	38 - **100**	(5)	40 - **100**	(5)
2,4,6-Tribromophenol	52 - 123	(5)	51 - 122	(5)
2-Fluorophenol	46 - **100**	(5)	31 - **100**	(5)
d5-Phenol [3]	50 - 100	52 - 108	19 - **100**	12 - **100**
d5-Nitrobenzene	46 - 100	(5)	46 - 101	(5)
2-Fluorobiphenyl	49 - **100**	(5)	49 - 103	(5)
d14-p-Terphenyl	53 - 119	(5)	49 - 130	(5)
d8-1,4-Dioxane	45 - **100**	(5)	30 - 160 [4]	(5)
Sample Surrogate Recovery				
d4-2-Chlorophenol	44 - **100**	(5)	23 - 104	(5)
d4-1,2-Dichlorobenzene	32 - **100**	(5)	22 - **100**	(5)
2,4,6-Tribromophenol	48 - 118	(5)	22 - 125	(5)
2-Fluorophenol	38 - **100**	(5)	18 - **100**	(5)
d5-Phenol	41 - **100**	32 - 104	**10** - **100**	17 - **100**
d5-Nitrobenzene	39 - **100**	(5)	21 - 106	(5)
2-Fluorobiphenyl	42 - **100**	(5)	26 - 104	(5)
d14-p-Terphenyl	26 - 114	(5)	11 - 132	(5)
d8-1,4-Dioxane	32 - **100**	(5)	30 - 160 [4]	(5)

(1) Control Limits calculated using all data generated 1/1/07 through 12/1/07.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard [6] as beyond the CL but still within the ME limits. ARI defines ME limits as between 3 and 4 standard deviations around the mean with upper limit ≥ 100%. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances in an analysis require corrective action.
(3) These are "**poor performers**" defined in the DoD QSM[7] as compounds that "produce low mean recoveries and high standard deviations, resulting in wide LCS control limits with particularly low lower control limits (sometimes-negative values). ARI does not control batch acceptance based on these compounds since there is a high level of uncertainty in their recovery."
(4) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. **DO NOT** use these limits as the sole reason to reject the data from a batch of analyses.
(5) Marginal Exceedances not allowed for surrogate unless it is a "poor performer".
(6) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(7) Page 182 of: **Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3 Final, March 2005** Prepared By Environmental Data Quality Workgroup, Department of Navy, Lead Service (Based On National Environmental Laboratory Accreditation Conference (NELAC) Chapter 5 (Quality Systems) NELAC Voted Version – 5 June 2003
(8) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(9) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(10) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

TZ73 : 00025

Quality Control Parameters for Metals Analysis using ICP-OES

	Aqueous Samples[2]			Spike Recovery		RPD[5]	Solids[3]	Tissue[4]
Analyte	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ mg/kg	LOQ mg/kg
Aluminum	7.57	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Antimony	6.28	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Arsenic	3.33	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Barium	1.33	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Beryllium	0.16	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Boron	7.39	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Cadmium	0.18	0.5	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Calcium	11.27	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Chromium	1.24	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Cobalt	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Copper	0.92	1.0	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Iron	7.50	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Lead	1.55	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Magnesium	9.61	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Manganese	0.28	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Molybdenum	0.79	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Nickel	3.86	5.0	**10**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Potassium	65.70	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Selenium	4.99	25	**50**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Silicon	8.17	30	**60**	75 – 125	80 – 120	≤ 20	**(6)**	**(6)**
Silver	0.43	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Sodium	11.35	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Strontium	0.09	1.0	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Thallium	3.10	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Tin	1.41	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**
Titanium	2.11	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Vanadium	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Zinc	1.45	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Tissue is reported on an "as received" (wet weight) basis using 2.5 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

(6) ARI does not analyze for Silicon in solids or tissue samples

TZ73 : 00026

Quality Control Parameters for Metals Analysis using ICP-MS

Analyte	Mass	Aqueous Samples[2]			Spike Recovery		RPD[4]	Solids[3]
		DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ[1] mg/kg
Aluminum	27	1.601	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Antimony	121	0.010	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
	123	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #1	75	0.048	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #2	75	0.092	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Barium	135	0.020	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	137	0.019	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Beryllium	9	0.021	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Cadmium	111	0.010	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
	114	0.005	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Calcium	43	3.983	25	**50.0**	75 – 125	80 – 120	≤ 20	**50.0**
Chromium	52	0.045	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	53	0.118	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Cobalt	59	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Copper	63	0.158	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	65	0.236	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Iron	54	5.753	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
	57	3.876	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Lead	208	0.046	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Magnesium	24	0.297	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Manganese	55	0.022	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Molybdenum	98	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Nickel	60	0.079	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	62	0.089	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Potassium	39	2.944	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Selenium	82	0.127	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	78	0.324	0.25	**2.0**	75 – 125	80 – 120	≤ 20	**2.0**
Silver	107	0.008	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Sodium	23	2.833	50	**100.0**	75 – 125	80 – 120	≤ 20	**100.0**
Thorium	232	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Thallium	205	0.004	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Uranium	238	0.003	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Vanadium	51	0.043	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Zinc	66	0.497	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	67	0.531	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	68	0.524	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

TZ73 : 00027

Quality Control Parameters for Mercury Analysis using CVAA

	Aqueous Samples[2]			Spike Recovery		RPD[5]
	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS	
Mercury	0.0069	0.05	**0.10**[2]	75 – 125	80 – 120	≤ 20
Mercury (low level)	0.0026	0.01	**0.02**[3]	75 – 125	80 – 120	≤ 20
	Soil / Sediment / Tissue[4] Samples			**Spike Recovery**		**RPD[5]**
	DL[1] mg/kg	**LOD[1] mg/kg**	**LOQ[1] mg/kg**	**Matrix Spike**	**LCS**	
Mercury	0.0021	0.0125	**0.025**[3,4]	75 – 125	80 – 120	≤ 20

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 20 mL sample with 20 mL final volume
(3) 0.2 g sample with 50 mL final volume assuming 100% dry weight. Soil and sediment are reported on a dry weight basis.
(4) Tissue LOQ is 0.005 mg/kg as received (wet weight) based on 1 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

TZ73 : 00028

Semivolatile Analysis
Report and Summary QC Forms

ARI Job ID: TZ73, TZ86

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-3S-120111
SAMPLE

Lab Sample ID: TZ73A
LIMS ID: 11-27809
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 16:38
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	73.9%
2-Fluorophenol	67.7%
2,4,6-Tribromophenol	93.3%
d4-2-Chlorophenol	72.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-27-120111
SAMPLE

Lab Sample ID: TZ73B
LIMS ID: 11-27810
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 17:11
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	75.2%
2-Fluorophenol	68.5%
2,4,6-Tribromophenol	86.4%
d4-2-Chlorophenol	73.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-26-120111**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ73C
LIMS ID: 11-27811
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 17:44
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	**2,4-Dichlorophenol**	**5.0**	**21**
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	**Pentachlorophenol**	**5.0**	**99 E**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**1.0**	**21**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	66.9%
2-Fluorophenol	59.7%
2,4,6-Tribromophenol	87.7%
d4-2-Chlorophenol	64.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-26-120111
DILUTION

Lab Sample ID: TZ73C
LIMS ID: 11-27811
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/12/11 19:28
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 3.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	3.0	< 3.0 U
95-57-8	2-Chlorophenol	3.0	< 3.0 U
120-83-2	**2,4-Dichlorophenol**	**15**	**20**
88-06-2	2,4,6-Trichlorophenol	15	< 15 U
95-95-4	2,4,5-Trichlorophenol	15	< 15 U
87-86-5	**Pentachlorophenol**	**15**	**96**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**3.0**	**20**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	63.0%
2-Fluorophenol	59.2%
2,4,6-Tribromophenol	86.4%
d4-2-Chlorophenol	63.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-5S-120111
SAMPLE

Lab Sample ID: TZ73D
LIMS ID: 11-27812
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 18:17
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	71.5%
2-Fluorophenol	64.8%
2,4,6-Tribromophenol	85.3%
d4-2-Chlorophenol	69.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-11-120111
SAMPLE

Lab Sample ID: TZ73E
LIMS ID: 11-27813
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 18:50
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	82.9%
2-Fluorophenol	77.1%
2,4,6-Tribromophenol	93.1%
d4-2-Chlorophenol	81.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-12-120111
SAMPLE

Lab Sample ID: TZ73F
LIMS ID: 11-27814
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 19:23
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	73.3%
2-Fluorophenol	67.2%
2,4,6-Tribromophenol	84.0%
d4-2-Chlorophenol	72.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-19-120111
SAMPLE

Lab Sample ID: TZ73G
LIMS ID: 11-27815
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 19:55
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	67.2%
2-Fluorophenol	61.6%
2,4,6-Tribromophenol	84.5%
d4-2-Chlorophenol	64.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-3D-120111
SAMPLE

Lab Sample ID: TZ73H
LIMS ID: 11-27816
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 20:28
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	67.7%
2-Fluorophenol	60.8%
2,4,6-Tribromophenol	85.9%
d4-2-Chlorophenol	65.6%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ73-ERM-West
Project: RG
128296.07

Client ID	PHL	2FP	TBP	2CP	TOT OUT
MB-120711	71.2%	69.3%	77.9%	73.1%	0
LCS-120711	78.4%	69.6%	98.4%	75.5%	0
LCSD-120711	70.4%	63.5%	89.9%	68.3%	0
MW-3S-120111	73.9%	67.7%	93.3%	72.3%	0
MW-27-120111	75.2%	68.5%	86.4%	73.3%	0
MW-26-120111	66.9%	59.7%	87.7%	64.8%	0
MW-26-120111 DL	63.0%	59.2%	86.4%	63.9%	0
MW-5S-120111	71.5%	64.8%	85.3%	69.6%	0
MW-11-120111	82.9%	77.1%	93.1%	81.3%	0
MW-12-120111	73.3%	67.2%	84.0%	72.3%	0
MW-19-120111	67.2%	61.6%	84.5%	64.8%	0
MW-3D-120111	67.7%	60.8%	85.9%	65.6%	0

	LCS/MB LIMITS	QC LIMITS
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27809 to 11-27816

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-14-120211
SAMPLE

Lab Sample ID: TZ86A
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 21:01
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	75.7%
2-Fluorophenol	70.4%
2,4,6-Tribromophenol	90.7%
d4-2-Chlorophenol	75.5%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ86-ERM-West
Project: RG
128296.07

Client ID	PHL	2FP	TBP	2CP	TOT OUT
MB-120711	71.2%	69.3%	77.9%	73.1%	0
LCS-120711	78.4%	69.6%	98.4%	75.5%	0
LCSD-120711	70.4%	63.5%	89.9%	68.3%	0
MW-14-120211	75.7%	70.4%	90.7%	75.5%	0
MW-14-120211 MS	66.9%	59.2%	93.1%	65.1%	0
MW-14-120211 MSD	72.3%	64.0%	95.7%	70.1%	0

	LCS/MB LIMITS	QC LIMITS
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27879 to 11-27879

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-14-120211
MS/MSD

Lab Sample ID: TZ86A
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted MS/MSD: 12/07/11

Date Analyzed MS: 12/09/11 21:34
MSD: 12/09/11 22:07
Instrument/Analyst MS: NT6/JZ
MSD: NT6/JZ
GPC Cleanup: NO

Sample Amount MS: 500 mL
MSD: 500 mL
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Phenol	< 1.0 U	19.5	25.0	78.0%	21.8	25.0	87.2%	11.1%
2-Chlorophenol	< 1.0 U	18.3	25.0	73.2%	20.0	25.0	80.0%	8.9%
2,4-Dichlorophenol	< 5.0 U	50.5	75.0	67.3%	55.7	75.0	74.3%	9.8%
2,4,6-Trichlorophenol	< 5.0 U	58.7	75.0	78.3%	62.5	75.0	83.3%	6.3%
2,4,5-Trichlorophenol	< 5.0 U	59.7	75.0	79.6%	63.8	75.0	85.1%	6.6%
Pentachlorophenol	< 5.0 U	68.2	75.0	90.9%	71.5	75.0	95.3%	4.7%
2,3,4,6-Tetrachlorophenol	< 1.0 U	26.1	25.0	104%	27.4	25.0	110%	4.9%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-14-120211**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ86A
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 21:34
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	---
95-57-8	2-Chlorophenol	1.0	---
120-83-2	2,4-Dichlorophenol	5.0	---
88-06-2	2,4,6-Trichlorophenol	5.0	---
95-95-4	2,4,5-Trichlorophenol	5.0	---
87-86-5	Pentachlorophenol	5.0	---
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	---

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	66.9%
2-Fluorophenol	59.2%
2,4,6-Tribromophenol	93.1%
d4-2-Chlorophenol	65.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-14-120211**
Page 1 of 1 **MATRIX SPIKE DUP**

Lab Sample ID: TZ86A
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Date Extracted: 12/07/11
Date Analyzed: 12/09/11 22:07
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	---
95-57-8	2-Chlorophenol	1.0	---
120-83-2	2,4-Dichlorophenol	5.0	---
88-06-2	2,4,6-Trichlorophenol	5.0	---
95-95-4	2,4,5-Trichlorophenol	5.0	---
87-86-5	Pentachlorophenol	5.0	---
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	---

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	72.3%
2-Fluorophenol	64.0%
2,4,6-Tribromophenol	95.7%
d4-2-Chlorophenol	70.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: LCS-120711**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-120711 QC Report No: TZ73-ERM-West
LIMS ID: 11-27809 Project: RG
Matrix: Water 128296.07
Data Release Authorized: Date Sampled: 12/01/11
Reported: 12/13/11 Date Received: 12/01/11

Date Extracted LCS/LCSD: 12/07/11 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 12/09/11 16:05 Final Extract Volume LCS: 0.50 mL
LCSD: 12/09/11 00:00 LCSD: 0.50 mL
Instrument/Analyst LCS: NT6/JZ Dilution Factor LCS: 1.00
LCSD: NT6/JZ LCSD: 1.00
GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Phenol	23.4	25.0	93.6%	21.4	25.0	85.6%	8.9%
2-Chlorophenol	21.8	25.0	87.2%	19.8	25.0	79.2%	9.6%
2,4-Dichlorophenol	58.6	75.0	78.1%	55.7	75.0	74.3%	5.1%
2,4,6-Trichlorophenol	64.1	75.0	85.5%	64.7	75.0	86.3%	0.9%
2,4,5-Trichlorophenol	65.5	75.0	87.3%	65.4	75.0	87.2%	0.2%
Pentachlorophenol	73.5	75.0	98.0%	71.5	75.0	95.3%	2.8%
2,3,4,6-Tetrachlorophenol	28.4	25.0	114%	26.4	25.0	106%	7.3%

Semivolatile Surrogate Recovery

	LCS	LCSD
d5-Phenol	78.4%	70.4%
2-Fluorophenol	69.6%	63.5%
2,4,6-Tribromophenol	98.4%	89.9%
d4-2-Chlorophenol	75.5%	68.3%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ73MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Lab File ID: 12081120 Date Extracted: 12/07/11

Instrument ID: NT6 Date Analyzed: 12/08/11

Matrix: LIQUID Time Analyzed: 2254

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ73LCSDW1	TZ73LCSDW1	12081122	12/09/11
02	TZ73LCSW1	TZ73LCSW1	12091105	12/09/11
03	MW-3S-120111	TZ73A	12091106	12/09/11
04	MW-27-120111	TZ73B	12091107	12/09/11
05	MW-26-120111	TZ73C	12091108	12/09/11
06	MW-5S-120111	TZ73D	12091109	12/09/11
07	MW-11-120111	TZ73E	12091110	12/09/11
08	MW-12-120111	TZ73F	12091111	12/09/11
09	MW-19-120111	TZ73G	12091112	12/09/11
10	MW-3D-120111	TZ73H	12091113	12/09/11
11	MW-14-120211	TZ86A	12091114	12/09/11
12	MW-14-120211 MS	TZ86AMS	12091115	12/09/11
13	MW-14-120211 MSD	TZ86AMSD	12091116	12/09/11
14	MW-26-120111	TZ73C	12121106	12/12/11
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-120711
METHOD BLANK

Lab Sample ID: MB-120711
LIMS ID: 11-27809
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Date Extracted: 12/07/11
Date Analyzed: 12/08/11 22:54
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	71.2%
2-Fluorophenol	69.3%
2,4,6-Tribromophenol	77.9%
d4-2-Chlorophenol	73.1%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 11/21/11 DFTPP Injection Time: 1033

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.9
68	Less than 2.0% of mass 69	0.3 (0.6)1
69	Mass 69 relative abundance	41.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	51.6
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	22.7
365	Greater than 1.0% of mass 198	2.28
441	0.0 - 24.0% of mass 442	11.1 (14.4)2
442	50.0 - 200.0% of mass 198	76.8
443	15.0 - 24.0% of mass 442	15.1 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC11121	IC11121	11211102	11/21/11	1124
02	IC51121	IC51121	11211103	11/21/11	1157
03	IC101121	IC101121	11211104	11/21/11	1230
04	IC401121	IC401121	11211105	11/21/11	1320
05	IC601121	IC601121	11211106	11/21/11	1353
06	IC801121	IC801121	11211107	11/21/11	1426
07	IC251121	IC250121	11211109	11/21/11	1737
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ73:00048

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 12/08/11 DFTPP Injection Time: 1221

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	39.6
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	10.0 - 80.0% of mass 198	49.0
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.3
275	10.0 - 60.0% of mass 198	21.9
365	Greater than 1.0% of mass 198	2.22
441	0.0 - 24.0% of mass 442	12.1 (14.6)2
442	50.0 - 200.0% of mass 198	82.9
443	15.0 - 24.0% of mass 442	15.4 (18.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1208	CC1208	12081102	12/08/11	1253
02	TZ73MBW1	TZ73MBW1	12081120	12/08/11	2254
03	TZ73LCSDW1	TZ73LCSDW1	12081122	12/09/11	0000
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ73:00049

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 12/09/11 DFTPP Injection Time: 1351

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	41.8
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	10.0 - 80.0% of mass 198	49.8
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	23.1
365	Greater than 1.0% of mass 198	2.56
441	0.0 - 24.0% of mass 442	13.2 (15.0)2
442	50.0 - 200.0% of mass 198	88.1
443	15.0 - 24.0% of mass 442	16.7 (18.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1209	CC1209	12091101	12/09/11	1351
02	TZ73LCSW1	TZ73LCSW1	12091105	12/09/11	1605
03	MW-3S-120111	TZ73A	12091106	12/09/11	1638
04	MW-27-120111	TZ73B	12091107	12/09/11	1711
05	MW-26-120111	TZ73C	12091108	12/09/11	1744
06	MW-5S-120111	TZ73D	12091109	12/09/11	1817
07	MW-11-120111	TZ73E	12091110	12/09/11	1850
08	MW-12-120111	TZ73F	12091111	12/09/11	1923
09	MW-19-120111	TZ73G	12091112	12/09/11	1955
10	MW-3D-120111	TZ73H	12091113	12/09/11	2028
11	MW-14-120211	TZ86A	12091114	12/09/11	2101
12	MW-14-120211 MS	TZ86AMS	12091115	12/09/11	2134
13	MW-14-120211 MSD	TZ86AMSD	12091116	12/09/11	2207
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 12/12/11 DFTPP Injection Time: 1644

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	24.4
68	Less than 2.0% of mass 69	0.2 (0.4)1
69	Mass 69 relative abundance	42.4
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	50.5
197	Less than 2.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 60.0% of mass 198	22.4
365	Greater than 1.0% of mass 198	2.21
441	0.0 - 24.0% of mass 442	11.6 (14.8)2
442	50.0 - 200.0% of mass 198	78.4
443	15.0 - 24.0% of mass 442	15.2 (19.4)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1212	CC1212	12121101	12/12/11	1644
02	MW-26-120111	TZ73C	12121106	12/12/11	1928
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ73:00051

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
Phenol	2.046	1.795	1.782	1.677	1.628	1.542	1.504	1.710	10.8
Bis(2-Chloroethyl)ether	1.582	1.343	1.489	1.368	1.347	1.304	1.290	1.389	7.7
2-Chlorophenol	1.675	1.408	1.453	1.395	1.346	1.287	1.255	1.403	9.9
1,3-Dichlorobenzene	1.828	1.568	1.759	1.631	1.573	1.502	1.461	1.617	8.3
1,4-Dichlorobenzene	1.834	1.581	1.743	1.617	1.530	1.497	1.436	1.605	8.7
1,2-Dichlorobenzene	1.761	1.496	1.614	1.516	1.428	1.378	1.364	1.508	9.3
Benzyl alcohol	0.890	0.850	0.928	0.863	0.829	0.822	0.831	0.859	4.5
2,2'-oxybis(1-Chloropropane)	1.340	1.123	1.212	1.115	1.072	1.030	0.993	1.126	10.4
2-Methylphenol	1.488	1.327	1.302	1.250	1.219	1.168	1.100	1.265	9.9
Hexachloroethane	0.682	0.585	0.657	0.625	0.606	0.596	0.584	0.619	6.1
N-Nitroso-di-n-propylamine	1.090	0.950	1.005	0.927	0.882	0.878	0.837	0.938	9.2
4-Methylphenol	1.567	1.356	1.352	1.252	1.212	1.181	1.095	1.288	12.0
Nitrobenzene	0.441	0.378	0.428	0.396	0.379	0.363	0.354	0.391	8.3
Isophorone	0.652	0.568	0.635	0.584	0.563	0.567	0.545	0.588	6.8
2-Nitrophenol	0.190	0.181	0.192	0.198	0.192	0.190	0.187	0.190	2.7
2,4-Dimethylphenol	0.399	0.352	0.357	0.347	0.330	0.322	0.310	0.345	8.4
Bis(2-Chloroethoxy)methane	0.471	0.421	0.468	0.435	0.412	0.408	0.400	0.431	6.7
2,4-Dichlorophenol	0.318	0.293	0.300	0.296	0.280	0.273	0.261	0.289	6.6
1,2,4-Trichlorobenzene	0.368	0.310	0.347	0.325	0.307	0.303	0.296	0.322	8.2
Naphthalene	1.178	1.014	1.090	0.992	0.920	0.870	0.814	0.982	12.9
Benzoic acid	_____	0.120	0.164	0.214	0.212	0.239	0.230	0.196	0.992
4-Chloroaniline	0.454	0.417	0.435	0.399	0.366	0.358	0.320	0.393	12.1
Hexachlorobutadiene	0.193	0.165	0.186	0.180	0.165	0.166	0.165	0.174	6.8
4-Chloro-3-methylphenol	0.307	0.288	0.282	0.275	0.262	0.271	0.248	0.276	6.8
2-Methylnaphthalene	0.621	0.531	0.563	0.518	0.478	0.481	0.446	0.520	11.4
Hexachlorocyclopentadiene	0.239	0.256	0.338	0.361	0.358	0.345	0.375	0.324	16.7
2,4,6-Trichlorophenol	0.320	0.312	0.346	0.351	0.343	0.341	0.340	0.336	4.3
2,4,5-Trichlorophenol	0.330	0.320	0.362	0.373	0.360	0.361	0.363	0.353	5.6
2-Chloronaphthalene	1.301	1.086	1.198	1.110	1.029	0.949	0.943	1.088	12.0
2-Nitroaniline	0.247	0.266	0.295	0.281	0.269	0.280	0.266	0.272	5.6
Acenaphthylene	1.786	1.610	1.787	1.664	1.561	1.492	1.445	1.621	8.3
Dimethylphthalate	1.323	1.124	1.212	1.122	1.057	1.097	1.064	1.143	8.3
2,6-Dinitrotoluene	0.234	0.248	0.279	0.271	0.255	0.272	0.262	0.260	6.0
Acenaphthene	1.213	1.012	1.098	1.035	0.964	0.951	0.924	1.028	9.8
3-Nitroaniline	0.293	0.280	0.292	0.270	0.248	0.227	_____	0.268	9.8
2,4-Dinitrophenol	_____	0.060	0.099	0.143	0.140	0.163	0.158	0.127	0.995
Dibenzofuran	1.704	1.471	1.541	1.419	1.315	1.298	1.204	1.422	11.9

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-1

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	RRF	%RSD /R^2
4-Nitrophenol	0.066	0.109	0.112	0.127	0.117	0.129	0.117	0.111	19.2
2,4-Dinitrotoluene	0.310	0.315	0.353	0.349	0.328	0.368	0.345	0.338	6.3
Fluorene	1.346	1.162	1.250	1.170	1.074	1.083	1.029	1.159	9.5
4-Chlorophenyl-phenylether	0.668	0.548	0.600	0.565	0.530	0.536	0.516	0.566	9.3
Diethylphthalate	1.263	1.088	1.145	1.067	0.990	1.031	0.971	1.079	9.3
4-Nitroaniline	0.240	0.268	0.269	0.271	0.242	0.279	0.246	0.259	6.2
4,6-Dinitro-2-methylphenol		0.104	0.123	0.142	0.140	0.142	0.145	0.133	12.0
N-Nitrosodiphenylamine (1)	0.697	0.598	0.658	0.597	0.589	0.554	0.568	0.609	8.4
4-Bromophenyl-phenylether	0.252	0.203	0.238	0.215	0.214	0.202	0.210	0.219	8.6
Hexachlorobenzene	0.264	0.220	0.248	0.228	0.223	0.210	0.217	0.230	8.3
Pentachlorophenol		0.079	0.110	0.117	0.122	0.129	0.130	0.114	16.5
Phenanthrene	1.306	1.096	1.165	1.076	1.017	0.962	0.947	1.081	11.6
Anthracene	1.262	1.117	1.215	1.126	1.059	0.993	0.984	1.108	9.5
Carbazole	1.122	1.038	1.095	1.047	0.963	0.951	0.916	1.019	7.6
Di-n-butylphthalate	1.220	1.155	1.248	1.218	1.118	1.088	1.056	1.158	6.4
Fluoranthene	1.098	1.046	1.090	1.062	0.972	0.968	0.951	1.027	6.0
Pyrene	1.517	1.207	1.344	1.210	1.183	1.116	1.090	1.238	11.9
Butylbenzylphthalate	0.485	0.496	0.567	0.559	0.549	0.542	0.534	0.533	5.8
Benzo(a)anthracene	1.044	0.938	1.042	0.994	0.966	0.922	0.913	0.974	5.6
3,3'-Dichlorobenzidine	0.322	0.334	0.357	0.341	0.320	0.286	0.277	0.320	9.1
Chrysene	1.162	0.950	1.057	1.012	0.969	0.934	0.929	1.002	8.4
bis(2-Ethylhexyl)phthalate	0.615	0.538	0.612	0.607	0.594	0.585	0.586	0.591	4.4
Di-n-octylphthalate	1.192	0.962	1.061	1.038	0.988	0.978	0.962	1.026	8.1
Benzo(b)fluoranthene	1.041	0.998	1.057	1.058	1.053	1.000	1.007	1.030	2.7
Benzo(k)fluoranthene	1.261	1.058	1.255	1.092	1.011	0.946	0.903	1.075	13.0
Benzo(a)pyrene	0.926	0.882	0.993	0.956	0.934	0.893	0.893	0.925	4.3
Indeno(1,2,3-cd)pyrene	1.249	1.102	1.325	1.269	1.241	1.177	1.231	1.228	5.8
Dibenzo(a,h)anthracene	1.016	0.916	1.088	1.064	1.018	0.965	0.998	1.009	5.7
Benzo(g,h,i)perylene	1.094	0.968	1.157	1.103	1.103	1.058	1.108	1.084	5.4
N-Nitrosodimethylamine	0.953	0.886	1.001	0.951	0.959	0.934	0.950	0.948	3.6
Aniline	2.291	2.084	2.213	2.022	1.955	1.884	1.752	2.029	9.2
Benzidine		0.092	0.176	0.217	0.248	0.239	0.252	0.204	0.992
Pyridine	1.564	1.631	1.863	1.811	1.771	1.760	1.742	1.734	6.0
1-methylnaphthalene	0.599	0.531	0.555	0.519	0.473	0.485	0.448	0.516	10.0
Azobenzene (1,2-DP-Hydrazine	1.372	1.231	1.322	1.242	1.151	1.159	1.096	1.225	8.0
2,3,4,6-Tetrachlorophenol	0.201	0.214	0.229	0.246	0.238	0.253	0.243	0.232	8.1
1,2,4,5-Tetrachlorobenzene	0.530	0.463	0.526	0.500	0.477	0.452	0.476	0.489	6.2

(1) Cannot be seperated from Diphenylamine

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-2

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
Total Benzofluoranthenes	1.094	0.982	1.099	1.022	0.985	0.921	0.898	1.000	7.8
2-Fluorophenol	1.558	1.439	1.559	1.465	1.394	1.361		1.463	5.6
Phenol-d5	2.012	1.839	1.911	1.729	1.669	1.638		1.800	8.1
2-Chlorophenol-d4	1.543	1.393	1.498	1.381	1.333	1.302		1.408	6.7
1,2-Dichlorobenzene-d4	1.124	0.997	1.030	0.944	0.890	0.858		0.974	10.0
Nitrobenzene-d5	0.414	0.396	0.436	0.417	0.408	0.402		0.412	3.3
2-Fluorobiphenyl	1.483	1.302	1.425	1.318	1.258	1.191		1.330	8.1
2,4,6-Tribromophenol	0.133	0.128	0.146	0.144	0.135	0.149		0.139	6.0
Terphenyl-d14	1.089	0.778	0.826	0.736	0.731	0.708		0.811	17.5

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/08/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1253

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.806	0.800	AVRG	5.6
Bis(2-Chloroethyl)ether	1.389	1.410	0.700	AVRG	1.5
2-Chlorophenol	1.403	1.448	0.800	AVRG	3.2
1,3-Dichlorobenzene	1.617	1.626	0.010	AVRG	0.6
1,4-Dichlorobenzene	1.605	1.640	0.010	AVRG	2.2
1,2-Dichlorobenzene	1.508	1.528	0.010	AVRG	1.3
Benzyl alcohol	0.859	0.943	0.010	AVRG	9.8
2,2'-oxybis(1-Chloropropane)	1.126	1.150	0.010	AVRG	2.1
2-Methylphenol	1.265	1.345	0.700	AVRG	6.3
Hexachloroethane	0.619	0.616	0.300	AVRG	-0.5
N-Nitroso-di-n-propylamine	0.938	1.032	0.500	AVRG	10.0
4-Methylphenol	1.288	1.394	0.600	AVRG	8.2
Nitrobenzene	0.391	0.405	0.200	AVRG	3.6
Isophorone	0.588	0.606	0.400	AVRG	3.1
2-Nitrophenol	0.190	0.201	0.100	AVRG	5.8
2,4-Dimethylphenol	0.345	0.354	0.200	AVRG	2.6
Bis(2-Chloroethoxy)methane	0.431	0.438	0.300	AVRG	1.6
2,4-Dichlorophenol	0.289	0.301	0.200	AVRG	4.2
1,2,4-Trichlorobenzene	0.322	0.317	0.010	AVRG	-1.6
Naphthalene	0.982	0.987	0.700	AVRG	0.5
Benzoic acid	50.00	40.69	0.010	LINR	-18.6
4-Chloroaniline	0.393	0.404	0.010	AVRG	2.8
Hexachlorobutadiene	0.174	0.172	0.010	AVRG	-1.1
4-Chloro-3-methylphenol	0.276	0.295	0.200	AVRG	6.9
2-Methylnaphthalene	0.520	0.535	0.400	AVRG	2.9
Hexachlorocyclopentadiene	0.324	0.314	0.050	AVRG	-3.1
2,4,6-Trichlorophenol	0.336	0.352	0.200	AVRG	4.8
2,4,5-Trichlorophenol	0.353	0.372	0.200	AVRG	5.4
2-Chloronaphthalene	1.088	1.080	0.800	AVRG	-0.7
2-Nitroaniline	0.272	0.293	0.010	AVRG	7.7
Acenaphthylene	1.621	1.693	0.900	AVRG	4.4
Dimethylphthalate	1.143	1.158	0.010	AVRG	1.3
2,6-Dinitrotoluene	0.260	0.286	0.200	AVRG	10.0
Acenaphthene	1.028	1.031	0.900	AVRG	0.3
3-Nitroaniline	0.268	0.280	0.010	AVRG	4.5
2,4-Dinitrophenol	50.00	42.23	0.010	2ORDR	-15.5
Dibenzofuran	1.422	1.445	0.800	AVRG	1.6

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/08/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1253

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.142	0.010	AVRG	27.9	<- NTC
2,4-Dinitrotoluene	0.338	0.377	0.200	AVRG	11.5	
Fluorene	1.159	1.192	0.900	AVRG	2.8	
4-Chlorophenyl-phenylether	0.566	0.582	0.400	AVRG	2.8	
Diethylphthalate	1.079	1.100	0.010	AVRG	1.9	
4-Nitroaniline	0.259	0.276	0.010	AVRG	6.6	
4,6-Dinitro-2-methylphenol	0.133	0.129	0.010	AVRG	-3.0	
N-Nitrosodiphenylamine(1)	0.609	0.609	0.010	AVRG	0.0	
4-Bromophenyl-phenylether	0.219	0.217	0.100	AVRG	-0.9	
Hexachlorobenzene	0.230	0.228	0.100	AVRG	-0.9	
Pentachlorophenol	0.114	0.099	0.050	AVRG	-13.2	
Phenanthrene	1.081	1.080	0.700	AVRG	-0.1	
Anthracene	1.108	1.120	0.700	AVRG	1.1	
Carbazole	1.019	1.008	0.010	AVRG	-1.1	
Di-n-butylphthalate	1.158	1.205	0.010	AVRG	4.0	
Fluoranthene	1.027	1.053	0.600	AVRG	2.5	
Pyrene	1.238	1.319	0.600	AVRG	6.5	
Butylbenzylphthalate	0.533	0.597	0.010	AVRG	12.0	
Benzo(a)anthracene	0.974	1.050	0.800	AVRG	7.8	
3,3'-Dichlorobenzidine	0.320	0.361	0.010	AVRG	12.8	
Chrysene	1.002	1.011	0.700	AVRG	0.9	
bis(2-Ethylhexyl)phthalate	0.591	0.625	0.010	AVRG	5.8	
Di-n-octylphthalate	1.026	1.008	0.010	AVRG	-1.8	
Benzo(b)fluoranthene	1.030	1.133	0.700	AVRG	10.0	
Benzo(k)fluoranthene	1.075	1.126	0.700	AVRG	4.7	
Benzo(a)pyrene	0.925	0.978	0.700	AVRG	5.7	
Indeno(1,2,3-cd)pyrene	1.228	1.208	0.500	AVRG	-1.6	
Dibenzo(a,h)anthracene	1.009	1.010	0.400	AVRG	0.1	
Benzo(g,h,i)perylene	1.084	1.039	0.500	AVRG	-4.2	
N-Nitrosodimethylamine	0.948	0.978	0.010	AVRG	3.2	
Aniline	2.029	1.969	0.010	AVRG	-3.0	
Benzidine	25.00	0.000	0.010	LINR		
Pyridine	1.734	1.726	0.010	AVRG	-0.5	
1-methylnaphthalene	0.516	0.526	0.010	AVRG	1.9	
Azobenzene (1,2-DP-Hydrazine	1.225		0.010	AVRG		
2,3,4,6-Tetrachlorophenol	0.232	0.239	0.010	AVRG	3.0	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-2 12/8/11

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/08/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1253

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.478	0.010	AVRG	-2.2
Total Benzofluoranthenes	1.000	1.070	0.010	AVRG	7.0
2-Fluorophenol	1.463	1.472	0.010	AVRG	0.6
Phenol-d5	1.800	1.856	0.010	AVRG	3.1
2-Chlorophenol-d4	1.408	1.446	0.010	AVRG	2.7
1,2-Dichlorobenzene-d4	0.974	0.945	0.010	AVRG	-3.0
Nitrobenzene-d5	0.412	0.411	0.010	AVRG	-0.2
2-Fluorobiphenyl	1.330	1.299	0.010	AVRG	-2.3
2,4,6-Tribromophenol	0.139	0.153	0.010	AVRG	10.1
Terphenyl-d14	0.811	0.820	0.010	AVRG	1.1

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.838	0.800	AVRG	7.5
Bis(2-Chloroethyl)ether	1.389	1.430	0.700	AVRG	3.0
2-Chlorophenol	1.403	1.440	0.800	AVRG	2.6
1,3-Dichlorobenzene	1.617	1.598	0.010	AVRG	-1.2
1,4-Dichlorobenzene	1.605	1.592	0.010	AVRG	-0.8
1,2-Dichlorobenzene	1.508	1.513	0.010	AVRG	0.3
Benzyl alcohol	0.859	0.966	0.010	AVRG	12.4
2,2'-oxybis(1-Chloropropane)	1.126	1.168	0.010	AVRG	3.7
2-Methylphenol	1.265	1.368	0.700	AVRG	8.1
Hexachloroethane	0.619	0.604	0.300	AVRG	-2.4
N-Nitroso-di-n-propylamine	0.938	1.058	0.500	AVRG	12.8
4-Methylphenol	1.288	1.431	0.600	AVRG	11.1
Nitrobenzene	0.391	0.404	0.200	AVRG	3.3
Isophorone	0.588	0.625	0.400	AVRG	6.3
2-Nitrophenol	0.190	0.203	0.100	AVRG	6.8
2,4-Dimethylphenol	0.345	0.360	0.200	AVRG	4.3
Bis(2-Chloroethoxy)methane	0.431	0.446	0.300	AVRG	3.5
2,4-Dichlorophenol	0.289	0.303	0.200	AVRG	4.8
1,2,4-Trichlorobenzene	0.322	0.319	0.010	AVRG	-0.9
Naphthalene	0.982	0.988	0.700	AVRG	0.6
Benzoic acid	50.00	47.79	0.010	LINR	-4.4
4-Chloroaniline	0.393	0.414	0.010	AVRG	5.3
Hexachlorobutadiene	0.174	0.169	0.010	AVRG	-2.9
4-Chloro-3-methylphenol	0.276	0.311	0.200	AVRG	12.7
2-Methylnaphthalene	0.520	0.545	0.400	AVRG	4.8
Hexachlorocyclopentadiene	0.324	0.328	0.050	AVRG	1.2
2,4,6-Trichlorophenol	0.336	0.360	0.200	AVRG	7.1
2,4,5-Trichlorophenol	0.353	0.385	0.200	AVRG	9.1
2-Chloronaphthalene	1.088	1.060	0.800	AVRG	-2.6
2-Nitroaniline	0.272	0.304	0.010	AVRG	11.8
Acenaphthylene	1.621	1.696	0.900	AVRG	4.6
Dimethylphthalate	1.143	1.224	0.010	AVRG	7.1
2,6-Dinitrotoluene	0.260	0.300	0.200	AVRG	15.4
Acenaphthene	1.028	1.043	0.900	AVRG	1.4
3-Nitroaniline	0.268	0.290	0.010	AVRG	8.2
2,4-Dinitrophenol	50.00	53.41	0.010	2ORDR	6.8
Dibenzofuran	1.422	1.487	0.800	AVRG	4.6

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.162	0.010	AVRG	45.9	<- NTC
2,4-Dinitrotoluene	0.338	0.401	0.200	AVRG	18.6	
Fluorene	1.159	1.208	0.900	AVRG	4.2	
4-Chlorophenyl-phenylether	0.566	0.608	0.400	AVRG	7.4	
Diethylphthalate	1.079	1.187	0.010	AVRG	10.0	
4-Nitroaniline	0.259	0.307	0.010	AVRG	18.5	
4,6-Dinitro-2-methylphenol	0.133	0.138	0.010	AVRG	3.8	
N-Nitrosodiphenylamine(1)	0.609	0.608	0.010	AVRG	-0.2	
4-Bromophenyl-phenylether	0.219	0.216	0.100	AVRG	-1.4	
Hexachlorobenzene	0.230	0.227	0.100	AVRG	-1.3	
Pentachlorophenol	0.114	0.117	0.050	AVRG	2.6	
Phenanthrene	1.081	1.065	0.700	AVRG	-1.5	
Anthracene	1.108	1.114	0.700	AVRG	0.5	
Carbazole	1.019	1.048	0.010	AVRG	2.8	
Di-n-butylphthalate	1.158	1.252	0.010	AVRG	8.1	
Fluoranthene	1.027	1.100	0.600	AVRG	7.1	
Pyrene	1.238	1.298	0.600	AVRG	4.8	
Butylbenzylphthalate	0.533	0.627	0.010	AVRG	17.6	
Benzo(a)anthracene	0.974	1.038	0.800	AVRG	6.6	
3,3'-Dichlorobenzidine	0.320	0.356	0.010	AVRG	11.2	
Chrysene	1.002	1.030	0.700	AVRG	2.8	
bis(2-Ethylhexyl)phthalate	0.591	0.618	0.010	AVRG	4.6	
Di-n-octylphthalate	1.026	1.005	0.010	AVRG	-2.0	
Benzo(b)fluoranthene	1.030	1.153	0.700	AVRG	11.9	
Benzo(k)fluoranthene	1.075	1.157	0.700	AVRG	7.6	
Benzo(a)pyrene	0.925	0.974	0.700	AVRG	5.3	
Indeno(1,2,3-cd)pyrene	1.228	1.001	0.500	AVRG	-18.5	
Dibenzo(a,h)anthracene	1.009	0.844	0.400	AVRG	-16.4	
Benzo(g,h,i)perylene	1.084	0.838	0.500	AVRG	-22.7	<- NTC
N-Nitrosodimethylamine	0.948	0.940	0.010	AVRG	-0.8	
Aniline	2.029	1.986	0.010	AVRG	-2.1	
Benzidine	25.00	0.000	0.010	LINR		
Pyridine	1.734	1.652	0.010	AVRG	-4.7	
1-methylnaphthalene	0.516	0.542	0.010	AVRG	5.0	
Azobenzene (1,2-DP-Hydrazine	1.225		0.010	AVRG		
2,3,4,6-Tetrachlorophenol	0.232	0.273	0.010	AVRG	17.7	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

12/03/11

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.470	0.010	AVRG	-3.9
Total Benzofluoranthenes	1.000	1.096	0.010	AVRG	9.6
2-Fluorophenol	1.463	1.462	0.010	AVRG	-0.1
Phenol-d5	1.800	1.889	0.010	AVRG	4.9
2-Chlorophenol-d4	1.408	1.432	0.010	AVRG	1.7
1,2-Dichlorobenzene-d4	0.974	0.930	0.010	AVRG	-4.5
Nitrobenzene-d5	0.412	0.412	0.010	AVRG	0.0
2-Fluorobiphenyl	1.330	1.276	0.010	AVRG	-4.1
2,4,6-Tribromophenol	0.139	0.164	0.010	AVRG	18.0
Terphenyl-d14	0.811	0.808	0.010	AVRG	-0.4

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1644

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.834	0.800	AVRG	7.2
Bis(2-Chloroethyl)ether	1.389	1.420	0.700	AVRG	2.2
2-Chlorophenol	1.403	1.454	0.800	AVRG	3.6
1,3-Dichlorobenzene	1.617	1.633	0.010	AVRG	1.0
1,4-Dichlorobenzene	1.605	1.618	0.010	AVRG	0.8
1,2-Dichlorobenzene	1.508	1.524	0.010	AVRG	1.1
Benzyl alcohol	0.859	0.955	0.010	AVRG	11.2
2,2'-oxybis(1-Chloropropane)	1.126	1.180	0.010	AVRG	4.8
2-Methylphenol	1.265	1.364	0.700	AVRG	7.8
Hexachloroethane	0.619	0.606	0.300	AVRG	-2.1
N-Nitroso-di-n-propylamine	0.938	1.036	0.500	AVRG	10.4
4-Methylphenol	1.288	1.416	0.600	AVRG	9.9
Nitrobenzene	0.391	0.396	0.200	AVRG	1.3
Isophorone	0.588	0.609	0.400	AVRG	3.6
2-Nitrophenol	0.190	0.196	0.100	AVRG	3.2
2,4-Dimethylphenol	0.345	0.350	0.200	AVRG	1.4
Bis(2-Chloroethoxy)methane	0.431	0.436	0.300	AVRG	1.2
2,4-Dichlorophenol	0.289	0.298	0.200	AVRG	3.1
1,2,4-Trichlorobenzene	0.322	0.315	0.010	AVRG	-2.2
Naphthalene	0.982	0.983	0.700	AVRG	0.1
Benzoic acid	50.00	46.40	0.010	LINR	-7.2
4-Chloroaniline	0.393	0.398	0.010	AVRG	1.3
Hexachlorobutadiene	0.174	0.166	0.010	AVRG	-4.6
4-Chloro-3-methylphenol	0.276	0.298	0.200	AVRG	8.0
2-Methylnaphthalene	0.520	0.534	0.400	AVRG	2.7
Hexachlorocyclopentadiene	0.324	0.328	0.050	AVRG	1.2
2,4,6-Trichlorophenol	0.336	0.360	0.200	AVRG	7.1
2,4,5-Trichlorophenol	0.353	0.386	0.200	AVRG	9.3
2-Chloronaphthalene	1.088	1.070	0.800	AVRG	-1.6
2-Nitroaniline	0.272	0.293	0.010	AVRG	7.7
Acenaphthylene	1.621	1.702	0.900	AVRG	5.0
Dimethylphthalate	1.143	1.198	0.010	AVRG	4.8
2,6-Dinitrotoluene	0.260	0.295	0.200	AVRG	13.5
Acenaphthene	1.028	1.038	0.900	AVRG	1.0
3-Nitroaniline	0.268	0.282	0.010	AVRG	5.2
2,4-Dinitrophenol	50.00	48.98	0.010	2ORDR	-2.0
Dibenzofuran	1.422	1.469	0.800	AVRG	3.3

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1644

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.152	0.010	AVRG	36.9	<- NTC
2,4-Dinitrotoluene	0.338	0.384	0.200	AVRG	13.6	
Fluorene	1.159	1.196	0.900	AVRG	3.2	
4-Chlorophenyl-phenylether	0.566	0.590	0.400	AVRG	4.2	
Diethylphthalate	1.079	1.124	0.010	AVRG	4.2	
4-Nitroaniline	0.259	0.294	0.010	AVRG	13.5	
4,6-Dinitro-2-methylphenol	0.133	0.132	0.010	AVRG	-0.8	
N-Nitrosodiphenylamine(1)	0.609	0.602	0.010	AVRG	-1.1	
4-Bromophenyl-phenylether	0.219	0.216	0.100	AVRG	-1.4	
Hexachlorobenzene	0.230	0.227	0.100	AVRG	-1.3	
Pentachlorophenol	0.114	0.120	0.050	AVRG	5.3	
Phenanthrene	1.081	1.076	0.700	AVRG	-0.5	
Anthracene	1.108	1.117	0.700	AVRG	0.8	
Carbazole	1.019	1.032	0.010	AVRG	1.3	
Di-n-butylphthalate	1.158	1.240	0.010	AVRG	7.1	
Fluoranthene	1.027	1.080	0.600	AVRG	5.2	
Pyrene	1.238	1.330	0.600	AVRG	7.4	
Butylbenzylphthalate	0.533	0.617	0.010	AVRG	15.8	
Benzo(a)anthracene	0.974	1.049	0.800	AVRG	7.7	
3,3'-Dichlorobenzidine	0.320	0.352	0.010	AVRG	10.0	
Chrysene	1.002	1.013	0.700	AVRG	1.1	
bis(2-Ethylhexyl)phthalate	0.591	0.636	0.010	AVRG	7.6	
Di-n-octylphthalate	1.026	1.009	0.010	AVRG	-1.6	
Benzo(b)fluoranthene	1.030	1.082	0.700	AVRG	5.0	
Benzo(k)fluoranthene	1.075	1.185	0.700	AVRG	10.2	
Benzo(a)pyrene	0.925	0.978	0.700	AVRG	5.7	
Indeno(1,2,3-cd)pyrene	1.228	1.166	0.500	AVRG	-5.0	
Dibenzo(a,h)anthracene	1.009	0.975	0.400	AVRG	-3.4	
Benzo(g,h,i)perylene	1.084	1.010	0.500	AVRG	-6.8	
N-Nitrosodimethylamine	0.948	0.969	0.010	AVRG	2.2	
Aniline	2.029	1.973	0.010	AVRG	-2.8	
Benzidine	25.00	22.40	0.010	LINR	-10.4	
Pyridine	1.734	1.704	0.010	AVRG	-1.7	
1-methylnaphthalene	0.516	0.528	0.010	AVRG	2.3	
Azobenzene (1,2-DP-Hydrazine	1.225	1.264	0.010	AVRG	3.2	
2,3,4,6-Tetrachlorophenol	0.232	0.263	0.010	AVRG	13.4	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

12/13/11

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/12/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1644

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.469	0.010	AVRG	-4.1
Total Benzofluoranthenes	1.000	1.072	0.010	AVRG	7.2
2-Fluorophenol	1.463	1.482	0.010	AVRG	1.3
Phenol-d5	1.800	1.875	0.010	AVRG	4.2
2-Chlorophenol-d4	1.408	1.436	0.010	AVRG	2.0
1,2-Dichlorobenzene-d4	0.974	0.942	0.010	AVRG	-3.3
Nitrobenzene-d5	0.412	0.398	0.010	AVRG	-3.4
2-Fluorobiphenyl	1.330	1.284	0.010	AVRG	-3.4
2,4,6-Tribromophenol	0.139	0.159	0.010	AVRG	14.4
Terphenyl-d14	0.811	0.829	0.010	AVRG	2.2

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/08/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	440384	7.85	1706310	9.90	965059	12.78
	UPPER LIMIT		8.35		10.40		13.28
	LOWER LIMIT		7.35		9.40		12.28
01	TZ73MBW1	436186	7.85	1644976	9.90	932922	12.78
02	TZ73LCSDW1	459078	7.85	1803786	9.91	997293	12.78
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/08/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1410135	15.15	1151923	19.47	1020472	21.63
	UPPER LIMIT		15.65		19.97		22.13
	LOWER LIMIT		14.65		18.97		21.13
01	TZ73MBW1	1310779	15.15	1384465	19.47	1518773	21.63
02	TZ73LCSDW1	1478234	15.16	1361449	19.47	1617285	21.64
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/08/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1512284	20.64				
	UPPER LIMIT		21.14				
	LOWER LIMIT		20.14				
01	TZ73MBW1	1828218	20.64				
02	TZ73LCSDW1	1916310	20.64				
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	407145	7.81	1609797	9.87	951894	12.73
	UPPER LIMIT		8.31		10.37		13.23
	LOWER LIMIT		7.31		9.37		12.23
01	TZ73LCSW1	416954	7.81	1701263	9.87	989850	12.74
02	MW-3S-120111	416888	7.81	1616184	9.86	974771	12.73
03	MW-27-120111	452051	7.81	1792177	9.86	1077012	12.73
04	MW-26-120111	454844	7.81	1813677	9.87	1089959	12.73
05	MW-5S-120111	512265	7.81	2048500	9.86	1243361	12.73
06	MW-11-120111	428726	7.81	1707441	9.86	1042825	12.73
07	MW-12-120111	463926	7.81	1848667	9.86	1115581	12.73
08	MW-19-120111	455900	7.81	1809734	9.86	1078423	12.73
09	MW-3D-120111	473224	7.81	1863006	9.87	1117775	12.73
10	MW-14-120211	426524	7.81	1686129	9.87	1017896	12.73
11	MW-14-120211	441863	7.81	1810767	9.87	1031376	12.74
12	MW-14-120211	455126	7.81	1835867	9.87	1054032	12.73
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1491310	15.10	1304427	19.42	1085018	21.58
	UPPER LIMIT		15.60		19.92		22.08
	LOWER LIMIT		14.60		18.92		21.08
01	TZ73LCSW1	1630142	15.11	1330564	19.42	1175235	21.58
02	MW-3S-120111	1452043	15.10	1259939	19.41	973481	21.57
03	MW-27-120111	1619253	15.10	1495687	19.42	1271495	21.57
04	MW-26-120111	1675221	15.11	1445849	19.42	1079006	21.58
05	MW-5S-120111	1908349	15.10	1853466	19.42	1600011	21.57
06	MW-11-120111	1576251	15.10	1492072	19.42	1241061	21.58
07	MW-12-120111	1698157	15.10	1549579	19.41	1315096	21.57
08	MW-19-120111	1650215	15.10	1514209	19.42	1240715	21.57
09	MW-3D-120111	1706703	15.10	1544469	19.42	1209656	21.58
10	MW-14-120211	1541851	15.10	1397656	19.42	1102549	21.58
11	MW-14-120211	1669864	15.11	1381733	19.42	1099192	21.58
12	MW-14-120211	1691966	15.11	1389545	19.42	1099824	21.58
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1788937	20.58				
	UPPER LIMIT		21.08				
	LOWER LIMIT		20.08				
01	TZ73LCSW1	1928573	20.59				
02	MW-3S-120111	1784841	20.58				
03	MW-27-120111	2072609	20.59				
04	MW-26-120111	2075442	20.59				
05	MW-5S-120111	2587854*	20.59				
06	MW-11-120111	2114552	20.59				
07	MW-12-120111	2198104	20.58				
08	MW-19-120111	2155570	20.59				
09	MW-3D-120111	2249055	20.59				
10	MW-14-120211	1970272	20.59				
11	MW-14-120211	1948119	20.59				
12	MW-14-120211	1949218	20.59				
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/12/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	391205	7.75	1569857	9.81	897974	12.67
	UPPER LIMIT		8.25		10.31		13.17
	LOWER LIMIT		7.25		9.31		12.17
01	MW-26-120111	480732	7.75	1884475	9.80	1147053	12.67
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/12/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1356223	15.04	1128117	19.36	937645	21.51
	UPPER LIMIT		15.54		19.86		22.01
	LOWER LIMIT		14.54		18.86		21.01
01	MW-26-120111	1721859	15.04	1537856	19.35	1213136	21.51
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ73 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/12/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1506299	20.53				
	UPPER LIMIT		21.03				
	LOWER LIMIT		20.03				
01	MW-26-120111	2138344	20.53				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

Metals Analysis
Report and Summary QC Forms

ARI Job ID: TZ73, TZ86

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-3S-120111	TZ73A	11-27809	
MW-3S-120111D	TZ73ADUP	11-27809	
MW-3S-120111S	TZ73ASPK	11-27809	
MW-27-120111	TZ73B	11-27810	
PBW	TZ73MB1	11-27810	
LCSW	TZ73MB1SPK	11-27810	
MW-26-120111	TZ73C	11-27811	
MW-5S-120111	TZ73D	11-27812	
MW-11-120111	TZ73E	11-27813	
MW-12-120111	TZ73F	11-27814	
MW-19-120111	TZ73G	11-27815	
MW-3D-120111	TZ73H	11-27816	
MW-3S-120111	TZ73I	11-27817	
MW-3S-120111D	TZ73IDUP	11-27817	
MW-3S-120111S	TZ73ISPK	11-27817	
MW-27-120111	TZ73J	11-27818	
PBW	TZ73MB2	11-27818	
LCSW	TZ73MB2SPK	11-27818	
MW-26-120111	TZ73K	11-27819	
MW-5S-120111	TZ73L	11-27820	
MW-11-120111	TZ73M	11-27821	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/20/11 Title: Inorganics Director

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-12-120111	TZ73N	11-27822	
MW-19-120111	TZ73O	11-27823	
MW-3D-120111	TZ73P	11-27824	
MW-3S-120111	TZ73RA	11-27809	R
MW-3S-120111D	TZ73RADUP	11-27809	R
MW-3S-120111S	TZ73RASPK	11-27809	R
MW-27-120111	TZ73RB	11-27810	R
PBW	TZ73RMB1	11-27810	R
LCSW	TZ73RMB1SPK	11-27810	R
MW-26-120111	TZ73RC	11-27811	R
MW-3D-120111	TZ73RH	11-27816	R

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/20/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: MW-3S-120111
SAMPLE

Lab Sample ID: TZ73A
LIMS ID: 11-27809
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**414**	
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/14/11	6020	12/15/11	7440-47-3	Chromium	1	1	U
3010A	12/06/11	6010B	12/08/11	**7440-50-8**	**Copper**	2	**2**	
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/12/11	**7440-02-0**	**Nickel**	0.5	**1.0**	
200.8	12/07/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-27-120111
SAMPLE

Lab Sample ID: TZ73B
LIMS ID: 11-27810
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	1	**13**	
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.5	0.5	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.2	0.2	U
200.8	12/14/11	6020	12/15/11	**7440-47-3**	**Chromium**	1	**2**	
3010A	12/06/11	6010B	12/08/11	**7440-50-8**	**Copper**	2	**3**	
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.2	0.2	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/08/11	**7440-02-0**	**Nickel**	1	**8**	
200.8	12/07/11	6020	12/08/11	**7782-49-2**	**Selenium**	5	**6**	
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.5	0.5	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample ID: MW-26-120111
SAMPLE

Lab Sample ID: TZ73C
LIMS ID: 11-27811
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**432**	
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/14/11	6020	12/15/11	**7440-47-3**	**Chromium**	1	**2**	
3010A	12/06/11	6010B	12/08/11	**7440-50-8**	**Copper**	2	**4**	
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/12/11	**7440-02-0**	**Nickel**	0.5	**1.9**	
200.8	12/07/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-5S-120111
SAMPLE

Lab Sample ID: TZ73D
LIMS ID: 11-27812
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**7.2**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-11-120111
SAMPLE

Lab Sample ID: TZ73E
LIMS ID: 11-27813
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/08/11	7440-38-2	Arsenic	0.2	97.6	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-12-120111
SAMPLE

Lab Sample ID: TZ73F
LIMS ID: 11-27814
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**123**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-19-120111
SAMPLE

Lab Sample ID: TZ73G
LIMS ID: 11-27815
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**402**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-3D-120111
SAMPLE

Lab Sample ID: TZ73H
LIMS ID: 11-27816
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.5	**34.8**	
200.8	12/14/11	6020	12/15/11	**7440-47-3**	**Chromium**	1	**5**	
3010A	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-3S-120111
MATRIX SPIKE

Lab Sample ID: TZ73A
LIMS ID: 11-27809
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	6010B	50.0 U	1,540	2,000	77.0%	
Arsenic	6020	414	432	25.0	72.0%	H
Beryllium	6020	0.200 U	24.0	25.0	96.0%	
Cadmium	6020	0.100 U	23.5	25.0	94.0%	
Chromium	6020	1.25 U	23.2	25.0	92.8%	
Copper	6010B	2.18	515	500	103%	
Lead	6020	0.100 U	24.0	25.0	96.0%	
Mercury	7470A	0.100 U	1.07	1.00	107%	
Nickel	6020	0.980	24.9	25.0	95.7%	
Selenium	6020	0.500 U	72.0	80.0	90.0%	
Silver	6010B	3.00 U	486	500	97.2%	
Thallium	6020	0.200 U	24.9	25.0	99.6%	
Zinc	6010B	10.0 U	473	500	94.6%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-3S-120111
DUPLICATE

Lab Sample ID: TZ73A
LIMS ID: 11-27809
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	414	414	0.0%	+/- 20%	
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	2	2	0.0%	+/- 2	L
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	1.0	1.0	0.0%	+/- 0.5	L
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ73LCS
LIMS ID: 11-27810
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	6010B	1970	2000	98.5%	
Arsenic	6020	25.3	25.0	101%	
Beryllium	6020	25.6	25.0	102%	
Cadmium	6020	24.7	25.0	98.8%	
Chromium	6020	24.2	25.0	96.8%	
Copper	6010B	506	500	101%	
Lead	6020	25.8	25.0	103%	
Mercury	7470A	2.1	2.0	105%	
Nickel	6020	26.6	25.0	106%	
Selenium	6020	73.8	80.0	92.2%	
Silver	6010B	489	500	97.8%	
Thallium	6020	26.5	25.0	106%	
Zinc	6010B	480	500	96.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ73MB
LIMS ID: 11-27810
Matrix: Water
Data Release Authorized:
Reported: 12/20/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/08/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/14/11	6020	12/15/11	**7440-47-3**	**Chromium**	0.5	**0.7**	
3010A	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/08/11	7440-02-0	Nickel	0.5	0.5	U
200.8	12/07/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-3S-120111
SAMPLE

Lab Sample ID: TZ73I
LIMS ID: 11-27817
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**412**	
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/07/11	6020	12/12/11	7440-47-3	Chromium	1	1	U
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/12/11	**7440-02-0**	**Nickel**	0.5	**0.9**	
200.8	12/07/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-27-120111
SAMPLE

Lab Sample ID: TZ73J
LIMS ID: 11-27818
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	1	**13**	
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.5	0.5	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-47-3	Chromium	1	1	U
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.2	0.2	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/08/11	**7440-02-0**	**Nickel**	1	**8**	
200.8	12/07/11	6020	12/08/11	**7782-49-2**	**Selenium**	5	**7**	
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.5	0.5	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-26-120111
SAMPLE

Lab Sample ID: TZ73K
LIMS ID: 11-27819
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**448**	
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/07/11	6020	12/13/11	7440-47-3	Chromium	2	2	U
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/12/11	**7440-02-0**	**Nickel**	0.5	**1.8**	
200.8	12/07/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-5S-120111
SAMPLE

Lab Sample ID: TZ73L
LIMS ID: 11-27820
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**7.4**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-11-120111
SAMPLE

Lab Sample ID: TZ73M
LIMS ID: 11-27821
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**97.7**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-12-120111
SAMPLE

Lab Sample ID: TZ73N
LIMS ID: 11-27822
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**116**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-19-120111
SAMPLE

Lab Sample ID: TZ730
LIMS ID: 11-27823
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/12/11	**7440-38-2**	**Arsenic**	1	**420**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-3D-120111
SAMPLE

Lab Sample ID: TZ73P
LIMS ID: 11-27824
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/07/11	6020	12/12/11	**7440-38-2**	**Arsenic**	0.5	**35.8**	
200.8	12/07/11	6020	12/12/11	**7440-47-3**	**Chromium**	1	**4**	
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-3S-120111
MATRIX SPIKE

Lab Sample ID: TZ73I
LIMS ID: 11-27817
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	6010B	50.0 U	1,770	2,000	88.5%	
Arsenic	6020	412	421	25.0	36.0%	H
Beryllium	6020	0.200 U	23.6	25.0	94.4%	
Cadmium	6020	0.100 U	24.1	25.0	96.4%	
Chromium	6020	1.25 U	20.9	25.0	83.6%	
Copper	6010B	2.00 U	489	500	97.8%	
Lead	6020	0.100 U	24.2	25.0	96.8%	
Mercury	7470A	0.100 U	1.05	1.00	105%	
Nickel	6020	0.900	24.3	25.0	93.6%	
Selenium	6020	0.500 U	74.6	80.0	93.2%	
Silver	6010B	3.00 U	347	500	69.4%	N
Thallium	6020	0.200 U	24.9	25.0	99.6%	
Zinc	6010B	10.0 U	468	500	93.6%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-3S-120111
DUPLICATE

Lab Sample ID: TZ73I
LIMS ID: 11-27817
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: 12/01/11
Date Received: 12/01/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	412	412	0.0%	+/- 20%	
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	0.9	0.9	0.0%	+/- 0.5	L
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: TZ73LCS
LIMS ID: 11-27818
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	6010B	1840	2000	92.0%	
Arsenic	6020	25.3	25.0	101%	
Beryllium	6020	25.7	25.0	103%	
Cadmium	6020	24.5	25.0	98.0%	
Chromium	6020	25.6	25.0	102%	
Copper	6010B	474	500	94.8%	
Lead	6020	25.6	25.0	102%	
Mercury	7470A	2.1	2.0	105%	
Nickel	6020	26.7	25.0	107%	
Selenium	6020	74.5	80.0	93.1%	
Silver	6010B	443	500	88.6%	
Thallium	6020	26.4	25.0	106%	
Zinc	6010B	480	500	96.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ73MB
LIMS ID: 11-27818
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ73-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/06/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/07/11	6020	12/08/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/07/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/07/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/07/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/06/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/07/11	6020	12/08/11	7440-02-0	Nickel	0.5	0.5	U
200.8	12/07/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/07/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Antimony	SB	ICP	IP120871	2000.0	2037.38	**101.9**	2000.0	2040.02	**102.0**	1979.19	**99.0**	1977.87	**98.9**	1944.68	**97.2**	1943.19	**97.2**
Arsenic	AS	PMS	MS120881	50.0	51.59	**103.2**	50.0	50.25	**100.5**	50.06	**100.1**	50.18	**100.4**	50.00	**100.0**	49.96	**99.9**
Beryllium	BE	PMS	MS120881	50.0	50.58	**101.2**	50.0	50.02	**100.0**	49.72	**99.4**	49.44	**98.9**	51.75	**103.5**	51.32	**102.6**
Cadmium	CD	PMS	MS120881	50.0	49.68	**99.4**	50.0	50.42	**100.8**	50.07	**100.1**	50.67	**101.3**	49.58	**99.2**	50.37	**100.7**
Chromium	CR	PMS	MS120881	50.0	50.69	**101.4**	50.0	49.55	**99.1**	49.47	**98.9**	49.96	**99.9**	50.22	**100.4**	49.80	**99.6**
Copper	CU	ICP	IP120871	1000.0	1015.83	**101.6**	1000.0	1022.98	**102.3**	1001.57	**100.2**	1000.36	**100.0**	992.59	**99.3**	988.25	**98.8**
Lead	PB	PMS	MS120881	50.0	50.55	**101.1**	50.0	50.24	**100.5**	50.52	**101.0**	50.78	**101.6**	51.38	**102.8**	50.77	**101.5**
Mercury	HG	CVA	HG120901	8.0	7.76	**97.0**	4.0	4.17	**104.3**	4.30	**107.5**	4.21	**105.3**	4.32	**108.0**	4.37	**109.3**
Nickel	NI	PMS	MS120881	50.0	51.37	**102.7**	50.0	49.72	**99.4**	49.95	**99.9**	50.32	**100.6**	50.93	**101.9**	50.77	**101.5**
Selenium	SE	PMS	MS120881	80.0	81.88	**102.4**	50.0	50.53	**101.1**	51.00	**102.0**	51.21	**102.4**	49.68	**99.4**	49.70	**99.4**
Silver	AG	ICP	IP120871	1000.0	1005.93	**100.6**	1000.0	1011.24	**101.1**	967.29	**96.7**	970.81	**97.1**	953.38	**95.3**	952.40	**95.2**
Thallium	TL	PMS	MS120881	50.0	52.22	**104.4**	50.0	52.06	**104.1**	52.52	**105.0**	51.87	**103.7**	53.27	**106.5**	52.92	**105.8**
Zinc	ZN	ICP	IP120871	1000.0	972.06	**97.2**	1000.0	986.40	**98.6**	972.26	**97.2**	961.14	**96.1**	949.52	**95.0**	966.30	**96.6**

TZ73 00199

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS:ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Antimony	SB	ICP	IP120871	2000.0	1937.26	**96.9**	1919.60	**96.0**	1916.12	**95.8**	1901.13	**95.1**	1908.43	**95.4**	1909.75	**95.5**
Arsenic	AS	PMS	MS120881	50.0	50.08	**100.2**	49.67	**99.3**	50.23	**100.5**	49.94	**99.9**	50.37	**100.7**	50.39	**100.8**
Beryllium	BE	PMS	MS120881	50.0	50.95	**101.9**	48.73	**97.5**	51.40	**102.8**	51.45	**102.9**	49.09	**98.2**	48.82	**97.6**
Cadmium	CD	PMS	MS120881	50.0	49.95	**99.9**	49.70	**99.4**	50.26	**100.5**	49.72	**99.4**	50.53	**101.1**	50.68	**101.4**
Chromium	CR	PMS	MS120881	50.0	50.65	**101.3**	50.27	**100.5**	50.99	**102.0**	51.52	**103.0**	50.08	**100.2**	49.82	**99.6**
Copper	CU	ICP	IP120871	1000.0	979.31	**97.9**	988.79	**98.9**	987.10	**98.7**	979.07	**97.9**	981.23	**98.1**	982.54	**98.3**
Lead	PB	PMS	MS120881	50.0	50.68	**101.4**	51.20	**102.4**	51.78	**103.6**	50.55	**101.1**	51.22	**102.4**	51.26	**102.5**
Mercury	HG	CVA	HG120901	4.0												
Nickel	NI	PMS	MS120881	50.0	51.03	**102.1**	50.38	**100.8**	51.86	**103.7**	50.99	**102.0**	50.39	**100.8**	51.13	**102.3**
Selenium	SE	PMS	MS120881	50.0	50.95	**101.9**	50.22	**100.4**	50.67	**101.3**	50.11	**100.2**	51.20	**102.4**	51.75	**103.5**
Silver	AG	ICP	IP120871	1000.0	1628.59	**162.9**	957.21	**95.7**	959.82	**96.0**	952.56	**95.3**	996.58	**99.7**	959.55	**96.0**
Thallium	TL	PMS	MS120881	50.0	52.17	**104.3**	52.39	**104.8**	53.71	**107.4**	52.44	**104.9**	53.17	**106.3**	52.66	**105.3**
Zinc	ZN	ICP	IP120871	1000.0	961.12	**96.1**	953.98	**95.4**	953.40	**95.3**	948.35	**94.8**	942.58	**94.3**	942.33	**94.2**

TZ73:00151

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS:ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV12	%R	CCV13	%R	CCV14	%R	CCV15	%R	CCV16	%R	CCV17	%R
Antimony	SB	ICP	IP120871	2000.0	1893.76	**94.7**	1890.98	**94.5**								
Arsenic	AS	PMS	MS120881	50.0												
Beryllium	BE	PMS	MS120881	50.0												
Cadmium	CD	PMS	MS120881	50.0												
Chromium	CR	PMS	MS120881	50.0												
Copper	CU	ICP	IP120871	1000.0	977.04	**97.7**	974.66	**97.5**								
Lead	PB	PMS	MS120881	50.0												
Mercury	HG	CVA	HG120901	4.0												
Nickel	NI	PMS	MS120881	50.0												
Selenium	SE	PMS	MS120881	50.0												
Silver	AG	ICP	IP120871	1000.0	954.88	**95.5**	950.55	**95.1**								
Thallium	TL	PMS	MS120881	50.0												
Zinc	ZN	ICP	IP120871	1000.0	950.84	**95.1**	944.83	**94.5**								

29100:2171

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS121281	50.0	50.99	102.0	50.0	49.95	99.9	50.42	100.8	49.81	99.6	49.65	99.3	50.42	100.8
Chromium	CR	PMS	MS121281	50.0	51.01	102.0	50.0	49.92	99.8	49.82	99.6	51.16	102.3	50.88	101.8	51.05	102.1
Nickel	NI	PMS	MS121281	50.0	51.20	102.4	50.0	49.57	99.1	50.50	101.0	51.39	102.8	51.23	102.5	51.37	102.7

Control Limits: Mercury 80-120; Other Metals 90-110

G9T93-6271

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Arsenic	AS	PMS	MS121281	50.0	50.09	100.2	49.90	99.8	50.26	100.5	49.96	99.9				
Chromium	CR	PMS	MS121281	50.0	50.01	100.0	49.90	99.8	49.31	98.6	49.36	98.7				
Nickel	NI	PMS	MS121281	50.0	51.49	103.0	50.34	100.7	49.22	98.4	49.24	98.5				

Control Limits: Mercury 80-120; Other Metals 90-110

h0109 : 2173

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Chromium	CR	PMS	MS121381	50.0	50.98	102.0	50.0	49.57	99.1	50.15	100.3	49.82	99.6	49.90	99.8	49.82	99.6

TZ73:00105

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: T273

UNITS:ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Chromium	CR	PMS	MS121581	50.0	51.08	102.2	50.0	51.24	102.5	48.01	96.0	52.19	104.4				

T273:00166

Control Limits: Mercury 80-120; Other Metals 90-110

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Antimony	SB	ICP	IP120871	50.0	50.90	**101.8**	44.10	**88.2**	44.31	**88.6**						
Arsenic	AS	PMS	MS120881	0.2	0.20	**100.0**										
Beryllium	BE	PMS	MS120881	0.2	0.20	**100.0**										
Cadmium	CD	PMS	MS120881	0.1	0.11	**110.0**										
Chromium	CR	PMS	MS120881	0.5	0.48	**96.0**										
Copper	CU	ICP	IP120871	2.0	2.20	**110.0**	2.14	**107.0**	2.18	**109.0**						
Lead	PB	PMS	MS120881	0.1	0.11	**110.0**										
Mercury	HG	CVA	HG120901	0.1	0.10	**100.0**										
Nickel	NI	PMS	MS120881	0.5	0.61	**122.0**										
Selenium	SE	PMS	MS120881	0.5	0.51	**102.0**										
Silver	AG	ICP	IP120871	3.0	2.97	**99.0**	3.07	**102.3**	2.94	**98.0**						
Thallium	TL	PMS	MS120881	0.2	0.21	**105.0**										
Zinc	ZN	ICP	IP120871	10.0	9.58	**95.8**	9.36	**93.6**	8.84	**88.4**						
Arsenic	AS	PMS	MS121281	0.2	0.26	**130.0**										
Chromium	CR	PMS	MS121281	0.5	0.50	**100.0**										
Nickel	NI	PMS	MS121281	0.5	0.53	**106.0**										
Chromium	CR	PMS	MS121381	0.5	0.55	**110.0**										
Chromium	CR	PMS	MS121581	0.5	0.55	**110.0**										

TZ73:00107

Control Limits: no control limits have been established by the EPA at this time.

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Antimony	SB	ICP	IP120871	60.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Beryllium	BE	PMS	MS120881	5.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	PMS	MS120881	5.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chromium	CR	PMS	MS120881	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Lead	PB	PMS	MS120881	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Mercury	HG	CVA	HG120901	0.2	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Nickel	NI	PMS	MS120881	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Selenium	SE	PMS	MS120881	5.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Thallium	TL	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ73:00108

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Antimony	SB	ICP	IP120871	60.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Beryllium	BE	PMS	MS120881	5.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	PMS	MS120881	5.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chromium	CR	PMS	MS120881	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Lead	PB	PMS	MS120881	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Mercury	HG	CVA	HG120901	0.2	0.1												
Nickel	NI	PMS	MS120881	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Selenium	SE	PMS	MS120881	5.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Thallium	TL	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ73:0171

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS:ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB12	C	CCB13	C	CCB14	C	CCB15	C	CCB16	C	CCB17	C
Antimony	SB	ICP	IP120871	60.0	50.0	50.0	U	50.0	U								
Arsenic	AS	PMS	MS120881	10.0	0.2												
Beryllium	BE	PMS	MS120881	5.0	0.2												
Cadmium	CD	PMS	MS120881	5.0	0.1												
Chromium	CR	PMS	MS120881	10.0	0.5												
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U								
Lead	PB	PMS	MS120881	3.0	0.1												
Mercury	HG	CVA	HG120901	0.2	0.1												
Nickel	NI	PMS	MS120881	40.0	0.5												
Selenium	SE	PMS	MS120881	5.0	0.5												
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U								
Thallium	TL	PMS	MS120881	10.0	0.2												
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U								

TZ73:601109

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS121281	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Chromium	CR	PMS	MS121281	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Nickel	NI	PMS	MS121281	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

TZ73 00114

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Arsenic	AS	PMS	MS121281	10.0	0.2	0.2	B	0.3	B	0.3	B	0.3	B				
Chromium	CR	PMS	MS121281	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U				
Nickel	NI	PMS	MS121281	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U				

TZ73 - 00112

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS:ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Chromium	CR	PMS	MS121381	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

TZ73:00113

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Chromium	CR	PMS	MS121581	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U				

TZ73:00414

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: IP120871

SDG: TZ73

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	195569.8	195251.1	**97.6**	187441.5	189633.9	**94.8**	188756.1	188589.5	**94.3**
Antimony		1000	-2.5	943.0	**94.3**	-10.7	897.1	**89.7**	-10.3	872.0	**87.2**
Arsenic		1000	0.1	969.4	**96.9**	0.3	928.6	**92.9**	1.8	911.2	**91.1**
Barium		1000	0.0	973.2	**97.3**	0.4	941.0	**94.1**	0.1	926.4	**92.6**
Beryllium		1000	-0.1	962.0	**96.2**	-0.2	921.2	**92.1**	-0.1	916.5	**91.7**
Boron			-12.7	-11.1		-10.9	-10.3		-12.2	-10.7	
Cadmium		1000	0.7	1018.2	**101.8**	0.6	985.9	**98.6**	0.7	967.1	**96.7**
Calcium	100000	100000	99304.6	99994.8	**100.0**	97188.6	96842.5	**96.8**	97213.4	97055.0	**97.1**
Chromium		1000	-0.2	980.1	**98.0**	-0.1	951.0	**95.1**	-1.0	936.3	**93.6**
Cobalt		1000	1.5	951.4	**95.1**	1.4	921.3	**92.1**	1.3	903.5	**90.4**
Copper		1000	-1.3	1051.7	**105.2**	-0.5	1028.7	**102.9**	-0.6	1011.1	**101.1**
Iron	200000	200000	193343.2	194354.5	**97.2**	184949.6	186610.6	**93.3**	186303.6	186486.4	**93.2**
Lead		1000	-4.8	965.4	**96.5**	-3.8	925.7	**92.6**	-3.9	908.6	**90.9**
Magnesium	100000	100000	100524.6	97242.3	**97.2**	96648.4	94127.9	**94.1**	96452.4	93272.6	**93.3**
Manganese		1000	0.3	963.3	**96.3**	0.2	925.8	**92.6**	0.2	913.3	**91.3**
Molybdenum			6.1	6.2		5.2	5.8		5.2	5.9	
Nickel		1000	0.3	919.5	**92.0**	1.5	884.6	**88.5**	0.4	871.5	**87.2**
Potassium			49.8	212.7		79.8	240.2		57.7	232.9	
Selenium		1000	9.8	989.8	**99.0**	17.1	944.8	**94.5**	19.2	928.3	**92.8**
Silicon			-13.2	-18.3		-5.6	-10.2		-4.1	-6.5	
Silver		1000	-0.5	1029.2	**102.9**	-0.4	990.7	**99.1**	-0.4	975.4	**97.5**
Sodium			10.7	11.1		33.0	35.3		33.0	29.3	
Strontium			10.1	10.1		9.8	9.8		9.9	9.8	
Thallium		1000	5.7	947.5	**94.8**	9.4	900.9	**90.1**	8.3	883.7	**88.4**
Tin			-11.6	-12.9		-12.2	-12.3		-12.4	-12.4	
Titanium			-0.2	-0.5		-0.6	-0.3		-0.7	-0.6	
Vanadium		1000	5.3	986.9	**98.7**	4.2	961.0	**96.1**	4.5	947.6	**94.8**
Zinc		1000	-1.7	918.0	**91.8**	-0.9	889.7	**89.0**	-2.0	879.1	**87.9**

TZ73-90143

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

ICS SOURCE: I.V.

RUNID: MS120881

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.2	0.1							
Barium			0.0	0.1							
Cadmium		20	0.1	19.3	96.5						
Chromium		20	0.7	20.5	102.5						
Cobalt		20	0.0	19.5	97.5						
Copper		20	0.4	19.8	99.0						
Lead			0.1	0.1							
Manganese		20	0.1	19.7	98.5						
Molybdenum	400	400	405.0	400.4	100.1						
Nickel		20	0.5	19.1	95.5						
Selenium			-0.2	-0.1							
Silver		20	0.0	18.9	94.5						
Thallium			0.4	0.5							
Vanadium			0.0	-0.3							
Zinc		20	1.0	20.6	103.0						

TZ73 9106

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

ICS SOURCE: I.V.

RUNID: MS121281

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Cadmium		20	0.1	20.0	100.0						
Chromium		20	0.9	20.6	103.0						
Cobalt		20	0.0	19.4	97.0						
Copper		20	0.5	19.4	97.0						
Lead			0.1	0.1							
Manganese		20	0.2	19.8	99.0						
Molybdenum	400	400	488.9	408.6	102.2						
Nickel		20	0.6	19.1	95.5						
Selenium			0.1	0.1							
Silver		20	0.0	19.5	97.5						
Vanadium			0.0	-0.3							
Zinc		20	1.4	20.0	100.0						

TZ73:0011

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121381

SDG: TZ73

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Cadmium		20	0.0	19.7	98.5						
Chromium		20	0.8	20.5	102.5						
Cobalt		20	0.0	19.8	99.0						
Copper		20	0.4	20.1	100.5						
Lead			0.1	0.1							
Manganese		20	0.1	19.8	99.0						
Molybdenum	400	400	397.7	391.4	97.9						
Nickel		20	0.6	19.4	97.0						
Selenium			-0.1	-0.1							
Silver		20	0.0	19.2	96.0						
Vanadium			0.0	-0.3							
Zinc		20	0.9	20.0	100.0						

TZ73 00113

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121581

SDG: TZ73

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Cadmium		20	0.0	20.0	100.0						
Chromium		20	0.8	20.7	103.5						
Cobalt		20	0.0	19.4	97.0						
Copper		20	0.5	20.1	100.5						
Lead			0.1	0.1							
Manganese		20	0.1	20.1	100.5						
Molybdenum	400	400	402.8	398.9	99.7						
Nickel		20	0.7	19.7	98.5						
Silver		20	0.0	19.9	99.5						
Thallium			0.1	0.1							
Vanadium			0.0	-0.4							
Zinc		20	1.1	20.0	100.0						

TZ73:00119

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ73

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Antimony	MW-3S-120111L	TZ73A-L	Water	IP120871	50.00	U	250.00	U		
Copper	MW-3S-120111L	TZ73A-L	Water	IP120871	2.18	B	10.00	U	100.0	
Silver	MW-3S-120111L	TZ73A-L	Water	IP120871	3.00	U	15.00	U		
Zinc	MW-3S-120111L	TZ73A-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ73

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Antimony	MW-3S-120111L	TZ73I-L	Water	IP120871	50.00	U	250.00	U		
Copper	MW-3S-120111L	TZ73I-L	Water	IP120871	2.00	U	10.00	U		
Silver	MW-3S-120111L	TZ73I-L	Water	IP120871	3.00	U	15.00	U		
Zinc	MW-3S-120111L	TZ73I-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ73

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Beryllium	MW-3S-120111L	TZ73A-L	Water	MS120881	0.03	U	0.00	B		
Cadmium	MW-3S-120111L	TZ73A-L	Water	MS120881	0.02	U	-0.05	B		
Lead	MW-3S-120111L	TZ73A-L	Water	MS120881	0.09	U	0.25	B		
Lead	MW-3S-120111L	TZ73A-L	Water	MS120881	0.09	U	0.25	B		
Selenium	MW-3S-120111L	TZ73A-L	Water	MS120881	0.12	U	0.15	B		
Thallium	MW-3S-120111L	TZ73A-L	Water	MS120881	0.03	U	0.05	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ73

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Beryllium	MW-3S-120111L	TZ73I-L	Water	MS120881	0.00	U	0.05	B		
Cadmium	MW-3S-120111L	TZ73I-L	Water	MS120881	0.00	U	-0.05	B		
Lead	MW-3S-120111L	TZ73I-L	Water	MS120881	0.02	U	0.20	B		
Selenium	MW-3S-120111L	TZ73I-L	Water	MS120881	0.09	U	-0.35	B		
Thallium	MW-3S-120111L	TZ73I-L	Water	MS120881	0.02	U	0.05	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ73

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-3S-120111L	TZ73A-L	Water	MS121281	165.53		168.80		2.0	
Nickel	MW-3S-120111L	TZ73A-L	Water	MS121281	0.98	B	1.10	B	12.2	
Arsenic	MW-3S-120111L	TZ73I-L	Water	MS121281	164.86		161.30		2.2	
Beryllium	MW-3S-120111L	TZ73I-L	Water	MS121281	0.00	U	0.00	B		
Cadmium	MW-3S-120111L	TZ73I-L	Water	MS121281	0.00	U	0.00	B		
Chromium	MW-3S-120111L	TZ73I-L	Water	MS121281	0.09	U	-0.15	B		
Lead	MW-3S-120111L	TZ73I-L	Water	MS121281	0.02	U	0.15	B		
Selenium	MW-3S-120111L	TZ73I-L	Water	MS121281	0.09	U	0.65	B		
Thallium	MW-3S-120111L	TZ73I-L	Water	MS121281	0.02	U	0.10	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ73

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Chromium	MW-3S-120111L	TZ73RA-L	Water	MS121581	0.19	U	0.10	B		

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Antimony	SB	ICP	OPTIMA ICP 2	206.84		60	50.0	4/1/2011	30000.0	8/3/2011
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Beryllium	BE	PMS	PE ELAN 6000 MS	0.00		5	0.2	4/1/2011		
Cadmium	CD	PMS	PE ELAN 6000 MS	0.00		5	0.1	4/1/2011		
Chromium	CR	PMS	PE ELAN 6000 MS	0.00		10	0.5	4/1/2011		
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Lead	PB	PMS	PE ELAN 6000 MS	0.00		3	0.1	4/1/2011		
Mercury	HG	CVA	CETAC MERCURY	253.70		0.2	0.1	4/1/2011		
Nickel	NI	PMS	PE ELAN 6000 MS	0.00		40	0.5	4/1/2011		
Selenium	SE	PMS	PE ELAN 6000 MS	0.00		5	0.5	4/1/2011		
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2011	5000.0	8/3/2011
Thallium	TL	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ73

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3891270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.1208350
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0339516	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0076716	0.0000000	-0.1892080	0.0000000	0.0000000	0.0522067
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0242504	0.0000000	0.0000000	0.0000000	0.0000000	-0.0377814
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0584929
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2018030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0540270
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5652870
Manganese	257.61	0.0071394	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0051324
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0123608	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.2053280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	-0.1233420
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0108199	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1141760
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0387268	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0730907
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0258303	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TZ73:0127

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ73

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0405628	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0057432	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0041261	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0107429	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0736777	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

82100 : 3171

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

ANALYSIS METHOD: ICP

ARI PREP CODE: TWC

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-3S-120111	TZ73A	0.000	50.0	50.0
MW-3S-120111D	TZ73ADUP	0.000	50.0	50.0
MW-3S-120111S	TZ73ASPK	0.000	50.0	50.0
MW-27-120111	TZ73B	0.000	50.0	50.0
MW-26-120111	TZ73C	0.000	50.0	50.0
MW-3D-120111	TZ73H	0.000	50.0	50.0
PBW	TZ73MB1	0.000	50.0	50.0
LCSW	TZ73MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

ANALYSIS METHOD: ICP

ARI PREP CODE: WMN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-3S-120111	TZ73I	0.000	50.0	50.0
MW-3S-120111D	TZ73IDUP	0.000	50.0	50.0
MW-3S-120111S	TZ73ISPK	0.000	50.0	50.0
MW-27-120111	TZ73J	0.000	50.0	50.0
MW-26-120111	TZ73K	0.000	50.0	50.0
PBW	TZ73MB2	0.000	50.0	50.0
LCSW	TZ73MB2SPK	0.000	50.0	50.0
MW-3D-120111	TZ73P	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/7/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-3S-120111	TZ73A	0.000	50.0	25.0
MW-3S-120111D	TZ73ADUP	0.000	50.0	25.0
MW-3S-120111S	TZ73ASPK	0.000	50.0	25.0
MW-27-120111	TZ73B	0.000	50.0	25.0
MW-26-120111	TZ73C	0.000	50.0	25.0
MW-5S-120111	TZ73D	0.000	50.0	25.0
MW-11-120111	TZ73E	0.000	50.0	25.0
MW-12-120111	TZ73F	0.000	50.0	25.0
MW-19-120111	TZ73G	0.000	50.0	25.0
MW-3D-120111	TZ73H	0.000	50.0	25.0
MW-3S-120111	TZ73I	0.000	50.0	25.0
MW-3S-120111D	TZ73IDUP	0.000	50.0	25.0
MW-3S-120111S	TZ73ISPK	0.000	50.0	25.0
MW-27-120111	TZ73J	0.000	50.0	25.0
MW-26-120111	TZ73K	0.000	50.0	25.0
MW-5S-120111	TZ73L	0.000	50.0	25.0
MW-11-120111	TZ73M	0.000	50.0	25.0
PBW	TZ73MB1	0.000	50.0	25.0
LCSW	TZ73MB1SPK	0.000	50.0	25.0
PBW	TZ73MB2	0.000	50.0	25.0
LCSW	TZ73MB2SPK	0.000	50.0	25.0
MW-12-120111	TZ73N	0.000	50.0	25.0
MW-19-120111	TZ73O	0.000	50.0	25.0
MW-3D-120111	TZ73P	0.000	50.0	25.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ANALYSIS METHOD: PMS

PROJECT: RG

ARI PREP CODE: REN

SDG: TZ73

PREPDATE: 12/14/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-3S-120111	TZ73RA	0.000	50.0	25.0
MW-3S-120111D	TZ73RADUP	0.000	50.0	25.0
MW-3S-120111S	TZ73RASPK	0.000	50.0	25.0
MW-27-120111	TZ73RB	0.000	50.0	25.0
MW-26-120111	TZ73RC	0.000	50.0	25.0
MW-3D-120111	TZ73RH	0.000	50.0	25.0
PBW	TZ73RMB1	0.000	50.0	25.0
LCSW	TZ73RMB1SPK	0.000	50.0	25.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ73

ANALYSIS METHOD: CVA

ARI PREP CODE: TWM

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-3S-120111	TZ73A	0.000	20.0	20.0
MW-3S-120111D	TZ73ADUP	0.000	20.0	20.0
MW-3S-120111S	TZ73ASPK	0.000	20.0	20.0
MW-27-120111	TZ73B	0.000	20.0	20.0
MW-26-120111	TZ73C	0.000	20.0	20.0
MW-3S-120111	TZ73I	0.000	20.0	20.0
MW-3S-120111D	TZ73IDUP	0.000	20.0	20.0
MW-3S-120111S	TZ73ISPK	0.000	20.0	20.0
MW-27-120111	TZ73J	0.000	20.0	20.0
MW-26-120111	TZ73K	0.000	20.0	20.0
PBW	TZ73MB1	0.000	20.0	20.0
LCSW	TZ73MB1SPK	0.000	20.0	20.0
PBW	TZ73MB2	0.000	20.0	20.0
LCSW	TZ73MB2SPK	0.000	20.0	20.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ73 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08363		X										X										X								X
S2	S2	1.00	08405												X																		
S3	S3	1.00	08425		X																												X
S4	S4	1.00	08452																						X								
S5	S5	1.00	08473																														
ICV	ICV	1.00	08551		X										X										X								X
ICB	ICB	1.00	08591		X										X										X								X
CRI	CRII	1.00	09032		X										X										X								X
ICSA	ICSAI	1.00	09074		X										X										X								X
ICSAB	ICSABI	1.00	09115		X										X										X								X
CCV	CCV1	1.00	09170		X										X										X								X
CCB	CCB1	1.00	09210		X										X										X								X
ZZZZZZ	TZ98MB2	2.00	09251																														
ZZZZZZ	TZ98MB1	1.00	09293																														
ZZZZZZ	TZ98ADUP	1.00	09334																														
ZZZZZZ	TZ98A	1.00	09375																														
ZZZZZZ	TZ98ASPK	1.00	09421																														
ZZZZZZ	TZ98BDUP	2.00	09462																														
ZZZZZZ	TZ98B	2.00	09504																														
ZZZZZZ	TZ98BSPK	2.00	09545																														
ZZZZZZ	TZ98MB2SPK	2.00	09585																														
ZZZZZZ	TZ98MB1SPK	1.00	10025																														
CCV	CCV2	1.00	10065		X										X										X								X
CCB	CCB2	1.00	10105		X										X										X								X
ZZZZZZ	TZ50MB2	1.00	10150																														
ZZZZZZ	TZ50L-L	5.00	10192																														
ZZZZZZ	TZ50L	1.00	10233																														
ZZZZZZ	TZ50LDUP	1.00	10274																														
ZZZZZZ	TZ50LSPK	1.00	10320																														
ZZZZZZ	TZ50O	1.00	10370																														
ZZZZZZ	TZ50P	1.00	10412																														
ZZZZZZ	TZ50Q	1.00	10453																														
ZZZZZZ	TZ50F	1.00	10495																														
ZZZZZZ	TZ50MB2SPK	1.00	10540																														
CCV	CCV3	1.00	10580		X										X										X								X

FORM XIV

12/13/11 09:00

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ73 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB3	1.00	11020		X										X										X								X
ZZZZZZ	TZ50MB1	1.00	11061																														
ZZZZZZ	TZ50C-L	5.00	11102																														
ZZZZZZ	TZ50C	1.00	11144																														
ZZZZZZ	TZ50CDUP	1.00	11185																														
ZZZZZZ	TZ50CSPK	1.00	11231																														
ZZZZZZ	TZ50G	1.00	11271																														
ZZZZZZ	TZ50H	1.00	11312																														
ZZZZZZ	TZ50F	1.00	11353																														
ZZZZZZ	TZ50LSPK	1.00	11421																														
ZZZZZZ	TZ50MB1SPK	1.00	11460																														
CCV	CCV4	1.00	11500		X										X										X								X
CCB	CCB4	1.00	11541		X										X										X								X
PBW	TZ73MB1	1.00	11582		X										X										X								X
MW-3S-120111L	TZ73A-L	5.00	12023		X										X										X								X
MW-3S-120111	TZ73A	1.00	12065		X										X										X								X
MW-3S-120111D	TZ73ADUP	1.00	12110		X										X										X								X
MW-3S-120111S	TZ73ASPK	1.00	12151		X										X										X								X
MW-27-120111	TZ73B	1.00	12191		X										X										X								X
MW-26-120111	TZ73C	1.00	12233		X										X										X								X
MW-3D-120111	TZ73H	1.00	12274		X										X																		X
MW-3D-120111	TZ73P	1.00	12321		X										X																		X
LCSW	TZ73MB1SPK	1.00	12364		X										X										X								X
CCV	CCV5	1.00	12404		X										X										X								X
CCB	CCB5	1.00	12444		X										X										X								X
PBW	TZ73MB2	1.00	12490																														
ZZZZZZ	ZZZZZZ	5.00	12531																														
MW-3S-120111	TZ73I	1.00	12573																														
MW-3S-120111D	TZ73IDUP	1.00	13014																														
MW-3S-120111S	TZ73ISPK	1.00	13055																														
MW-27-120111	TZ73J	1.00	13095																														
MW-26-120111	TZ73K	1.00	13141																														
MW-3S-120111S	TZ73ISPK	1.00	13182																														
LCSW	TZ73MB2SPK	1.00	13221																														
LCSW	TZ73MB2SPK	1.00	13285																														

TZ73 : 90185

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ73 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCV	CCV6	1.00	13325		X										X										X								X
CCB	CCB6	1.00	13365		X										X										X								X
CCV	CCV7	1.00	13431		X										X										X								X
CCB	CCB7	1.00	13471		X										X										X								X
ZZZZZZ	TZ83MB2	1.00	13513																														
ZZZZZZ	TZ83B-L	5.00	13554																														
ZZZZZZ	TZ83B	1.00	13595																														
ZZZZZZ	TZ83BDUP	1.00	14041																														
ZZZZZZ	TZ83BSPK	1.00	14082																														
ZZZZZZ	TZ86C-L	5.00	14170																														
ZZZZZZ	TZ86C	1.00	14211																														
ZZZZZZ	TZ86CDUP	1.00	14252																														
ZZZZZZ	TZ86CSPK	1.00	14294																														
ZZZZZZ	TZ83MB1SPK	1.00	14334																														
CCV	CCV8	1.00	14374		X										X										X								X
CCB	CCB8	1.00	14414		X										X										X								X
CRI	CRIF	1.00	14455		X										X										X								X
ICSA	ICSAF	1.00	14501		X										X										X								X
ICSAB	ICSABF	1.00	14542		X										X										X								X
CCV	CCV9	1.00	14593		X										X										X								X
CCB	CCB9	1.00	15033		X										X										X								X
PBW	TZ73MB2	1.00	15074		X										X										X								X
MW-3S-120111L	TZ73I-L	5.00	15115		X										X										X								X
MW-3S-120111	TZ73I	1.00	15161		X										X										X								X
MW-3S-120111D	TZ73IDUP	1.00	15202		X										X										X								X
MW-3S-120111S	TZ73ISPK	1.00	15243																														
ZZZZZZ	ZZZZZZ	1.00	15320																														
ZZZZZZ	ZZZZZZ	1.00	15395																														
ZZZZZZ	D1	1.00	15435																														
MW-27-120111	TZ73J	1.00	15480		X										X										X								X
MW-26-120111	TZ73K	1.00	15522		X										X										X								X
CCV	CCV10	1.00	15563		X										X										X								X
CCB	CCB10	1.00	16003		X										X										X								X
ZZZZZZ	TZ83MB1	1.00	16045																														
ZZZZZZ	TZ83A-L	5.00	16090																														

FORM XIV

9612 : 9612

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ73 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ83A	1.00	16131																														
ZZZZZZ	TZ83ADUP	1.00	16173																														
ZZZZZZ	TZ83ASPK	1.00	16214																														
ZZZZZZ	TZ86A-L	5.00	16260																														
ZZZZZZ	TZ86A	1.00	16301																														
ZZZZZZ	TZ86ADUP	1.00	16343																														
ZZZZZZ	TZ86ASPK	1.00	16384																														
ZZZZZZ	TZ83MB2SPK	1.00	16424																														
CCV	CCV11	1.00	16464		X										X										X								X
CCB	CCB11	1.00	16504		X										X										X								X
ZZZZZZ	TZ86MB1	1.00	16550																														
ZZZZZZ	TZ86MB2	1.00	16591																														
ZZZZZZ	TZ86MB2SPK	1.00	17032																														
LCSW	TZ73MB2SPK	1.00	17072		X										X										X								X
ZZZZZZ	TZ86MB1SPK	1.00	17112																														
MW-3S-120111S	TZ73ISPK	1.00	17152		X										X										X								X
ZZZZZZ	D2	1.00	17192																														
CCV	CCV12	1.00	17233		X										X										X								X
CCB	CCB12	1.00	17273		X										X										X								X
CRI	CRIF1	1.00	17315		X										X										X								X
ICSA	ICSAF1	1.00	17360		X										X										X								X
ICSAB	ICSABF1	1.00	17401		X										X										X								X
CCV	CCV13	1.00	17452		X										X										X								X
CCB	CCB13	1.00	17492		X										X										X								X

TZ73 00137

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/8/2011

SDG: TZ73 | RUNID: MS120881 METHOD: PMS | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11280				X			X		X		X									X	X		X				X			
S1	S1	1.00	11350				X			X		X		X									X	X		X				X			
S2	S2	1.00	11410				X			X		X		X									X	X		X				X			
S3	S3	1.00	11470				X			X		X		X									X	X		X				X			
S4	S4	1.00	11530				X			X		X		X									X	X		X				X			
ZZZZZZ	Rinse Sampl	1.00	12000																														
ICV	MICV	1.00	12090				X			X		X		X									X	X		X				X			
ICB	ICB	1.00	12160				X			X		X		X									X	X		X				X			
CCV	MCCV1	1.00	12220				X			X		X		X									X	X		X				X			
CCB	CCB1	1.00	12280				X			X		X		X									X	X		X				X			
CRI	MCRI	1.00	12340				X			X		X		X									X	X		X				X			
ZZZZZZ	ZZZZZZ	1.00	12400																														
ICSAB	ICSABI	1.00	12460				X			X		X		X									X	X		X				X			
ZZZZZZ	LR200	1.00	12530																														
ZZZZZZ	LR300	1.00	12590																														
ICSA	ICSAI	1.00	13060				X			X		X		X									X	X		X				X			
CCV	MCCV2	1.00	13150				X			X		X		X									X	X		X				X			
CCB	CCB2	1.00	13210				X			X		X		X									X	X		X				X			
S0	S0	1.00	13280				X			X		X		X									X	X		X				X			
CCV	MCCV3	1.00	13340				X			X		X		X									X	X		X				X			
CCB	CCB3	1.00	13410				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ32MB2	2.00	13460																														
ZZZZZZ	UA26MB	2.00	13520																														
ZZZZZZ	UA26MBSPK	2.00	13580																														
ZZZZZZ	UA26ADUP	2.00	14040																														
ZZZZZZ	UA26A	2.00	14100																														
ZZZZZZ	UA26ASPK	2.00	14170																														
ZZZZZZ	TZ50A	2.00	14230																														
ZZZZZZ	TZ50B	2.00	14290																														
ZZZZZZ	TZ32E	20.00	14360																														
ZZZZZZ	TZ32N	20.00	14420																														
CCV	MCCV4	1.00	14480				X			X		X		X									X	X		X				X			
CCB	CCB4	1.00	14550				X			X		X		X									X	X		X				X			
S0	S0	1.00	15080				X			X		X		X									X	X		X				X			
CCV	MCCV5	1.00	15140				X			X		X		X									X	X		X				X			

FORM XIV

TZ73 : 00138

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/8/2011

SDG: TZ73 | RUNID: MS120881 METHOD: PMS | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB5	1.00	15210				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ50MB1	2.00	15270																														
ZZZZZZ	TZ50MB2	2.00	15330																														
ZZZZZZ	TZ50MB2SPK	2.00	15380																														
ZZZZZZ	TZ50MB1SPK	2.00	15450																														
ZZZZZZ	TZ50C-L	10.00	15510																														
ZZZZZZ	TZ50C	2.00	15570																														
ZZZZZZ	TZ50CDUP	2.00	16040																														
ZZZZZZ	TZ50CSPK	2.00	16100																														
ZZZZZZ	ZZZZZZ	2.00	16160																														
ZZZZZZ	TZ50D	2.00	16220																														
CCV	MCCV6	1.00	16290				X			X		X		X									X	X		X				X			
CCB	CCB6	1.00	16350				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ50L-L	10.00	16590																														
ZZZZZZ	TZ50L	2.00	17090																														
ZZZZZZ	TZ50LDUP	2.00	17160																														
ZZZZZZ	TZ50LSPK	2.00	17220																														
ZZZZZZ	ZZZZZZ	2.00	17280																														
ZZZZZZ	TZ50E	2.00	17350																														
ZZZZZZ	TZ50F	2.00	17410																														
ZZZZZZ	TZ50G	2.00	17470																														
ZZZZZZ	TZ50H	2.00	17530																														
ZZZZZZ	TZ50I	2.00	18000																														
CCV	MCCV7	1.00	18060				X			X		X		X									X	X		X				X			
CCB	CCB7	1.00	18130				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ50J	2.00	18180																														
ZZZZZZ	TZ50K	2.00	18250																														
ZZZZZZ	TZ50M	2.00	18310																														
ZZZZZZ	TZ50N	2.00	18370																														
ZZZZZZ	TZ50O	2.00	18440																														
ZZZZZZ	TZ50P	2.00	18500																														
ZZZZZZ	TZ50Q	2.00	18560																														
ZZZZZZ	TZ50R	2.00	19020																														
MW-27-120111	TZ73B	5.00	19090				X			X		X											X	X		X				X			
MW-27-120111	TZ73J	5.00	19150				X			X		X		X									X	X		X				X			

TZ73:00139

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/8/2011

SDG: TZ73 | RUNID: MS120881 METHOD: PMS | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCV	MCCV8	1.00	19210				X			X		X		X									X	X		X				X			
CCB	CCB8	1.00	19280				X			X		X		X									X	X		X				X			
PBW	TZ73MB1	2.00	19340				X			X		X											X	X		X				X			
PBW	TZ73MB2	2.00	19390				X			X		X		X									X	X		X				X			
LCSW	TZ73MB2SPK	2.00	19450				X			X		X		X									X	X		X				X			
LCSW	TZ73MB1SPK	2.00	19510				X			X		X											X	X		X				X			
MW-3S-120111L	TZ73A-L	10.00	19580							X		X												X		X				X			
MW-3S-120111	TZ73A	2.00	20040							X		X												X		X				X			
MW-3S-120111D	TZ73ADUP	2.00	20100							X		X												X		X				X			
MW-3S-120111S	TZ73ASPK	2.00	20170							X		X												X		X				X			
ZZZZZZ	ZZZZZZ	2.00	20230																														
MW-26-120111	TZ73C	2.00	20290							X		X												X		X				X			
CCV	MCCV9	1.00	20350				X			X		X		X									X	X		X				X			
CCB	CCB9	1.00	20420				X			X		X		X									X	X		X				X			
MW-3S-120111L	TZ73I-L	10.00	20480							X		X												X		X				X			
MW-3S-120111	TZ73I	2.00	20540							X		X												X		X				X			
MW-3S-120111D	TZ73IDUP	2.00	21000							X		X												X		X				X			
MW-3S-120111S	TZ73ISPK	2.00	21070							X		X												X		X				X			
ZZZZZZ	ZZZZZZ	2.00	21130																														
MW-5S-120111	TZ73D	2.00	21190				X																										
MW-11-120111	TZ73E	2.00	21260				X																										
MW-12-120111	TZ73F	2.00	21320				X																										
MW-19-120111	TZ73G	2.00	21380																														
MW-3D-120111	TZ73H	2.00	21440				X																										
CCV	MCCV10	1.00	21510				X			X		X		X									X	X		X				X			
CCB	CCB10	1.00	21570				X			X		X		X									X	X		X				X			
MW-26-120111	TZ73K	2.00	22030							X		X												X		X				X			
MW-5S-120111	TZ73L	2.00	22090				X																										
MW-11-120111	TZ73M	2.00	22160				X																										
MW-12-120111	TZ73N	2.00	22220				X																										
MW-19-120111	TZ73O	2.00	22280																														
MW-3D-120111	TZ73P	2.00	22350																														
CCV	MCCV11	1.00	22410				X			X		X		X									X	X		X				X			
CCB	CCB11	1.00	22470				X			X		X		X									X	X		X				X			

TZ73 : 09Dec12

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ73 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09460				X							X									X										
S1	S1	1.00	09530				X							X									X										
S2	S2	1.00	09590				X							X									X										
S3	S3	1.00	10050				X							X									X										
S4	S4	1.00	10110				X							X									X										
ZZZZZZ	Rinse Sampl	1.00	10180																														
ICV	MICV	1.00	10320				X							X									X										
ICB	ICB	1.00	10390				X							X									X										
CCV	MCCV1	1.00	10440				X							X									X										
CCB	CCB1	1.00	10510				X							X									X										
CRI	MCRI	1.00	10570				X							X									X										
ICSA	ICSAI	1.00	11030				X							X									X										
ICSAB	ICSABI	1.00	11110				X							X									X										
ZZZZZZ	LR200	1.00	11170																														
ZZZZZZ	LR300	1.00	11240																														
CCV	MCCV2	1.00	11300				X							X									X										
CCB	CCB2	1.00	11370				X							X									X										
ZZZZZZ	UA26RMB	2.00	11430																														
ZZZZZZ	UA30MB1	2.00	11490																														
ZZZZZZ	UA30MB1SPK	2.00	11550																														
ZZZZZZ	UA26RMBSPK	2.00	12010																														
ZZZZZZ	UA26RADUP	2.00	12070																														
ZZZZZZ	UA26RA	2.00	12130																														
ZZZZZZ	UA26RASPK	2.00	12200																														
ZZZZZZ	UA30ADUP	2.00	12260																														
ZZZZZZ	UA30A	2.00	12320																														
ZZZZZZ	UA30ASPK	2.00	12390																														
CCV	MCCV3	1.00	12450				X							X									X										
CCB	CCB3	1.00	12510				X							X									X										
ZZZZZZ	UA26RADUP	2.00	12580																														
ZZZZZZ	UA26RA	2.00	13040																														
CCV	MCCV4	1.00	13150				X							X									X										
CCB	CCB4	1.00	13220				X							X									X										
ZZZZZZ	UA30MB2	2.00	13280																														
ZZZZZZ	UA58MBSPK	20.00	13340																														

FORM XIV

TZ73-00144

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ73 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	UA30MB2SPK	2.00	13410																														
ZZZZZZ	TZ50O	2.00	13470																														
ZZZZZZ	UA30BDUP	2.00	13530																														
ZZZZZZ	UA30B	2.00	13590																														
ZZZZZZ	UA30BSPK	2.00	14060																														
ZZZZZZ	UA58ADUP	20.00	14120																														
ZZZZZZ	UA58A	20.00	14180																														
ZZZZZZ	UA58ASPK	20.00	14250																														
CCV	MCCV5	1.00	14310				X							X									X										
CCB	CCB5	1.00	14370				X							X									X										
ZZZZZZ	UA58MB	20.00	14460																														
MW-26-120111	TZ73C	2.00	14510																				X										
MW-26-120111	TZ73C	5.00	14580				X																										
MW-19-120111	TZ73G	5.00	15040				X																										
MW-3D-120111	TZ73H	2.00	15100																														
MW-3D-120111	TZ73H	5.00	15160																														
MW-26-120111	TZ73K	2.00	15230																				X										
MW-26-120111	TZ73K	5.00	15290				X																										
MW-19-120111	TZ73O	5.00	15350				X																										
ZZZZZZ	UA58B	20.00	15420																														
CCV	MCCV6	1.00	15480				X							X									X										
CCB	CCB6	1.00	15540				X							X									X										
MW-3S-120111L	TZ73A-L	10.00	16020																				X										
MW-3S-120111	TZ73A	2.00	16090																				X										
MW-3S-120111D	TZ73ADUP	2.00	16150																				X										
MW-3S-120111S	TZ73ASPK	2.00	16210																				X										
ZZZZZZ	ZZZZZZ	2.00	16270																														
MW-3S-120111L	TZ73A-L	25.00	16340				X																										
MW-3S-120111	TZ73A	5.00	16400				X																										
MW-3S-120111D	TZ73ADUP	5.00	16460				X																										
MW-3S-120111S	TZ73ASPK	5.00	16520				X																										
ZZZZZZ	ZZZZZZ	5.00	16590																														
CCV	MCCV7	1.00	17050				X							X									X										
CCB	CCB7	1.00	17120				X							X									X										
MW-3S-120111L	TZ73I-L	10.00	17180																				X										

TZ73 : 00142

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ73 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-3S-120111	TZ73I	2.00	17240																				X										
MW-3S-120111D	TZ73IDUP	2.00	17300																				X										
MW-3S-120111S	TZ73ISPK	2.00	17360																				X										
ZZZZZZ	ZZZZZZ	2.00	17430																														
MW-3S-120111L	TZ73I-L	25.00	17490				X							X																				
MW-3S-120111	TZ73I	5.00	17550				X							X																				
MW-3S-120111D	TZ73IDUP	5.00	18010				X							X																				
MW-3S-120111S	TZ73ISPK	5.00	18080				X							X																				
ZZZZZZ	ZZZZZZ	5.00	18140																														
CCV	MCCV8	1.00	18200				X							X									X										
CCB	CCB8	1.00	18270				X							X									X										
ZZZZZZ	TZ83MB1	2.00	18330																														
ZZZZZZ	TZ83MB2	2.00	18380																														
ZZZZZZ	TZ83MB1SPK	2.00	18440																														
ZZZZZZ	TZ83MB2SPK	2.00	18510																														
MW-3D-120111	TZ73P	2.00	18570				X																										
MW-3D-120111	TZ73P	5.00	19030											X																				
ZZZZZZ	TZ86B	2.00	19090																														
ZZZZZZ	TZ86B	5.00	19160																														
ZZZZZZ	TZ86D	2.00	19220																														
ZZZZZZ	TZ86D	5.00	19280																														
CCV	MCCV9	1.00	19350				X							X									X										
CCB	CCB9	1.00	19410				X							X									X										

TZ73 - 09143

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/13/2011

SDG: TZ73 | RUNID: MS121381 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09150											X																			
S1	S1	1.00	09210											X																			
S2	S2	1.00	09270											X																			
S3	S3	1.00	09340											X																			
S4	S4	1.00	09400											X																			
ZZZZZZ	Rinse Sampl	1.00	09460																														
ICV	MICV	1.00	09540											X																			
ICB	ICB	1.00	10000											X																			
CCV	MCCV1	1.00	10060											X																			
CCB	CCB1	1.00	10130											X																			
ZZZZZZ	NEW IS	1.00	10180																														
CRI	MCRI	1.00	10240											X																			
ICSA	ICSAI	1.00	10300											X																			
ICSAB	ICSABI	1.00	10360											X																			
ZZZZZZ	LR200	1.00	10430																														
ZZZZZZ	LR300	1.00	10490																														
CCV	MCCV2	1.00	10560											X																			
CCB	CCB2	1.00	11020											X																			
S0	S0	1.00	11090											X																			
CCV	MCCV3	1.00	11160											X																			
CCB	CCB3	1.00	11220											X																			
ZZZZZZ	UA83MB1	200.00	11280																														
ZZZZZZ	UA83MB1SPK	200.00	11340																														
ZZZZZZ	UA83ADUP	200.00	11410																														
ZZZZZZ	UA83A	200.00	11470																														
ZZZZZZ	UA83ASPK	200.00	11530																														
ZZZZZZ	UA83B	200.00	11590																														
ZZZZZZ	UA83C	200.00	12060																														
ZZZZZZ	UA83D	200.00	12120																														
ZZZZZZ	UA83E	200.00	12180																														
ZZZZZZ	UA83F	200.00	12240																														
CCV	MCCV4	1.00	12310											X																			
CCB	CCB4	1.00	12370											X																			
ZZZZZZ	TZ83MB1	2.00	12450																														
ZZZZZZ	TZ83MB2	2.00	12510																														

TZ73 : 001 of 001

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/13/2011

SDG: TZ73 | RUNID: MS121381 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ86MB1	2.00	12570																														
ZZZZZZ	TZ86MB2	2.00	13030																														
ZZZZZZ	TZ86MB1SPK	2.00	13080																														
ZZZZZZ	TZ86MB2SPK	2.00	13150																														
ZZZZZZ	TZ83MB1SPK	2.00	13210																														
ZZZZZZ	TZ83MB2SPK	2.00	13270																														
ZZZZZZ	UA58B	20.00	13330																														
MW-26-120111	TZ73K	10.00	13400											X																			
CCV	MCCV5	1.00	13460											X																			
CCB	CCB5	1.00	13530											X																			

TZ73 : 00145

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/15/2011

SDG: TZ73 | RUNID: MS121581 METHOD: PMS | END DATE: 12/15/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	10370											X																			
S1	S1	1.00	10430											X																			
S2	S2	1.00	10490											X																			
S3	S3	1.00	10550											X																			
S4	S4	1.00	11010											X																			
ZZZZZZ	Rinse Sampl	1.00	11080																														
ICV	MICV	1.00	11190											X																			
ICB	ICB	1.00	11260											X																			
CCV	MCCV1	1.00	11310											X																			
CCB	CCB1	1.00	11380											X																			
CRI	MCRI	1.00	11440											X																			
ICSA	ICSAI	1.00	11500											X																			
ICSAB	ICSABI	1.00	11560											X																			
ZZZZZZ	LR200	1.00	12020																														
ZZZZZZ	LR300	1.00	12090																														
CCV	MCCV2	1.00	12160											X																			
CCB	CCB2	1.00	12220											X																			
PBW	TZ73RMB1	2.00	12290											X																			
LCSW	TZ73RMB1SPK	2.00	12350											X																			
MW-3S-120111L	TZ73RA-L	25.00	12410											X																			
MW-3S-120111	TZ73RA	5.00	12480											X																			
MW-3S-120111D	TZ73RADUP	5.00	12540											X																			
MW-3S-120111S	TZ73RASPK	5.00	13000											X																			
MW-27-120111	TZ73RB	5.00	13070											X																			
MW-26-120111	TZ73RC	5.00	13130											X																			
MW-3D-120111	TZ73RH	5.00	13190											X																			
ZZZZZZ	UA51B	100.00	13250																														
CCV	MCCV3	1.00	13320											X																			
CCB	CCB3	1.00	13380											X																			

TZ73 : 09145

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ73 | RUNID: HG120901 METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08032														X																
S0.1	S0.1	1.00	08050														X																
S0.5	S0.5	1.00	08063														X																
S1	S1	1.00	08081														X																
S2	S2	1.00	08095														X																
S5	S5	1.00	08113														X																
S10	S10	1.00	08130														X																
ICV	AICV	1.00	08184														X																
ICB	ICB	1.00	08202														X																
CCV	ACCV1	1.00	08220														X																
CCB	CCB1	1.00	08234														X																
CRA	CRA	1.00	08251														X																
ZZZZZZ	TZ50MB1	1.00	08265																														
ZZZZZZ	TZ50MB1SPK	1.00	08283																														
ZZZZZZ	TZ50C	1.00	08300																														
ZZZZZZ	TZ50CDUP	1.00	08314																														
ZZZZZZ	TZ50CSPK	1.00	08331																														
ZZZZZZ	TZ50F	1.00	08345																														
ZZZZZZ	TZ50G	1.00	08363																														
ZZZZZZ	TZ50H	1.00	08381																														
ZZZZZZ	TZ50MB2	1.00	08394																														
CCV	ACCV2	1.00	08412														X																
CCB	CCB2	1.00	08430														X																
ZZZZZZ	TZ50MB2SPK	1.00	08444																														
ZZZZZZ	TZ50L	1.00	08462																														
ZZZZZZ	TZ50LDUP	1.00	08475																														
ZZZZZZ	TZ50LSPK	1.00	08493																														
ZZZZZZ	TZ50O	1.00	08510																														
ZZZZZZ	TZ50P	1.00	08524																														
ZZZZZZ	TZ50Q	1.00	08542																														
PBW	TZ73MB1	1.00	08555														X																
LCSW	TZ73MB1SPK	1.00	08573														X																
MW-3S-120111	TZ73A	1.00	08591														X																
CCV	ACCV3	1.00	09005														X																
CCB	CCB3	1.00	09023														X																

FORM XIV

TZ73:12/09/11

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ73 | RUNID: HG120901 | METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-3S-120111D	TZ73ADUP	1.00	09041														X																
MW-3S-120111S	TZ73ASPK	1.00	09055														X																
MW-27-120111	TZ73B	1.00	09072														X																
MW-26-120111	TZ73C	1.00	09090														X																
PBW	TZ73MB2	1.00	09104														X																
LCSW	TZ73MB2SPK	1.00	09121														X																
MW-3S-120111	TZ73I	1.00	09135														X																
MW-3S-120111D	TZ73IDUP	1.00	09152														X																
MW-3S-120111S	TZ73ISPK	1.00	09170														X																
MW-27-120111	TZ73J	1.00	09184														X																
CCV	ACCV4	1.00	09202														X																
CCB	CCB4	1.00	09220														X																
MW-26-120111	TZ73K	1.00	09234														X																
ZZZZZZ	TZ84MB1	1.00	09252																														
ZZZZZZ	TZ84MB1SPK	1.00	09265																														
ZZZZZZ	TZ84A	1.00	09283																														
ZZZZZZ	TZ84ADUP	1.00	09301																														
ZZZZZZ	TZ84ASPK	1.00	09315																														
ZZZZZZ	TZ84B	1.00	09332																														
ZZZZZZ	TZ84MB2	1.00	09350																														
ZZZZZZ	TZ84MB2SPK	1.00	09364																														
ZZZZZZ	TZ84F	1.00	09381																														
CCV	ACCV5	1.00	09395														X																
CCB	CCB5	1.00	09413														X																

TZ73 : 09148

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-14-120211	TZ86A	11-27879	
MW-14-120211D	TZ86ADUP	11-27879	
MW-14-120211S	TZ86ASPK	11-27879	
PBW	TZ86MB1	11-27879	
LCSW	TZ86MB1SPK	11-27879	
DUP-120211-1	TZ86B	11-27880	
MW-14-120211	TZ86C	11-27881	
MW-14-120211D	TZ86CDUP	11-27881	
MW-14-120211S	TZ86CSPK	11-27881	
PBW	TZ86MB2	11-27881	
LCSW	TZ86MB2SPK	11-27881	
DUP-120211-1	TZ86D	11-27882	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/14/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-14-120211
SAMPLE

Lab Sample ID: TZ86A
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/12/11	**7440-38-2**	**Arsenic**	2	**933**	
200.8	12/06/11	6020	12/13/11	7440-47-3	Chromium	1	1	U
3010A	12/06/11	6010B	12/08/11	**7440-50-8**	**Copper**	2	**9**	
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: DUP-120211-1
SAMPLE

Lab Sample ID: TZ86B
LIMS ID: 11-27880
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/13/11	**7440-38-2**	**Arsenic**	1	**858**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-14-120211**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ86A
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6020	933	1,010	25.0	308%	H
Chromium	6020	1.25 U	22.9	25.0	91.6%	
Copper	6010B	8.63	517	500	102%	
Silver	6010B	3.00 U	485	500	97.0%	
Zinc	6010B	10.0 U	471	500	94.2%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-14-120211**
Page 1 of 1 **DUPLICATE**

Lab Sample ID: TZ86A
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6020	933	936	0.3%	+/- 20%	
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	9	9	0.0%	+/- 2	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**
Page 1 of 1

Lab Sample ID: TZ86LCS
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6020	26.6	25.0	106%	
Chromium	6020	25.7	25.0	103%	
Copper	6010B	496	500	99.2%	
Silver	6010B	496	500	99.2%	
Zinc	6010B	480	500	96.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: METHOD BLANK

Lab Sample ID: TZ86MB
LIMS ID: 11-27879
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/13/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/12/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
3010A	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
3010A	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

TZ73:00155

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-14-120211
SAMPLE

Lab Sample ID: TZ86C
LIMS ID: 11-27881
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/12/11	**7440-38-2**	**Arsenic**	2	**935**	
200.8	12/06/11	6020	12/13/11	7440-47-3	Chromium	1	1	U
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: DUP-120211-1
SAMPLE

Lab Sample ID: TZ86D
LIMS ID: 11-27882
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/13/11	**7440-38-2**	**Arsenic**	1	**892**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-14-120211
MATRIX SPIKE

Lab Sample ID: TZ86C
LIMS ID: 11-27881
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6020	935	967	25.0	128%	H
Chromium	6020	1.25 U	24.0	25.0	96.0%	
Copper	6010B	2.00 U	495	500	99.0%	
Silver	6010B	3.00 U	406	500	81.2%	
Zinc	6010B	10.0 U	473	500	94.6%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-14-120211
DUPLICATE

Lab Sample ID: TZ86C
LIMS ID: 11-27881
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: 12/02/11
Date Received: 12/02/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6020	935	917	1.9%	+/- 20%	
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ86LCS
LIMS ID: 11-27881
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6020	26.2	25.0	105%	
Chromium	6020	25.0	25.0	100%	
Copper	6010B	478	500	95.6%	
Silver	6010B	492	500	98.4%	
Zinc	6010B	480	500	96.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ86MB
LIMS ID: 11-27881
Matrix: Water
Data Release Authorized:
Reported: 12/21/11

QC Report No: TZ86-ERM-West
Project: RG
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/13/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/13/11	**7440-47-3**	**Chromium**	0.5	**0.6**	
6010B	12/06/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
6010B	12/06/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
6010B	12/06/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS121281	50.0	50.99	**102.0**	50.0	49.95	**99.9**	50.42	**100.8**	49.81	**99.6**	49.65	**99.3**	50.42	**100.8**
Chromium	CR	PMS	MS121281	50.0	51.01	**102.0**	50.0	49.92	**99.8**	49.82	**99.6**	51.16	**102.3**	50.88	**101.8**	51.05	**102.1**
Copper	CU	ICP	IP120871	1000.0	1015.83	**101.6**	1000.0	1022.98	**102.3**	1001.57	**100.2**	1000.36	**100.0**	992.59	**99.3**	988.25	**98.8**
Silver	AG	ICP	IP120871	1000.0	1005.93	**100.6**	1000.0	1011.24	**101.1**	967.29	**96.7**	970.81	**97.1**	953.38	**95.3**	952.40	**95.2**
Zinc	ZN	ICP	IP120871	1000.0	972.06	**97.2**	1000.0	986.40	**98.6**	972.26	**97.2**	961.14	**96.1**	949.52	**95.0**	966.30	**96.6**

TZ76 : 08192

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Arsenic	AS	PMS	MS121281	50.0	50.09	**100.2**	49.90	**99.8**	50.26	**100.5**	49.96	**99.9**	50.17	**100.3**	49.38	**98.8**
Chromium	CR	PMS	MS121281	50.0	50.01	**100.0**	49.90	**99.8**	49.31	**98.6**	49.36	**98.7**	50.44	**100.9**	50.46	**100.9**
Copper	CU	ICP	IP120871	1000.0	979.31	**97.9**	988.79	**98.9**	987.10	**98.7**	979.07	**97.9**	981.23	**98.1**	982.54	**98.3**
Silver	AG	ICP	IP120871	1000.0	1628.59	**162.9**	957.21	**95.7**	959.82	**96.0**	952.56	**95.3**	996.58	**99.7**	959.55	**96.0**
Zinc	ZN	ICP	IP120871	1000.0	961.12	**96.1**	953.98	**95.4**	953.40	**95.3**	948.35	**94.8**	942.58	**94.3**	942.33	**94.2**

Control Limits: Mercury 80-120; Other Metals 90-110

TZ73:00163

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV12	%R	CCV13	%R	CCV14	%R	CCV15	%R	CCV16	%R	CCV17	%R
Arsenic	AS	PMS	MS121281	50.0	49.95	99.9	49.52	99.0	49.59	99.2						
Chromium	CR	PMS	MS121281	50.0	50.53	101.1	50.30	100.6	50.58	101.2						
Copper	CU	ICP	IP120871	1000.0	977.04	97.7	974.66	97.5								
Silver	AG	ICP	IP120871	1000.0	954.88	95.5	950.55	95.1								
Zinc	ZN	ICP	IP120871	1000.0	950.84	95.1	944.83	94.5								

Control Limits: Mercury 80-120; Other Metals 90-110

TZ73.0615

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS121381	50.0	51.34	102.7	50.0	49.94	99.9	49.40	98.8	49.41	98.8	49.63	99.3	49.65	99.3
Chromium	CR	PMS	MS121381	50.0	50.98	102.0	50.0	49.57	99.1	50.15	100.3	49.82	99.6	49.90	99.8	49.82	99.6

Control Limits: Mercury 80-120; Other Metals 90-110

TZ73:00165

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Arsenic	AS	PMS	MS121381	50.0	49.66	99.3										
Chromium	CR	PMS	MS121381	50.0	49.00	98.0										

Control Limits: Mercury 80-120; Other Metals 90-110

TZ73:00199

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Arsenic	AS	PMS	MS121281	0.2	0.26	130.0										
Chromium	CR	PMS	MS121281	0.5	0.50	100.0										
Copper	CU	ICP	IP120871	2.0	2.20	110.0	2.14	107.0	2.18	109.0						
Silver	AG	ICP	IP120871	3.0	2.97	99.0	3.07	102.3	2.94	98.0						
Zinc	ZN	ICP	IP120871	10.0	9.58	95.8	9.36	93.6	8.84	88.4						

Control Limits: no control limits have been established by the EPA at this time.

TZ73 : 00157

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I	TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Arsenic	AS	PMS	MS121381		0.2	0.17	85.0										
Chromium	CR	PMS	MS121381		0.5	0.55	110.0										

Control Limits: no control limits have been established by the EPA at this time.

TZ73 00199

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS121281	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Chromium	CR	PMS	MS121281	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ73 : 00169

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Arsenic	AS	PMS	MS121281	10.0	0.2	0.2	B	0.3	B	0.3	B	0.3	B	0.3	B	0.3	B
Chromium	CR	PMS	MS121281	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ73:00178

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB12	C	CCB13	C	CCB14	C	CCB15	C	CCB16	C	CCB17	C
Arsenic	AS	PMS	MS121281	10.0	0.2	0.3	B	0.3	B	0.3	B						
Chromium	CR	PMS	MS121281	10.0	0.5	0.5	U	0.5	U	0.5	U						
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U								
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U								
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U								

TZ73:001171

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS121381	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Chromium	CR	PMS	MS121381	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

TZ73 : 00172

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Arsenic	AS	PMS	MS121381	10.0	0.2	0.2	U										
Chromium	CR	PMS	MS121381	10.0	0.5	0.5	U										

TZ73:001773

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: IP120871

SDG: TZ86

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	195569.8	195251.1	**97.6**	187441.5	189633.9	**94.8**	188756.1	188589.5	**94.3**
Antimony		1000	-2.5	943.0	**94.3**	-10.7	897.1	**89.7**	-10.3	872.0	**87.2**
Arsenic		1000	0.1	969.4	**96.9**	0.3	928.6	**92.9**	1.8	911.2	**91.1**
Barium		1000	0.0	973.2	**97.3**	0.4	941.0	**94.1**	0.1	926.4	**92.6**
Beryllium		1000	-0.1	962.0	**96.2**	-0.2	921.2	**92.1**	-0.1	916.5	**91.7**
Boron			-12.7	-11.1		-10.9	-10.3		-12.2	-10.7	
Cadmium		1000	0.7	1018.2	**101.8**	0.6	985.9	**98.6**	0.7	967.1	**96.7**
Calcium	100000	100000	99304.6	99994.8	**100.0**	97188.6	96842.5	**96.8**	97213.4	97055.0	**97.1**
Chromium		1000	-0.2	980.1	**98.0**	-0.1	951.0	**95.1**	-1.0	936.3	**93.6**
Cobalt		1000	1.5	951.4	**95.1**	1.4	921.3	**92.1**	1.3	903.5	**90.4**
Copper		1000	-1.3	1051.7	**105.2**	-0.5	1028.7	**102.9**	-0.6	1011.1	**101.1**
Iron	200000	200000	193343.2	194354.5	**97.2**	184949.6	186610.6	**93.3**	186303.6	186486.4	**93.2**
Lead		1000	-4.8	965.4	**96.5**	-3.8	925.7	**92.6**	-3.9	908.6	**90.9**
Magnesium	100000	100000	100524.6	97242.3	**97.2**	96648.4	94127.9	**94.1**	96452.4	93272.6	**93.3**
Manganese		1000	0.3	963.3	**96.3**	0.2	925.8	**92.6**	0.2	913.3	**91.3**
Molybdenum			6.1	6.2		5.2	5.8		5.2	5.9	
Nickel		1000	0.3	919.5	**92.0**	1.5	884.6	**88.5**	0.4	871.5	**87.2**
Potassium			49.8	212.7		79.8	240.2		57.7	232.9	
Selenium		1000	9.8	989.8	**99.0**	17.1	944.8	**94.5**	19.2	928.3	**92.8**
Silicon			-13.2	-18.3		-5.6	-10.2		-4.1	-6.5	
Silver		1000	-0.5	1029.2	**102.9**	-0.4	990.7	**99.1**	-0.4	975.4	**97.5**
Sodium			10.7	11.1		33.0	35.3		33.0	29.3	
Strontium			10.1	10.1		9.8	9.8		9.9	9.8	
Thallium		1000	5.7	947.5	**94.8**	9.4	900.9	**90.1**	8.3	883.7	**88.4**
Tin			-11.6	-12.9		-12.2	-12.3		-12.4	-12.4	
Titanium			-0.2	-0.5		-0.6	-0.3		-0.7	-0.6	
Vanadium		1000	5.3	986.9	**98.7**	4.2	961.0	**96.1**	4.5	947.6	**94.8**
Zinc		1000	-1.7	918.0	**91.8**	-0.9	889.7	**89.0**	-2.0	879.1	**87.9**

TZ73:0017H

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

ICS SOURCE: I.V.

RUNID: MS121281

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.8	99.0						
Cadmium		20	0.1	20.0	100.0						
Chromium		20	0.9	20.6	103.0						
Cobalt		20	0.0	19.4	97.0						
Copper		20	0.5	19.4	97.0						
Lead			0.1	0.1							
Manganese		20	0.2	19.8	99.0						
Molybdenum	400	400	488.9	408.6	102.2						
Nickel		20	0.6	19.1	95.5						
Selenium			0.1	0.1							
Silver		20	0.0	19.5	97.5						
Vanadium			0.0	-0.3							
Zinc		20	1.4	20.0	100.0						

TZ73:00175

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121381

SDG: TZ86

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.5	97.5						
Cadmium		20	0.0	19.7	98.5						
Chromium		20	0.8	20.5	102.5						
Cobalt		20	0.0	19.8	99.0						
Copper		20	0.4	20.1	100.5						
Lead			0.1	0.1							
Manganese		20	0.1	19.8	99.0						
Molybdenum	400	400	397.7	391.4	97.9						
Nickel		20	0.6	19.4	97.0						
Selenium			-0.1	-0.1							
Silver		20	0.0	19.2	96.0						
Vanadium			0.0	-0.3							
Zinc		20	0.9	20.0	100.0						

TZ73 : 90176

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ86

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Copper	MW-14-120211L	TZ86A-L	Water	IP120871	8.63	B	10.70	B	24.0	
Silver	MW-14-120211L	TZ86A-L	Water	IP120871	3.00	U	15.00	U		
Zinc	MW-14-120211L	TZ86A-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ86

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Copper	MW-14-120211L	TZ86C-L	Water	IP120871	2.00	U	10.00	U		
Silver	MW-14-120211L	TZ86C-L	Water	IP120871	3.00	U	15.00	U		
Zinc	MW-14-120211L	TZ86C-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ86

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-14-120211L	TZ86A-L	Water	MS121281	186.58		184.20		1.3	
Arsenic	MW-14-120211L	TZ86C-L	Water	MS121281	187.04		176.92		5.4	
Chromium	MW-14-120211L	TZ86A-L	Water	MS121381	0.22	U	0.15	B		
Chromium	MW-14-120211L	TZ86C-L	Water	MS121381	0.18	U	0.10	B		

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Chromium	CR	PMS	PE ELAN 6000 MS	0.00		10	0.5	4/1/2011		
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2011	5000.0	8/3/2011
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ86

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3891270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.1208350
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0339516	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0076716	0.0000000	-0.1892080	0.0000000	0.0000000	0.0522067
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0242504	0.0000000	0.0000000	0.0000000	0.0000000	-0.0377814
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0584929
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2018030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0540270
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5652870
Manganese	257.61	0.0071394	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0051324
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0123608	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.2053280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	-0.1233420
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0108199	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1141760
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0387268	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0730907
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0258303	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TZ86:00161

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ86

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0405628	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0057432	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0041261	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0107429	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0736777	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

TZ73:90182

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

ANALYSIS METHOD: ICP

ARI PREP CODE: TWC

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-14-120211	TZ86A	0.000	50.0	50.0
MW-14-120211D	TZ86ADUP	0.000	50.0	50.0
MW-14-120211S	TZ86ASPK	0.000	50.0	50.0
PBW	TZ86MB1	0.000	50.0	50.0
LCSW	TZ86MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

ANALYSIS METHOD: ICP

ARI PREP CODE: WMN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-14-120211	TZ86C	0.000	50.0	50.0
MW-14-120211D	TZ86CDUP	0.000	50.0	50.0
MW-14-120211S	TZ86CSPK	0.000	50.0	50.0
PBW	TZ86MB2	0.000	50.0	50.0
LCSW	TZ86MB2SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ86

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-14-120211	TZ86A	0.000	50.0	25.0
MW-14-120211D	TZ86ADUP	0.000	50.0	25.0
MW-14-120211S	TZ86ASPK	0.000	50.0	25.0
DUP-120211-1	TZ86B	0.000	50.0	25.0
MW-14-120211	TZ86C	0.000	50.0	25.0
MW-14-120211D	TZ86CDUP	0.000	50.0	25.0
MW-14-120211S	TZ86CSPK	0.000	50.0	25.0
DUP-120211-1	TZ86D	0.000	50.0	25.0
PBW	TZ86MB1	0.000	50.0	25.0
LCSW	TZ86MB1SPK	0.000	50.0	25.0
PBW	TZ86MB2	0.000	50.0	25.0
LCSW	TZ86MB2SPK	0.000	50.0	25.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ86 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08363		X										X																		X
S2	S2	1.00	08405												X																		
S3	S3	1.00	08425		X																												X
S4	S4	1.00	08452																														
S5	S5	1.00	08473																														
ICV	ICV	1.00	08551		X										X																		X
ICB	ICB	1.00	08591		X										X																		X
CRI	CRII	1.00	09032		X										X																		X
ICSA	ICSAI	1.00	09074		X										X																		X
ICSAB	ICSABI	1.00	09115		X										X																		X
CCV	CCV1	1.00	09170		X										X																		X
CCB	CCB1	1.00	09210		X										X																		X
ZZZZZZ	TZ98MB2	2.00	09251																														
ZZZZZZ	TZ98MB1	1.00	09293																														
ZZZZZZ	TZ98ADUP	1.00	09334																														
ZZZZZZ	TZ98A	1.00	09375																														
ZZZZZZ	TZ98ASPK	1.00	09421																														
ZZZZZZ	TZ98BDUP	2.00	09462																														
ZZZZZZ	TZ98B	2.00	09504																														
ZZZZZZ	TZ98BSPK	2.00	09545																														
ZZZZZZ	TZ98MB2SPK	2.00	09585																														
ZZZZZZ	TZ98MB1SPK	1.00	10025																														
CCV	CCV2	1.00	10065		X										X																		X
CCB	CCB2	1.00	10105		X										X																		X
ZZZZZZ	TZ50MB2	1.00	10150																														
ZZZZZZ	TZ50L-L	5.00	10192																														
ZZZZZZ	TZ50L	1.00	10233																														
ZZZZZZ	TZ50LDUP	1.00	10274																														
ZZZZZZ	TZ50LSPK	1.00	10320																														
ZZZZZZ	TZ50O	1.00	10370																														
ZZZZZZ	TZ50P	1.00	10412																														
ZZZZZZ	TZ50Q	1.00	10453																														
ZZZZZZ	TZ50F	1.00	10495																														
ZZZZZZ	TZ50MB2SPK	1.00	10540																														
CCV	CCV3	1.00	10580		X										X																		X

FORM XIV

TZ73:00185

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ86 | RUNID: IP120871 METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB3	1.00	11020		X										X																		X
ZZZZZZ	TZ50MB1	1.00	11061																														
ZZZZZZ	TZ50C-L	5.00	11102																														
ZZZZZZ	TZ50C	1.00	11144																														
ZZZZZZ	TZ50CDUP	1.00	11185																														
ZZZZZZ	TZ50CSPK	1.00	11231																														
ZZZZZZ	TZ50G	1.00	11271																														
ZZZZZZ	TZ50H	1.00	11312																														
ZZZZZZ	TZ50F	1.00	11353																														
ZZZZZZ	TZ50LSPK	1.00	11421																														
ZZZZZZ	TZ50MB1SPK	1.00	11460																														
CCV	CCV4	1.00	11500		X										X																		X
CCB	CCB4	1.00	11541		X										X																		X
ZZZZZZ	TZ73MB1	1.00	11582																														
ZZZZZZ	TZ73A-L	5.00	12023																														
ZZZZZZ	TZ73A	1.00	12065																														
ZZZZZZ	TZ73ADUP	1.00	12110																														
ZZZZZZ	TZ73ASPK	1.00	12151																														
ZZZZZZ	TZ73B	1.00	12191																														
ZZZZZZ	TZ73C	1.00	12233																														
ZZZZZZ	TZ73H	1.00	12274																														
ZZZZZZ	TZ73P	1.00	12321																														
ZZZZZZ	TZ73MB1SPK	1.00	12364																														
CCV	CCV5	1.00	12404		X										X																		X
CCB	CCB5	1.00	12444		X										X																		X
ZZZZZZ	TZ73MB2	1.00	12490																														
ZZZZZZ	ZZZZZZ	5.00	12531																														
ZZZZZZ	TZ73I	1.00	12573																														
ZZZZZZ	TZ73IDUP	1.00	13014																														
ZZZZZZ	TZ73ISPK	1.00	13055																														
ZZZZZZ	TZ73J	1.00	13095																														
ZZZZZZ	TZ73K	1.00	13141																														
ZZZZZZ	TZ73ISPK	1.00	13182																														
ZZZZZZ	TZ73MB2SPK	1.00	13221																														
ZZZZZZ	TZ73MB2SPK	1.00	13285																														

TZ86:0971

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ86 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCV	CCV6	1.00	13325		X										X																		X
CCB	CCB6	1.00	13365		X										X																		X
CCV	CCV7	1.00	13431		X										X																		X
CCB	CCB7	1.00	13471		X										X																		X
ZZZZZZ	TZ83MB2	1.00	13513																														
ZZZZZZ	TZ83B-L	5.00	13554																														
ZZZZZZ	TZ83B	1.00	13595																														
ZZZZZZ	TZ83BDUP	1.00	14041																														
ZZZZZZ	TZ83BSPK	1.00	14082																														
MW-14-120211L	TZ86C-L	5.00	14170		X										X																		X
MW-14-120211	TZ86C	1.00	14211		X										X																		X
MW-14-120211D	TZ86CDUP	1.00	14252		X										X																		X
MW-14-120211S	TZ86CSPK	1.00	14294		X										X																		X
ZZZZZZ	TZ83MB1SPK	1.00	14334																														
CCV	CCV8	1.00	14374		X										X																		X
CCB	CCB8	1.00	14414		X										X																		X
CRI	CRIF	1.00	14455		X										X																		X
ICSA	ICSAF	1.00	14501		X										X																		X
ICSAB	ICSABF	1.00	14542		X										X																		X
CCV	CCV9	1.00	14593		X										X																		X
CCB	CCB9	1.00	15033		X										X																		X
ZZZZZZ	TZ73MB2	1.00	15074																														
ZZZZZZ	TZ73I-L	5.00	15115																														
ZZZZZZ	TZ73I	1.00	15161																														
ZZZZZZ	TZ73IDUP	1.00	15202																														
ZZZZZZ	TZ73ISPK	1.00	15243																														
ZZZZZZ	ZZZZZZ	1.00	15320																														
ZZZZZZ	ZZZZZZ	1.00	15395																														
ZZZZZZ	D1	1.00	15435																														
ZZZZZZ	TZ73J	1.00	15480																														
ZZZZZZ	TZ73K	1.00	15522																														
CCV	CCV10	1.00	15563		X										X																		X
CCB	CCB10	1.00	16003		X										X																		X
ZZZZZZ	TZ83MB1	1.00	16045																														
ZZZZZZ	TZ83A-L	5.00	16090																														

FORM XIV

TZ73:00188

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ86 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ83A	1.00	16131																														
ZZZZZZ	TZ83ADUP	1.00	16173																														
ZZZZZZ	TZ83ASPK	1.00	16214																														
MW-14-120211L	TZ86A-L	5.00	16260		X										X																		X
MW-14-120211	TZ86A	1.00	16301		X										X																		X
MW-14-120211D	TZ86ADUP	1.00	16343		X										X																		X
MW-14-120211S	TZ86ASPK	1.00	16384		X										X																		X
ZZZZZZ	TZ83MB2SPK	1.00	16424																														
CCV	CCV11	1.00	16464		X										X																		X
CCB	CCB11	1.00	16504		X										X																		X
PBW	TZ86MB1	1.00	16550		X										X																		X
PBW	TZ86MB2	1.00	16591		X										X																		X
LCSW	TZ86MB2SPK	1.00	17032		X										X																		X
ZZZZZZ	TZ73MB2SPK	1.00	17072																														
LCSW	TZ86MB1SPK	1.00	17112		X										X																		X
ZZZZZZ	TZ73ISPK	1.00	17152																														
ZZZZZZ	D2	1.00	17192																														
CCV	CCV12	1.00	17233		X										X																		X
CCB	CCB12	1.00	17273		X										X																		X
CRI	CRIF1	1.00	17315		X										X																		X
ICSA	ICSAF1	1.00	17360		X										X																		X
ICSAB	ICSABF1	1.00	17401		X										X																		X
CCV	CCV13	1.00	17452		X										X																		X
CCB	CCB13	1.00	17492		X										X																		X

TZ73:60189

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ86 | RUNID: MS121281 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09460				X							X																			
S1	S1	1.00	09530				X							X																			
S2	S2	1.00	09590				X							X																			
S3	S3	1.00	10050				X							X																			
S4	S4	1.00	10110				X							X																			
ZZZZZZ	Rinse Samp1	1.00	10180																														
ICV	MICV	1.00	10320				X							X																			
ICB	ICB	1.00	10390				X							X																			
CCV	MCCV1	1.00	10440				X							X																			
CCB	CCB1	1.00	10510				X							X																			
CRI	MCRI	1.00	10570				X							X																			
ICSA	ICSAI	1.00	11030				X							X																			
ICSAB	ICSABI	1.00	11110				X							X																			
ZZZZZZ	LR200	1.00	11170																														
ZZZZZZ	LR300	1.00	11240																														
CCV	MCCV2	1.00	11300				X							X																			
CCB	CCB2	1.00	11370				X							X																			
ZZZZZZ	UA26RMB	2.00	11430																														
ZZZZZZ	UA30MB1	2.00	11490																														
ZZZZZZ	UA30MB1SPK	2.00	11550																														
ZZZZZZ	UA26RMBSPK	2.00	12010																														
ZZZZZZ	UA26RADUP	2.00	12070																														
ZZZZZZ	UA26RA	2.00	12130																														
ZZZZZZ	UA26RASPK	2.00	12200																														
ZZZZZZ	UA30ADUP	2.00	12260																														
ZZZZZZ	UA30A	2.00	12320																														
ZZZZZZ	UA30ASPK	2.00	12390																														
CCV	MCCV3	1.00	12450				X							X																			
CCB	CCB3	1.00	12510				X							X																			
ZZZZZZ	UA26RADUP	2.00	12580																														
ZZZZZZ	UA26RA	2.00	13040																														
CCV	MCCV4	1.00	13150				X							X																			
CCB	CCB4	1.00	13220				X							X																			
ZZZZZZ	UA30MB2	2.00	13280																														
ZZZZZZ	UA58MBSPK	20.00	13340																														

FORM XIV

TZ73 : 0519

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ86 | RUNID: MS121281 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	UA30MB2SPK	2.00	13410																														
ZZZZZZ	TZ50O	2.00	13470																														
ZZZZZZ	UA30BDUP	2.00	13530																														
ZZZZZZ	UA30B	2.00	13590																														
ZZZZZZ	UA30BSPK	2.00	14060																														
ZZZZZZ	UA58ADUP	20.00	14120																														
ZZZZZZ	UA58A	20.00	14180																														
ZZZZZZ	UA58ASPK	20.00	14250																														
CCV	MCCV5	1.00	14310				X							X																			
CCB	CCB5	1.00	14370				X							X																			
ZZZZZZ	UA58MB	20.00	14460																														
ZZZZZZ	TZ73C	2.00	14510																														
ZZZZZZ	TZ73C	5.00	14580																														
ZZZZZZ	TZ73G	5.00	15040																														
ZZZZZZ	TZ73H	2.00	15100																														
ZZZZZZ	TZ73H	5.00	15160																														
ZZZZZZ	TZ73K	2.00	15230																														
ZZZZZZ	TZ73K	5.00	15290																														
ZZZZZZ	TZ73O	5.00	15350																														
ZZZZZZ	UA58B	20.00	15420																														
CCV	MCCV6	1.00	15480				X							X																			
CCB	CCB6	1.00	15540				X							X																			
ZZZZZZ	TZ73A-L	10.00	16020																														
ZZZZZZ	TZ73A	2.00	16090																														
ZZZZZZ	TZ73ADUP	2.00	16150																														
ZZZZZZ	TZ73ASPK	2.00	16210																														
ZZZZZZ	ZZZZZZ	2.00	16270																														
ZZZZZZ	TZ73A-L	25.00	16340																														
ZZZZZZ	TZ73A	5.00	16400																														
ZZZZZZ	TZ73ADUP	5.00	16460																														
ZZZZZZ	TZ73ASPK	5.00	16520																														
ZZZZZZ	ZZZZZZ	5.00	16590																														
CCV	MCCV7	1.00	17050				X							X																			
CCB	CCB7	1.00	17120				X							X																			
ZZZZZZ	TZ73I-L	10.00	17180																														

FORM XIV

TZ73:90191

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ86 | RUNID: MS121281 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ73I	2.00	17240																														
ZZZZZZ	TZ73IDUP	2.00	17300																														
ZZZZZZ	TZ73ISPK	2.00	17360																														
ZZZZZZ	ZZZZZZ	2.00	17430																														
ZZZZZZ	TZ73I-L	25.00	17490																														
ZZZZZZ	TZ73I	5.00	17550																														
ZZZZZZ	TZ73IDUP	5.00	18010																														
ZZZZZZ	TZ73ISPK	5.00	18080																														
ZZZZZZ	ZZZZZZ	5.00	18140																														
CCV	MCCV8	1.00	18200				X							X																			
CCB	CCB8	1.00	18270				X							X																			
ZZZZZZ	TZ83MB1	2.00	18330																														
ZZZZZZ	TZ83MB2	2.00	18380																														
ZZZZZZ	TZ83MB1SPK	2.00	18440																														
ZZZZZZ	TZ83MB2SPK	2.00	18510																														
ZZZZZZ	TZ73P	2.00	18570																														
ZZZZZZ	TZ73P	5.00	19030																														
DUP-120211-1	TZ86B	2.00	19090																														
DUP-120211-1	TZ86B	5.00	19160																														
DUP-120211-1	TZ86D	2.00	19220																														
DUP-120211-1	TZ86D	5.00	19280																														
CCV	MCCV9	1.00	19350				X							X																			
CCB	CCB9	1.00	19410				X							X																			
ZZZZZZ	ZZZZZZ	10.00	19470																														
ZZZZZZ	TZ83A	2.00	19530																														
ZZZZZZ	TZ83ADUP	2.00	19590																														
ZZZZZZ	TZ83A SPK	2.00	20060																														
ZZZZZZ	ZZZZZZ	2.00	20120																														
ZZZZZZ	TZ83A-L	25.00	20180																														
ZZZZZZ	TZ83A	5.00	20250																														
ZZZZZZ	TZ83ADUP	5.00	20310																														
ZZZZZZ	TZ83ASPK	5.00	20370																														
ZZZZZZ	ZZZZZZ	5.00	20430																														
CCV	MCCV10	1.00	20500				X							X																			
CCB	CCB10	1.00	20560				X							X																			

TZ73:09182

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ86 | RUNID: MS121281 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	ZZZZZZ	10.00	21020																														
ZZZZZZ	TZ83B	2.00	21080																														
ZZZZZZ	TZ83BDUP	2.00	21150																														
ZZZZZZ	TZ83BSPK	2.00	21210																														
ZZZZZZ	ZZZZZZ	2.00	21270																														
ZZZZZZ	TZ83B-L	25.00	21340																														
ZZZZZZ	TZ83B	5.00	21400																														
ZZZZZZ	TZ83BDUP	5.00	21460																														
ZZZZZZ	TZ83BSPK	5.00	21520																														
ZZZZZZ	ZZZZZZ	5.00	21590																														
CCV	MCCV11	1.00	22050				X							X																			
CCB	CCB11	1.00	22120				X							X																			
ZZZZZZ	ZZZZZZ	10.00	22170																														
MW-14-120211	TZ86A	2.00	22240																														
MW-14-120211D	TZ86ADUP	2.00	22300																														
MW-14-120211S	TZ86ASPK	2.00	22360																														
ZZZZZZ	ZZZZZZ	2.00	22430																														
MW-14-120211L	TZ86A-L	50.00	22490				X																										
MW-14-120211	TZ86A	10.00	22550				X																										
MW-14-120211D	TZ86ADUP	10.00	23010				X																										
MW-14-120211S	TZ86ASPK	10.00	23080				X																										
ZZZZZZ	ZZZZZZ	10.00	23140																														
CCV	MCCV12	1.00	23200				X							X																			
CCB	CCB12	1.00	23270				X							X																			
ZZZZZZ	ZZZZZZ	10.00	23330																														
MW-14-120211	TZ86C	2.00	23390																														
MW-14-120211D	TZ86CDUP	2.00	23450																														
MW-14-120211S	TZ86CSPK	2.00	23510																														
ZZZZZZ	ZZZZZZ	2.00	23580																														
MW-14-120211L	TZ86C-L	50.00	00040				X																										
MW-14-120211	TZ86C	10.00	00100				X																										
MW-14-120211D	TZ86CDUP	10.00	00170				X																										
MW-14-120211S	TZ86CSPK	10.00	00230				X																										
ZZZZZZ	ZZZZZZ	10.00	00290																														
CCV	MCCV13	1.00	00350				X							X																			

FORM XIV

TZ13.0173

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ86 | RUNID: MS121281 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB13	1.00	00420				X							X																			
PBW	TZ86MB1	2.00	00480											X																			
PBW	TZ86MB2	2.00	00540																														
LCSW	TZ86MB1SPK	2.00	00590											X																			
LCSW	TZ86MB2SPK	2.00	01060											X																			
ZZZZZZ	UA58ADUP	100.00	01120																														
ZZZZZZ	UA58A	100.00	01180																														
ZZZZZZ	UA58ASPK	100.00	01250																														
ZZZZZZ	UA58B	100.00	01310																														
CCV	MCCV14	1.00	01370				X							X																			
CCB	CCB14	1.00	01440				X							X																			

TZ73.0154

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/13/2011

SDG: TZ86 | RUNID: MS121381 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09150				X							X																			
S1	S1	1.00	09210				X							X																			
S2	S2	1.00	09270				X							X																			
S3	S3	1.00	09340				X							X																			
S4	S4	1.00	09400				X							X																			
ZZZZZZ	Rinse Sampl	1.00	09460																													
ICV	MICV	1.00	09540				X							X																			
ICB	ICB	1.00	10000				X							X																			
CCV	MCCV1	1.00	10060				X							X																			
CCB	CCB1	1.00	10130				X							X																			
ZZZZZZ	NEW IS	1.00	10180																													
CRI	MCRI	1.00	10240				X							X																			
ICSA	ICSAI	1.00	10300				X							X																			
ICSAB	ICSABI	1.00	10360				X							X																			
ZZZZZZ	LR200	1.00	10430																													
ZZZZZZ	LR300	1.00	10490																													
CCV	MCCV2	1.00	10560				X							X																			
CCB	CCB2	1.00	11020				X							X																			
S0	S0	1.00	11090				X							X																			
CCV	MCCV3	1.00	11160				X							X																			
CCB	CCB3	1.00	11220				X							X																			
ZZZZZZ	UA83MB1	200.00	11280																													
ZZZZZZ	UA83MB1SPK	200.00	11340																													
ZZZZZZ	UA83ADUP	200.00	11410																													
ZZZZZZ	UA83A	200.00	11470																													
ZZZZZZ	UA83ASPK	200.00	11530																													
ZZZZZZ	UA83B	200.00	11590																													
ZZZZZZ	UA83C	200.00	12060																													
ZZZZZZ	UA83D	200.00	12120																													
ZZZZZZ	UA83E	200.00	12180																													
ZZZZZZ	UA83F	200.00	12240																													
CCV	MCCV4	1.00	12310				X							X																			
CCB	CCB4	1.00	12370				X							X																			
ZZZZZZ	TZ83MB1	2.00	12450																													
ZZZZZZ	TZ83MB2	2.00	12510																													

TZ83:09135

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/13/2011

SDG: TZ86 | RUNID: MS121381 METHOD: PMS | END DATE: 12/13/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
PBW	TZ86MB1	2.00	12570				X																										
PBW	TZ86MB2	2.00	13030				X							X																				
LCSW	TZ86MB1SPK	2.00	13080				X																										
LCSW	TZ86MB2SPK	2.00	13150				X																										
ZZZZZZ	TZ83MB1SPK	2.00	13210																														
ZZZZZZ	TZ83MB2SPK	2.00	13270																														
ZZZZZZ	UA58B	20.00	13330																														
ZZZZZZ	TZ73K	10.00	13400																														
CCV	MCCV5	1.00	13460				X							X																				
CCB	CCB5	1.00	13530				X							X																				
MW-14-120211L	TZ86A-L	25.00	14000											X																				
MW-14-120211	TZ86A	5.00	14060											X																				
MW-14-120211D	TZ86ADUP	5.00	14120											X																				
MW-14-120211S	TZ86ASPK	5.00	14190											X																				
MW-14-120211L	TZ86C-L	25.00	14250											X																				
MW-14-120211	TZ86C	5.00	14310											X																				
MW-14-120211D	TZ86CDUP	5.00	14370											X																				
MW-14-120211S	TZ86CSPK	5.00	14440											X																				
DUP-120211-1	TZ86B	10.00	14500				X																										
DUP-120211-1	TZ86D	10.00	14560				X																										
CCV	MCCV6	1.00	15030				X							X																				
CCB	CCB6	1.00	15090				X							X																				

TZ73:00196

Table of Contents: ARI Job TZ50

Client: ERM-West

Project: 128296 RG

	Page From:	Page To:
Inventory Sheet		
Cover Letter	1	1
Chain of Custody Documentation	2	6
Case Narrative, Data Qualifiers, Control Limits	7	21
Semivolatile Analysis		
Report and Summary QC Forms	22	44
Metals Analysis		
Report and Summary QC Forms	45	110

BC

Signature

December-14-2011

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

December 14, 2011

Michael F. Mendes
ERM-West, Inc.
1218 3rd Avenue, Suite 1412
Seattle, WA 98101

RE: RG, 128296
ARI Job No.: TZ50

Dear Mr. Mendes:

Please find enclosed Chain-of-Custody (COC) record, sample receipt documentation, and the final data package for samples from the project referenced above.

Sample receipt and details of these analyses are discussed in the Case Narrative.

Please note that current ARI control limits are available at www.arilabs.com.

An electronic copy of this package will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Cheronne Oreiro
Project Manager
-For-
Susan D. Dunnihoo
Director, Client Services
206-695-6207
sue@arilabs.com

Enclosures

cc: eFile TZ50

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Documentation

ARI Job ID: TZ50

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: P250	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: ERM	Phone: 425 214 0458	Date: 11/30/11	Ice Present?
Client Contact: Mike Mendes		No. of Coolers:	Cooler Temps:
Client Project Name: RG			
Client Project #: 128296	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Phenol / Chlorinated phenols	Total As	Dissolved As *	Total ① Metals	Dissolved ① Metals				Notes/Comments
MW-2D-113011	11/30/11	0703	water	4	X	X	X						
MW-2S-113011	11/30/11	0742	water	4	X	X	X						
MW-24-113011	11/30/11	0832	water	4	X	X	X	X	X				
MW-21-113011	11/30/11	0917	water	4	X	X	X						
DUP-113011-1	11/30/11	0630	water	2		X	X						
MW-20-113011	11/30/11	1004	water	4	X	X	X	X	X				
MW-18-113011	11/30/11	1127	water	4	X	X	X	X	X				
DUP-113011-2	11/30/11	0645	water	2	[illegible]			X	X				
MW-6S-113011	11/30/11	1225	water	4	X	X	X						

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
* Dissolved metals samples filtered in the field	Printed Name: Cyrus Gorman	Printed Name: A. Volgardsen	Printed Name	Printed Name:
	Company: ERM	Company: ARI	Company	Company
	Date & Time: 11/30/11 1756	Date & Time: 11/30/11 1756	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

① Metals = Cr, Cu, Ag, Zn, Sb, Be, Cd, Pb, Ni, Se, Tl, Hg

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

P250 : 0000

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client ERM Project Name RG

COC No(s) _____ (NA) Delivered by: Fed-Ex UPS (Courier) Hand Delivered Other: _____

Assigned ARI Job No. TZ50 Tracking No. _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry) ... 5.9 4.0 ___ ___

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619

Cooler Accepted by AV Date 11/30/11 Time 1256

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	(Bubble Wrap) (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

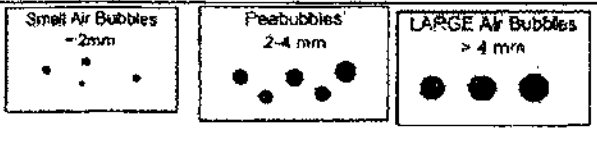
Samples Logged by AV Date: 12/1/11 Time: 809

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By _____ Date _____



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

PRESERVATION VERIFICATION 12/01/11
Page 1 of 2

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ50**

Inquiry Number: NONE
Analysis Requested: 12/01/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: AV
Sample Set Used: Yes-481
Validatable Package: YES
Deliverables:

PC: Sue D.
VTSR: 11/30/11

Project #: 128296
Project: RG
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27697 **TZ50A**	MW-2D-113011						TOT															
11-27698 **TZ50B**	MW-2S-113011						TOT															
11-27699 **TZ50C**	MW-24-113011						TOT															
11-27700 **TZ50D**	MW-21-113011						TOT															
11-27701 **TZ50E**	DUP-113011-1						TOT															
11-27702 **TZ50F**	MW-20-113011						TOT															
11-27703 **TZ50G**	MW-18-113011						TOT															
11-27704 **TZ50H**	DUP-113011-2						TOT															
11-27705 **TZ50I**	MW-6S-113011						TOT															
11-27706 **TZ50J**	MW-2D-113011						DIS									Y						
11-27707 **TZ50K**	MW-2S-113011						DIS									Y						
11-27708 **TZ50L**	MW-24-113011						DIS									Y						
11-27709 **TZ50M**	MW-21-113011						DIS									Y						
11-27710 **TZ50N**	DUP-113011-1						DIS									Y						

Checked By AV Date 12/1/11

PRESERVATION VERIFICATION 12/01/11
Page 2 of 2

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ50**

Client: ERM-West

Project #: 128296
Project: RG

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27711 **TZ50O**	MW-2C-113011						DIS									Y						
11-27712 **TZ50P**	MW-18-113011						DIS									Y						
11-27713 **TZ50Q**	DUP-113011-2						DIS									Y						
11-27714 **TZ50R**	MW-6S-113011						DIS									Y						

TZ50 00006

Checked By AV Date 12/1/11

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: TZ50

ANALYTICAL
RESOURCES
INCORPORATED

Narrative

Client: ERM-West, Inc.
Project: RG, 128296
ARI Job No.: TZ50

Sample receipt

Nine water samples were received on November 30, 2011 under ARI job TZ50. The cooler temperatures measured by IR thermometer following ARI SOP were 4.0 and 5.9°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

Semivolatiles by SW8270

The samples were extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements for requested compounds.

The internal standard area of Di-n-octylphthalate-d4 was outside the control limits high for sample **MW-2S-113011**. This internal standard is not associated with the requested compounds. No corrective action was taken.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits. The LCS and LCSD percent recoveries were within control limits.

Total and Dissolved Metals by SW6010/6020/7470

The samples and associated laboratory QC were digested and analyzed within recommended holding times.

Initial and continuing calibrations were within limits.

The method blanks were clean at the detection limits. The LCS percent recoveries were within control limits.

The dissolved matrix spike percent recovery of silver fell outside the control limits low for sample **MW-24-113011**. All relevant data have been flagged with an "N" qualifier on the appropriate Form V. No further corrective action was take.

The duplicate RPDs were within control limits.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ50
Client: ERM-West
Project Event: 128296
Project Name: RG

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-2D-113011	TZ50A	11-27697	Water	11/30/11 07:03	11/30/11 12:56
2.	MW-2S-113011	TZ50B	11-27698	Water	11/30/11 07:42	11/30/11 12:56
3.	MW-24-113011	TZ50C	11-27699	Water	11/30/11 08:32	11/30/11 12:56
4.	MW-21-113011	TZ50D	11-27700	Water	11/30/11 09:17	11/30/11 12:56
5.	DUP-113011-1	TZ50E	11-27701	Water	11/30/11 06:30	11/30/11 12:56
6.	MW-20-113011	TZ50F	11-27702	Water	11/30/11 10:04	11/30/11 12:56
7.	MW-18-113011	TZ50G	11-27703	Water	11/30/11 11:27	11/30/11 12:56
8.	DUP-113011-2	TZ50H	11-27704	Water	11/30/11 06:45	11/30/11 12:56
9.	MW-6S-113011	TZ50I	11-27705	Water	11/30/11 12:25	11/30/11 12:56
10.	MW-2D-113011	TZ50J	11-27706	Water	11/30/11 07:03	11/30/11 12:56
11.	MW-2S-113011	TZ50K	11-27707	Water	11/30/11 07:42	11/30/11 12:56
12.	MW-24-113011	TZ50L	11-27708	Water	11/30/11 08:32	11/30/11 12:56
13.	MW-21-113011	TZ50M	11-27709	Water	11/30/11 09:17	11/30/11 12:56
14.	DUP-113011-1	TZ50N	11-27710	Water	11/30/11 06:30	11/30/11 12:56
15.	MW-20-113011	TZ50O	11-27711	Water	11/30/11 10:04	11/30/11 12:56
16.	MW-18-113011	TZ50P	11-27712	Water	11/30/11 11:27	11/30/11 12:56
17.	DUP-113011-2	TZ50Q	11-27713	Water	11/30/11 06:45	11/30/11 12:56
18.	MW-6S-113011	TZ50R	11-27714	Water	11/30/11 12:25	11/30/11 12:56

Printed 12/01/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

TZ50 : 00010

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

TZ50 : 00011

Geotechnical Data

A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.

F Samples were frozen prior to particle size determination

SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations

SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis

W Weight of sample in some pipette aliquots was below the level required for accurate weighting

TZ50 : 00012

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1907-1	PCB 1660	20	ACETONE	11/01/12
2#		BCOC PEST	10	ACETONE	NA
3	1885-1	PEST	01/02/10	ACETONE	12/15/11
4	1885-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1902-4	EPH	1500	MECL2	10/04/12
6	1919-2	PCP	12.5/125	ACETONE	10/15/12
7	1888-1	ABN	100	MEOH	08/30/12
8	1916-2	TBT	2.5	MECL2	11/23/12
9	1918-2	PORE TBT	.125/.25	MECL2	11/23/12
10					
11	1860-4	TPHD	15000	ACETONE	05/12/12
12					
13	1838-4	LOW PCB	2	ACETONE	01/31/12
14					
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1906-4	1,4-DIOXANE	100	MEOH	04/30/12
17	1869-4	1248 PCB	10	ACETONE	06/14/12
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1873-2	AK103	7500	ACETONE	01/02/12
20	1886-4	PNA	100	ACETONE	01/07/12
21	1874-3	SKY/BHT	100	MEOH	01/14/12
22	1864-3	HERB	02 to 2500	MEOH	12/03/11
23	1887-2	EXTRA PNA	15	ACETONE	08/25/12
24					
25#		DIPHENYL	100	MEOH	NA
26	1904-2	OP-PEST	25	MEOH	02/10/12
27		STEROLS	200	MEOH	NA
28#		ADD. PEST	2	ACETONE	NA
29#		DECANES	100	MEOH	NA

TZ50:00013

LCS SOLUTIONS

30		EDB/DBCP	0.2	MEOH	NA
31	1909-2	TERPINEOL	100	MEOH	02/14/12
32	1876-1	GUAIACOL	50-200	ACETONE	01/05/12
33		RETENE	100	MEOH	NA
34	1867-3	CONGENERS	0.5	ACETONE	03/14/12
35	1875-3	ALKYL PNA A	10	MEOH	07/18/12
36		ALKYL PNA B	10	MEOH	NA
37		CAR/PERY	100	ACETONE	NA
38	1904-1	ABN ACID	200-450	MEOH	04/21/12
39	1853-4	BENZIDINE	500	MEOH	04/30/12
40	1851-3	PBDE	0.5	MEOH	04/22/12
50	1900-1	FULL RESIN	250	ACETONE	08/12/12
51		DDTS	0.01	ACETONE	NA
52		1232 PCB	20	ACETONE	NA
53	1919-1	DALAPON	50	MEOH	08/22/12
54		T-CHLORDANE	10	ACETONE	NA
55		TOXAPHENE	50	ACETONE	NA
56	1917-1	ABN BASE	50-200	MEOH	05/31/12
	#=PROJECT SPECIFIC SOLUTION				
	*=REVERIFIED SOLUTION				

TZ50 : 00014

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1906-5	ABN	100/150	MEOH	04/30/12
B	1917-2	SIM PNA	15/75	ACETONE	05/30/12
C	NA	SIM ABN	25/37.5	MEOH	NA
D	1907-4	LOW PCB	0.2	ACETONE	12/16/11
E	1900-2	HERB	62.5	MEOH	10/06/12
F	1896-2	PCP	12.5	ACETONE	12/09/11
G	1906-3	d8-DIOXANE	100	MEOH	04/30/12
H	1847-2	OP-PEST	25	ACETONE	03/23/12
I	1896-3	LOW S. PNA	1.5	ACETONE	09/22/12
J	1915-4	TBT-PORE	0.125	MECL2	11/23/12
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1915-3	TBT	2.5	MECL2	11/23/12
M	1888-4	EPH	1500	MECL2	04/04/12
N	1914-2	PCB	2	ACETONE	05/28/12
O	1914-4	TPH	450	MECL2	02/04/12
P	1895-4	HCID	2250	MECL2	02/04/12
Q	NA	EDB	1	MEOH	NA
R	1886-3	RESIN ACID	250	ACETONE	02/19/12
S	1864-1	PBDE	.5	MEOH	05/21/12
T	1884-2	ALKYL PNA	10	MEOH	07/15/12
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11

TZ50 : 00015

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
LCS Spike Recovery [8]				
Phenol [3]	50 - **100**	43 - 103	16 - **100**	6 - **100**
Bis-(2-chloroethyl) ether	52 - **100**	45 - 105	41 - 112	29 - 124
2-Chlorophenol	56 - **100**	49 - 103	43 - 111	32 - 122
1,3-Dichlorobenzene	23 - **100**	15 - **100**	32 - **100**	22 - 103
1,4-Dichlorobenzene	25 - **100**	17 - **100**	32 - **100**	22 - 103
Benzyl Alcohol	19 - 100	**10** - 114	22 - 100	9 - 113
1,2-Dichlorobenzene	30 - **100**	22 - **100**	34 - **100**	24 - 104
2-Methylphenol	52 - **100**	44 - 106	36 - 110	24 - 122
2,2'-oxybis(1-chloropropane)	32 - 111	19 - 124	29 - 118	14 - 133
4-Methylphenol	53 - 102	45 - 110	38 - 104	27 - 115
N-Nitroso-di-n-propylamine	43 - 104	33 - 114	38 - 115	25 - 128
Hexachloroethane	12 - **100**	**10** - **100**	24 - **100**	13 - 100
Nitrobenzene	33 - 125	18 - 140	45 - 106	35 - 116
Isophorone	57 - 115	47 - 125	55 - 119	44 - 130
2-Nitrophenol	56 - 102	48 - 110	46 - 118	34 - 130
2,4-Dimethyphenol	29 - **100**	20 - **100**	28 - 105	15 - 118
Bis-(2-chloroethoxy) methane	54 - 101	46 - 109	44 - 118	32 - 130
Benzoic Acid [3]	**10** - 131	**10** - 151	11 - **100**	**10** - **100**
2,4-Dichlorophenol	56 - 104	48 - 112	43 - 121	30 - 134
1,2,4-Trichlorobenzene	27 - **100**	18 - **100**	35 - **100**	25 - 107
Naphthalene	45 - **100**	38 - **100**	36 - 111	24 - 124
4-Chloroaniline [3]	**10** - 139	**10** - 161	10 - 174	**10** - 201
2-Chloronaphthalene	45 - **100**	37 - 105	39 - 118	26 - 131
Hexachlorobutadiene	**10** - **100**	**10** - **100**	24 - **100**	12 - 108
4-Chloro-3-methylphenol	53 - 109	44 - 118	45 - 122	32 - 135
2-Methylnaphthalene	46 - **100**	38 - 100	45 - 103	35 - 113
Hexachlorocyclopentadiene	**10** - **100**	**10** - **100**	23 - 108	**10** - 122
2,4,6-Trichlorophenol	58 - 108	50 - 116	48 - 122	36 - 134
2,4,5-Trichlorophenol	58 - 107	50 - 115	48 - 122	36 - 134
2-Nitroaniline	50 - 107	41 - 117	48 - 118	36 - 130
Dimethylphthalate	58 - 107	50 - 115	50 - 120	38 - 132
Acenaphthylene	57 - 100	50 - 107	50 - 119	39 - 131
2,6-Dinitrotoluene	58 - 112	49 - 121	48 - 133	34 - 147
3-Nitroaniline [3]	21 - 150	**10** - 172	54 - 140	40 - 154
Acenaphthene	51 - **100**	43 - 106	41 - 120	28 - 133
2,4-Dinitrophenol	12 - 169	**10** - 195	23 - 176	**10** - 202

TZ50:00016

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME [1,2]	Separatory Funnel [1]	Separatory Funnel - ME [1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Dibenzofuran	57 - 100	50 - 107	51 - 114	41 - 125
4-Nitrophenol [3]	35 - 119	21 - 133	13 - **100**	**10** - **100**
2,4-Dinitrotoluene	58 - 117	48 - 127	51 - 134	37 - 148
Fluorene	56 - 104	48 - 112	50 - 120	38 - 132
Diethylphthlalate	52 - 111	42 - 121	48 - 122	36 - 134
4-Chlorophenyl-phenyl ether	55 - 104	47 - 112	50 - 118	39 - 129
4-Nitroaniline	49 - 112	39 - 123	42 - 136	26 - 152
4,6-Dinitro-2-Methylphenol	13 - 139	**10** - 160	32 - 121	17 - 136
N-Nitrosodiphenylamine	60 - 136	47 - 149	58 - 141	44 - 155
4-Bromophenyl-phenyl ether	55 - 103	47 - 111	50 - 122	38 - 134
Hexachlorobenzene	54 - 106	45 - 115	47 - 125	34 - 138
Pentachlorophenol	46 - 114	35 - 125	35 - 130	19 - 146
Phenanthrene	56 - 102	48 - 110	49 - 120	37 - 132
Anthracene	56 - 101	49 - 109	53 - 116	43 - 127
Carbazole	60 - 108	52 - 116	57 - 122	46 - 133
Di-n-butylphthalate	56 - 112	47 - 121	57 - 121	46 - 132
Fluoranthene	57 - 110	48 - 119	56 - 119	46 - 130
Pyrene	48 - 119	36 - 131	37 - 143	19 - 161
Butylbenzylphthalate	51 - 114	41 - 125	34 - 152	14 - 172
Benzo(a)Anthracene	55 - 105	47 - 113	49 - 129	36 - 142
3,3'-Dichlorbenzidine [3]	**10** - 128	**10** - 148	50 - 128	37 - 141
Chrysene	55 - 104	47 - 112	45 - 128	31 - 142
bis(2-Ethylhexyl) phthalate	28 - 164	**10** - 187	57 - 133	44 - 146
Di-n-octylphthalate	57 - 107	49 - 115	52 - 120	41 - 131
Benzofluoranthene(s) (Total)	30 - 160 [10]	30 - 160 [10]	30 - 160 [10]	30 - 160 [10]
Benzo(a)Pyrene	45 - 103	35 - 113	46 - 109	36 - 120
Indeno(1,2,3-cd)Pyrene	35 - 118	21 - 132	34 - 136	17 - 153
Dibenz(a,h)anthracene	42 - 119	29 - 132	41 - 134	26 - 150
Benzo(g,h,i)Perylene	39 - 123	25 - 137	41 - 133	26 - 148
Aniline [3]	**10** - **100**	**10** - **100**	28 - 126	12 - 142
1,2-Diphenylhydrazine /Azobenzene	57 - 109	48 - 118	55 - 119	44 - 130
N-Nitrosodimethylamine	49 - **100**	41 - 104	31 - **100**	21 - 105
1-Methylnaphthalene	46 - **100**	37 - 107	43 - 115	31 - 127
1,4-Dioxane	40 - **100**	30 - 108	30 - 160 [4]	30 - 160 [4]
Pyridine	-	-	25 - **100**	15 - **100**
Tributyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Dibutyl Phenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]

TZ50 : 00017

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Butyl Diphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Triphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Butylated Hydroxytoluene (BHT)	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
MB / LCS Surrogate Recovery				
d4-2-Chlorophenol	53 - 100	(5)	49 - 101	(5)
d4-1,2-Dichlorobenzene	38 - **100**	(5)	40 - **100**	(5)
2,4,6-Tribromophenol	52 - 123	(5)	51 - 122	(5)
2-Fluorophenol	46 - **100**	(5)	31 - **100**	(5)
d5-Phenol [3]	50 - 100	52 - 108	19 - **100**	12 - **100**
d5-Nitrobenzene	46 - 100	(5)	46 - 101	(5)
2-Fluorobiphenyl	49 - **100**	(5)	49 - 103	(5)
d14-p-Terphenyl	53 - 119	(5)	49 - 130	(5)
d8-1,4-Dioxane	45 - **100**	(5)	30 - 160 [4]	(5)
Sample Surrogate Recovery				
d4-2-Chlorophenol	44 - **100**	(5)	23 - 104	(5)
d4-1,2-Dichlorobenzene	32 - **100**	(5)	22 - **100**	(5)
2,4,6-Tribromophenol	48 - 118	(5)	22 - 125	(5)
2-Fluorophenol	38 - **100**	(5)	18 - **100**	(5)
d5-Phenol	41 - **100**	32 - 104	**10 - 100**	17 - **100**
d5-Nitrobenzene	39 - **100**	(5)	21 - 106	(5)
2-Fluorobiphenyl	42 - **100**	(5)	26 - 104	(5)
d14-p-Terphenyl	26 - 114	(5)	11 - 132	(5)
d8-1,4-Dioxane	32 - **100**	(5)	30 - 160 [4]	(5)

(1) Control Limits calculated using all data generated 1/1/07 through 12/1/07.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard [6] as beyond the CL but still within the ME limits. ARI defines ME limits as between 3 and 4 standard deviations around the mean with upper limit ≥ 100%. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances in an analysis require corrective action.
(3) These are "**poor performers**" defined in the DoD QSM[7] as compounds that "produce low mean recoveries and high standard deviations, resulting in wide LCS control limits with particularly low lower control limits (sometimes-negative values). ARI does not control batch acceptance based on these compounds since there is a high level of uncertainty in their recovery."
(4) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. **DO NOT** use these limits as the sole reason to reject the data from a batch of analyses.
(5) Marginal Exceedances not allowed for surrogate unless it is a "poor performer".
(6) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(7) Page 182 of: **Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3 Final, March 2005** Prepared By Environmental Data Quality Workgroup, Department of Navy, Lead Service (Based On National Environmental Laboratory Accreditation Conference (NELAC) Chapter 5 (Quality Systems) NELAC Voted Version – 5 June 2003
(8) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(9) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(10) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

TZ50 : 00018

Quality Control Parameters for Metals Analysis using ICP-OES

	Aqueous Samples[2]			Spike Recovery		RPD[5]	Solids[3]	Tissue[4]
Analyte	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ mg/kg	LOQ mg/kg
Aluminum	7.57	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Antimony	6.28	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Arsenic	3.33	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Barium	1.33	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Beryllium	0.16	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Boron	7.39	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Cadmium	0.18	0.5	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Calcium	11.27	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Chromium	1.24	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Cobalt	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Copper	0.92	1.0	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Iron	7.50	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Lead	1.55	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Magnesium	9.61	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Manganese	0.28	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Molybdenum	0.79	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Nickel	3.86	5.0	**10**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Potassium	65.70	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Selenium	4.99	25	**50**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Silicon	8.17	30	**60**	75 – 125	80 – 120	≤ 20	**(6)**	**(6)**
Silver	0.43	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Sodium	11.35	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Strontium	0.09	1.0	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Thallium	3.10	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Tin	1.41	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**
Titanium	2.11	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Vanadium	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Zinc	1.45	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Tissue is reported on an "as received" (wet weight) basis using 2.5 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

(6) ARI does not analyze for Silicon in solids or tissue samples

TZ50 : 00019

Quality Control Parameters for Metals Analysis using ICP-MS

Analyte	Mass	Aqueous Samples[2]			Spike Recovery		RPD[4]	Solids[3]
		DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ[1] mg/kg
Aluminum	27	1.601	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Antimony	121	0.010	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
	123	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #1	75	0.048	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #2	75	0.092	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Barium	135	0.020	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	137	0.019	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Beryllium	9	0.021	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Cadmium	111	0.010	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
	114	0.005	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Calcium	43	3.983	25	**50.0**	75 – 125	80 – 120	≤ 20	**50.0**
Chromium	52	0.045	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	53	0.118	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Cobalt	59	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Copper	63	0.158	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	65	0.236	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Iron	54	5.753	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
	57	3.876	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Lead	208	0.046	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Magnesium	24	0.297	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Manganese	55	0.022	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Molybdenum	98	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Nickel	60	0.079	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	62	0.089	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Potassium	39	2.944	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Selenium	82	0.127	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	78	0.324	0.25	**2.0**	75 – 125	80 – 120	≤ 20	**2.0**
Silver	107	0.008	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Sodium	23	2.833	50	**100.0**	75 – 125	80 – 120	≤ 20	**100.0**
Thorium	232	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Thallium	205	0.004	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Uranium	238	0.003	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Vanadium	51	0.043	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Zinc	66	0.497	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	67	0.531	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	68	0.524	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

TZ50 : 00020

Quality Control Parameters for Mercury Analysis using CVAA

	Aqueous Samples[2]			Spike Recovery		RPD[5]
	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS	
Mercury	0.0069	0.05	**0.10**[2]	75 – 125	80 – 120	≤ 20
Mercury (low level)	0.0026	0.01	**0.02**[3]	75 – 125	80 – 120	≤ 20
	Soil / Sediment / Tissue[4] Samples			**Spike Recovery**		**RPD[5]**
	DL[1] mg/kg	**LOD[1] mg/kg**	**LOQ[1] mg/kg**	**Matrix Spike**	**LCS**	
Mercury	0.0021	0.0125	**0.025**[3,4]	75 – 125	80 – 120	≤ 20

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 20 mL sample with 20 mL final volume
(3) 0.2 g sample with 50 mL final volume assuming 100% dry weight. Soil and sediment are reported on a dry weight basis.
(4) Tissue LOQ is 0.005 mg/kg as received (wet weight) based on 1 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

TZ50 : 00021

Semivolatile Analysis
Report and Summary QC Forms

ARI Job ID: TZ50

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-2D-113011
SAMPLE

Lab Sample ID: TZ50A
LIMS ID: 11-27697
Matrix: Water
Data Release Authorized:
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 15:15
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	68.8%
2-Fluorophenol	67.2%
2,4,6-Tribromophenol	82.4%
d4-2-Chlorophenol	70.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-2S-113011**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ50B
LIMS ID: 11-27698
Matrix: Water
Data Release Authorized:
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 15:48
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	65.3%
2-Fluorophenol	60.8%
2,4,6-Tribromophenol	81.1%
d4-2-Chlorophenol	64.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-24-113011**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ50C
LIMS ID: 11-27699
Matrix: Water
Data Release Authorized:
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 16:21
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	78.9%
2-Fluorophenol	75.2%
2,4,6-Tribromophenol	88.0%
d4-2-Chlorophenol	78.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-21-113011
SAMPLE

Lab Sample ID: TZ50D
LIMS ID: 11-27700
Matrix: Water
Data Release Authorized:
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 16:54
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	74.1%
2-Fluorophenol	71.7%
2,4,6-Tribromophenol	82.9%
d4-2-Chlorophenol	75.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-20-113011
SAMPLE

Lab Sample ID: TZ50F
LIMS ID: 11-27702
Matrix: Water
Data Release Authorized: MW
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 17:26
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	75.5%
2-Fluorophenol	70.4%
2,4,6-Tribromophenol	87.2%
d4-2-Chlorophenol	74.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-18-113011
SAMPLE

Lab Sample ID: TZ50G
LIMS ID: 11-27703
Matrix: Water
Data Release Authorized:
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 17:59
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	70.7%
2-Fluorophenol	67.5%
2,4,6-Tribromophenol	80.0%
d4-2-Chlorophenol	71.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-6S-113011**
 SAMPLE

Lab Sample ID: TZ50I
LIMS ID: 11-27705
Matrix: Water
Data Release Authorized:
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 18:32
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	72.0%
2-Fluorophenol	68.8%
2,4,6-Tribromophenol	80.8%
d4-2-Chlorophenol	73.3%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ50-ERM-West
Project: RG
128296

Client ID	PHL	2FP	TBP	2CP	TOT OUT
MB-120511	76.5%	71.5%	78.1%	76.0%	0
LCS-120511	65.9%	59.5%	84.3%	64.3%	0
LCSD-120511	74.9%	70.4%	92.0%	72.8%	0
MW-2D-113011	68.8%	67.2%	82.4%	70.4%	0
MW-2S-113011	65.3%	60.8%	81.1%	64.3%	0
MW-24-113011	78.9%	75.2%	88.0%	78.9%	0
MW-21-113011	74.1%	71.7%	82.9%	75.7%	0
MW-20-113011	75.5%	70.4%	87.2%	74.1%	0
MW-18-113011	70.7%	67.5%	80.0%	71.2%	0
MW-6S-113011	72.0%	68.8%	80.8%	73.3%	0

	LCS/MB LIMITS	QC LIMITS
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27697 to 11-27705

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: LCS-120511**
Page 1 of 1 **LCS/LCSD**

Lab Sample ID: LCS-120511 QC Report No: TZ50-ERM-West
LIMS ID: 11-27697 Project: RG
Matrix: Water 128296
Data Release Authorized: Date Sampled: 11/30/11
Reported: 12/09/11 Date Received: 11/30/11

Date Extracted LCS/LCSD: 12/05/11 Sample Amount LCS: 500 mL
LCSD: 500 mL
Date Analyzed LCS: 12/08/11 14:09 Final Extract Volume LCS: 0.50 mL
LCSD: 12/08/11 14:42 LCSD: 0.50 mL
Instrument/Analyst LCS: NT6/JZ Dilution Factor LCS: 1.00
LCSD: NT6/JZ LCSD: 1.00
GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Phenol	18.8	25.0	75.2%	22.2	25.0	88.8%	16.6%
2-Chlorophenol	17.7	25.0	70.8%	20.9	25.0	83.6%	16.6%
2,4-Dichlorophenol	50.0	75.0	66.7%	57.2	75.0	76.3%	13.4%
2,4,6-Trichlorophenol	54.5	75.0	72.7%	63.0	75.0	84.0%	14.5%
2,4,5-Trichlorophenol	55.5	75.0	74.0%	64.8	75.0	86.4%	15.5%
Pentachlorophenol	64.0	75.0	85.3%	72.3	75.0	96.4%	12.2%
2,3,4,6-Tetrachlorophenol	23.0	25.0	92.0%	25.4	25.0	102%	9.9%

Semivolatile Surrogate Recovery

	LCS	LCSD
d5-Phenol	65.9%	74.9%
2-Fluorophenol	59.5%	70.4%
2,4,6-Tribromophenol	84.3%	92.0%
d4-2-Chlorophenol	64.3%	72.8%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ50MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Lab File ID: 12081103 Date Extracted: 12/05/11

Instrument ID: NT6 Date Analyzed: 12/08/11

Matrix: LIQUID Time Analyzed: 1336

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ50LCSW1	TZ50LCSW1	12081104	12/08/11
02	TZ50LCSDW1	TZ50LCSDW1	12081105	12/08/11
03	MW-2D-113011	TZ50A	12081106	12/08/11
04	MW-2S-113011	TZ50B	12081107	12/08/11
05	MW-24-113011	TZ50C	12081108	12/08/11
06	MW-21-113011	TZ50D	12081109	12/08/11
07	MW-20-113011	TZ50F	12081110	12/08/11
08	MW-18-113011	TZ50G	12081111	12/08/11
09	MW-6S-113011	TZ50I	12081112	12/08/11
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-120511
METHOD BLANK

Lab Sample ID: MB-120511
LIMS ID: 11-27697
Matrix: Water
Data Release Authorized:
Reported: 12/09/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

Date Extracted: 12/05/11
Date Analyzed: 12/08/11 13:36
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	76.5%
2-Fluorophenol	71.5%
2,4,6-Tribromophenol	78.1%
d4-2-Chlorophenol	76.0%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 11/21/11 DFTPP Injection Time: 1033

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.9
68	Less than 2.0% of mass 69	0.3 (0.6)1
69	Mass 69 relative abundance	41.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	51.6
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	22.7
365	Greater than 1.0% of mass 198	2.28
441	0.0 - 24.0% of mass 442	11.1 (14.4)2
442	50.0 - 200.0% of mass 198	76.8
443	15.0 - 24.0% of mass 442	15.1 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC11121	IC11121	11211102	11/21/11	1124
02	IC51121	IC51121	11211103	11/21/11	1157
03	IC101121	IC101121	11211104	11/21/11	1230
04	IC401121	IC401121	11211105	11/21/11	1320
05	IC601121	IC601121	11211106	11/21/11	1353
06	IC801121	IC801121	11211107	11/21/11	1426
07	IC251121	IC250121	11211109	11/21/11	1737
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ50:00034

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG

DFTPP Injection Date: 12/08/11 DFTPP Injection Time: 1221

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	39.6
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	10.0 - 80.0% of mass 198	49.0
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.3
275	10.0 - 60.0% of mass 198	21.9
365	Greater than 1.0% of mass 198	2.22
441	0.0 - 24.0% of mass 442	12.1 (14.6)2
442	50.0 - 200.0% of mass 198	82.9
443	15.0 - 24.0% of mass 442	15.4 (18.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1208	CC1208	12081102	12/08/11	1253
02	TZ50MBW1	TZ50MBW1	12081103	12/08/11	1336
03	TZ50LCSW1	TZ50LCSW1	12081104	12/08/11	1409
04	TZ50LCSDW1	TZ50LCSDW1	12081105	12/08/11	1442
05	MW-2D-113011	TZ50A	12081106	12/08/11	1515
06	MW-2S-113011	TZ50B	12081107	12/08/11	1548
07	MW-24-113011	TZ50C	12081108	12/08/11	1621
08	MW-21-113011	TZ50D	12081109	12/08/11	1654
09	MW-20-113011	TZ50F	12081110	12/08/11	1726
10	MW-18-113011	TZ50G	12081111	12/08/11	1759
11	MW-6S-113011	TZ50I	12081112	12/08/11	1832
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	RRF	%RSD /R^2
Phenol	2.046	1.795	1.782	1.677	1.628	1.542	1.504	1.710	10.8
Bis(2-Chloroethyl)ether	1.582	1.343	1.489	1.368	1.347	1.304	1.290	1.389	7.7
2-Chlorophenol	1.675	1.408	1.453	1.395	1.346	1.287	1.255	1.403	9.9
1,3-Dichlorobenzene	1.828	1.568	1.759	1.631	1.573	1.502	1.461	1.617	8.3
1,4-Dichlorobenzene	1.834	1.581	1.743	1.617	1.530	1.497	1.436	1.605	8.7
1,2-Dichlorobenzene	1.761	1.496	1.614	1.516	1.428	1.378	1.364	1.508	9.3
Benzyl alcohol	0.890	0.850	0.928	0.863	0.829	0.822	0.831	0.859	4.5
2,2'-oxybis(1-Chloropropane)	1.340	1.123	1.212	1.115	1.072	1.030	0.993	1.126	10.4
2-Methylphenol	1.488	1.327	1.302	1.250	1.219	1.168	1.100	1.265	9.9
Hexachloroethane	0.682	0.585	0.657	0.625	0.606	0.596	0.584	0.619	6.1
N-Nitroso-di-n-propylamine	1.090	0.950	1.005	0.927	0.882	0.878	0.837	0.938	9.2
4-Methylphenol	1.567	1.356	1.352	1.252	1.212	1.181	1.095	1.288	12.0
Nitrobenzene	0.441	0.378	0.428	0.396	0.379	0.363	0.354	0.391	8.3
Isophorone	0.652	0.568	0.635	0.584	0.563	0.567	0.545	0.588	6.8
2-Nitrophenol	0.190	0.181	0.192	0.198	0.192	0.190	0.187	0.190	2.7
2,4-Dimethylphenol	0.399	0.352	0.357	0.347	0.330	0.322	0.310	0.345	8.4
Bis(2-Chloroethoxy)methane	0.471	0.421	0.468	0.435	0.412	0.408	0.400	0.431	6.7
2,4-Dichlorophenol	0.318	0.293	0.300	0.296	0.280	0.273	0.261	0.289	6.6
1,2,4-Trichlorobenzene	0.368	0.310	0.347	0.325	0.307	0.303	0.296	0.322	8.2
Naphthalene	1.178	1.014	1.090	0.992	0.920	0.870	0.814	0.982	12.9
Benzoic acid		0.120	0.164	0.214	0.212	0.239	0.230	0.196	0.992
4-Chloroaniline	0.454	0.417	0.435	0.399	0.366	0.358	0.320	0.393	12.1
Hexachlorobutadiene	0.193	0.165	0.186	0.180	0.165	0.166	0.165	0.174	6.8
4-Chloro-3-methylphenol	0.307	0.288	0.282	0.275	0.262	0.271	0.248	0.276	6.8
2-Methylnaphthalene	0.621	0.531	0.563	0.518	0.478	0.481	0.446	0.520	11.4
Hexachlorocyclopentadiene	0.239	0.256	0.338	0.361	0.358	0.345	0.375	0.324	16.7
2,4,6-Trichlorophenol	0.320	0.312	0.346	0.351	0.343	0.341	0.340	0.336	4.3
2,4,5-Trichlorophenol	0.330	0.320	0.362	0.373	0.360	0.361	0.363	0.353	5.6
2-Chloronaphthalene	1.301	1.086	1.198	1.110	1.029	0.949	0.943	1.088	12.0
2-Nitroaniline	0.247	0.266	0.295	0.281	0.269	0.280	0.266	0.272	5.6
Acenaphthylene	1.786	1.610	1.787	1.664	1.561	1.492	1.445	1.621	8.3
Dimethylphthalate	1.323	1.124	1.212	1.122	1.057	1.097	1.064	1.143	8.3
2,6-Dinitrotoluene	0.234	0.248	0.279	0.271	0.255	0.272	0.262	0.260	6.0
Acenaphthene	1.213	1.012	1.098	1.035	0.964	0.951	0.924	1.028	9.8
3-Nitroaniline	0.293	0.280	0.292	0.270	0.248	0.227		0.268	9.8
2,4-Dinitrophenol		0.060	0.099	0.143	0.140	0.163	0.158	0.127	0.995
Dibenzofuran	1.704	1.471	1.541	1.419	1.315	1.298	1.204	1.422	11.9

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-1

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	___ RRF	%RSD /R^2
4-Nitrophenol	0.066	0.109	0.112	0.127	0.117	0.129	0.117	0.111	19.2
2,4-Dinitrotoluene	0.310	0.315	0.353	0.349	0.328	0.368	0.345	0.338	6.3
Fluorene	1.346	1.162	1.250	1.170	1.074	1.083	1.029	1.159	9.5
4-Chlorophenyl-phenylether	0.668	0.548	0.600	0.565	0.530	0.536	0.516	0.566	9.3
Diethylphthalate	1.263	1.088	1.145	1.067	0.990	1.031	0.971	1.079	9.3
4-Nitroaniline	0.240	0.268	0.269	0.271	0.242	0.279	0.246	0.259	6.2
4,6-Dinitro-2-methylphenol		0.104	0.123	0.142	0.140	0.142	0.145	0.133	12.0
N-Nitrosodiphenylamine (1)	0.697	0.598	0.658	0.597	0.589	0.554	0.568	0.609	8.4
4-Bromophenyl-phenylether	0.252	0.203	0.238	0.215	0.214	0.202	0.210	0.219	8.6
Hexachlorobenzene	0.264	0.220	0.248	0.228	0.223	0.210	0.217	0.230	8.3
Pentachlorophenol		0.079	0.110	0.117	0.122	0.129	0.130	0.114	16.5
Phenanthrene	1.306	1.096	1.165	1.076	1.017	0.962	0.947	1.081	11.6
Anthracene	1.262	1.117	1.215	1.126	1.059	0.993	0.984	1.108	9.5
Carbazole	1.122	1.038	1.095	1.047	0.963	0.951	0.916	1.019	7.6
Di-n-butylphthalate	1.220	1.155	1.248	1.218	1.118	1.088	1.056	1.158	6.4
Fluoranthene	1.098	1.046	1.090	1.062	0.972	0.968	0.951	1.027	6.0
Pyrene	1.517	1.207	1.344	1.210	1.183	1.116	1.090	1.238	11.9
Butylbenzylphthalate	0.485	0.496	0.567	0.559	0.549	0.542	0.534	0.533	5.8
Benzo(a)anthracene	1.044	0.938	1.042	0.994	0.966	0.922	0.913	0.974	5.6
3,3'-Dichlorobenzidine	0.322	0.334	0.357	0.341	0.320	0.286	0.277	0.320	9.1
Chrysene	1.162	0.950	1.057	1.012	0.969	0.934	0.929	1.002	8.4
bis(2-Ethylhexyl)phthalate	0.615	0.538	0.612	0.607	0.594	0.585	0.586	0.591	4.4
Di-n-octylphthalate	1.192	0.962	1.061	1.038	0.988	0.978	0.962	1.026	8.1
Benzo(b)fluoranthene	1.041	0.998	1.057	1.058	1.053	1.000	1.007	1.030	2.7
Benzo(k)fluoranthene	1.261	1.058	1.255	1.092	1.011	0.946	0.903	1.075	13.0
Benzo(a)pyrene	0.926	0.882	0.993	0.956	0.934	0.893	0.893	0.925	4.3
Indeno(1,2,3-cd)pyrene	1.249	1.102	1.325	1.269	1.241	1.177	1.231	1.228	5.8
Dibenzo(a,h)anthracene	1.016	0.916	1.088	1.064	1.018	0.965	0.998	1.009	5.7
Benzo(g,h,i)perylene	1.094	0.968	1.157	1.103	1.103	1.058	1.108	1.084	5.4
N-Nitrosodimethylamine	0.953	0.886	1.001	0.951	0.959	0.934	0.950	0.948	3.6
Aniline	2.291	2.084	2.213	2.022	1.955	1.884	1.752	2.029	9.2
Benzidine		0.092	0.176	0.217	0.248	0.239	0.252	0.204	0.992
Pyridine	1.564	1.631	1.863	1.811	1.771	1.760	1.742	1.734	6.0
1-methylnaphthalene	0.599	0.531	0.555	0.519	0.473	0.485	0.448	0.516	10.0
Azobenzene (1,2-DP-Hydrazine	1.372	1.231	1.322	1.242	1.151	1.159	1.096	1.225	8.0
2,3,4,6-Tetrachlorophenol	0.201	0.214	0.229	0.246	0.238	0.253	0.243	0.232	8.1
1,2,4,5-Tetrachlorobenzene	0.530	0.463	0.526	0.500	0.477	0.452	0.476	0.489	6.2

(1) Cannot be seperated from Diphenylamine

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-2

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	RRF	%RSD /R^2
Total Benzofluoranthenes	1.094	0.982	1.099	1.022	0.985	0.921	0.898	1.000	7.8
2-Fluorophenol	1.558	1.439	1.559	1.465	1.394	1.361		1.463	5.6
Phenol-d5	2.012	1.839	1.911	1.729	1.669	1.638		1.800	8.1
2-Chlorophenol-d4	1.543	1.393	1.498	1.381	1.333	1.302		1.408	6.7
1,2-Dichlorobenzene-d4	1.124	0.997	1.030	0.944	0.890	0.858		0.974	10.0
Nitrobenzene-d5	0.414	0.396	0.436	0.417	0.408	0.402		0.412	3.3
2-Fluorobiphenyl	1.483	1.302	1.425	1.318	1.258	1.191		1.330	8.1
2,4,6-Tribromophenol	0.133	0.128	0.146	0.144	0.135	0.149		0.139	6.0
Terphenyl-d14	1.089	0.778	0.826	0.736	0.731	0.708		0.811	17.5

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/08/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1253

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.806	0.800	AVRG	5.6
Bis(2-Chloroethyl)ether	1.389	1.410	0.700	AVRG	1.5
2-Chlorophenol	1.403	1.448	0.800	AVRG	3.2
1,3-Dichlorobenzene	1.617	1.626	0.010	AVRG	0.6
1,4-Dichlorobenzene	1.605	1.640	0.010	AVRG	2.2
1,2-Dichlorobenzene	1.508	1.528	0.010	AVRG	1.3
Benzyl alcohol	0.859	0.943	0.010	AVRG	9.8
2,2'-oxybis(1-Chloropropane)	1.126	1.150	0.010	AVRG	2.1
2-Methylphenol	1.265	1.345	0.700	AVRG	6.3
Hexachloroethane	0.619	0.616	0.300	AVRG	-0.5
N-Nitroso-di-n-propylamine	0.938	1.032	0.500	AVRG	10.0
4-Methylphenol	1.288	1.394	0.600	AVRG	8.2
Nitrobenzene	0.391	0.405	0.200	AVRG	3.6
Isophorone	0.588	0.606	0.400	AVRG	3.1
2-Nitrophenol	0.190	0.201	0.100	AVRG	5.8
2,4-Dimethylphenol	0.345	0.354	0.200	AVRG	2.6
Bis(2-Chloroethoxy)methane	0.431	0.438	0.300	AVRG	1.6
2,4-Dichlorophenol	0.289	0.301	0.200	AVRG	4.2
1,2,4-Trichlorobenzene	0.322	0.317	0.010	AVRG	-1.6
Naphthalene	0.982	0.987	0.700	AVRG	0.5
Benzoic acid	50.00	40.69	0.010	LINR	-18.6
4-Chloroaniline	0.393	0.404	0.010	AVRG	2.8
Hexachlorobutadiene	0.174	0.172	0.010	AVRG	-1.1
4-Chloro-3-methylphenol	0.276	0.295	0.200	AVRG	6.9
2-Methylnaphthalene	0.520	0.535	0.400	AVRG	2.9
Hexachlorocyclopentadiene	0.324	0.314	0.050	AVRG	-3.1
2,4,6-Trichlorophenol	0.336	0.352	0.200	AVRG	4.8
2,4,5-Trichlorophenol	0.353	0.372	0.200	AVRG	5.4
2-Chloronaphthalene	1.088	1.080	0.800	AVRG	-0.7
2-Nitroaniline	0.272	0.293	0.010	AVRG	7.7
Acenaphthylene	1.621	1.693	0.900	AVRG	4.4
Dimethylphthalate	1.143	1.158	0.010	AVRG	1.3
2,6-Dinitrotoluene	0.260	0.286	0.200	AVRG	10.0
Acenaphthene	1.028	1.031	0.900	AVRG	0.3
3-Nitroaniline	0.268	0.280	0.010	AVRG	4.5
2,4-Dinitrophenol	50.00	42.23	0.010	2ORDR	-15.5
Dibenzofuran	1.422	1.445	0.800	AVRG	1.6

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/08/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1253

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.142	0.010	AVRG	27.9	<-
2,4-Dinitrotoluene	0.338	0.377	0.200	AVRG	11.5	
Fluorene	1.159	1.192	0.900	AVRG	2.8	
4-Chlorophenyl-phenylether	0.566	0.582	0.400	AVRG	2.8	
Diethylphthalate	1.079	1.100	0.010	AVRG	1.9	
4-Nitroaniline	0.259	0.276	0.010	AVRG	6.6	
4,6-Dinitro-2-methylphenol	0.133	0.129	0.010	AVRG	-3.0	
N-Nitrosodiphenylamine(1)	0.609	0.609	0.010	AVRG	0.0	
4-Bromophenyl-phenylether	0.219	0.217	0.100	AVRG	-0.9	
Hexachlorobenzene	0.230	0.228	0.100	AVRG	-0.9	
Pentachlorophenol	0.114	0.099	0.050	AVRG	-13.2	
Phenanthrene	1.081	1.080	0.700	AVRG	-0.1	
Anthracene	1.108	1.120	0.700	AVRG	1.1	
Carbazole	1.019	1.008	0.010	AVRG	-1.1	
Di-n-butylphthalate	1.158	1.205	0.010	AVRG	4.0	
Fluoranthene	1.027	1.053	0.600	AVRG	2.5	
Pyrene	1.238	1.319	0.600	AVRG	6.5	
Butylbenzylphthalate	0.533	0.597	0.010	AVRG	12.0	
Benzo(a)anthracene	0.974	1.050	0.800	AVRG	7.8	
3,3'-Dichlorobenzidine	0.320	0.361	0.010	AVRG	12.8	
Chrysene	1.002	1.011	0.700	AVRG	0.9	
bis(2-Ethylhexyl)phthalate	0.591	0.625	0.010	AVRG	5.8	
Di-n-octylphthalate	1.026	1.008	0.010	AVRG	-1.8	
Benzo(b)fluoranthene	1.030	1.133	0.700	AVRG	10.0	
Benzo(k)fluoranthene	1.075	1.126	0.700	AVRG	4.7	
Benzo(a)pyrene	0.925	0.978	0.700	AVRG	5.7	
Indeno(1,2,3-cd)pyrene	1.228	1.208	0.500	AVRG	-1.6	
Dibenzo(a,h)anthracene	1.009	1.010	0.400	AVRG	0.1	
Benzo(g,h,i)perylene	1.084	1.039	0.500	AVRG	-4.2	
N-Nitrosodimethylamine	0.948	0.978	0.010	AVRG	3.2	
Aniline	2.029	1.969	0.010	AVRG	-3.0	
Benzidine	25.00	0.000	0.010	LINR		
Pyridine	1.734	1.726	0.010	AVRG	-0.5	
1-methylnaphthalene	0.516	0.526	0.010	AVRG	1.9	
Azobenzene (1,2-DP-Hydrazine	1.225		0.010	AVRG		
2,3,4,6-Tetrachlorophenol	0.232	0.239	0.010	AVRG	3.0	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Instrument ID: NT6 Cont. Calib. Date: 12/08/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1253

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.478	0.010	AVRG	-2.2
Total Benzofluoranthenes	1.000	1.070	0.010	AVRG	7.0
2-Fluorophenol	1.463	1.472	0.010	AVRG	0.6
Phenol-d5	1.800	1.856	0.010	AVRG	3.1
2-Chlorophenol-d4	1.408	1.446	0.010	AVRG	2.7
1,2-Dichlorobenzene-d4	0.974	0.945	0.010	AVRG	-3.0
Nitrobenzene-d5	0.412	0.411	0.010	AVRG	-0.2
2-Fluorobiphenyl	1.330	1.299	0.010	AVRG	-2.3
2,4,6-Tribromophenol	0.139	0.153	0.010	AVRG	10.1
Terphenyl-d14	0.811	0.820	0.010	AVRG	1.1

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/08/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	440384	7.85	1706310	9.90	965059	12.78
	UPPER LIMIT		8.35		10.40		13.28
	LOWER LIMIT		7.35		9.40		12.28
01	TZ50MBW1	490051	7.85	1880912	9.90	1109992	12.77
02	TZ50LCSW1	482458	7.85	1867241	9.90	1079639	12.78
03	TZ50LCSDW1	511187	7.85	1942782	9.90	1088570	12.78
04	MW-2D-113011	471406	7.85	1787839	9.90	1029649	12.77
05	MW-2S-113011	540203	7.85	2079413	9.90	1265776	12.77
06	MW-24-113011	460116	7.85	1772209	9.90	1037709	12.77
07	MW-21-113011	460355	7.85	1759596	9.90	1018592	12.77
08	MW-20-113011	510741	7.85	1983340	9.90	1193495	12.77
09	MW-18-113011	494741	7.85	1901533	9.90	1111257	12.77
10	MW-6S-113011	491987	7.85	1891270	9.90	1131586	12.77
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/08/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1410135	15.15	1151923	19.47	1020472	21.63
	UPPER LIMIT		15.65		19.97		22.13
	LOWER LIMIT		14.65		18.97		21.13
01	TZ50MBW1	1601976	15.15	1313939	19.47	1081803	21.63
02	TZ50LCSW1	1553822	15.15	1242224	19.47	1073565	21.63
03	TZ50LCSDW1	1589612	15.15	1269560	19.47	1111431	21.63
04	MW-2D-113011	1476207	15.15	1235592	19.47	1071942	21.63
05	MW-2S-113011	1910260	15.15	1855401	19.47	1584836	21.63
06	MW-24-113011	1498595	15.15	1231392	19.47	1049596	21.63
07	MW-21-113011	1451911	15.15	1244557	19.47	1084226	21.62
08	MW-20-113011	1731549	15.15	1434904	19.47	1181841	21.63
09	MW-18-113011	1578125	15.15	1305268	19.47	1115096	21.63
10	MW-6S-113011	1636910	15.15	1380073	19.47	1143216	21.63
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ50 Project: RG

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/08/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1512284	20.64				
	UPPER LIMIT		21.14				
	LOWER LIMIT		20.14				
01	TZ50MBW1	1679967	20.64				
02	TZ50LCSW1	1622858	20.64				
03	TZ50LCSDW1	1679257	20.64				
04	MW-2D-113011	1706694	20.64				
05	MW-2S-113011	2535335*	20.64				
06	MW-24-113011	1686402	20.64				
07	MW-21-113011	1686246	20.64				
08	MW-20-113011	1968311	20.63				
09	MW-18-113011	1794774	20.63				
10	MW-6S-113011	1885536	20.64				
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

Metals Analysis
Report and Summary QC Forms

ARI Job ID: TZ50

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-2D-113011	TZ50A	11-27697	
MW-2S-113011	TZ50B	11-27698	
MW-24-113011	TZ50C	11-27699	
MW-24-113011D	TZ50CDUP	11-27699	
MW-24-113011S	TZ50CSPK	11-27699	
MW-21-113011	TZ50D	11-27700	
DUP-113011-1	TZ50E	11-27701	
MW-20-113011	TZ50F	11-27702	
PBW	TZ50MB1	11-27702	
LCSW	TZ50MB1SPK	11-27702	
MW-18-113011	TZ50G	11-27703	
DUP-113011-2	TZ50H	11-27704	
MW-6S-113011	TZ50I	11-27705	
MW-2D-113011	TZ50J	11-27706	
MW-2S-113011	TZ50K	11-27707	
MW-24-113011	TZ50L	11-27708	
MW-24-113011D	TZ50LDUP	11-27708	
MW-24-113011S	TZ50LSPK	11-27708	
MW-21-113011	TZ50M	11-27709	
DUP-113011-1	TZ50N	11-27710	
PBW	TZ50MB2	11-27711	

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/13/11 Title: Inorganics Director

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
LCSW	TZ50MB2SPK	11-27711	
MW-20-113011	TZ50O	11-27711	
MW-18-113011	TZ50P	11-27712	
DUP-113011-2	TZ50Q	11-27713	
MW-6S-113011	TZ50R	11-27714	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/8/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-2D-113011
SAMPLE

Lab Sample ID: TZ50A
LIMS ID: 11-27697
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.5	**34.3**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-2S-113011
SAMPLE

Lab Sample ID: TZ50B
LIMS ID: 11-27698
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	1	**462**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-24-113011
SAMPLE

Lab Sample ID: TZ50C
LIMS ID: 11-27699
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/09/11	7440-47-3	Chromium	1	1	U
3010A	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	**7440-02-0**	**Nickel**	0.5	**1.1**	
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-21-113011
SAMPLE

Lab Sample ID: TZ50D
LIMS ID: 11-27700
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	2	**1,870**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: DUP-113011-1
SAMPLE

Lab Sample ID: TZ50E
LIMS ID: 11-27701
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	2	**1,820**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-20-113011
SAMPLE

Lab Sample ID: TZ50F
LIMS ID: 11-27702
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	5	**2,770**	
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	**7440-43-9**	**Cadmium**	0.1	**0.2**	
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	**7440-50-8**	**Copper**	2	**3**	
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	**7440-02-0**	**Nickel**	0.5	**1.5**	
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-18-113011**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ50G
LIMS ID: 11-27703
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**3.6**	
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	**7440-02-0**	**Nickel**	0.5	**0.7**	
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: DUP-113011-2
SAMPLE

Lab Sample ID: TZ50H
LIMS ID: 11-27704
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	**7440-47-3**	**Chromium**	0.5	**0.5**	
3010A	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	**7440-02-0**	**Nickel**	0.5	**0.7**	
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-6S-113011
SAMPLE

Lab Sample ID: TZ50I
LIMS ID: 11-27705
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**29.0**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-24-113011**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ50C
LIMS ID: 11-27699
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	6010B	50.0 U	1,840	2,000	92.0%	
Arsenic	6020	0.200 U	26.8	25.0	107%	
Beryllium	6020	0.200 U	25.2	25.0	101%	
Cadmium	6020	0.100 U	25.3	25.0	101%	
Chromium	6020	1.25 U	22.4	25.0	89.6%	
Copper	6010B	2.00 U	495	500	99.0%	
Lead	6020	0.100 U	25.8	25.0	103%	
Mercury	7470A	0.100 U	1.13	1.00	113%	
Nickel	6020	1.08	26.8	25.0	103%	
Selenium	6020	0.500 U	80.1	80.0	100%	
Silver	6010B	3.00 U	475	500	95.0%	
Thallium	6020	0.200 U	26.8	25.0	107%	
Zinc	6010B	10.0 U	447	500	89.4%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-24-113011
DUPLICATE

Lab Sample ID: TZ50C
LIMS ID: 11-27699
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Chromium	6020	1 U	1 U	0.0%	+/- 1	L
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	1.1	1.1	0.0%	+/- 0.5	L
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ50LCS
LIMS ID: 11-27702
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	6010B	1950	2000	97.5%	
Arsenic	6020	25.9	25.0	104%	
Beryllium	6020	25.1	25.0	100%	
Cadmium	6020	25.5	25.0	102%	
Chromium	6020	26.2	25.0	105%	
Copper	6010B	505	500	101%	
Lead	6020	26.3	25.0	105%	
Mercury	7470A	2.1	2.0	105%	
Nickel	6020	26.6	25.0	106%	
Selenium	6020	79.4	80.0	99.2%	
Silver	6010B	504	500	101%	
Thallium	6020	27.1	25.0	108%	
Zinc	6010B	470	500	94.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ50MB
LIMS ID: 11-27702
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
3010A	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-02-0	Nickel	0.5	0.5	U
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
3010A	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
3010A	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-2D-113011
SAMPLE

Lab Sample ID: TZ50J
LIMS ID: 11-27706
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.5	**36.6**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-2S-113011
SAMPLE

Lab Sample ID: TZ50K
LIMS ID: 11-27707
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	1	**499**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-24-113011
SAMPLE

Lab Sample ID: TZ50L
LIMS ID: 11-27708
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**0.2**	
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	**7440-02-0**	**Nickel**	0.5	**0.7**	
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-21-113011
SAMPLE

Lab Sample ID: TZ50M
LIMS ID: 11-27709
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	2	**1,850**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: DUP-113011-1
SAMPLE

Lab Sample ID: TZ50N
LIMS ID: 11-27710
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	2	1,800	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-20-113011
SAMPLE

Lab Sample ID: TZ500
LIMS ID: 11-27711
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/09/11	**7440-38-2**	**Arsenic**	5	**2,600**	
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/12/11	**7440-02-0**	**Nickel**	0.5	**0.5**	
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-18-113011
SAMPLE

Lab Sample ID: TZ50P
LIMS ID: 11-27712
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**4.0**	
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/09/11	**7440-02-0**	**Nickel**	0.5	**0.6**	
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: DUP-113011-2
SAMPLE

Lab Sample ID: TZ50Q
LIMS ID: 11-27713
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/09/11	7440-02-0	Nickel	0.5	0.5	U
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-6S-113011
SAMPLE

Lab Sample ID: TZ50R
LIMS ID: 11-27714
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	0.2	**27.9**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-24-113011
MATRIX SPIKE

Lab Sample ID: TZ50L
LIMS ID: 11-27708
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Antimony	6010B	50.0 U	1,820	2,000	91.0%	
Arsenic	6020	0.200	26.5	25.0	105%	
Beryllium	6020	0.200 U	24.0	25.0	96.0%	
Cadmium	6020	0.100 U	25.4	25.0	102%	
Chromium	6020	0.500 U	19.9	25.0	79.6%	
Copper	6010B	2.00 U	476	500	95.2%	
Lead	6020	0.100 U	25.7	25.0	103%	
Mercury	7470A	0.100 U	1.09	1.00	109%	
Nickel	6020	0.680	25.6	25.0	99.7%	
Selenium	6020	0.500 U	78.8	80.0	98.5%	
Silver	6010B	3.00 U	335	500	67.0%	N
Thallium	6020	0.200 U	26.6	25.0	106%	
Zinc	6010B	10.0 U	456	500	91.2%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-24-113011
DUPLICATE

Lab Sample ID: TZ50L
LIMS ID: 11-27708
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: 11/30/11
Date Received: 11/30/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Antimony	6010B	50 U	50 U	0.0%	+/- 50	L
Arsenic	6020	0.2	0.2	0.0%	+/- 0.2	L
Beryllium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Cadmium	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Chromium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Copper	6010B	2 U	2 U	0.0%	+/- 2	L
Lead	6020	0.1 U	0.1 U	0.0%	+/- 0.1	L
Mercury	7470A	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	6020	0.7	0.6	15.4%	+/- 0.5	L
Selenium	6020	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Thallium	6020	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6010B	10 U	10 U	0.0%	+/- 10	L

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: TZ50LCS
LIMS ID: 11-27711
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Antimony	6010B	1890	2000	94.5%	
Arsenic	6020	26.5	25.0	106%	
Beryllium	6020	25.9	25.0	104%	
Cadmium	6020	25.6	25.0	102%	
Chromium	6020	26.6	25.0	106%	
Copper	6010B	488	500	97.6%	
Lead	6020	26.8	25.0	107%	
Mercury	7470A	2.1	2.0	105%	
Nickel	6020	27.2	25.0	109%	
Selenium	6020	80.6	80.0	101%	
Silver	6010B	469	500	93.8%	
Thallium	6020	27.4	25.0	110%	
Zinc	6010B	480	500	96.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: METHOD BLANK

Lab Sample ID: TZ50MB
LIMS ID: 11-27711
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ50-ERM-West
Project: RG
128296
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
6010B	12/05/11	6010B	12/08/11	7440-36-0	Antimony	50	50	U
200.8	12/06/11	6020	12/08/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-41-7	Beryllium	0.2	0.2	U
200.8	12/06/11	6020	12/08/11	7440-43-9	Cadmium	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-50-8	Copper	2	2	U
200.8	12/06/11	6020	12/08/11	7439-92-1	Lead	0.1	0.1	U
7470A	12/05/11	7470A	12/09/11	7439-97-6	Mercury	0.1	0.1	U
200.8	12/06/11	6020	12/08/11	7440-02-0	Nickel	0.5	0.5	U
200.8	12/06/11	6020	12/08/11	7782-49-2	Selenium	0.5	0.5	U
6010B	12/05/11	6010B	12/08/11	7440-22-4	Silver	3	3	U
200.8	12/06/11	6020	12/08/11	7440-28-0	Thallium	0.2	0.2	U
6010B	12/05/11	6010B	12/08/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Antimony	SB	ICP	IP120871	2000.0	2037.38	**101.9**	2000.0	2040.02	**102.0**	1979.19	**99.0**	1977.87	**98.9**	1944.68	**97.2**	1943.19	**97.2**
Arsenic	AS	PMS	MS120881	50.0	51.59	**103.2**	50.0	50.25	**100.5**	50.06	**100.1**	50.18	**100.4**	50.00	**100.0**	49.96	**99.9**
Beryllium	BE	PMS	MS120881	50.0	50.58	**101.2**	50.0	50.02	**100.0**	49.72	**99.4**	49.44	**98.9**	51.75	**103.5**	51.32	**102.6**
Cadmium	CD	PMS	MS120881	50.0	49.68	**99.4**	50.0	50.42	**100.8**	50.07	**100.1**	50.67	**101.3**	49.58	**99.2**	50.37	**100.7**
Chromium	CR	PMS	MS120881	50.0	50.69	**101.4**	50.0	49.55	**99.1**	49.47	**98.9**	49.96	**99.9**	50.22	**100.4**	49.80	**99.6**
Copper	CU	ICP	IP120871	1000.0	1015.83	**101.6**	1000.0	1022.98	**102.3**	1001.57	**100.2**	1000.36	**100.0**	992.59	**99.3**	988.25	**98.8**
Lead	PB	PMS	MS120881	50.0	50.55	**101.1**	50.0	50.24	**100.5**	50.52	**101.0**	50.78	**101.6**	51.38	**102.8**	50.77	**101.5**
Mercury	HG	CVA	HG120901	8.0	7.76	**97.0**	4.0	4.17	**104.3**	4.30	**107.5**	4.21	**105.3**				
Nickel	NI	PMS	MS120881	50.0	51.37	**102.7**	50.0	49.72	**99.4**	49.95	**99.9**	50.32	**100.6**	50.93	**101.9**	50.77	**101.5**
Selenium	SE	PMS	MS120881	80.0	81.88	**102.4**	50.0	50.53	**101.1**	51.00	**102.0**	51.21	**102.4**	49.68	**99.4**	49.70	**99.4**
Silver	AG	ICP	IP120871	1000.0	1005.93	**100.6**	1000.0	1011.24	**101.1**	967.29	**96.7**	970.81	**97.1**	953.38	**95.3**	952.40	**95.2**
Thallium	TL	PMS	MS120881	50.0	52.22	**104.4**	50.0	52.06	**104.1**	52.52	**105.0**	51.87	**103.7**	53.27	**106.5**	52.92	**105.8**
Zinc	ZN	ICP	IP120871	1000.0	972.06	**97.2**	1000.0	986.40	**98.6**	972.26	**97.2**	961.14	**96.1**	949.52	**95.0**	966.30	**96.6**

TZ50 : 00074

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Antimony	SB	ICP	IP120871	2000.0	1937.26	**96.9**	1919.60	**96.0**	1916.12	**95.8**	1901.13	**95.1**				
Arsenic	AS	PMS	MS120881	50.0	50.08	**100.2**	49.67	**99.3**	50.23	**100.5**						
Beryllium	BE	PMS	MS120881	50.0	50.95	**101.9**	48.73	**97.5**	51.40	**102.8**						
Cadmium	CD	PMS	MS120881	50.0	49.95	**99.9**	49.70	**99.4**	50.26	**100.5**						
Chromium	CR	PMS	MS120881	50.0	50.65	**101.3**	50.27	**100.5**	50.99	**102.0**						
Copper	CU	ICP	IP120871	1000.0	979.31	**97.9**	988.79	**98.9**	987.10	**98.7**	979.07	**97.9**				
Lead	PB	PMS	MS120881	50.0	50.68	**101.4**	51.20	**102.4**	51.78	**103.6**						
Mercury	HG	CVA	HG120901	4.0												
Nickel	NI	PMS	MS120881	50.0	51.03	**102.1**	50.38	**100.8**	51.86	**103.7**						
Selenium	SE	PMS	MS120881	50.0	50.95	**101.9**	50.22	**100.4**	50.67	**101.3**						
Silver	AG	ICP	IP120871	1000.0	1628.59	**162.9**	957.21	**95.7**	959.82	**96.0**	952.56	**95.3**				
Thallium	TL	PMS	MS120881	50.0	52.17	**104.3**	52.39	**104.8**	53.71	**107.4**						
Zinc	ZN	ICP	IP120871	1000.0	961.12	**96.1**	953.98	**95.4**	953.40	**95.3**	948.35	**94.8**				

TZ50 : 0005 TS

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS120981	50.0	51.02	102.0	50.0	49.72	99.4	50.29	100.6	50.23	100.5	50.09	100.2	50.01	100.0
Chromium	CR	PMS	MS120981	50.0	50.91	101.8	50.0	49.58	99.2	49.28	98.6	49.88	99.8	49.75	99.5	49.96	99.9
Nickel	NI	PMS	MS120981	50.0	50.57	101.1	50.0	49.69	99.4	49.68	99.4	49.59	99.2	50.79	101.6	49.78	99.6

TZ50 00076

Control Limits: Mercury 80-120; Other Metals 90-110

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Nickel	NI	PMS	MS121281	50.0	51.20	102.4	50.0	49.57	99.1	50.50	101.0	51.39	102.8	51.23	102.5	51.37	102.7

Control Limits: Mercury 80-120; Other Metals 90-110

TZ50 : 60077

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Antimony	SB	ICP	IP120871	50.0	50.90	**101.8**	44.10	**88.2**	44.31	**88.6**						
Arsenic	AS	PMS	MS120881	0.2	0.20	**100.0**										
Beryllium	BE	PMS	MS120881	0.2	0.20	**100.0**										
Cadmium	CD	PMS	MS120881	0.1	0.11	**110.0**										
Chromium	CR	PMS	MS120881	0.5	0.48	**96.0**										
Copper	CU	ICP	IP120871	2.0	2.20	**110.0**	2.14	**107.0**	2.18	**109.0**						
Lead	PB	PMS	MS120881	0.1	0.11	**110.0**										
Mercury	HG	CVA	HG120901	0.1	0.10	**100.0**										
Nickel	NI	PMS	MS120881	0.5	0.61	**122.0**										
Selenium	SE	PMS	MS120881	0.5	0.51	**102.0**										
Silver	AG	ICP	IP120871	3.0	2.97	**99.0**	3.07	**102.3**	2.94	**98.0**						
Thallium	TL	PMS	MS120881	0.2	0.21	**105.0**										
Zinc	ZN	ICP	IP120871	10.0	9.58	**95.8**	9.36	**93.6**	8.84	**88.4**						

TZ50 : 00578

Control Limits: no control limits have been established by the EPA at this time.

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Arsenic	AS	PMS	MS120981	0.2	0.22	110.0										
Chromium	CR	PMS	MS120981	0.5	0.51	102.0										
Nickel	NI	PMS	MS120981	0.5	0.53	106.0										
Nickel	NI	PMS	MS121281	0.5	0.53	106.0										

Control Limits: no control limits have been established by the EPA at this time.

61309 : 0521

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Antimony	SB	ICP	IP120871	60.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U	50.0	U
Arsenic	AS	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Beryllium	BE	PMS	MS120881	5.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Cadmium	CD	PMS	MS120881	5.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chromium	CR	PMS	MS120881	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Lead	PB	PMS	MS120881	3.0	0.1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Mercury	HG	CVA	HG120901	0.2	0.1	0.1	U	0.1	U	0.1	U	0.1	U				
Nickel	NI	PMS	MS120881	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Selenium	SE	PMS	MS120881	5.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Thallium	TL	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

TZ50 : 00086

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS:ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Antimony	SB	ICP	IP120871	60.0	50.0	50.0	U	50.0	U	50.0	U	50.0	U				
Arsenic	AS	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U						
Beryllium	BE	PMS	MS120881	5.0	0.2	0.2	U	0.2	U	0.2	U						
Cadmium	CD	PMS	MS120881	5.0	0.1	0.1	U	0.1	U	0.1	U						
Chromium	CR	PMS	MS120881	10.0	0.5	0.5	U	0.5	U	0.5	U						
Copper	CU	ICP	IP120871	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U				
Lead	PB	PMS	MS120881	3.0	0.1	0.1	U	0.1	U	0.1	U						
Mercury	HG	CVA	HG120901	0.2	0.1												
Nickel	NI	PMS	MS120881	40.0	0.5	0.5	U	0.5	U	0.5	U						
Selenium	SE	PMS	MS120881	5.0	0.5	0.5	U	0.5	U	0.5	U						
Silver	AG	ICP	IP120871	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U				
Thallium	TL	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U						
Zinc	ZN	ICP	IP120871	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U				

TZ50 00081

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS120981	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Chromium	CR	PMS	MS120981	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Nickel	NI	PMS	MS120981	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

TZ50 : 00082

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Nickel	NI	PMS	MS121281	40.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U

TZ50:05071

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: IP120871

SDG: TZ50

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	195569.8	195251.1	**97.6**	187441.5	189633.9	**94.8**			
Antimony		1000	-2.5	943.0	**94.3**	-10.7	897.1	**89.7**			
Arsenic		1000	0.1	969.4	**96.9**	0.3	928.6	**92.9**			
Barium		1000	0.0	973.2	**97.3**	0.4	941.0	**94.1**			
Beryllium		1000	-0.1	962.0	**96.2**	-0.2	921.2	**92.1**			
Boron			-12.7	-11.1		-10.9	-10.3				
Cadmium		1000	0.7	1018.2	**101.8**	0.6	985.9	**98.6**			
Calcium	100000	100000	99304.6	99994.8	**100.0**	97188.6	96842.5	**96.8**			
Chromium		1000	-0.2	980.1	**98.0**	-0.1	951.0	**95.1**			
Cobalt		1000	1.5	951.4	**95.1**	1.4	921.3	**92.1**			
Copper		1000	-1.3	1051.7	**105.2**	-0.5	1028.7	**102.9**			
Iron	200000	200000	193343.2	194354.5	**97.2**	184949.6	186610.6	**93.3**			
Lead		1000	-4.8	965.4	**96.5**	-3.8	925.7	**92.6**			
Magnesium	100000	100000	100524.6	97242.3	**97.2**	96648.4	94127.9	**94.1**			
Manganese		1000	0.3	963.3	**96.3**	0.2	925.8	**92.6**			
Molybdenum			6.1	6.2		5.2	5.8				
Nickel		1000	0.3	919.5	**92.0**	1.5	884.6	**88.5**			
Potassium			49.8	212.7		79.8	240.2				
Selenium		1000	9.8	989.8	**99.0**	17.1	944.8	**94.5**			
Silicon			-13.2	-18.3		-5.6	-10.2				
Silver		1000	-0.5	1029.2	**102.9**	-0.4	990.7	**99.1**			
Sodium			10.7	11.1		33.0	35.3				
Strontium			10.1	10.1		9.8	9.8				
Thallium		1000	5.7	947.5	**94.8**	9.4	900.9	**90.1**			
Tin			-11.6	-12.9		-12.2	-12.3				
Titanium			-0.2	-0.5		-0.6	-0.3				
Vanadium		1000	5.3	986.9	**98.7**	4.2	961.0	**96.1**			
Zinc		1000	-1.7	918.0	**91.8**	-0.9	889.7	**89.0**			

TZ50 : 9008L

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS120881

SDG: TZ50

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.2	0.1							
Arsenic		20	0.0	19.3	**96.5**						
Barium			0.0	0.1							
Cadmium		20	0.1	19.3	**96.5**						
Chromium		20	0.7	20.5	**102.5**						
Cobalt		20	0.0	19.5	**97.5**						
Copper		20	0.4	19.8	**99.0**						
Lead			0.1	0.1							
Manganese		20	0.1	19.7	**98.5**						
Molybdenum	400	400	405.0	400.4	**100.1**						
Nickel		20	0.5	19.1	**95.5**						
Selenium			-0.2	-0.1							
Silver		20	0.0	18.9	**94.5**						
Thallium			0.4	0.5							
Vanadium			0.0	-0.3							
Zinc		20	1.0	20.6	**103.0**						

S3000 : 0521

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

ICS SOURCE: I.V.

RUNID: MS120981

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.3	96.5						
Cadmium		20	0.0	19.6	98.0						
Chromium		20	0.7	20.2	101.0						
Cobalt		20	0.0	19.2	96.0						
Copper		20	0.4	19.6	98.0						
Manganese		20	0.1	19.5	97.5						
Molybdenum	400	400	398.6	408.3	102.1						
Nickel		20	0.5	18.9	94.5						
Silver		20	0.0	19.0	95.0						
Thallium			0.5	0.3							
Vanadium			0.0	-0.2							
Zinc		20	0.9	19.5	97.5						

TZ50 00086

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG

RUNID: MS121281

SDG: TZ50

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.8	99.0						
Cadmium		20	0.1	20.0	100.0						
Chromium		20	0.9	20.6	103.0						
Cobalt		20	0.0	19.4	97.0						
Copper		20	0.5	19.4	97.0						
Lead			0.1	0.1							
Manganese		20	0.2	19.8	99.0						
Molybdenum	400	400	488.9	408.6	102.2						
Nickel		20	0.6	19.1	95.5						
Selenium			0.1	0.1							
Silver		20	0.0	19.5	97.5						
Vanadium			0.0	-0.3							
Zinc		20	1.4	20.0	100.0						

TZ50 : 09005

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ50

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Antimony	MW-24-113011L	TZ50C-L	Water	IP120871	50.00	U	250.00	U		
Copper	MW-24-113011L	TZ50C-L	Water	IP120871	2.00	U	10.00	U		
Silver	MW-24-113011L	TZ50C-L	Water	IP120871	3.00	U	15.00	U		
Zinc	MW-24-113011L	TZ50C-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: ICP

SDG: TZ50

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Antimony	MW-24-113011L	TZ50L-L	Water	IP120871	50.00	U	250.00	U		
Copper	MW-24-113011L	TZ50L-L	Water	IP120871	2.00	U	10.00	U		
Silver	MW-24-113011L	TZ50L-L	Water	IP120871	3.00	U	15.00	U		
Zinc	MW-24-113011L	TZ50L-L	Water	IP120871	10.00	U	50.00	U		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ50

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-24-113011L	TZ50C-L	Water	MS120881	0.17	U	-0.10	B		
Beryllium	MW-24-113011L	TZ50C-L	Water	MS120881	0.03	U	0.10	B		
Cadmium	MW-24-113011L	TZ50C-L	Water	MS120881	0.04	U	0.00	B		
Lead	MW-24-113011L	TZ50C-L	Water	MS120881	0.03	U	0.05	B		
Nickel	MW-24-113011L	TZ50C-L	Water	MS120881	1.08	B	1.10	B	1.9	
Selenium	MW-24-113011L	TZ50C-L	Water	MS120881	0.02	U	-0.50	B		
Thallium	MW-24-113011L	TZ50C-L	Water	MS120881	0.00	U	0.00	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ50

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Chromium	MW-24-113011L	TZ50C-L	Water	MS120981	0.27	U	0.25	B		

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

ANALYSIS METHOD: PMS

SDG: TZ50

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFER-ENCE	Q
Arsenic	MW-24-113011L	TZ50L-L	Water	MS120881	0.20	B	0.00	B	100.0	
Beryllium	MW-24-113011L	TZ50L-L	Water	MS120881	0.03	U	0.00	B		
Cadmium	MW-24-113011L	TZ50L-L	Water	MS120881	0.01	U	-0.05	B		
Chromium	MW-24-113011L	TZ50L-L	Water	MS120881	0.37	U	0.15	B		
Lead	MW-24-113011L	TZ50L-L	Water	MS120881	0.01	U	0.00	B		
Nickel	MW-24-113011L	TZ50L-L	Water	MS120881	0.68	B	0.78	U	15.4	
Selenium	MW-24-113011L	TZ50L-L	Water	MS120881	0.09	U	-0.20	B		
Thallium	MW-24-113011L	TZ50L-L	Water	MS120881	0.02	U	0.00	B		

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Antimony	SB	ICP	OPTIMA ICP 2	206.84		60	50.0	4/1/2011	30000.0	8/3/2011
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Beryllium	BE	PMS	PE ELAN 6000 MS	0.00		5	0.2	4/1/2011		
Cadmium	CD	PMS	PE ELAN 6000 MS	0.00		5	0.1	4/1/2011		
Chromium	CR	PMS	PE ELAN 6000 MS	0.00		10	0.5	4/1/2011		
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Lead	PB	PMS	PE ELAN 6000 MS	0.00		3	0.1	4/1/2011		
Mercury	HG	CVA	CETAC MERCURY	253.70		0.2	0.1	4/1/2011		
Nickel	NI	PMS	PE ELAN 6000 MS	0.00		40	0.5	4/1/2011		
Selenium	SE	PMS	PE ELAN 6000 MS	0.00		5	0.5	4/1/2011		
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2011	5000.0	8/3/2011
Thallium	TL	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

IEC DATE: 11/29/2011

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3891270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.1208350
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0339516	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0076716	0.0000000	-0.1892080	0.0000000	0.0000000	0.0522067
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0242504	0.0000000	0.0000000	0.0000000	0.0000000	-0.0377814
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0584929
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2018030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0540270
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5652870
Manganese	257.61	0.0071394	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0051324
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0123608	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.2053280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	-0.1233420
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0108199	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1141760
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0387268	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0730907
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0258303	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TZ50 - SSZ1

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

IEC DATE: 11/29/2011

SDG: TZ50

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0405628	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0057432	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0041261	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0107429	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0736777	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

TZ50 : 55555

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

ANALYSIS METHOD: ICP

ARI PREP CODE: TWC

PREPDATE: 12/5/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-24-113011	TZ50C	0.000	50.0	50.0
MW-24-113011D	TZ50CDUP	0.000	50.0	50.0
MW-24-113011S	TZ50CSPK	0.000	50.0	50.0
MW-20-113011	TZ50F	0.000	50.0	50.0
MW-18-113011	TZ50G	0.000	50.0	50.0
DUP-113011-2	TZ50H	0.000	50.0	50.0
PBW	TZ50MB1	0.000	50.0	50.0
LCSW	TZ50MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

ANALYSIS METHOD: ICP

ARI PREP CODE: WMN

PREPDATE: 12/5/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-24-113011	TZ50L	0.000	50.0	50.0
MW-24-113011D	TZ50LDUP	0.000	50.0	50.0
MW-24-113011S	TZ50LSPK	0.000	50.0	50.0
PBW	TZ50MB2	0.000	50.0	50.0
LCSW	TZ50MB2SPK	0.000	50.0	50.0
MW-20-113011	TZ50O	0.000	50.0	50.0
MW-18-113011	TZ50P	0.000	50.0	50.0
DUP-113011-2	TZ50Q	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-2D-113011	TZ50A	0.000	50.0	25.0
MW-2S-113011	TZ50B	0.000	50.0	25.0
MW-24-113011	TZ50C	0.000	50.0	25.0
MW-24-113011D	TZ50CDUP	0.000	50.0	25.0
MW-24-113011S	TZ50CSPK	0.000	50.0	25.0
MW-21-113011	TZ50D	0.000	50.0	25.0
DUP-113011-1	TZ50E	0.000	50.0	25.0
MW-20-113011	TZ50F	0.000	50.0	25.0
MW-18-113011	TZ50G	0.000	50.0	25.0
DUP-113011-2	TZ50H	0.000	50.0	25.0
MW-6S-113011	TZ50I	0.000	50.0	25.0
MW-2D-113011	TZ50J	0.000	50.0	25.0
MW-2S-113011	TZ50K	0.000	50.0	25.0
MW-24-113011	TZ50L	0.000	50.0	25.0
MW-24-113011D	TZ50LDUP	0.000	50.0	25.0
MW-24-113011S	TZ50LSPK	0.000	50.0	25.0
MW-21-113011	TZ50M	0.000	50.0	25.0
PBW	TZ50MB1	0.000	50.0	25.0
LCSW	TZ50MB1SPK	0.000	50.0	25.0
PBW	TZ50MB2	0.000	50.0	25.0
LCSW	TZ50MB2SPK	0.000	50.0	25.0
DUP-113011-1	TZ50N	0.000	50.0	25.0
MW-20-113011	TZ50O	0.000	50.0	25.0
MW-18-113011	TZ50P	0.000	50.0	25.0
DUP-113011-2	TZ50Q	0.000	50.0	25.0
MW-6S-113011	TZ50R	0.000	50.0	25.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG

SDG: TZ50

ANALYSIS METHOD: CVA

ARI PREP CODE: TWM

PREPDATE: 12/5/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-24-113011	TZ50C	0.000	20.0	20.0
MW-24-113011D	TZ50CDUP	0.000	20.0	20.0
MW-24-113011S	TZ50CSPK	0.000	20.0	20.0
MW-20-113011	TZ50F	0.000	20.0	20.0
MW-18-113011	TZ50G	0.000	20.0	20.0
DUP-113011-2	TZ50H	0.000	20.0	20.0
MW-24-113011	TZ50L	0.000	20.0	20.0
MW-24-113011D	TZ50LDUP	0.000	20.0	20.0
MW-24-113011S	TZ50LSPK	0.000	20.0	20.0
PBW	TZ50MB1	0.000	20.0	20.0
LCSW	TZ50MB1SPK	0.000	20.0	20.0
PBW	TZ50MB2	0.000	20.0	20.0
LCSW	TZ50MB2SPK	0.000	20.0	20.0
MW-20-113011	TZ50O	0.000	20.0	20.0
MW-18-113011	TZ50P	0.000	20.0	20.0
DUP-113011-2	TZ50Q	0.000	20.0	20.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ50 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08363		X										X										X								X
S2	S2	1.00	08405												X																		
S3	S3	1.00	08425		X																												X
S4	S4	1.00	08452																						X								
S5	S5	1.00	08473																														
ICV	ICV	1.00	08551		X										X										X								X
ICB	ICB	1.00	08591		X										X										X								X
CRI	CRII	1.00	09032		X										X										X								X
ICSA	ICSAI	1.00	09074		X										X										X								X
ICSAB	ICSABI	1.00	09115		X										X										X								X
CCV	CCV1	1.00	09170		X										X										X								X
CCB	CCB1	1.00	09210		X										X										X								X
ZZZZZZ	TZ98MB2	2.00	09251																														
ZZZZZZ	TZ98MB1	1.00	09293																														
ZZZZZZ	TZ98ADUP	1.00	09334																														
ZZZZZZ	TZ98A	1.00	09375																														
ZZZZZZ	TZ98ASPK	1.00	09421																														
ZZZZZZ	TZ98BDUP	2.00	09462																														
ZZZZZZ	TZ98B	2.00	09504																														
ZZZZZZ	TZ98BSPK	2.00	09545																														
ZZZZZZ	TZ98MB2SPK	2.00	09585																														
ZZZZZZ	TZ98MB1SPK	1.00	10025																														
CCV	CCV2	1.00	10065		X										X										X								X
CCB	CCB2	1.00	10105		X										X										X								X
PBW	TZ50MB2	1.00	10150		X										X										X								X
MW-24-113011L	TZ50L-L	5.00	10192		X										X										X								X
MW-24-113011	TZ50L	1.00	10233		X										X										X								X
MW-24-113011D	TZ50LDUP	1.00	10274		X										X										X								X
MW-24-113011S	TZ50LSPK	1.00	10320																														
MW-20-113011	TZ50O	1.00	10370		X										X										X								X
MW-18-113011	TZ50P	1.00	10412		X										X										X								X
DUP-113011-2	TZ50Q	1.00	10453		X										X										X								X
MW-20-113011	TZ50F	1.00	10495																														
LCSW	TZ50MB2SPK	1.00	10540		X										X										X								X
CCV	CCV3	1.00	10580		X										X										X								X

FORM XIV

TZ50 09199

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ50 | RUNID: IP120871 | METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB3	1.00	11020		X										X										X								X
PBW	TZ50MB1	1.00	11061		X										X										X								X
MW-24-113011L	TZ50C-L	5.00	11102		X										X										X								X
MW-24-113011	TZ50C	1.00	11144		X										X										X								X
MW-24-113011D	TZ50CDUP	1.00	11185		X										X										X								X
MW-24-113011S	TZ50CSPK	1.00	11231		X										X										X								X
MW-18-113011	TZ50G	1.00	11271		X										X										X								X
DUP-113011-2	TZ50H	1.00	11312		X										X										X								X
MW-20-113011	TZ50F	1.00	11353		X										X										X								X
MW-24-113011S	TZ50LSPK	1.00	11421		X										X										X								X
LCSW	TZ50MB1SPK	1.00	11460		X										X										X								X
CCV	CCV4	1.00	11500		X										X										X								X
CCB	CCB4	1.00	11541		X										X										X								X
ZZZZZZ	TZ73MB1	1.00	11582																														
ZZZZZZ	TZ73A-L	5.00	12023																														
ZZZZZZ	TZ73A	1.00	12065																														
ZZZZZZ	TZ73ADUP	1.00	12110																														
ZZZZZZ	TZ73ASPK	1.00	12151																														
ZZZZZZ	TZ73B	1.00	12191																														
ZZZZZZ	TZ73C	1.00	12233																														
ZZZZZZ	TZ73H	1.00	12274																														
ZZZZZZ	TZ73P	1.00	12321																														
ZZZZZZ	TZ73MB1SPK	1.00	12364																														
CCV	CCV5	1.00	12404		X										X										X								X
CCB	CCB5	1.00	12444		X										X										X								X
ZZZZZZ	TZ73MB2	1.00	12490																														
ZZZZZZ	ZZZZZZ	5.00	12531																														
ZZZZZZ	TZ73I	1.00	12573																														
ZZZZZZ	TZ73IDUP	1.00	13014																														
ZZZZZZ	TZ73ISPK	1.00	13055																														
ZZZZZZ	TZ73J	1.00	13095																														
ZZZZZZ	TZ73K	1.00	13141																														
ZZZZZZ	TZ73ISPK	1.00	13182																														
ZZZZZZ	TZ73MB2SPK	1.00	13221																														
ZZZZZZ	TZ73MB2SPK	1.00	13285																														

TZ50 : 90151

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/8/2011

SDG: TZ50 | RUNID: IP120871 METHOD: ICP | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCV	CCV6	1.00	13325		X										X										X								X
CCB	CCB6	1.00	13365		X										X										X								X
CCV	CCV7	1.00	13431		X										X										X								X
CCB	CCB7	1.00	13471		X										X										X								X
ZZZZZZ	TZ83MB2	1.00	13513																														
ZZZZZZ	TZ83B-L	5.00	13554																														
ZZZZZZ	TZ83B	1.00	13595																														
ZZZZZZ	TZ83BDUP	1.00	14041																														
ZZZZZZ	TZ83BSPK	1.00	14082																														
ZZZZZZ	TZ86C-L	5.00	14170																														
ZZZZZZ	TZ86C	1.00	14211																														
ZZZZZZ	TZ86CDUP	1.00	14252																														
ZZZZZZ	TZ86CSPK	1.00	14294																														
ZZZZZZ	TZ83MB1SPK	1.00	14334																														
CCV	CCV8	1.00	14374		X										X										X								X
CCB	CCB8	1.00	14414		X										X										X								X
CRI	CRIF	1.00	14455		X										X										X								X
ICSA	ICSAF	1.00	14501		X										X										X								X
ICSAB	ICSABF	1.00	14542		X										X										X								X
CCV	CCV9	1.00	14593		X										X										X								X
CCB	CCB9	1.00	15033		X										X										X								X

TZ50 : 05102

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/8/2011

SDG: TZ50 | RUNID: MS120881 METHOD: PMS | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11280				X			X		X		X									X	X		X				X			
S1	S1	1.00	11350				X			X		X		X									X	X		X				X			
S2	S2	1.00	11410				X			X		X		X									X	X		X				X			
S3	S3	1.00	11470				X			X		X		X									X	X		X				X			
S4	S4	1.00	11530				X			X		X		X									X	X		X				X			
ZZZZZZ	Rinse Samp1	1.00	12000																														
ICV	MICV	1.00	12090				X			X		X		X									X	X		X				X			
ICB	ICB	1.00	12160				X			X		X		X									X	X		X				X			
CCV	MCCV1	1.00	12220				X			X		X		X									X	X		X				X			
CCB	CCB1	1.00	12280				X			X		X		X									X	X		X				X			
CRI	MCRI	1.00	12340				X			X		X		X									X	X		X				X			
ZZZZZZ	ZZZZZZ	1.00	12400																														
ICSAB	ICSABI	1.00	12460				X			X		X		X									X	X		X				X			
ZZZZZZ	LR200	1.00	12530																														
ZZZZZZ	LR300	1.00	12590																														
ICSA	ICSAI	1.00	13060				X			X		X		X									X	X		X				X			
CCV	MCCV2	1.00	13150				X			X		X		X									X	X		X				X			
CCB	CCB2	1.00	13210				X			X		X		X									X	X		X				X			
S0	S0	1.00	13280				X			X		X		X									X	X		X				X			
CCV	MCCV3	1.00	13340				X			X		X		X									X	X		X				X			
CCB	CCB3	1.00	13410				X			X		X		X									X	X		X				X			
ZZZZZZ	TZ32MB2	2.00	13460																														
ZZZZZZ	UA26MB	2.00	13520																														
ZZZZZZ	UA26MBSPK	2.00	13580																														
ZZZZZZ	UA26ADUP	2.00	14040																														
ZZZZZZ	UA26A	2.00	14100																														
ZZZZZZ	UA26ASPK	2.00	14170																														
MW-2D-113011	TZ50A	2.00	14230				X																										
MW-2S-113011	TZ50B	2.00	14290																														
ZZZZZZ	TZ32E	20.00	14360																														
ZZZZZZ	TZ32N	20.00	14420																														
CCV	MCCV4	1.00	14480				X			X		X		X									X	X		X				X			
CCB	CCB4	1.00	14550				X			X		X		X									X	X		X				X			
S0	S0	1.00	15080				X			X		X		X									X	X		X				X			
CCV	MCCV5	1.00	15140				X			X		X		X									X	X		X				X			

FORM XIV

TZ50 : 09103

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/8/2011

SDG: TZ50 | RUNID: MS120881 METHOD: PMS | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCB	CCB5	1.00	15210				X			X		X		X									X	X		X				X			
PBW	TZ50MB1	2.00	15270				X			X		X		X									X	X		X				X			
PBW	TZ50MB2	2.00	15330				X			X		X		X									X	X		X				X			
LCSW	TZ50MB2SPK	2.00	15380				X			X		X		X									X	X		X				X			
LCSW	TZ50MB1SPK	2.00	15450				X			X		X		X									X	X		X				X			
MW-24-113011L	TZ50C-L	10.00	15510				X			X		X											X	X		X				X			
MW-24-113011	TZ50C	2.00	15570				X			X		X											X	X		X				X			
MW-24-113011D	TZ50CDUP	2.00	16040				X			X		X											X	X		X				X			
MW-24-113011S	TZ50CSPK	2.00	16100				X			X		X											X	X		X				X			
ZZZZZZ	ZZZZZZ	2.00	16160																														
MW-21-113011	TZ50D	2.00	16220																														
CCV	MCCV6	1.00	16290				X			X		X		X									X	X		X				X			
CCB	CCB6	1.00	16350				X			X		X		X									X	X		X				X			
MW-24-113011L	TZ50L-L	10.00	16590				X			X		X		X									X	X		X				X			
MW-24-113011	TZ50L	2.00	17090				X			X		X		X									X	X		X				X			
MW-24-113011D	TZ50LDUP	2.00	17160				X			X		X		X									X	X		X				X			
MW-24-113011S	TZ50LSPK	2.00	17220				X			X		X		X									X	X		X				X			
ZZZZZZ	ZZZZZZ	2.00	17280																														
DUP-113011-1	TZ50E	2.00	17350																														
MW-20-113011	TZ50F	2.00	17410							X		X		X									X	X		X				X			
MW-18-113011	TZ50G	2.00	17470				X			X		X		X									X	X		X				X			
DUP-113011-2	TZ50H	2.00	17530							X		X		X									X	X		X				X			
MW-6S-113011	TZ50I	2.00	18000				X																										
CCV	MCCV7	1.00	18060				X			X		X		X									X	X		X				X			
CCB	CCB7	1.00	18130				X			X		X		X									X	X		X				X			
MW-2D-113011	TZ50J	2.00	18180				X																										
MW-2S-113011	TZ50K	2.00	18250																														
MW-21-113011	TZ50M	2.00	18310																														
DUP-113011-1	TZ50N	2.00	18370																														
MW-20-113011	TZ50O	2.00	18440							X		X		X										X		X				X			
MW-18-113011	TZ50P	2.00	18500				X			X		X		X										X		X				X			
DUP-113011-2	TZ50Q	2.00	18560							X		X		X										X		X				X			
MW-6S-113011	TZ50R	2.00	19020				X																										
ZZZZZZ	TZ73B	5.00	19090																														
ZZZZZZ	TZ73J	5.00	19150																														

TZ50 : 09Dec11

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/8/2011

SDG: TZ50 | RUNID: MS120881 METHOD: PMS | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCV	MCCV8	1.00	19210				X			X	X		X										X	X		X				X			
CCB	CCB8	1.00	19280				X			X	X		X										X	X		X				X			

TZ50:00105

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/9/2011

SDG: TZ50 | RUNID: MS120981 METHOD: PMS | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	12360				X							X									X										
S1	S1	1.00	12430				X							X									X										
S2	S2	1.00	12490				X							X									X										
S3	S3	1.00	12550				X							X									X										
S4	S4	1.00	13010				X							X									X										
ZZZZZZ	Rinse Samp1	1.00	13080																														
ICV	MICV	1.00	13150				X							X									X										
ICB	ICB	1.00	13210				X							X									X										
CCV	MCCV1	1.00	13270				X							X									X										
CCB	CCB1	1.00	13340				X							X									X										
CRI	MCRI	1.00	13400				X							X									X										
ICSA	ICSAI	1.00	13450				X							X									X										
ICSAB	ICSABI	1.00	13520				X							X									X										
ZZZZZZ	LR200	1.00	13580																														
ZZZZZZ	LR300	1.00	14050																														
CCV	MCCV2	1.00	14110				X							X									X										
CCB	CCB2	1.00	14210				X							X									X										
MW-2S-113011	TZ50B	10.00	14270				X																										
MW-21-113011	TZ50D	20.00	14330				X																										
MW-24-113011S	TZ50CSPK	2.00	14390																														
DUP-113011-1	TZ50E	20.00	14450				X																										
MW-20-113011	TZ50F	50.00	14520				X																										
MW-2S-113011	TZ50K	10.00	14580				X																										
MW-21-113011	TZ50M	20.00	15040																														
DUP-113011-1	TZ50N	20.00	15100																														
MW-20-113011	TZ50O	50.00	15210				X																										
MW-18-113011	TZ50P	2.00	15280																				X										
CCV	MCCV3	1.00	15340				X							X									X										
CCB	CCB3	1.00	15400				X							X									X										
MW-20-113011	TZ50O	50.00	15460																														
DUP-113011-2	TZ50Q	2.00	15530																				X										
MW-18-113011	TZ50G	5.00	15590																														
DUP-113011-2	TZ50H	2.00	16050																														
DUP-113011-2	TZ50H	5.00	16110																														
MW-6S-113011	TZ50I	2.00	16180																														

TZ50 : 90109

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/9/2011

SDG: TZ50 | RUNID: MS120981 METHOD: PMS | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-6S-113011	TZ50I	5.00	16240																														
MW-18-113011	TZ50P	5.00	16300																														
MW-24-113011L	TZ50C-L	25.00	16360											X																		
MW-24-113011	TZ50C	5.00	16430											X																		
CCV	MCCV4	1.00	16490				X							X									X									
CCB	CCB4	1.00	16560				X							X									X									
MW-24-113011D	TZ50CDUP	5.00	17010											X																		
MW-24-113011S	TZ50CSPK	5.00	17080											X																		
MW-21-113011	TZ50M	20.00	17140				X																										
DUP-113011-1	TZ50N	20.00	17190				X																										
CCV	MCCV5	1.00	17240				X							X									X									
CCB	CCB5	1.00	17300				X							X									X									

TZ50 : 09169

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ50 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	09460																				X										
S1	S1	1.00	09530																				X										
S2	S2	1.00	09590																				X										
S3	S3	1.00	10050																				X										
S4	S4	1.00	10110																				X										
ZZZZZZ	Rinse Sampl	1.00	10180																														
ICV	MICV	1.00	10320																				X										
ICB	ICB	1.00	10390																				X										
CCV	MCCV1	1.00	10440																				X										
CCB	CCB1	1.00	10510																				X										
CRI	MCRI	1.00	10570																				X										
ICSA	ICSAI	1.00	11030																				X										
ICSAB	ICSABI	1.00	11110																				X										
ZZZZZZ	LR200	1.00	11170																														
ZZZZZZ	LR300	1.00	11240																														
CCV	MCCV2	1.00	11300																				X										
CCB	CCB2	1.00	11370																				X										
ZZZZZZ	UA26RMB	2.00	11430																														
ZZZZZZ	UA30MB1	2.00	11490																														
ZZZZZZ	UA30MB1SPK	2.00	11550																														
ZZZZZZ	UA26RMBSPK	2.00	12010																														
ZZZZZZ	UA26RADUP	2.00	12070																														
ZZZZZZ	UA26RA	2.00	12130																														
ZZZZZZ	UA26RASPK	2.00	12200																														
ZZZZZZ	UA30ADUP	2.00	12260																														
ZZZZZZ	UA30A	2.00	12320																														
ZZZZZZ	UA30ASPK	2.00	12390																														
CCV	MCCV3	1.00	12450																				X										
CCB	CCB3	1.00	12510																				X										
ZZZZZZ	UA26RADUP	2.00	12580																														
ZZZZZZ	UA26RA	2.00	13040																														
CCV	MCCV4	1.00	13150																				X										
CCB	CCB4	1.00	13220																				X										
ZZZZZZ	UA30MB2	2.00	13280																														
ZZZZZZ	UA58MBSPK	20.00	13340																														

FORM XIV

TZ50 : 09198

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/12/2011

SDG: TZ50 | RUNID: MS121281 METHOD: PMS | END DATE: 12/12/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	UA30MB2SPK	2.00	13410																														
MW-20-113011	TZ50O	2.00	13470																				X										
ZZZZZZ	UA30BDUP	2.00	13530																														
ZZZZZZ	UA30B	2.00	13590																														
ZZZZZZ	UA30BSPK	2.00	14060																														
ZZZZZZ	UA58ADUP	20.00	14120																														
ZZZZZZ	UA58A	20.00	14180																														
ZZZZZZ	UA58ASPK	20.00	14250																														
CCV	MCCV5	1.00	14310																				X										
CCB	CCB5	1.00	14370																				X										

TZ50 : 00105

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG | INSTRUMENT ID: CETAC MERCURY | START DATE: 12/9/2011

SDG: TZ50 | RUNID: HG120901 METHOD: CVA | END DATE: 12/9/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	08032														X																
S0.1	S0.1	1.00	08050														X																
S0.5	S0.5	1.00	08063														X																
S1	S1	1.00	08081														X																
S2	S2	1.00	08095														X																
S5	S5	1.00	08113														X																
S10	S10	1.00	08130														X																
ICV	AICV	1.00	08184														X																
ICB	ICB	1.00	08202														X																
CCV	ACCV1	1.00	08220														X																
CCB	CCB1	1.00	08234														X																
CRA	CRA	1.00	08251														X																
PBW	TZ50MB1	1.00	08265														X																
LCSW	TZ50MB1SPK	1.00	08283														X																
MW-24-113011	TZ50C	1.00	08300														X																
MW-24-113011D	TZ50CDUP	1.00	08314														X																
MW-24-113011S	TZ50CSPK	1.00	08331														X																
MW-20-113011	TZ50F	1.00	08345														X																
MW-18-113011	TZ50G	1.00	08363														X																
DUP-113011-2	TZ50H	1.00	08381														X																
PBW	TZ50MB2	1.00	08394														X																
CCV	ACCV2	1.00	08412														X																
CCB	CCB2	1.00	08430														X																
LCSW	TZ50MB2SPK	1.00	08444														X																
MW-24-113011	TZ50L	1.00	08462														X																
MW-24-113011D	TZ50LDUP	1.00	08475														X																
MW-24-113011S	TZ50LSPK	1.00	08493														X																
MW-20-113011	TZ50O	1.00	08510														X																
MW-18-113011	TZ50P	1.00	08524														X																
DUP-113011-2	TZ50Q	1.00	08542														X																
ZZZZZZ	TZ73MB1	1.00	08555																														
ZZZZZZ	TZ73MB1SPK	1.00	08573																														
ZZZZZZ	TZ73A	1.00	08591																														
CCV	ACCV3	1.00	09005														X																
CCB	CCB3	1.00	09023														X																

TZ50_0016

FORM XIV

Table of Contents: ARI Job TZ21, TZ32

Client: ERM-West

Project: 128296.07 RG Fall GW Sampling

	Page From:	Page To:
Inventory Sheet		
Cover Letter	1	1
Chain of Custody Documentation	2	10
Case Narrative, Data Qualifiers, Control Limits	11	34
Volatile Analysis		
Report and Summary QC Forms	35	74
Semivolatile Analysis		
Report and Summary QC Forms	75	128
TPHD Analysis		
Report and Summary QC Forms	129	162
TPHG Analysis		
Report and Summary QC Forms	163	218
Metals Analysis		
Report and Summary QC Forms	219	294
General Chemistry Analysis		
Report and Summary QC Forms	295	302
General Chemistry Raw Data		
Analyst Notes and Raw Data	303	309

Signature

December-15-2011
Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

December 20, 2011

Michael F. Mendes
ERM-West, Inc.
1218 3rd Avenue, Suite 1412
Seattle, WA 98101

RE: RG Fall GW Sampling, 128296.07
ARI Job Nos.: TZ21 & TZ32

Dear Mr. Mendes:

Please find enclosed Chain-of-Custody (COC) records, sample receipt documentation, and the final data package for samples from the project referenced above.

Sample receipt and details of these analyses are discussed in the Case Narrative.

Please note that current ARI control limits are available at www.arilabs.com.

An electronic copy of this package will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Chèronne Oreiro
Project Manager
-For-
Susan D. Dunnihoo
Director, Client Services
206-695-6207
sue@arilabs.com

Enclosures

cc: eFile TZ21_TZ32

4611 South 134th Place, Suite 100 • Tukwila WA 98168 • **206-695-6200** • **206-695-6201** fax

Chain of Custody Documentation

ARI Job ID: TZ21, TZ32

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 7221	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: ERM	Phone: 425 214 0458	Date: 11/28/2011	Ice Present?
Client Contact: Mike Mendes		No. of Coolers:	Cooler Temps:
Client Project Name: RG Fall GW Sampling			
Client Project #: 128296.07	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Phenols / chlorinated phenols	Total As	Dissolved As *	VOCs 8260	MS/MSD phenols / chlorinated phenols	MS/MSD Total/Diss As			Notes/Comments
MW-17-112811	11/28/11	1117	water	4	X	X	X						
MW-045-112811	11/28/11	1211	water	7	X	X	X	X					
TB-112811-1	11/28/11	1215	water	2				X					
DUP-112811-1	11/28/11	0800	water	2	X								
MW-22-112811	11/28/11	1321	water	12	X	X	X		X	X			
MW-23-112811	11/28/11	1422	water	4	X	X	X						

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
* Dissolved samples Field filtered	Printed Name: Cyrus Gorman	Printed Name: A. Vogardsen	Printed Name	Printed Name
	Company: ERM	Company: ARI	Company	Company
	Date & Time: 11/28/11 1501	Date & Time: 11/28/11 1501	Date & Time	Date & Time

7221 : 00003

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: EPM Project Name: RG Fall GW Sampling

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: TZ21 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry): 5.8 3.1 ___ ___

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90941619

Cooler Accepted by: AV Date: 11/28/11 Time: 1501

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	NA		10-24-11

Was Sample Split by ARI: (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: TS Date: ~~11-29-11~~ 11-29-11 Time: 1605

**** *Notify Project Manager of discrepancies or concerns* ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

MW-045 1 "pb"
TB-112811 2 "pb"

By: _____ Date: _____

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• •	• • •	● ● ●

Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

PRESERVATION VERIFICATION 11/29/11
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ21

Inquiry Number: NONE
Analysis Requested: 11/30/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Sue D.
VTSR: 11/28/11

Project #: 128296.07
Project: RG Fall GW Sampling
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27521 TZ21A	MW-17-112811						TOT Pass															
11-27522 TZ21B	MW-045-112811						TOT															
11-27524 TZ21D	MW-22-112811						TOT															
11-27525 TZ21E	MW-23-112811						TOT															
11-27527 TZ21G	MW-17-112811						DIS									Y						
11-27528 TZ21H	MW-045-112811						DIS									Y						
11-27529 TZ21I	MW-22-112811						DIS									Y						
11-27530 TZ21J	MW-23-112811						DIS									Y						

90000 : 1221

Checked By TS Date 11-29-11

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: TE52	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: Erm	Phone: 425 214 0458	Date: 11/29/11	Ice Present?
Client Contact: Mike Mendes		No. of Coolers:	Cooler Temps:
Client Project Name: 126			
Client Project #: 128296.07	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No Containers	Analysis Requested: Phenols, Chlorinated Phenols	Total As	Dissolved As **	TPH-Gx	TPH-Dx	Hex* Chrome	Total Cr, Cu, Ag, Zn	Dissolved Cr, Cu, Ag, Zn	Notes/Comments: MS/MSD TPH-Gx + Dx	TSS	VOC's 8260
MW-1D-112911	11/29/11	0626	water	4	X	X	X								
MW-1S-112911	11/29/11	712	water	17	X	X	X	X	X	X	X	X	X	Short hold time! Hex Cr	
FB-112911-1	11/29/11	713	water	2				X							
TB-112911-1	11/29/11	715	water	2				X							
DUP-112911-1	11/29/11	0500	water	2		X	X								
MW-7S-112911	11/29/11	952	water	5	X	X	X							X	
DUP-112911-2	11/29/11	0530	water	3	X									X	
MW-13-112911	11/29/11	1432	water	8	X	X	X							X	X
MW-10-112911	11/29/11	1146	water	5	X	X	X							X	
DUP-112911-3	11/29/11	0601	water	2	X										

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
* Dissolved metals samples field filtered	Printed Name: Cyrus German	Printed Name: A. Volgardsen	Printed Name	Printed Name
	Company: Erm	Company: ARI	Company	Company
	Date & Time: 11/29/11 1512	Date & Time: 11/29/11 1512	Date & Time	Date & Time

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client ERM Project Name 126

COC No(s) _____ (NA) Delivered by Fed-Ex UPS (Courier) Hand Delivered Other: _____

Assigned ARI Job No. TZ32 Tracking No _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 5.6 3.1 3.3 ___ ___

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90941619

Cooler Accepted by: AV Date 11/29/11 Time 1512

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used?	Bubble Wrap (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other:		
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		(YES)	NO
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		YES	(NO)
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)	NA	(YES)	NO
Were all VOC vials free of air bubbles?	NA	YES	(NO)
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI.	NA	11-24-11	

Was Sample Split by ARI (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by TS Date 11-30-11 Time 842

** *Notify Project Manager of discrepancies or concerns* **

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

For sample MW-15-112911 the Hex Chrome bottle was received preserved, used 1-500mL AG for Hex Cr analysis

TD-112911-1 "2pb"

By JM Date 11/29/11 TS 11-30-11

Small Air Bubbles ~2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	• • •	● ● ●

Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

Subject: RE. TZ32 RG Sample Receipt and COC
From: Shira DeGrood <Shira DeGrood@erm.com>
Date: 8.10 AM
To: Cheronne Oreiro <cheronneo@anlabs com>

Hi Cheronne,

There were a couple changes to be made to the COC for this data package.

Can you please ADD VOC analysis for the field blank and the trip blank and REMOVE TSS analysis for DUP-112911?

Thank you,

Shira DeGrood, R.G.
Main: +1 503 488-5282
Direct: +1 503 621-5911
Cell: +1 503 961-4845
Fax: +1 503 488-5142
shira.degrood@erm.com

Done 12/1/11 AV

-----Original Message-----
From: Cheronne Oreiro [mailto:cheronneo@arilabs.com]
Sent: Wednesday, November 30, 2011 1:27 PM
To: Mike Mendes; Shira DeGrood
Cc: Sue Dunnihoo
Subject: TZ32 RG Sample Receipt and COC

Hello,

Please see attached.
Thanks,
-Cheronne

--
NOTE: ARI will close early on Friday, Dec. 23 and be closed Monday, Dec 26th.

Cheronne Oreiro
Project Manager
Analytical Resources, Inc.
4611 S. 134th Place, Suite 100
Tukwila, WA 98168-3240
cheronneo@arilabs.com
(206)-695-6214

This correspondence contains confidential information from Analytical Resources, Inc. (ARI) The information contained herein is intended solely for the use of the individual(s) named above. If you are not the intended recipient, any copying, distribution, disclosure, or use of the text and/or attached document(s) is strictly prohibited.

If you have received this correspondence in error, please notify sender immediately. Thank you.

This message contains information which may be confidential, proprietary, privileged, or otherwise protected by law from disclosure or use by a third party. If you have received this message in error, please contact us immediately at (925) 946-0455 and take the steps necessary to delete the message completely from your computer system. Thank you.

Please visit ERM's web site: http://www.erm.com

Attachments

20111201075754099 pdf 735 KB

TZ21 : 00000 12/2/2011 9:09 AM

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: TF52	Turn-around Requested: Standard	Page: 1 of 1	
ARI Client Company: EIZM	Phone: 425 214 0458	Date: 11/29/11	Ice Present?
Client Contact: Mike Mendes		No. of Coolers:	Cooler Temps:
Client Project Name: IZG			
Client Project #: 128296.07	Samplers: Cyrus / Matt		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Phenols/Chlorinated Phenols	Total As	Dissolved As *	TPH-GX	TPH-DX	Hex * Chrome	Total Cr, Cu, Ag, Zn	Dissolved Cr, Cu, Ag, Zn	Notes/Comments: MS/MSD TPH-GX + DX	TSS	VOC's 8260
MW-1D-112911	11/29/11	0626	water	4	X	X	X								
MW-1S-112911	11/29/11	712	water	17	X	X	X	X	X	X	X	X	X	Short hold time!	
FB-112911-1	11/29/11	713	water	2				X							X
TB-112911-1	11/29/11	715	water	2				X							X
DUP-112911-1	11/29/11	0500	water	2		X	X								
MW-7S-112911	11/29/11	952	water	5	X	X	X							X	
DUP-112911-2	11/29/11	0530	water	3	X							Remove		~~X~~	
MW-13-112911	11/29/11	1432	water	8	X	X	X							X	X
MW-10-112911	11/29/11	1146	water	5	X	X	X							X	
DUP-112911-3	11/29/11	0601	water	2	X										

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
* Dissolved metals				

60000 : 1221

PRESERVATION VERIFICATION 11/30/11
Page 1 of 1

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: **TZ32**

Inquiry Number: NONE
Analysis Requested: 11/30/11
Contact: Mendes, Michael F.
Client: ERM-West
Logged by: TS
Sample Set Used: Yes-481
Validatable Package: No
Deliverables:

PC: Sue D.
VTSR: 11/29/11

Project #: 128296.07
Project: RG Fall GW Sampling
Sample Site:
SDG No:
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET FLT	DOC FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
11-27583 TZ32A	MW-1S-112911						DIS pass									Y						
11-27584 TZ32B	MW-1D-112911						TOT															
11-27585 TZ32C	MW-7S-112911						TOT															
11-27586 TZ32D	DUP-112911-2																					
11-27587 TZ32E	MW-13-112911						TOT pass															
11-27588 TZ32F	MW-10-112911						TOT															
11-27592 TZ32J	DUP-112911-1						TOT															
11-27593 TZ32K	MW-1S-112911						TOT									Y						
11-27594 TZ32L	MW-1D-112911						DIS									Y						
11-27595 TZ32M	MW-7S-112911						DIS									Y						
11-27596 TZ32N	MW-13-112911						DIS									Y						
11-27597 TZ32O	MW-10-112911						DIS									Y						
11-27598 TZ32P	DUP-112911-1						DIS									Y						

Checked By TS Date 11-30-11

Case Narrative, Data Qualifiers, Control Limits

ARI Job ID: TZ21, TZ32

Narrative

Client: ERM-West, Inc.
Project: RG Fall GW Sampling, 128296.07
ARI Job Nos.: TZ21 & TZ32

Sample receipt

Six water samples were received on November 28, 2011 under ARI job TZ21. The cooler temperatures measured by IR thermometer following ARI SOP were 3.1 and 5.8°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

Ten water samples were received on November 29, 2011 under ARI job TZ32. The cooler temperatures measured by IR thermometer following ARI SOP were 3.1, 3.3, and 5.6°C. For further details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles by SW8260

The samples were analyzed within recommended holding times.

The initial calibrations were within method requirements.

The 12/6/11 continuing calibration (CCAL) was outside the 20% control limit high for 1,2-Dibromo-3-chloropropane. All detected results associated with this CCAL have been flagged with a "Q" qualifier. No further corrective action was taken.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCSD percent recoveries of Hexachlorobutadiene, 1,2,4-Trichlorobenzene, Naphthalene, and 1,2,3-Trichlorobenzene were outside the control limits high for **LCS-120611**. All other percent recoveries were within control limits. No corrective action was taken.

Semivolatiles by SW8270

The samples and associated laboratory QC were initially extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements for requested compounds. Internal standard areas were within limits.

The surrogate percent recoveries of d5-Phenol, 2-Fluorophenol, and d4-2-Chlorophenol fell outside the control limits low for sample **MW-17-112811**. The sample was re-extracted outside the recommended holding time and all surrogate percent recoveries were within control limits. Both sets of data have been reported. No further corrective action was taken.

The surrogate percent recovery of d4-2-Chlorophenol fell outside the control limits low for sample **MW-22-112811**. Associated matrix QC surrogate percent recoveries were within control limits. No corrective action was taken.

The method blanks were clean at the reporting limits. The LCS percent recoveries were within control limits.

The matrix spike and matrix spike duplicate percent recoveries were within advisory control limits.

NWTPH-Dx

The sample and associated laboratory QC were extracted and analyzed within recommended holding times.

The initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits. The LCS and LCSD percent recoveries were within control limits.

Sample **MW-1A-112911** was analyzed with a matrix spike only due to limited sample volume. The matrix spike percent recovery was within control limits. .

NWTPH-Gx

The samples and associated laboratory QC were extracted and analyzed within recommended holding times.

Due to laboratory error, samples **FB-112911-1** and **TB-112911-1** were analyzed at a 15mL purge instead of a 5mL purge. All sample volumes have been consumed. These samples will have a raised reporting limit of 0.25mg/L.

The initial and continuing calibrations were within method requirements.

The surrogate percent recoveries of Trifluorotolene and Bromobenzene fell outside the control limits low for **TB-112911**. All sample volumes have been consumed. No corrective action was taken.

The method blanks were clean at the reporting limits. The LCS percent recovery was within control limits.

The matrix spike and matrix spike duplicate percent recoveries were within advisory control limits.

Total and Dissolved Metals by SW6010/6020/7470

The samples and associated laboratory QC were digested and analyzed within recommended holding times.

Initial and continuing calibrations were within limits.

Chromium was present in the total metals method blank for ARI job TZ32 at a level that was greater than the reporting limit. The method blank, LCS, and associated sample were re-digested and re-analyzed with similar results. The project action level for chromium is 50ug/L. The method blank and sample results were well below this action level. No further corrective action was taken.

The LCS percent recoveries were within control limits.

The dissolved matrix spike percent recovery of arsenic was outside the control limits high for sample **MW-22-11-2811**. A post digestion spike was performed and the recovery was within control limits. All relevant data have been flagged with an "N" qualifier on the appropriate Form V. No further corrective action was take.

The duplicate RPDs were within control limits.

Conventional Parameters

The samples and associated laboratory QC were prepared and analyzed within recommended holding times.

The method blanks were clean at the detection limits. The LCS percent recovery was within control limits.

The SRM percent recovery was within limits.

The matrix spike percent recovery of Hexavalent Chromium fell outside the control limits low for sample **MW-1S-112911**. All other quality control parameters were met for this analysis. No corrective action was taken.

The replicate RPD was within control limits.

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ21
Client: ERM-West
Project Event: 128296.07
Project Name: RG Fall GW Sampling

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-17-112811	TZ21A	11-27521	Water	11/28/11 11:17	11/28/11 15:01
2.	MW-045-112811	TZ21B	11-27522	Water	11/28/11 12:11	11/28/11 15:01
3.	DUP-112811-1	TZ21C	11-27523	Water	11/28/11 08:00	11/28/11 15:01
4.	MW-22-112811	TZ21D	11-27524	Water	11/28/11 13:21	11/28/11 15:01
5.	MW-23-112811	TZ21E	11-27525	Water	11/28/11 14:22	11/28/11 15:01
6.	TB-112811-1	TZ21F	11-27526	Water	11/28/11 12:15	11/28/11 15:01
7.	MW-17-112811	TZ21G	11-27527	Water	11/28/11 11:17	11/28/11 15:01
8.	MW-045-112811	TZ21H	11-27528	Water	11/28/11 12:11	11/28/11 15:01
9.	MW-22-112811	TZ21I	11-27529	Water	11/28/11 13:21	11/28/11 15:01
10.	MW-23-112811	TZ21J	11-27530	Water	11/28/11 14:22	11/28/11 15:01

Printed 11/29/11

Sample ID Cross Reference Report

ANALYTICAL RESOURCES INCORPORATED

ARI Job No: TZ32
Client: ERM-West
Project Event: 128296.07
Project Name: RG Fall GW Sampling

	Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1.	MW-1S-112911	TZ32A	11-27583	Water	11/29/11 07:12	11/29/11 15:12
2.	MW-1D-112911	TZ32B	11-27584	Water	11/29/11 06:26	11/29/11 15:12
3.	MW-7S-112911	TZ32C	11-27585	Water	11/29/11 09:52	11/29/11 15:12
4.	DUP-112911-2	TZ32D	11-27586	Water	11/29/11 05:30	11/29/11 15:12
5.	MW-13-112911	TZ32E	11-27587	Water	11/29/11 14:32	11/29/11 15:12
6.	MW-10-112911	TZ32F	11-27588	Water	11/29/11 11:46	11/29/11 15:12
7.	DUP-112911-3	TZ32G	11-27589	Water	11/29/11 06:01	11/29/11 15:12
8.	FB-112911-1	TZ32H	11-27590	Water	11/29/11 07:13	11/29/11 15:12
9.	TB-112911-1	TZ32I	11-27591	Water	11/29/11	11/29/11 15:12
10.	DUP-112911-1	TZ32J	11-27592	Water	11/29/11 05:00	11/29/11 15:12
11.	MW-1S-112911	TZ32K	11-27593	Water	11/29/11 07:12	11/29/11 15:12
12.	MW-1D-112911	TZ32L	11-27594	Water	11/29/11 06:26	11/29/11 15:12
13.	MW-7S-112911	TZ32M	11-27595	Water	11/29/11 09:52	11/29/11 15:12
14.	MW-13-112911	TZ32N	11-27596	Water	11/29/11 14:32	11/29/11 15:12
15.	MW-10-112911	TZ32O	11-27597	Water	11/29/11 11:46	11/29/11 15:12
16.	DUP-112911-1	TZ32P	11-27598	Water	11/29/11 05:00	11/29/11 15:12

Printed 11/30/11

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Data Reporting Qualifiers

Effective 2/14/2011

Inorganic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Duplicate RPD is not within established control limits

B — Reported value is less than the CRDL but ≥ the Reporting Limit

N — Matrix Spike recovery not within established control limits

NA — Not Applicable, analyte not spiked

H — The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible

L — Analyte concentration is ≤5 times the Reporting Limit and the replicate control limit defaults to ±1 RL instead of the normal 20% RPD

Organic Data

U — Indicates that the target analyte was not detected at the reported concentration

* — Flagged value is not within established control limits

B — Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.

J — Estimated concentration when the value is less than ARI's established reporting limits

D — The spiked compound was not detected due to sample extract dilution

E — Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

Q — Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20%Drift or minimum RRF).

TZ21 : 00017

S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte

NA The flagged analyte was not analyzed for

NR Spiked compound recovery is not reported due to chromatographic interference

NS The flagged analyte was not spiked into the sample

M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses

M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.

N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"

Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.

EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**

C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column

P The analyte was detected on both chromatographic columns but the quantified values differ by ≥40% RPD with no obvious chromatographic interference

X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**

Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**

TZ21 : 00018

Geotechnical Data

A	The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
F	Samples were frozen prior to particle size determination
SM	Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
SS	Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
W	Weight of sample in some pipette aliquots was below the level required for accurate weighting

TZ21 : 00019

LCS SOLUTIONS

LABL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
1	1907-1	PCB 1660	20	ACETONE	11/01/12
2#		BCOC PEST	10	ACETONE	NA
3	1885-1	PEST	01/02/10	ACETONE	12/15/11
4	1885-2	LOW PEST	.1/.2/1	ACETONE	12/15/11
5	1902-4	EPH	1500	MECL2	10/04/12
6	1919-2	PCP	12.5/125	ACETONE	10/15/12
7	1888-1	ABN	100	MEOH	08/30/12
8	1916-2	TBT	2.5	MECL2	11/23/12
9	1918-2	PORE TBT	.125/.25	MECL2	11/23/12
10					
11	1860-4	TPHD	15000	ACETONE	05/12/12
12					
13	1838-4	LOW PCB	2	ACETONE	01/31/12
14					
15	1814-2	SIM PNA	15/75	MEOH	01/04/12
16	1906-4	1,4-DIOXANE	100	MEOH	04/30/12
17	1869-4	1248 PCB	10	ACETONE	06/14/12
18	1814-3	LOW SIM PNA	1.5	ACETONE	01/04/12
19	1873-2	AK103	7500	ACETONE	01/02/12
20	1886-4	PNA	100	ACETONE	01/07/12
21	1874-3	SKY/BHT	100	MEOH	01/14/12
22	1864-3	HERB	02 to 2500	MEOH	12/03/11
23	1887-2	EXTRA PNA	15	ACETONE	08/25/12
24					
25#		DIPHENYL	100	MEOH	NA
26	1904-2	OP-PEST	25	MEOH	02/10/12
27		STEROLS	200	MEOH	NA
28#		ADD. PEST	2	ACETONE	NA
29#		DECANES	100	MEOH	NA

TZ21 : 00020

LCS SOLUTIONS

30		EDB/DBCP	0.2	MEOH	NA
31	1909-2	TERPINEOL	100	MEOH	02/14/12
32	1876-1	GUAIACOL	50-200	ACETONE	01/05/12
33		RETENE	100	MEOH	NA
34	1867-3	CONGENERS	0.5	ACETONE	03/14/12
35	1875-3	ALKYL PNA A	10	MEOH	07/18/12
36		ALKYL PNA B	10	MEOH	NA
37		CAR/PERY	100	ACETONE	NA
38	1904-1	ABN ACID	200-450	MEOH	04/21/12
39	1853-4	BENZIDINE	500	MEOH	04/30/12
40	1851-3	PBDE	0.5	MEOH	04/22/12
50	1900-1	FULL RESIN	250	ACETONE	08/12/12
51		DDTS	0.01	ACETONE	NA
52		1232 PCB	20	ACETONE	NA
53	1919-1	DALAPON	50	MEOH	08/22/12
54		T-CHLORDANE	10	ACETONE	NA
55		TOXAPHENE	50	ACETONE	NA
56	1917-1	ABN BASE	50-200	MEOH	05/31/12
	#=PROJECT SPECIFIC SOLUTION				
	*=REVERIFIED SOLUTION				

SURR SOLUTIONS

LABEL	SOLN ID	TEST	CONC. UG/ML	SOLVENT	EXP.
A	1906-5	ABN	100/150	MEOH	04/30/12
B	1917-2	SIM PNA	15/75	ACETONE	05/30/12
C	NA	SIM ABN	25/37.5	MEOH	NA
D	1907-4	LOW PCB	0.2	ACETONE	12/16/11
E	1900-2	HERB	62.5	MEOH	10/06/12
F	1896-2	PCP	12.5	ACETONE	12/09/11
G	1906-3	d8-DIOXANE	100	MEOH	04/30/12
H	1847-2	OP-PEST	25	ACETONE	03/23/12
I	1896-3	LOW S. PNA	1.5	ACETONE	09/22/12
J	1915-4	TBT-PORE	0.125	MECL2	11/23/12
K	1795-2	MED PCB	20	ACETONE	12/16/11
L	1915-3	TBT	2.5	MECL2	11/23/12
M	1888-4	EPH	1500	MECL2	04/04/12
N	1914-2	PCB	2	ACETONE	05/28/12
O	1914-4	TPH	450	MECL2	02/04/12
P	1895-4	HCID	2250	MECL2	02/04/12
Q	NA	EDB	1	MEOH	NA
R	1886-3	RESIN ACID	250	ACETONE	02/19/12
S	1864-1	PBDE	.5	MEOH	05/21/12
T	1884-2	ALKYL PNA	10	MEOH	07/15/12
U	NA	CONGENER	2.5	ACETONE	NA
V	1791-4	LOW PCP	1.25	ACETONE	12/09/11

TZ21 : 00022

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Volatile Organic Compounds (VOA) EPA SW-846 Methods 8260C 10 mL Purge Volume [1,6]

Effective: 8/30/2010

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI Control Limits	ARI ME Control Limits[2]
LCS Spike Recovery [5]		
Dichlorodifluoromethane	69 - 122	60 - 131
Chloromethane	76 - **120**	69 - 123
Vinyl Chloride	**80 - 120**	75 - 123
Bromomethane	71 - 120	63 - 129
Chloroethane	**80 - 120**	75 - 124
1,1,2-Trichloro-1,2,2-trifluoroethane	**80** - 121	76 - 128
Acrolein	69 - 126	60 - 136
Acetone	71 - **120**	64 - **120**
1,1-Dichloroethene	**80 - 120**	79 - 122
Bromoethane	**80 - 120**	80 - 121
Methyl Iodide	76 - 120	69 - 127
Methylene Chloride	**80 - 120**	77 - **120**
Acrylonitrile	79 - **120**	74 - **120**
Methyl tert-Butyl Ether	**80 - 120**	77 - 121
Carbon Disulfide	**80 - 120**	78 - 121
trans-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Vinyl Acetate	**80 - 120**	76 - **120**
1,1-Dichloroethane	**80 - 120**	**80 - 120**
2-Butanone	**80 - 120**	76 - **120**
2,2-Dichloropropane	**80 - 120**	77 - 120
cis-1,2-Dichloroethene	**80 - 120**	**80 - 120**
Chloroform	**80 - 120**	**80 - 120**
Bromodichloromethane	**80 - 120**	**80 - 120**
1,1,1-Trichloroethane	**80 - 120**	**80 - 120**
1,1-Dichloropropene	**80 - 120**	**80 - 120**
Carbon Tetrachloride	**80 - 120**	**80** - 123
1,2-Dichloroethane	**80 - 120**	**80 - 120**
Benzene	**80 - 120**	**80 - 120**
Trichloroethene	**80 - 120**	**80** - 120
1,2-Dichloropropane	**80 - 120**	**80 - 120**
Bromochloromethane	**80 - 120**	**80 - 120**
Dibromomethane	**80 - 120**	**80 - 120**
2-Chloroethylvinylether	**80 - 120**	75 - **120**
4-Methyl-2-Pentanone	**80 - 120**	78 - **120**
cis-1,3-Dichloropropene	**80 - 120**	**80 - 120**
Toluene	**80 - 120**	**80 - 120**
trans-1,3-Dichloropropene	**80 - 120**	**80 - 120**

TZ21 : 00023

2-Hexanone	**80 - 120**	75 - **120**
1,1,2-Trichloroethane	**80 - 120**	**80 - 120**
1,3-Dichloropropane	**80 - 120**	**80 - 120**
Tetrachloroethene	**80 - 120**	**80 - 120**
Dibromochloromethane	**80 - 120**	**80 - 120**
Ethylene Dibromide	**80 - 120**	**80 - 120**
Chlorobenzene	**80 - 120**	**80 - 120**
Ethylbenzene	**80 - 120**	**80** - 121
1,1,2,2-Tetrachloroethane	**80 - 120**	78 - **120**
m,p-Xylene	**80 - 120**	**80 - 120**
o-Xylene	**80 - 120**	**80 - 120**
Styrene	**80 - 120**	**80** - 122
Trichlorofluoromethane	**80 - 120**	78 123
Isopropylbenzene	**80 - 120**	79 - 121
Bromoform	**80 - 120**	79 - **120**
1,1,1,2-Tetrachloroethane	**80 - 120**	**80 - 120**
1,2,3-Trichloropropane	**80 - 120**	77 - **120**
trans-1,4-Dichloro-2-butene	74 - 122	66 - 130
n-Propylbenzene	**80 - 120**	80 - **120**
Bromobenzene	**80 - 120**	78 - **120**
1,3,5-Trimethylbenzene	**80 - 120**	**80** - 120
2-Chlorotoluene	**80 - 120**	80 - **120**
4-Chlorotoluene	**80 - 120**	**80 - 120**
tert-Butylbenzene	**80 - 120**	**80** - 121
1,2,4-Trimethylbenzene	**80 - 120**	**80** - 120
sec-Butylbenzene	**80 - 120**	**80** - 121
4-Isopropyltoluene	**80 - 120**	**80** - 123
1,3-Dichlorobenzene	**80 - 120**	**80 - 120**
1,4-Dichlorobenzene	**80 - 120**	**80 - 120**
n-Butylbenzene	**80 - 120**	**80** - 122
1,2-Dichlorobenzene	**80 - 120**	**80 - 120**
1,2-Dibromo-3-chloropropane	76 - **120**	71 - **120**
1,2,4-Trichlorobenzene	77 - **120**	71 - **120**
Hexachloro-1,3-butadiene	77 - 120	70 - 127
Naphthalene	76 - **120**	70 - **120**
1,2,3-Trichlorobenzene	79 - **120**	74 - **120**
MB/LCS Surrogate Recovery		
Dibromofluoromethane	**80 - 120**	(3)
d4-1,2-Dichloroethane	**80 - 120**	(3)
d8-Toluene	**80 - 120**	(3)
4-Bromofluorobenzene	**80 - 120**	(3)
d4-1,2-Dichlorobenzene	**80 - 120**	(3)
Sample Surrogate Recovery		
Dibromofluoromethane	**80 - 120**	(3)

TZ21 : 00024

d4-1,2-Dichloroethane	**80 - 120**	(3)
d8-Toluene	**80 - 120**	(3)
4-Bromofluorobenzene	**80 - 120**	(3)
D4-1,2-Dichlorobenzene	**80 - 120**	(3)

(1) Control Limits calculated using all data generated 7/1/09 through 6/30/10.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard[4] as beyond the LCS-CL but still within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances require corrective action.
(3) Marginal Exceedances not allowed for surrogate standards. A corrective action is required for each surrogate recovery outside of the control limit range.
(4) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(5) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(6) Highlighted control limits (**bold font**) are adjusted from the calculated values as follows:

a) ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
b) Control limits for analyzes with no separate preparation procedure are adjusted to reflect the minimum uncertainty in the calibration of the instrument allowed by the referenced analytical method.

TZ21 : 00025

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME [1,2]	Separatory Funnel [1]	Separatory Funnel - ME [1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
LCS Spike Recovery [8]				
Phenol [3]	50 - **100**	43 - 103	16 - **100**	6 - **100**
Bis-(2-chloroethyl) ether	52 - **100**	45 - 105	41 - 112	29 - 124
2-Chlorophenol	56 - **100**	49 - 103	43 - 111	32 - 122
1,3-Dichlorobenzene	23 - **100**	15 - **100**	32 - **100**	22 - 103
1,4-Dichlorobenzene	25 - **100**	17 - **100**	32 - **100**	22 - 103
Benzyl Alcohol	19 - 100	**10** - 114	22 - 100	9 - 113
1,2-Dichlorobenzene	30 - **100**	22 - **100**	34 - **100**	24 - 104
2-Methylphenol	52 - **100**	44 - 106	36 - 110	24 - 122
2,2'-oxybis(1-chloropropane)	32 - 111	19 - 124	29 - 118	14 - 133
4-Methylphenol	53 - 102	45 - 110	38 - 104	27 - 115
N-Nitroso-di-n-propylamine	43 - 104	33 - 114	38 - 115	25 - 128
Hexachloroethane	12 - **100**	**10** - **100**	24 - **100**	13 - 100
Nitrobenzene	33 - 125	18 - 140	45 - 106	35 - 116
Isophorone	57 - 115	47 - 125	55 - 119	44 - 130
2-Nitrophenol	56 - 102	48 - 110	46 - 118	34 - 130
2,4-Dimethyphenol	29 - **100**	20 - **100**	28 - 105	15 - 118
Bis-(2-chloroethoxy) methane	54 - 101	46 - 109	44 - 118	32 - 130
Benzoic Acid [3]	**10** - 131	**10** - 151	11 - **100**	**10** - **100**
2,4-Dichlorophenol	56 - 104	48 - 112	43 - 121	30 - 134
1,2,4-Trichlorobenzene	27 - **100**	18 - **100**	35 - **100**	25 - 107
Naphthalene	45 - **100**	38 - **100**	36 - 111	24 - 124
4-Chloroaniline [3]	**10** - 139	**10** - 161	10 - 174	**10** - 201
2-Chloronaphthalene	45 - **100**	37 - 105	39 - 118	26 - 131
Hexachlorobutadiene	**10** - **100**	**10** - **100**	24 - **100**	12 - 108
4-Chloro-3-methylphenol	53 - 109	44 - 118	45 - 122	32 - 135
2-Methylnaphthalene	46 - **100**	38 - 100	45 - 103	35 - 113
Hexachlorocyclopentadiene	**10** - **100**	**10** - **100**	23 - 108	**10** - 122
2,4,6-Trichlorophenol	58 - 108	50 - 116	48 - 122	36 - 134
2,4,5-Trichlorophenol	58 - 107	50 - 115	48 - 122	36 - 134
2-Nitroaniline	50 - 107	41 - 117	48 - 118	36 - 130
Dimethylphthalate	58 - 107	50 - 115	50 - 120	38 - 132
Acenaphthylene	57 - 100	50 - 107	50 - 119	39 - 131
2,6-Dinitrotoluene	58 - 112	49 - 121	48 - 133	34 - 147
3-Nitroaniline [3]	21 - 150	**10** - 172	54 - 140	40 - 154
Acenaphthene	51 - **100**	43 - 106	41 - 120	28 - 133
2,4-Dinitrophenol	12 - 169	**10** - 195	23 - 176	**10** - 202

TZ21 : 00026

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME [1,2]	Separatory Funnel [1]	Separatory Funnel - ME [1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Dibenzofuran	57 - 100	50 - 107	51 - 114	41 - 125
4-Nitrophenol [3]	35 - 119	21 - 133	13 - **100**	**10** - **100**
2,4-Dinitrotoluene	58 - 117	48 - 127	51 - 134	37 - 148
Fluorene	56 - 104	48 - 112	50 - 120	38 - 132
Diethylphthlalate	52 - 111	42 - 121	48 - 122	36 - 134
4-Chlorophenyl-phenyl ether	55 - 104	47 - 112	50 - 118	39 - 129
4-Nitroaniline	49 - 112	39 - 123	42 - 136	26 - 152
4,6-Dinitro-2-Methylphenol	13 - 139	**10** - 160	32 - 121	17 - 136
N-Nitrosodiphenylamine	60 - 136	47 - 149	58 - 141	44 - 155
4-Bromophenyl-phenyl ether	55 - 103	47 - 111	50 - 122	38 - 134
Hexachlorobenzene	54 - 106	45 - 115	47 - 125	34 - 138
Pentachlorophenol	46 - 114	35 - 125	35 - 130	19 - 146
Phenanthrene	56 - 102	48 - 110	49 - 120	37 - 132
Anthracene	56 - 101	49 - 109	53 - 116	43 - 127
Carbazole	60 - 108	52 - 116	57 - 122	46 - 133
Di-n-butylphthalate	56 - 112	47 - 121	57 - 121	46 - 132
Fluoranthene	57 - 110	48 - 119	56 - 119	46 - 130
Pyrene	48 - 119	36 - 131	37 - 143	19 - 161
Butylbenzylphthalate	51 - 114	41 - 125	34 - 152	14 - 172
Benzo(a)Anthracene	55 - 105	47 - 113	49 - 129	36 - 142
3,3'-Dichlorbenzidine [3]	**10** - 128	**10** - 148	50 - 128	37 - 141
Chrysene	55 - 104	47 - 112	45 - 128	31 - 142
bis(2-Ethylhexyl) phthalate	28 - 164	**10** - 187	57 - 133	44 - 146
Di-n-octylphthalate	57 - 107	49 - 115	52 - 120	41 - 131
Benzofluoranthene(s) (Total)	30 - 160 [10]	30 - 160 [10]	30 - 160 [10]	30 - 160 [10]
Benzo(a)Pyrene	45 - 103	35 - 113	46 - 109	36 - 120
Indeno(1,2,3-cd)Pyrene	35 - 118	21 - 132	34 - 136	17 - 153
Dibenz(a,h)anthracene	42 - 119	29 - 132	41 - 134	26 - 150
Benzo(g,h,i)Perylene	39 - 123	25 - 137	41 - 133	26 - 148
Aniline [3]	**10** - **100**	**10** - **100**	28 - 126	12 - 142
1,2-Diphenylhydrazine /Azobenzene	57 - 109	48 - 118	55 - 119	44 - 130
N-Nitrosodimethylamine	49 - **100**	41 - 104	31 - **100**	21 - 105
1-Methylnaphthalene	46 - **100**	37 - 107	43 - 115	31 - 127
1,4-Dioxane	40 - **100**	30 - 108	30 - 160 [4]	30 - 160 [4]
Pyridine	-	-	25 - **100**	15 - **100**
Tributyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Dibutyl Phenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]

TZ21 : 00027

Spike Recovery Control Limits for Analysis of Aqueous Samples Semi-Volatile Organic Compounds (SVOA) EPA SW-846 Methods 8270D [9]

Effective: 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

Extraction Method:	Liquid-Liquid Extract [1]	Liquid-Liquid ME[1,2]	Separatory Funnel [1]	Separatory Funnel - ME[1,2]
Sample Weight / Final Volume:	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL	500 to 0.5 mL
Butyl Diphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Triphenyl Phosphate	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
Butylated Hydroxytoluene (BHT)	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]	30 - 160 [4]
MB / LCS Surrogate Recovery				
d4-2-Chlorophenol	53 - 100	(5)	49 - 101	(5)
d4-1,2-Dichlorobenzene	38 - **100**	(5)	40 - **100**	(5)
2,4,6-Tribromophenol	52 - 123	(5)	51 - 122	(5)
2-Fluorophenol	46 - **100**	(5)	31 - **100**	(5)
d5-Phenol [3]	50 - 100	52 - 108	19 - **100**	12 - **100**
d5-Nitrobenzene	46 - 100	(5)	46 - 101	(5)
2-Fluorobiphenyl	49 - **100**	(5)	49 - 103	(5)
d14-p-Terphenyl	53 - 119	(5)	49 - 130	(5)
d8-1,4-Dioxane	45 - **100**	(5)	30 - 160 [4]	(5)
Sample Surrogate Recovery				
d4-2-Chlorophenol	44 - **100**	(5)	23 - 104	(5)
d4-1,2-Dichlorobenzene	32 - **100**	(5)	22 - **100**	(5)
2,4,6-Tribromophenol	48 - 118	(5)	22 - 125	(5)
2-Fluorophenol	38 - **100**	(5)	18 - **100**	(5)
d5-Phenol	41 - **100**	32 - 104	**10** - **100**	17 - **100**
d5-Nitrobenzene	39 - **100**	(5)	21 - 106	(5)
2-Fluorobiphenyl	42 - **100**	(5)	26 - 104	(5)
d14-p-Terphenyl	26 - 114	(5)	11 - 132	(5)
d8-1,4-Dioxane	32 - **100**	(5)	30 - 160 [4]	(5)

(1) Control Limits calculated using all data generated 1/1/07 through 12/1/07.
(2) **ME** = A **marginal exceedance** defined in the NELAC Standard [6] as beyond the CL but still within the ME limits. ARI defines ME limits as between 3 and 4 standard deviations around the mean with upper limit ≥ 100%. A maximum of four marginal exceedances are acceptable. Five or more marginal exceedances in an analysis require corrective action.
(3) These are "**poor performers**" defined in the DoD QSM[7] as compounds that "produce low mean recoveries and high standard deviations, resulting in wide LCS control limits with particularly low lower control limits (sometimes-negative values). ARI does not control batch acceptance based on these compounds since there is a high level of uncertainty in their recovery."
(4) 30 – 160 are default, advisory control limits used when there is insufficient data to calculate historic control limits. **DO NOT** use these limits as the sole reason to reject the data from a batch of analyses.
(5) Marginal Exceedances not allowed for surrogate unless it is a "poor performer".
(6) **2003 NELAC Standard (EPA/600/R-04/003), July 2003**, Chapter 5, pages 251-252.
(7) Page 182 of: **Department of Defense Quality Systems Manual for Environmental Laboratories, Version 3 Final, March 2005** Prepared By Environmental Data Quality Workgroup, Department of Navy, Lead Service (Based On National Environmental Laboratory Accreditation Conference (NELAC) Chapter 5 (Quality Systems) NELAC Voted Version – 5 June 2003
(8) Laboratory Control Sample (LCS) spike recovery control limits also used as advisory control limits for sample matrix spike (MS) analyzes. MS recovery values are advisory and not used to assess the acceptability of an analytical batch.
(9) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
(10) Default limits pending generation of historic limits for total benzofluoranthrenes (7/29/10)

TZ21 : 00028

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Quality Control Criteria
Total Petroleum Hydrocarbons
(Diesel & Motor Oil)

Analysis Code	Analyte[5]	LOD[1]	LOQ[2] ppm	Spike % Recovery Control Limits[3]			RPD[4]
				LCS	MB/LCS Surrogate	Sample Surrogate	
HCIWVX	NWTPH-HCID – Water Samples	--	0.50 [7]	--	--	50-150	≤ 40
HCISVX	NWTPH-HCID – Solid Samples	--	50 [7]	--	--	50-150	
Aqueous Samples – No Extract Clean-up – Separatory Funnel Extraction – 500 to 1.0 mL							
DIESWI	DRO – NWTPH-Dext (C_{12}-C_{24})	0.022	0.1	64-112	50-150	50-150	≤ 40
AK2WSI	DRO – AK102 (C_{10}-C_{25})	0.022	0.1	75-125 [6]	60-120	50-150	
OILWSI	RRO – NWTPH-Dext (C_{24}-C_{38})	0.044	0.2	64-112	50-150	50-150	
AK3WSI	RRO – AK103 (C_{25}-C_{36})	0.030 [8]	0.2	60-120 [6]	60-120	50-150	
Aqueous Samples – With Acid and/or Silica Gel Clean-up – Separatory Funnel Extraction – 500 to 1.0 mL							
DIESWI	DRO – NWTPH-Dext (C_{12}-C_{24})	0.039	0.1	61-104	50-150	50-150	≤ 40
AK2WSI	DRO – AK102 (C_{10}-C_{25})	0.042	0.1	75-125 [6]	60-120	50-150	
OILWSI	RRO – NWTPH-Dext (C_{24}-C_{38})	0.010	0.2	61-104	50-150	50-150	
AK3WSI	RRO – AK103 (C_{25}-C_{36})	0.030 [8]	0.2	60-120 [6]	60-120	50-150	
Solid Matrix Samples – No Extract Clean-up – Microwave Extraction – 10 g to 1 mL							
DIESMI	DRO – NWTPH-Dext (C_{12}-C_{24})	1.35	5	62-119	50-150	50-150	≤ 40
AK2SMI	DRO – AK102 (C_{10}-C_{25})	2.43	5	75-125 [6]	60-120	50-150	
OILSMI	RRO – NWTPH-Dext (C_{24}-C_{38})	2.48	10	62-119	50-150	50-150	
AK3SMI	RRO – AK103 (C_{25}-C_{36})	0.665 [9]	10	60-120 [6]	60-120	50-150	
Solid Matrix Samples – With Acid and/or Silica Gel Clean-up – Microwave Extraction – 10 g to 1 mL							
DIESMI	DRO – NWTPH-Dext (C_{12}-C_{24})	1.28	5	60-108	50-150	50-150	≤ 40
AK2SMI	DRO – AK102 (C_{10}-C_{25})	2.06	5	75-125 [6]	60-120	50-150	
OILSMI	RRO – NWTPH-Dext (C_{24}-C_{38})	1.57	10	60-108	50-150	50-150	
AK3SMI	RRO – AK103 (C_{25}-C_{36})	0.665 [9]	10	60-120 [6]	60-120	50-150	

(1) Limit of Detection as defined in ARI SOP 1018S.
(2) Limit of Quantitation as defined in ARI SOP 1018S. The spike concentration used to determine the LOD and the concentration of the lowest standard used to calibrate the GC-FID instrument.
(3) All surrogate recovery limits are specified in the published methods (AK102, AK103 & NWTPH-Dext). The surrogate standard is *o*-Terphenyl.
(4) Acceptance criteria for the relative percent difference (RPD) between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$
(5) DRO = Diesel Range Organics and RRO = Residual Range Organics as defined in the methods referenced in footnote 3.
(6) Method specified LCS acceptance limits.
(7) Method specified reporting limits
(8) MDL study QD55 completed 2/12/10
(9) MDL study QD35 completed 1/29/10

TZ21 : 00029

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Quality Control Criteria
Gasoline and BTEX

Method	Analyte	DL[1]	LOD[1]	LOQ[1]	Spike % Recovery Control Limits[2]			RPD[3]
					LCS	MB/LCS Surrogate	Sample Surrogate	
Aqueous Samples (DL, LOD & LOQ values in µg/L (ppb) for BTEX and mg/L (ppm) for gasoline								
NWTPH-G	Toluene – Naphthalene	0.057	0.125	0.25	75 – 124	--	--	≤ 40
8015B	2-methylpentane – 1,2,4-Trimethylbenzene	0.031	0.125	0.25	75 – 124	--	--	
WA-TPH-G	Toluene – nC_{12})	0.087	0.125	0.25	75 – 124	--	--	
AK-101	nC_6 – nC_{12}	0.032	0.050	0.10	75 – 124	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	**80 - 120**	**80 - 120**	
	Bromobenzene	--	--	--	--	**80 - 120**	**80 - 120**	
8021B	Benzene	0.094	0.5	1.0	73 – **120**	--	--	≤ 40
8021B	Toluene	0.113	0.5	1.0	73 – **120**	--	--	
8021B	Ethylbenzene	0.117	0.5	1.0	69 – **120**	--	--	
8021B	m/p-Xylene	0.265	1.0	2.0	72 – **120**	--	--	
8021B	o-Xylene	0.136	0.5	1.0	73 – **120**	--	--	
8021B	MTBE	0.412	0.5	1.0	30 – 182	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	79 – **120**	**80 - 120**	
	Bromobenzene	--	--	--	--	79 – **120**	**80 - 120**	
Solid Samples - (DL, LOD & LOQ values in µg/kg (ppb) for BTEX and mg/kg (ppm) for gasoline								
NWTPH-G	Toluene – Naphthalene	1.66	2.5	5	74 – 124	--	--	≤ 40
8015B	2-methylpentane – 1,2,4-Trimethylbenzene	1.57	2.5	5	74 – 124	--	--	
WA-TPH-G	Toluene – nC_{12})	1.54	2.5	5	74 – 124	--	--	
AK-101	nC_6 – nC_{12}	1.84	2.5	5	74 – 124	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	**80 - 120**	66-123	
	Bromobenzene	--	--	--	--	**80 - 120**	62-130	
8021B	Benzene	4.59	12.5	25	72 – **120**	--	--	≤ 40
8021B	Toluene	7.13	12.5	25	72 – **120**	--	--	
8021B	Ethylbenzene	4.98	12.5	25	71 – **120**	--	--	
8021B	m/p-Xylene	11.9	25.0	50	72 – **120**	--	--	
8021B	o-Xylene	6.23	12.5	25	72 – **120**	--	--	
8021B	MTBE	3.82	12.5	25	40 – 163	--	--	
	Trifluorotoluene (TFT)	--	--	--	--	80 – **120**	68 – 124	
	Bromobenzene	--	--	--	--	77 – **120**	62 – 134	

(1) Detection Limit (DL), Limit of Detection (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S.
(2) Highlighted control limits (bold font) are adjusted from the calculated values as follows:
a) Highlighted control limits (**bold font**) adjusted to demonstrate that ARI does not use control limits < 10 for the lower limit or < 100 for the upper limit.
b) Control limits for analytes with no separate preparation procedure are adjusted to reflect the minimum uncertainty in the calibration of the instrument allowed by the referenced analytical method.
(3) Acceptance criteria for the relative percent difference (RPD) between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

TZ21 : 00030

Quality Control Parameters for Metals Analysis using ICP-OES

	Aqueous Samples[2]			Spike Recovery		RPD[5]	Solids[3]	Tissue[4]
Analyte	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ mg/kg	LOQ mg/kg
Aluminum	7.57	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Antimony	6.28	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Arsenic	3.33	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Barium	1.33	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Beryllium	0.16	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Boron	7.39	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Cadmium	0.18	0.5	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Calcium	11.27	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Chromium	1.24	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Cobalt	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Copper	0.92	1.0	**2.0**	75 – 125	80 – 120	≤ 20	**0.2**	**0.04**
Iron	7.50	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Lead	1.55	10	**20**	75 – 125	80 – 120	≤ 20	**2.0**	**0.4**
Magnesium	9.61	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Manganese	0.28	0.5	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Molybdenum	0.79	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.1**
Nickel	3.86	5.0	**10**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Potassium	65.70	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Selenium	4.99	25	**50**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Silicon	8.17	30	**60**	75 – 125	80 – 120	≤ 20	**(6)**	**(6)**
Silver	0.43	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Sodium	11.35	250	**500**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Strontium	0.09	1.0	**1.0**	75 – 125	80 – 120	≤ 20	**0.1**	**0.02**
Thallium	3.10	25	**50**	75 – 125	80 – 120	≤ 20	**5.0**	**1.0**
Tin	1.41	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**
Titanium	2.11	2.5	**5.0**	75 – 125	80 – 120	≤ 20	**0.5**	**0.01**
Vanadium	0.27	1.5	**3.0**	75 – 125	80 – 120	≤ 20	**0.3**	**0.06**
Zinc	1.45	5.0	**10**	75 – 125	80 – 120	≤ 20	**1.0**	**0.2**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Tissue is reported on an "as received" (wet weight) basis using 2.5 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

(6) ARI does not analyze for Silicon in solids or tissue samples

TZ21 : 00031

Quality Control Parameters for Metals Analysis using ICP-MS

Analyte	Mass	Aqueous Samples[2]			Spike Recovery		RPD[4]	Solids[3]
		DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS		LOQ[1] mg/kg
Aluminum	27	1.601	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Antimony	121	0.010	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
	123	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #1	75	0.048	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Arsenic #2	75	0.092	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Barium	135	0.020	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	137	0.019	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Beryllium	9	0.021	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Cadmium	111	0.010	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
	114	0.005	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Calcium	43	3.983	25	**50.0**	75 – 125	80 – 120	≤ 20	**50.0**
Chromium	52	0.045	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	53	0.118	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Cobalt	59	0.011	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Copper	63	0.158	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	65	0.236	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Iron	54	5.753	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
	57	3.876	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Lead	208	0.046	0.05	**0.1**	75 – 125	80 – 120	≤ 20	**0.1**
Magnesium	24	0.297	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Manganese	55	0.022	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Molybdenum	98	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Nickel	60	0.079	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	62	0.089	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
Potassium	39	2.944	10	**20.0**	75 – 125	80 – 120	≤ 20	**20.0**
Selenium	82	0.127	0.25	**0.5**	75 – 125	80 – 120	≤ 20	**0.5**
	78	0.324	0.25	**2.0**	75 – 125	80 – 120	≤ 20	**2.0**
Silver	107	0.008	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Sodium	23	2.833	50	**100.0**	75 – 125	80 – 120	≤ 20	**100.0**
Thorium	232	0.013	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Thallium	205	0.004	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Uranium	238	0.003	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Vanadium	51	0.043	0.1	**0.2**	75 – 125	80 – 120	≤ 20	**0.2**
Zinc	66	0.497	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	67	0.531	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**
	68	0.524	2	**4.0**	75 – 125	80 – 120	≤ 20	**4.0**

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 50 mL sample and 50 mL final volume
(3) Solids LOQ based on 100% solids using 1.0 g sample with 100 mL final volume.
(4) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then

$$RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$$

TZ21 : 00032

Quality Control Parameters for Mercury Analysis using CVAA

	Aqueous Samples[2]			Spike Recovery		RPD[5]
	DL[1] µg/L	LOD[1] µg/L	LOQ[1] µg/L	Matrix Spike	LCS	
Mercury	0.0069	0.05	**0.10**[2]	75 – 125	80 – 120	≤ 20
Mercury (low level)	0.0026	0.01	**0.02**[3]	75 – 125	80 – 120	≤ 20
	Soil / Sediment / Tissue[4] Samples			**Spike Recovery**		**RPD[5]**
	DL[1] mg/kg	**LOD[1] mg/kg**	**LOQ[1] mg/kg**	**Matrix Spike**	**LCS**	
Mercury	0.0021	0.0125	**0.025**[3,4]	75 – 125	80 – 120	≤ 20

(1) Detection Limit (DL), Limit of Detection Limit (LOD) and Limit of Quantitation (LOQ) as defined in ARI SOP 1018S
(2) 20 mL sample with 20 mL final volume
(3) 0.2 g sample with 50 mL final volume assuming 100% dry weight. Soil and sediment are reported on a dry weight basis.
(4) Tissue LOQ is 0.005 mg/kg as received (wet weight) based on 1 g sample with 50 mL final volume.
(5) Relative Percent Difference between analytes in replicate analyzes. If C_O and C_D are the concentrations of the original and duplicate respectively then $RPD = \frac{|C_O - C_D|}{\frac{C_O + C_D}{2}} x100$

TZ21 : 00033

Analytical Resources,Incorporated
Analytical Chemists and Consultants

Spike Recovery Control Limits for Conventional Wet Chemistry

Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. http://www.arilabs.com/portal/downloads/ARI-CLs.zip

	ARI's Control Limits	
Sample Matrix:	Water	Soil / Sediment
Matrix Spike Recoveries	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 125	75 - 125
Chloride	75 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
Duplicate RPDs		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

TZ21 00034

Volatile Analysis
Report and Summary QC Forms

ARI Job ID: TZ21, TZ32

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-04S-112811**
 SAMPLE

Lab Sample ID: TZ21B
LIMS ID: 11-27522
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/06/11 12:02

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U

Lab Sample ID: TZ21B
LIMS ID: 11-27522
Matrix: Water
Date Analyzed: 12/06/11 12:02

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07

CAS Number	Analyte	RL	Result	Q
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.4%
d8-Toluene	99.1%
Bromofluorobenzene	109%
d4-1,2-Dichlorobenzene	94.1%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-112811-1**
Page 1 of 2 **SAMPLE**

Lab Sample ID: TZ21F
LIMS ID: 11-27526
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling 128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/06/11 12:28

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	**Styrene**	**0.2**	**0.2**	
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-112811-1**
 SAMPLE

Lab Sample ID: TZ21F
LIMS ID: 11-27526
Matrix: Water
Date Analyzed: 12/06/11 12:28

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07

CAS Number	Analyte	RL	Result	Q
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	99.6%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	99.3%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-120611	Method Blank	10	102%	101%	102%	99.1%	0
LCS-120611	Lab Control	10	104%	103%	101%	100%	0
LCSD-120611	Lab Control Dup	10	101%	99.1%	102%	106%	0
TZ21B	MW-04S-112811	10	99.4%	99.1%	109%	94.1%	0
TZ21F	TB-112811-1	10	101%	99.6%	105%	99.3%	0

	LCS/MB LIMITS	QC LIMITS
SW8260C		
(DCE) = d4-1,2-Dichloroethane	80-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 11-27522 to 11-27526

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-13-112911**
 SAMPLE

Lab Sample ID: TZ32E
LIMS ID: 11-27587
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/06/11 15:10

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MW-13-112911**
 SAMPLE

Lab Sample ID: TZ32E
LIMS ID: 11-27587
Matrix: Water
Date Analyzed: 12/06/11 15:10

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in ug/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	102%
d8-Toluene	102%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: FB-112911-1**
Page 1 of 2 **SAMPLE**

Lab Sample ID: TZ32H
LIMS ID: 11-27590
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Instrument/Analyst: NT2/PXC
Date Analyzed: 12/06/11 15:36

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C Sample ID: FB-112911-1
  SAMPLE

Lab Sample ID: TZ32H QC Report No: TZ32-ERM-West
LIMS ID: 11-27590 Project: RG Fall GW Sampling
Matrix: Water 128296.07
Date Analyzed: 12/06/11 15:36

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl ether	0.5	< 0.5	U

Reported in ug/L (ppb)

Volatile Surrogate Recovery

1,2-Dichloroethane	101%
Toluene	102%
Bromofluorobenzene	102%
1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-112911-1**
 SAMPLE

Lab Sample ID: TZ321
LIMS ID: 11-27591
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Instrument/Analyst: NT2/ZKC
Date Analyzed: 12/06/11 16:03

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	**Methylene Chloride**	**0.5**	**0.5**	
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	**Styrene**	**0.2**	**0.2**	
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U
76-13-	1,2,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: TB-112911-1**
 SAMPLE

Lab Sample ID: TZ32I QC Report No: TZ32-ERM-West
LIMS ID: 11-27[illegible]91 Project: RG Fall GW Sampling
Matrix: Water 128296.07
Date Analyzed: 12/06/11 16:33

CAS Number	Analyte	RL	Result	Q
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in ug/L (ppb)

Volatile Surrogate Recovery

[illegible]-1,2-Dichloroethane	100%
[illegible]-Toluene	102%
[illegible]romofluorobenzene	100%
[illegible]-1,2-Dichlorobenzene	98.0%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

ANALYTICAL RESOURCES INCORPORATED

VOA SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07

ARI ID	Client ID	PV	DCE	TOL	BFB	DCB	TOT OUT
MB-120611	Method Blank	10	102%	101%	102%	99.1%	0
LCS-120611	Lab Control	10	104%	103%	101%	100%	0
LCSD-120611	Lab Control Dup	10	101%	99.1%	102%	106%	0
TZ32E	MW-13-112911	10	102%	102%	102%	101%	0
TZ32H	FB-112911-1	10	101%	102%	102%	100%	0
TZ32I	TB-112911-1	10	100%	102%	100%	98.0%	0

	LCS/MB LIMITS	QC LIMITS
SW8260C		
(DCE) = d4-1,2-Dichloroethane	80-120	80-120
(TOL) = d8-Toluene	80-120	80-120
(BFB) = Bromofluorobenzene	80-120	80-120
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120

Prep Method: SW5030B
Log Number Range: 11-27587 to 11-27591

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-120611**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120611
LIMS ID: 11-27522
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT2/PKC
LCSD: NT2/PKC
Date Analyzed LCS: 12/06/11 10:06
LCSD: 12/06/11 10:33

Sample Amount LCS: 10.0 mL
LCSD: 10.0 mL
Purge Volume LCS: 10.0 mL
LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.6	10.0	96.0%	10.7	10.0	107%	10.8%
Bromomethane	9.2	10.0	92.0%	11.5	10.0	115%	22.2%
Vinyl Chloride	9.8	10.0	98.0%	10.8	10.0	108%	9.7%
Chloroethane	9.5	10.0	95.0%	10.9	10.0	109%	13.7%
Methylene Chloride	9.2	10.0	92.0%	10.2	10.0	102%	10.3%
Acetone	49.5	50.0	99.0%	55.8	50.0	112%	12.0%
Carbon Disulfide	9.6	10.0	96.0%	10.9	10.0	109%	12.7%
1,1-Dichloroethene	9.0	10.0	90.0%	10.2	10.0	102%	12.5%
1,1-Dichloroethane	9.6	10.0	96.0%	10.6	10.0	106%	9.9%
trans-1,2-Dichloroethene	9.4	10.0	94.0%	10.3	10.0	103%	9.1%
cis-1,2-Dichloroethene	9.3	10.0	93.0%	10.2	10.0	102%	9.2%
Chloroform	9.6	10.0	96.0%	10.6	10.0	106%	9.9%
1,2-Dichloroethane	9.8	10.0	98.0%	10.3	10.0	103%	5.0%
2-Butanone	53.8	50.0	108%	52.6	50.0	105%	2.3%
1,1,1-Trichloroethane	9.5	10.0	95.0%	10.7	10.0	107%	11.9%
Carbon Tetrachloride	9.4	10.0	94.0%	11.0	10.0	110%	15.7%
Vinyl Acetate	10.4	10.0	104%	10.4	10.0	104%	0.0%
Bromodichloromethane	9.8	10.0	98.0%	10.3	10.0	103%	5.0%
1,2-Dichloropropane	10.0	10.0	100%	10.4	10.0	104%	3.9%
cis-1,3-Dichloropropene	10.9	10.0	109%	10.1	10.0	101%	7.6%
Trichloroethene	9.3	10.0	93.0%	10.2	10.0	102%	9.2%
Dibromochloromethane	9.8	10.0	98.0%	10.3	10.0	103%	5.0%
1,1,2-Trichloroethane	10.2	10.0	102%	9.5	10.0	95.0%	7.1%
Benzene	9.7	10.0	97.0%	10.5	10.0	105%	7.9%
trans-1,3-Dichloropropene	11.2	10.0	112%	9.9	10.0	99.0%	12.3%
2-Chloroethylvinylether	11.1	10.0	111%	9.1	10.0	91.0%	19.8%
Bromoform	10.4	10.0	104%	10.2	10.0	102%	1.9%
4-Methyl-2-Pentanone (MIBK)	53.6	50.0	107%	56.6	50.0	113%	5.4%
2-Hexanone	55.6	50.0	111%	52.0	50.0	104%	6.7%
Tetrachloroethene	9.7	10.0	97.0%	10.7	10.0	107%	9.8%
1,1,2,2-Tetrachloroethane	9.9	10.0	99.0%	10.6	10.0	106%	6.8%
Toluene	9.9	10.0	99.0%	10.0	10.0	100%	1.0%
Chlorobenzene	9.7	10.0	97.0%	10.2	10.0	102%	5.0%
Ethylbenzene	9.8	10.0	98.0%	10.8	10.0	108%	9.7%
Styrene	10.5	10.0	105%	10.9	10.0	109%	3.7%
Trichlorofluoromethane	9.8	10.0	98.0%	11.0	10.0	110%	11.5%
1,1,2-Trichloro-1,2,2-trifluoroetha	9.6	10.0	96.0%	10.4	10.0	104%	8.0%
m,p-Xylene	20.1	20.0	100%	22.2	20.0	111%	9.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: LCS-120611**
 LAB CONTROL SAMPLE

Lab Sample ID: LCS-120611 QC Report No: TZ21-ERM-West
LIMS ID: 11-27522 Project: RG Fall GW Sampling
Matrix: Water 128296.07

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
o-Xylene	9.9	10.0	99.0%	11.5	10.0	115%	15.0%
1,2-Dichlorobenzene	9.5	10.0	95.0%	10.5	10.0	105%	10.0%
1,3-Dichlorobenzene	9.8	10.0	98.0%	10.3	10.0	103%	5.0%
1,4-Dichlorobenzene	9.6	10.0	96.0%	10.3	10.0	103%	7.0%
Acrolein	39.5	50.0	79.0%	44.0	50.0	88.0%	10.8%
Methyl Iodide	9.2	10.0	92.0%	10.3	10.0	103%	11.3%
Bromoethane	9.4	10.0	94.0%	10.4	10.0	104%	10.1%
Acrylonitrile	10.0	10.0	100%	11.0	10.0	110%	9.5%
1,1-Dichloropropene	9.7	10.0	97.0%	10.7	10.0	107%	9.8%
Dibromomethane	9.7	10.0	97.0%	10.2	10.0	102%	5.0%
1,1,1,2-Tetrachloroethane	9.5	10.0	95.0%	11.6	10.0	116%	19.9%
1,2-Dibromo-3-chloropropane	11.0 Q	10.0	110%	12.0 Q	10.0	120%	8.7%
1,2,3-Trichloropropane	10.0	10.0	100%	10.1	10.0	101%	1.0%
trans-1,4-Dichloro-2-butene	8.7	10.0	87.0%	8.2	10.0	82.0%	5.9%
1,3,5-Trimethylbenzene	10.6	10.0	106%	11.5	10.0	115%	8.1%
1,2,4-Trimethylbenzene	10.5	10.0	105%	11.5	10.0	115%	9.1%
Hexachlorobutadiene	10.0	10.0	100%	12.2	10.0	122%	19.8%
Ethylene Dibromide	10.1	10.0	101%	9.3	10.0	93.0%	8.2%
Bromochloromethane	9.4	10.0	94.0%	10.3	10.0	103%	9.1%
2,2-Dichloropropane	10.1	10.0	101%	11.9	10.0	119%	16.4%
1,3-Dichloropropane	10.2	10.0	102%	9.9	10.0	99.0%	3.0%
Isopropylbenzene	10.5	10.0	105%	11.4	10.0	114%	8.2%
n-Propylbenzene	10.4	10.0	104%	11.0	10.0	110%	5.6%
Bromobenzene	9.9	10.0	99.0%	10.0	10.0	100%	1.0%
2-Chlorotoluene	10.2	10.0	102%	10.9	10.0	109%	6.6%
4-Chlorotoluene	10.1	10.0	101%	10.5	10.0	105%	3.9%
tert-Butylbenzene	10.6	10.0	106%	11.6	10.0	116%	9.0%
sec-Butylbenzene	10.4	10.0	104%	11.4	10.0	114%	9.2%
4-Isopropyltoluene	10.5	10.0	105%	11.6	10.0	116%	10.0%
n-Butylbenzene	10.3	10.0	103%	11.6	10.0	116%	11.9%
1,2,4-Trichlorobenzene	10.1	10.0	101%	12.1	10.0	121%	18.0%
Naphthalene	10.2	10.0	102%	12.3	10.0	123%	18.7%
1,2,3-Trichlorobenzene	9.9	10.0	99.0%	12.4	10.0	124%	22.4%
Methyl tert-Butyl Ether	9.6	10.0	96.0%	10.7	10.0	107%	10.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	104%	101%
d8-Toluene	103%	99.1%
Bromofluorobenzene	101%	102%
d4-1,2-Dichlorobenzene	100%	106%

4A

VOLATILE METHOD BLANK SUMMARY

Method Blank ID.

MB1206

Lab Name: ANALYTICAL RESOURCES INC

Client: ERM-WEST

ARI Job No: TZ21

Project: RG FALL GW SAMPLING

Lab File ID: MB1206

Lab Sample ID: MB1206

Date Analyzed: 12/06/11

Time Analyzed: 1100

Instrument ID: NT2

Heated Purge: (Y/N) N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS1206	LCS1206	LCS1206	1006
02	LCS1206	LCS1206	LCS1206A	1033
03	MW-04S-11281	TZ21B	TZ21B1	1202
04	TB-112811-1	TZ21F	TZ21F	1228
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

4A
VOLATILE METHOD BLANK SUMMARY

Method Blank ID.

MB1206

Lab Name: ANALYTICAL RESOURCES INC

Client: ERM-WEST

ARI Job No: TZ32

Project: RG FALL GW SAMPLING

Lab File ID: MB1206

Lab Sample ID: MB1206

Date Analyzed: 12/06/11

Time Analyzed: 1100

Instrument ID: NT2

Heated Purge: (Y/N) N

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	LCS1206	LCS1206	LCS1206	1006
02	LCS1206	LCS1206	LCS1206A	1033
03	MW-13-112911	TZ32E	TZ32E	1510
04	FB-112911-1	TZ32H	TZ32H	1536
05	TB-112911-1	TZ32I	TZ32I	1603
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

COMMENTS:

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-120611**
Page 1 of 2 **METHOD BLANK**

Lab Sample ID: MB-120611
LIMS ID: 11-27522
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT2/PKC
Date Analyzed: 12/06/11 11:00

Sample Amount: 10.0 mL
Purge Volume: 10.0 mL

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	0.5	< 0.5	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.2	< 0.2	U
75-00-3	Chloroethane	0.2	< 0.2	U
75-09-2	Methylene Chloride	0.5	< 0.5	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.2	< 0.2	U
75-35-4	1,1-Dichloroethene	0.2	< 0.2	U
75-34-3	1,1-Dichloroethane	0.2	< 0.2	U
156-60-5	trans-1,2-Dichloroethene	0.2	< 0.2	U
156-59-2	cis-1,2-Dichloroethene	0.2	< 0.2	U
67-66-3	Chloroform	0.2	< 0.2	U
107-06-2	1,2-Dichloroethane	0.2	< 0.2	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.2	< 0.2	U
56-23-5	Carbon Tetrachloride	0.2	< 0.2	U
108-05-4	Vinyl Acetate	1.0	< 1.0	U
75-27-4	Bromodichloromethane	0.2	< 0.2	U
78-87-5	1,2-Dichloropropane	0.2	< 0.2	U
10061-01-5	cis-1,3-Dichloropropene	0.2	< 0.2	U
79-01-6	Trichloroethene	0.2	< 0.2	U
124-48-1	Dibromochloromethane	0.2	< 0.2	U
79-00-5	1,1,2-Trichloroethane	0.2	< 0.2	U
71-43-2	Benzene	0.2	< 0.2	U
10061-02-6	trans-1,3-Dichloropropene	0.2	< 0.2	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.2	< 0.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.2	< 0.2	U
79-34-5	1,1,2,2-Tetrachloroethane	0.2	< 0.2	U
108-88-3	Toluene	0.2	< 0.2	U
108-90-7	Chlorobenzene	0.2	< 0.2	U
100-41-4	Ethylbenzene	0.2	< 0.2	U
100-42-5	Styrene	0.2	< 0.2	U
75-69-4	Trichlorofluoromethane	0.2	< 0.2	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method SW8260C **Sample ID: MB-120611**
 METHOD BLANK

Lab Sample ID: MB-120611 QC Report No: TZ21-ERM-West
LIMS ID: 11-27522 Project: RG Fall GW Sampling
Matrix: Water 128296.07
Date Analyzed: 12/06/11 11:00

CAS Number	Analyte	RL	Result	Q
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroe	0.2	< 0.2	U
179601-23-1	m,p-Xylene	0.4	< 0.4	U
95-47-6	o-Xylene	0.2	< 0.2	U
95-50-1	1,2-Dichlorobenzene	0.2	< 0.2	U
541-73-1	1,3-Dichlorobenzene	0.2	< 0.2	U
106-46-7	1,4-Dichlorobenzene	0.2	< 0.2	U
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.2	< 0.2	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.2	< 0.2	U
74-95-3	Dibromomethane	0.2	< 0.2	U
630-20-6	1,1,1,2-Tetrachloroethane	0.2	< 0.2	U
96-12-8	1,2-Dibromo-3-chloropropane	0.5	< 0.5	U
96-18-4	1,2,3-Trichloropropane	0.5	< 0.5	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.2	< 0.2	U
95-63-6	1,2,4-Trimethylbenzene	0.2	< 0.2	U
87-68-3	Hexachlorobutadiene	0.5	< 0.5	U
106-93-4	Ethylene Dibromide	0.2	< 0.2	U
74-97-5	Bromochloromethane	0.2	< 0.2	U
594-20-7	2,2-Dichloropropane	0.2	< 0.2	U
142-28-9	1,3-Dichloropropane	0.2	< 0.2	U
98-82-8	Isopropylbenzene	0.2	< 0.2	U
103-65-1	n-Propylbenzene	0.2	< 0.2	U
108-86-1	Bromobenzene	0.2	< 0.2	U
95-49-8	2-Chlorotoluene	0.2	< 0.2	U
106-43-4	4-Chlorotoluene	0.2	< 0.2	U
98-06-6	tert-Butylbenzene	0.2	< 0.2	U
135-98-8	sec-Butylbenzene	0.2	< 0.2	U
99-87-6	4-Isopropyltoluene	0.2	< 0.2	U
104-51-8	n-Butylbenzene	0.2	< 0.2	U
120-82-1	1,2,4-Trichlorobenzene	0.5	< 0.5	U
91-20-3	Naphthalene	0.5	< 0.5	U
87-61-6	1,2,3-Trichlorobenzene	0.5	< 0.5	U
1634-04-4	Methyl tert-Butyl Ether	0.5	< 0.5	U

Reported in µg/L (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	102%
d8-Toluene	101%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	99.1%

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: ERM-WEST

Lab Code: ARI Case No.: RG FALL GW SAMPLING SDG No.: TZ21

Lab File ID: BFB1130B BFB Injection Date: 11/30/11

Instrument ID: NT2 BFB Injection Time: 0951

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	20.5
75	30.0 - 66.0% of mass 95	46.6
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.3
173	Less than 2.0% of mass 174	0.1 (0.1)1
174	50.0 - 101.0% of mass 95	78.8
175	4.0 - 9.0% of mass 174	5.8 (7.4)1
176	93.0 - 101.0% of mass 174	74.4 (94.4)1
177	5.0 - 9.0% of mass 176	4.9 (6.6)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC0.2	IC0.2	0021130	11/30/11	1208
02	IC0.5	IC0.5	0051130	11/30/11	1235
03	IC01	IC01	0101130	11/30/11	1302
04	IC02	IC02	0201130	11/30/11	1328
05	IC10	IC10	1001130	11/30/11	1355
06	IC20	IC20	2001130	11/30/11	1422
07	IC40	IC40	4001130	11/30/11	1449
08	IC60	IC60	6001130	11/30/11	1515
09	ICV10	ICV10	ICV1130	11/30/11	1609
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: ERM-WEST

Lab Code: ARI Case No.: RG FALL GW SAMPLING SDG No.: TZ21

Lab File ID: BFB1206A BFB Injection Date: 12/06/11

Instrument ID: NT2 BFB Injection Time: 0903

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	22.3
75	30.0 - 66.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 101.0% of mass 95	79.4
175	4.0 - 9.0% of mass 174	5.8 (7.3)1
176	93.0 - 101.0% of mass 174	78.1 (98.4)1
177	5.0 - 9.0% of mass 176	5.4 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1206	CC1206	CC1206	12/06/11	0939
02	LCS1206	LCS1206	LCS1206	12/06/11	1006
03	LCS1206	LCS1206	LCS1206A	12/06/11	1033
04	MB1206	MB1206	MB1206	12/06/11	1100
05	MW-04S-112811	TZ21B	TZ21B1	12/06/11	1202
06	TB-112811-1	TZ21F	TZ21F	12/06/11	1228
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: ANALYTICAL RESOURCES INC Contract: ERM-WEST

Lab Code: ARI Case No.: RG FALL GW SAMPLING SDG No.: TZ32

Lab File ID: BFB1206A BFB Injection Date: 12/06/11

Instrument ID: NT2 BFB Injection Time: 0903

GC Column: RTXVMS ID: 0.18 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	22.3
75	30.0 - 66.0% of mass 95	47.2
95	Base Peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	7.8
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 101.0% of mass 95	79.4
175	4.0 - 9.0% of mass 174	5.8 (7.3)1
176	93.0 - 101.0% of mass 174	78.1 (98.4)1
177	5.0 - 9.0% of mass 176	5.4 (6.9)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1206	CC1206	CC1206	12/06/11	0939
02	LCS1206	LCS1206	LCS1206	12/06/11	1006
03	LCS1206	LCS1206	LCS1206A	12/06/11	1033
04	MB1206	MB1206	MB1206	12/06/11	1100
05	MW-13-112911	TZ32E	TZ32E	12/06/11	1510
06	FB-112911-1	TZ32H	TZ32H	12/06/11	1536
07	TB-112911-1	TZ32I	TZ32I	12/06/11	1603
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF0.2: 0021130 RF0.5: 0051130 RF1: 0101130
RF2: 0201130 RF10: 1001130

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
Chloromethane		1.127	1.145	1.088	1.139
Vinyl Chloride	0.952	0.955	0.993	0.945	0.994
Bromomethane		0.368	0.368	0.298	0.362
Chloroethane	0.485	0.446	0.420	0.344	0.434
Trichlorofluoromethane	0.611	0.623	0.651	0.596	0.682
Acrolein		0.077	0.082	0.075	0.084
112Trichloro122Trifluoroetha	0.595	0.565	0.568	0.564	0.590
Acetone			0.152	0.140	0.147
1,1-Dichloroethene	0.628	0.634	0.615	0.575	0.616
Bromoethane	0.458	0.469	0.488	0.447	0.481
Iodomethane			0.987	0.921	0.983
Methylene Chloride		0.718	0.706	0.658	0.687
Acrylonitrile		0.195	0.206	0.193	0.201
Carbon Disulfide	2.080	1.977	2.050	1.872	2.156
Trans-1,2-Dichloroethene	0.699	0.687	0.701	0.652	0.690
Vinyl Acetate		0.942	0.982	0.899	1.081
1,1-Dichloroethane	1.271	1.245	1.291	1.207	1.290
2-Butanone		0.209	0.208	0.178	0.215
2,2-Dichloropropane	0.683	0.660	0.686	0.678	0.698
Cis-1,2-Dichloroethene	0.746	0.716	0.686	0.665	0.698
Chloroform	0.997	1.020	1.050	1.016	1.087
Bromochloromethane	0.266	0.284	0.298	0.288	0.307
1,1,1-Trichloroethane	0.901	0.859	0.878	0.832	0.916
1,1-Dichloropropene	0.563	0.571	0.597	0.558	0.585
Carbon Tetrachloride	0.451	0.483	0.476	0.475	0.500
1,2-Dichloroethane	0.451	0.436	0.447	0.424	0.443
Benzene	1.607	1.582	1.645	1.546	1.614
Trichloroethene	0.377	0.415	0.404	0.375	0.400
1,2-Dichloropropane	0.367	0.367	0.386	0.366	0.378
Bromodichloromethane	0.360	0.388	0.376	0.364	0.415
Dibromomethane	0.168	0.172	0.170	0.161	0.170
2-Chloroethyl Vinyl Ether		0.126	0.111	0.101	0.123
4-Methyl-2-Pentanone		0.093	0.096	0.094	0.112
Cis 1,3-dichloropropene	0.407	0.420	0.424	0.384	0.463
Toluene	0.868	0.857	0.862	0.782	0.852
Trans 1,3-Dichloropropene	0.333	0.316	0.330	0.291	0.368
2-Hexanone		0.178	0.180	0.169	0.194

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF0.2: 0021130 RF0.5: 0051130 RF1: 0101130
RF2: 0201130 RF10: 1001130

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
1,1,2-Trichloroethane	0.212	0.214	0.214	0.195	0.215
1,3-Dichloropropane	0.432	0.464	0.448	0.424	0.442
Tetrachloroethene	0.389	0.414	0.404	0.394	0.406
Chlorodibromomethane	0.255	0.239	0.254	0.245	0.285
1,2-Dibromoethane	0.198	0.190	0.191	0.180	0.205
Chlorobenzene	1.038	1.000	1.026	0.970	1.012
Ethyl Benzene	0.555	0.535	0.547	0.552	0.575
1,1,1,2-Tetrachloroethane	0.334	0.359	0.369	0.365	0.405
m,p-xylene	0.644	0.655	0.682	0.682	0.714
o-Xylene	0.655	0.672	0.714	0.707	0.764
Styrene	0.827	0.922	0.934	0.930	1.067
Bromoform	0.211	0.210	0.222	0.218	0.287
1,1,2,2-Tetrachloroethane	0.547	0.526	0.543	0.511	0.583
1,2,3-Trichloropropane		0.172	0.170	0.158	0.168
Trans-1,4-Dichloro 2-Butene		0.160	0.147	0.139	0.162
N-Propyl Benzene	3.194	3.281	3.295	3.149	3.552
Bromobenzene	0.729	0.635	0.701	0.636	0.693
Isopropyl Benzene	2.549	2.737	2.858	2.796	3.285
2-Chloro Toluene	2.329	2.292	2.348	2.262	2.524
4-Chloro Toluene	2.054	2.029	2.129	2.019	2.185
T-Butyl Benzene	1.850	1.944	2.017	1.954	2.415
1,3,5-Trimethyl Benzene	2.241	2.200	2.432	2.369	2.772
1,2,4-Trimethylbenzene	2.292	2.263	2.460	2.381	2.783
S-Butyl Benzene	2.932	2.994	3.236	3.057	3.560
4-Isopropyl Toluene	2.392	2.474	2.609	2.501	2.941
1,3-Dichlorobenzene	1.415	1.465	1.518	1.385	1.476
1,4-Dichlorobenzene	1.607	1.507	1.520	1.407	1.493
N-Butyl Benzene	2.476	2.333	2.449	2.352	2.661
1,2-Dichlorobenzene	1.527	1.423	1.455	1.386	1.458
1,2-Dibromo 3-Chloropropane		0.097	0.087	0.086	0.098
1,2,4-Trichlorobenzene	1.075	0.996	1.019	0.970	1.083
Hexachloro 1,3-Butadiene		0.497	0.486	0.469	0.486
Naphthalene		1.930	1.988	1.857	2.169
1,2,3-Trichlorobenzene		0.856	0.876	0.829	0.917
Dichlorodifluoromethane	0.612	0.638	0.617	0.658	0.682
Methyl tert butyl ether	1.774	1.721	1.772	1.666	1.779

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF0.2: 0021130 RF0.5: 0051130 RF1: 0101130
RF2: 0201130 RF10: 1001130

COMPOUND	RF0.2	RF0.5	RF1	RF2	RF10
d4-1,2-Dichloroethane	0.523	0.539	0.540	0.532	0.529
d8-Toluene	1.129	1.136	1.116	1.106	1.126
4-Bromofluorobenzene	0.519	0.527	0.526	0.538	0.515
d4-1,2-Dichlorobenzene	0.924	0.906	0.924	0.930	0.941
Dibromofluoromethane	0.499	0.501	0.500	0.508	0.521

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF20: 2001130 RF40: 4001130 RF60: 6001130

COMPOUND	RF20	RF40	RF60
Chloromethane	1.095	1.103	1.042
Vinyl Chloride	0.964	0.977	0.919
Bromomethane	0.327	0.336	0.327
Chloroethane	0.416	0.398	
Trichlorofluoromethane	0.665	0.684	0.653
Acrolein	0.082	0.085	0.082
112Trichloro122Trifluoroetha	0.564	0.568	0.532
Acetone	0.143	0.144	0.138
1,1-Dichloroethene	0.564	0.606	0.563
Bromoethane	0.466	0.471	0.445
Iodomethane	0.954	0.948	0.889
Methylene Chloride	0.663	0.668	0.634
Acrylonitrile	0.202	0.205	0.198
Carbon Disulfide	2.048	2.125	1.983
Trans-1,2-Dichloroethene	0.671	0.679	0.639
Vinyl Acetate	1.073	1.205	1.195
1,1-Dichloroethane	1.267	1.284	1.219
2-Butanone	0.210	0.229	
2,2-Dichloropropane	0.700	0.648	0.593
Cis-1,2-Dichloroethene	0.691	0.692	0.662
Chloroform	1.060	1.082	1.024
Bromochloromethane	0.299	0.299	0.288
1,1,1-Trichloroethane	0.901	0.874	0.838
1,1-Dichloropropene	0.571	0.556	0.532
Carbon Tetrachloride	0.488	0.466	0.453
1,2-Dichloroethane	0.422	0.428	0.415
Benzene	1.560	1.546	1.466
Trichloroethene	0.390	0.390	0.373
1,2-Dichloropropane	0.376	0.390	0.384
Bromodichloromethane	0.414	0.436	0.426
Dibromomethane	0.163	0.168	0.164
2-Chloroethyl Vinyl Ether	0.116	0.145	0.153
4-Methyl-2-Pentanone	0.111	0.112	0.108
Cis 1,3-dichloropropene	0.459	0.512	0.524
Toluene	0.832	0.863	0.846
Trans 1,3-Dichloropropene	0.342	0.393	0.401
2-Hexanone	0.182	0.196	0.196

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF20: 2001130 RF40: 4001130 RF60: 6001130

COMPOUND	RF20	RF40	RF60
1,1,2-Trichloroethane	0.203	0.220	0.222
1,3-Dichloropropane	0.430	0.465	0.467
Tetrachloroethene	0.404	0.394	0.377
Chlorodibromomethane	0.297	0.314	0.311
1,2-Dibromoethane	0.189	0.211	0.216
Chlorobenzene	1.006	1.019	0.982
Ethyl Benzene	0.579	0.568	0.548
1,1,1,2-Tetrachloroethane	0.415	0.397	0.374
m,p-xylene	0.714	0.687	0.648
o-Xylene	0.768	0.739	0.697
Styrene	1.105	1.136	1.106
Bromoform	0.293	0.323	0.324
1,1,2,2-Tetrachloroethane	0.584	0.602	0.596
1,2,3-Trichloropropane	0.166	0.170	
Trans-1,4-Dichloro 2-Butene	0.164	0.177	0.181
N-Propyl Benzene	3.573	3.583	3.409
Bromobenzene	0.682	0.723	0.708
Isopropyl Benzene	3.352	3.331	3.122
2-Chloro Toluene	2.522	2.558	2.468
4-Chloro Toluene	2.152	2.255	2.203
T-Butyl Benzene	2.530	2.500	2.369
1,3,5-Trimethyl Benzene	2.798	2.779	2.625
1,2,4-Trimethylbenzene	2.790	2.780	2.656
S-Butyl Benzene	3.625	3.561	3.348
4-Isopropyl Toluene	2.965	2.946	2.783
1,3-Dichlorobenzene	1.448	1.474	1.439
1,4-Dichlorobenzene	1.472	1.489	1.455
N-Butyl Benzene	2.655	2.576	2.458
1,2-Dichlorobenzene	1.444	1.424	1.375
1,2-Dibromo 3-Chloropropane	0.104	0.100	0.101
1,2,4-Trichlorobenzene	1.053	0.976	0.945
Hexachloro 1,3-Butadiene	0.472	0.440	0.420
Naphthalene	2.107	1.944	1.871
1,2,3-Trichlorobenzene	0.871	0.793	0.756
Dichlorodifluoromethane	0.658	0.677	0.643
Methyl tert butyl ether	1.744	1.772	1.683

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

LAB FILE ID: RF20: 2001130 RF40: 4001130 RF60: 6001130

COMPOUND	RF20	RF40	RF60
d4-1,2-Dichloroethane	0.523	0.525	0.527
d8-Toluene	1.126	1.156	1.172
4-Bromofluorobenzene	0.500	0.505	0.513
d4-1,2-Dichlorobenzene	0.935	0.907	0.885
Dibromofluoromethane	0.519	0.512	0.498

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
Chloromethane	AVRG	1.106	3.2
Vinyl Chloride	AVRG	0.962	2.6
Bromomethane	AVRG	0.341	7.8
Chloroethane	AVRG	0.420	10.4
Trichlorofluoromethane	AVRG	0.646	5.0
Acrolein	AVRG	0.081	4.7
112Trichloro122Trifluoroetha	AVRG	0.568	3.3
Acetone	AVRG	0.144	3.4
1,1-Dichloroethene	AVRG	0.600	4.8
Bromoethane	AVRG	0.466	3.2
Iodomethane	AVRG	0.947	4.0
Methylene Chloride	AVRG	0.676	4.3
Acrylonitrile	AVRG	0.200	2.5
Carbon Disulfide	AVRG	2.036	4.5
Trans-1,2-Dichloroethene	AVRG	0.677	3.3
Vinyl Acetate	AVRG	1.054	11.3
1,1-Dichloroethane	AVRG	1.259	2.6
2-Butanone	AVRG	0.208	8.0
2,2-Dichloropropane	AVRG	0.668	5.3
Cis-1,2-Dichloroethene	AVRG	0.694	3.9
Chloroform	AVRG	1.042	3.1
Bromochloromethane	AVRG	0.291	4.3
1,1,1-Trichloroethane	AVRG	0.875	3.5
1,1-Dichloropropene	AVRG	0.567	3.5
Carbon Tetrachloride	AVRG	0.474	3.5
1,2-Dichloroethane	AVRG	0.434	3.0
Benzene	AVRG	1.571	3.5
Trichloroethene	AVRG	0.390	3.9
1,2-Dichloropropane	AVRG	0.377	2.5
Bromodichloromethane	AVRG	0.397	7.4
Dibromomethane	AVRG	0.167	2.3
2-Chloroethyl Vinyl Ether	AVRG	0.125	14.7
4-Methyl-2-Pentanone	AVRG	0.104	8.4
Cis 1,3-dichloropropene	AVRG	0.449	11.1
Toluene	AVRG	0.845	3.3
Trans 1,3-Dichloropropene	AVRG	0.347	11.0
2-Hexanone	AVRG	0.185	5.7

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
1,1,2-Trichloroethane	AVRG	0.212	4.1
1,3-Dichloropropane	AVRG	0.446	3.9
Tetrachloroethene	AVRG	0.398	2.9
Chlorodibromomethane	AVRG	0.275	11.0
1,2-Dibromoethane	AVRG	0.197	6.3
Chlorobenzene	AVRG	1.007	2.2
Ethyl Benzene	AVRG	0.557	2.8
1,1,1,2-Tetrachloroethane	AVRG	0.377	7.1
m,p-xylene	AVRG	0.678	4.0
o-Xylene	AVRG	0.714	5.7
Styrene	AVRG	1.003	11.3
Bromoform	AVRG	0.261	19.4
1,1,2,2-Tetrachloroethane	AVRG	0.562	6.1
1,2,3-Trichloropropane	AVRG	0.167	3.0
Trans-1,4-Dichloro 2-Butene	AVRG	0.161	9.2
N-Propyl Benzene	AVRG	3.380	5.2
Bromobenzene	AVRG	0.688	5.2
Isopropyl Benzene	AVRG	3.004	10.2
2-Chloro Toluene	AVRG	2.413	4.9
4-Chloro Toluene	AVRG	2.128	4.1
T-Butyl Benzene	AVRG	2.197	12.8
1,3,5-Trimethyl Benzene	AVRG	2.527	9.8
1,2,4-Trimethylbenzene	AVRG	2.551	8.9
S-Butyl Benzene	AVRG	3.289	8.4
4-Isopropyl Toluene	AVRG	2.701	8.7
1,3-Dichlorobenzene	AVRG	1.452	2.8
1,4-Dichlorobenzene	AVRG	1.494	3.9
N-Butyl Benzene	AVRG	2.495	5.0
1,2-Dichlorobenzene	AVRG	1.436	3.3
1,2-Dibromo 3-Chloropropane	AVRG	0.096	7.0
1,2,4-Trichlorobenzene	AVRG	1.014	5.1
Hexachloro 1,3-Butadiene	AVRG	0.467	5.9
Naphthalene	AVRG	1.981	5.9
1,2,3-Trichlorobenzene	AVRG	0.843	6.4
Dichlorodifluoromethane	AVRG	0.648	3.9
Methyl tert butyl ether	AVRG	1.739	2.6

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

FORM 6
VOLATILE INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Calibration Date: 11/30/11

COMPOUND	CURVE TYPE	AVE RF	%RSD OR R^2
d4-1,2-Dichloroethane	AVRG	0.530	1.2
d8-Toluene	AVRG	1.133	1.9
4-Bromofluorobenzene	AVRG	0.518	2.4
d4-1,2-Dichlorobenzene	AVRG	0.919	2.0
Dibromofluoromethane	AVRG	0.507	1.8

<- Indicates value outside QC limits:
(%RSD < 20% or R^2 > 0.990)

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Cont. Calib. Date: 12/06/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0939

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Chloromethane	1.106	1.1797	0.100	AVRG	6.7
Vinyl Chloride	0.962	1.0259	0.010	AVRG	6.6
Bromomethane	0.341	0.3588	0.010	AVRG	5.2
Chloroethane	0.420	0.4689	0.010	AVRG	11.6
Trichlorofluoromethane	0.646	0.7245	0.010	AVRG	12.2
Acrolein	0.081	0.0674	0.010	AVRG	-16.8
112Trichloro122Trifluoroetha	0.568	0.6035	0.010	AVRG	6.2
Acetone	0.144	0.1564	0.010	AVRG	8.6
1,1-Dichloroethene	0.600	0.5805	0.010	AVRG	-3.2
Bromoethane	0.466	0.4735	0.010	AVRG	1.6
Iodomethane	0.947	0.9605	0.010	AVRG	1.4
Methylene Chloride	0.676	0.6817	0.010	AVRG	0.8
Acrylonitrile	0.200	0.2100	0.010	AVRG	5.0
Carbon Disulfide	2.036	2.0936	0.010	AVRG	2.8
Trans-1,2-Dichloroethene	0.677	0.6773	0.010	AVRG	0.0
Vinyl Acetate	1.054	1.0466	0.010	AVRG	-0.7
1,1-Dichloroethane	1.259	1.3187	0.100	AVRG	4.7
2-Butanone	0.208	0.2117	0.010	AVRG	1.8
2,2-Dichloropropane	0.668	0.7774	0.010	AVRG	16.4
Cis-1,2-Dichloroethene	0.694	0.6901	0.010	AVRG	-0.6
Chloroform	1.042	1.0819	0.010	AVRG	3.8
Bromochloromethane	0.291	0.2867	0.010	AVRG	-1.5
1,1,1-Trichloroethane	0.875	0.9114	0.010	AVRG	4.2
1,1-Dichloropropene	0.567	0.6112	0.010	AVRG	7.8
Carbon Tetrachloride	0.474	0.5116	0.010	AVRG	7.9
1,2-Dichloroethane	0.433	0.4398	0.010	AVRG	1.6
Benzene	1.571	1.6397	0.010	AVRG	4.4
Trichloroethene	0.390	0.3895	0.010	AVRG	-0.1
1,2-Dichloropropane	0.377	0.3780	0.010	AVRG	0.3
Bromodichloromethane	0.397	0.3974	0.010	AVRG	0.1
Dibromomethane	0.167	0.1617	0.010	AVRG	-3.2
2-Chloroethyl Vinyl Ether	0.125	0.1126	0.010	AVRG	-9.9
4-Methyl-2-Pentanone	0.104	0.1099	0.010	AVRG	5.7
Cis 1,3-dichloropropene	0.449	0.4387	0.010	AVRG	-2.3
Toluene	0.845	0.8257	0.010	AVRG	-2.3
Trans 1,3-Dichloropropene	0.347	0.3295	0.010	AVRG	-5.0
2-Hexanone	0.185	0.1919	0.010	AVRG	3.7

<- Exceeds QC limit of 20% D
* RF less than minimum RF

FORM VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Cont. Calib. Date: 12/06/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0939

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
1,1,2-Trichloroethane	0.212	0.1964	0.010	AVRG	-7.4	
1,3-Dichloropropane	0.446	0.4305	0.010	AVRG	-3.5	
Tetrachloroethene	0.398	0.4185	0.010	AVRG	5.2	
Chlorodibromomethane	0.275	0.2643	0.010	AVRG	-3.9	
1,2-Dibromoethane	0.198	0.1762	0.010	AVRG	-11.0	
Chlorobenzene	1.007	1.0116	0.300	AVRG	0.4	
Ethyl Benzene	0.557	0.5870	0.010	AVRG	5.4	
1,1,1,2-Tetrachloroethane	0.377	0.4150	0.010	AVRG	10.1	
m,p-xylene	0.678	0.7406	0.010	AVRG	9.2	
o-Xylene	0.714	0.7964	0.010	AVRG	11.5	
Styrene	1.003	1.0732	0.010	AVRG	7.0	
Bromoform	0.261	0.2555	0.100	AVRG	-2.1	
1,1,2,2-Tetrachloroethane	0.562	0.5656	0.300	AVRG	0.6	
1,2,3-Trichloropropane	0.167	0.1644	0.010	AVRG	-1.6	
Trans-1,4-Dichloro 2-Butene	0.161	0.1309	0.010	AVRG	-18.7	
N-Propyl Benzene	3.380	3.6911	0.010	AVRG	9.2	
Bromobenzene	0.688	0.6734	0.010	AVRG	-2.1	
Isopropyl Benzene	3.004	3.3774	0.010	AVRG	12.4	
2-Chloro Toluene	2.413	2.6155	0.010	AVRG	8.4	
4-Chloro Toluene	2.128	2.2012	0.010	AVRG	3.4	
T-Butyl Benzene	2.197	2.4837	0.010	AVRG	13.0	
1,3,5-Trimethyl Benzene	2.527	2.8849	0.010	AVRG	14.2	
1,2,4-Trimethylbenzene	2.551	2.8877	0.010	AVRG	13.2	
S-Butyl Benzene	3.289	3.7144	0.010	AVRG	12.9	
4-Isopropyl Toluene	2.701	3.0846	0.010	AVRG	14.2	
1,3-Dichlorobenzene	1.452	1.5004	0.010	AVRG	3.3	
1,4-Dichlorobenzene	1.494	1.5026	0.010	AVRG	0.6	
N-Butyl Benzene	2.495	2.8318	0.010	AVRG	13.5	
1,2-Dichlorobenzene	1.436	1.4866	0.010	AVRG	3.5	
1,2-Dibromo 3-Chloropropane	0.096	0.1190	0.010	AVRG	24.0	<-
1,2,4-Trichlorobenzene	1.015	1.1871	0.010	AVRG	17.0	
Hexachloro 1,3-Butadiene	0.467	0.5504	0.010	AVRG	17.8	
Naphthalene	1.981	2.2938	0.010	AVRG	15.8	
1,2,3-Trichlorobenzene	0.842	0.9891	0.010	AVRG	17.5	
Dichlorodifluoromethane	0.648	0.6904	0.010	AVRG	6.5	
Methyl tert butyl ether	1.739	1.8055	0.010	AVRG	3.8	

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII VOA

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT2 Cont. Calib. Date: 12/06/11

Init. Calib. Date: 11/30/11 Cont. Calib. Time: 0939

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
d4-1,2-Dichloroethane	0.530	0.5450	0.010	AVRG	2.8
d8-Toluene	1.133	1.1265	0.010	AVRG	-0.6
4-Bromofluorobenzene	0.518	0.5420	0.010	AVRG	4.6
d4-1,2-Dichlorobenzene	0.919	0.9598	0.010	AVRG	4.4
Dibromofluoromethane	0.507	0.5174	0.010	AVRG	2.0

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII VOA

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 11/30/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	191537	5.45	299924	5.85	260183	7.93
	UPPER LIMIT	383074	5.95	599848	6.35	520366	8.43
	LOWER LIMIT	95768	4.95	149962	5.35	130092	7.43
	Sample ID						
01	ICV10	190629	5.45	298605	5.85	249704	7.92
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 11/30/11

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	164199	9.62				
	UPPER LIMIT	328398	10.12				
	LOWER LIMIT	82100	9.12				
	Sample ID						
01	ICV10	160253	9.62				
02							
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 1001130 Ical Date: 11/30/11

Instrument ID: NT2 Project Run Date: 12/06/11

		IS1(PFB) AREA #	RT #	IS2(DFB) AREA #	RT #	IS3(CLB) AREA #	RT #
	ICAL MIDPT	191537	5.45	299924	5.85	260183	7.93
	UPPER LIMIT	383074	5.95	599848	6.35	520366	8.43
	LOWER LIMIT	95768	4.95	149962	5.35	130092	7.43
	Sample ID						
01	LCS1206	194977	5.45	310026	5.85	272920	7.92
02	LCS1206	186029	5.45	283978	5.85	231467	7.92
03	MB1206	192682	5.45	304117	5.85	270198	7.92
04	MW-04S-11281	176411	5.45	254600	5.85	215067	7.92
05	TB-112811-1	186752	5.45	285906	5.85	250576	7.93
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC | Client: ERM-WEST

ARI Job No: TZ21 | Project: RG FALL GW SAMPLING

Ical Midpoint ID: 1001130 | Ical Date: 11/30/11

Instrument ID: NT2 | Project Run Date: 12/06/11

		IS4(DCB) AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	164199	9.62				
	UPPER LIMIT	328398	10.12				
	LOWER LIMIT	82100	9.12				
	Sample ID						
01	LCS1206	166620	9.62				
02	LCS1206	151638	9.62				
03	MB1206	170268	9.62				
04	MW-04S-11281	171217	9.62				
05	TB-112811-1	168490	9.62				
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC | Client: ERM-WEST

ARI Job No: TZ32 | Project: RG FALL GW SAMPLING

Ical Midpoint ID: 1001130 | Ical Date: 11/30/11

Instrument ID: NT2 | Project Run Date: 12/06/11

		IS1(PFB) AREA	#	RT	#	IS2(DFB) AREA	#	RT	#	IS3(CLB) AREA	#	RT	#
	ICAL MIDPT	191537		5.45		299924		5.85		260183		7.93	
	UPPER LIMIT	383074		5.95		599848		6.35		520366		8.43	
	LOWER LIMIT	95768		4.95		149962		5.35		130092		7.43	
	Sample ID												
01	LCS1206	194977		5.45		310026		5.85		272920		7.92	
02	LCS1206	186029		5.45		283978		5.85		231467		7.92	
03	MB1206	192682		5.45		304117		5.85		270198		7.92	
04	MW-13-112911	183505		5.45		285288		5.85		252058		7.92	
05	FB-112911-1	183511		5.45		284254		5.85		252624		7.92	
06	TB-112911-1	193116		5.45		304379		5.85		268851		7.92	
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS1 (PFB) = Pentafluorobenzene
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CLB) = d5-Chlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

8A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC | Client: ERM-WEST

ARI Job No: TZ32 | Project: RG FALL GW SAMPLING

Ical Midpoint ID: 1001130 | Ical Date: 11/30/11

Instrument ID: NT2 | Project Run Date: 12/06/11

		IS4(DCB) AREA	#	RT	#	AREA	#	RT	#	AREA	#	RT	#
	ICAL MIDPT	164199		9.62									
	UPPER LIMIT	328398		10.12									
	LOWER LIMIT	82100		9.12									
	Sample ID												
01	LCS1206	166620		9.62									
02	LCS1206	151638		9.62									
03	MB1206	170268		9.62									
04	MW-13-112911	163935		9.62									
05	FB-112911-1	162907		9.62									
06	TB-112911-1	170592		9.62									
07													
08													
09													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

IS4 (DCB) = d4-1,4-Dichlorobenzene

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Ical midpoint
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Ical midpoint

* Values outside of QC limits.

Semivolatile Analysis
Report and Summary QC Forms

ARI Job ID: TZ21, TZ32

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-17-112811
SAMPLE

Lab Sample ID: TZ21A
LIMS ID: 11-27521
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 16:13
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	35.2%
2-Fluorophenol	30.4%
2,4,6-Tribromophenol	61.9%
d4-2-Chlorophenol	33.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MW-17-112811 REEXTRACT

Lab Sample ID: TZ21A
LIMS ID: 11-27521
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling 128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/08/11
Date Analyzed: 12/09/11 15:32
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	60.0%
2-Fluorophenol	55.5%
2,4,6-Tribromophenol	76.0%
d4-2-Chlorophenol	61.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-04S-112811
SAMPLE

Lab Sample ID: TZ21B
LIMS ID: 11-27522
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 16:46
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	56.3%
2-Fluorophenol	54.1%
2,4,6-Tribromophenol	71.2%
d4-2-Chlorophenol	57.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: DUP-112811-1
SAMPLE

Lab Sample ID: TZ21C
LIMS ID: 11-27523
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 17:18
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	58.7%
2-Fluorophenol	54.9%
2,4,6-Tribromophenol	74.7%
d4-2-Chlorophenol	59.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-22-112811
SAMPLE

Lab Sample ID: TZ21D
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/07/11 13:50
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	47.7%
2-Fluorophenol	39.2%
2,4,6-Tribromophenol	80.5%
d4-2-Chlorophenol	42.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: MW-23-112811**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ21E
LIMS ID: 11-27525
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 20:02
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	52.5%
2-Fluorophenol	46.4%
2,4,6-Tribromophenol	72.0%
d4-2-Chlorophenol	50.9%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07

Client ID	PHL	2FP	TBP	2CP	TOT OUT
MB-120811	63.7%	58.4%	71.7%	63.7%	0
LCS-120811	68.3%	61.1%	90.7%	65.9%	0
MW-17-112811	35.2%*	30.4%*	61.9%	33.6%*	3
MW-17-112811 RE	60.0%	55.5%	76.0%	61.1%	0
MW-04S-112811	56.3%	54.1%	71.2%	57.1%	0
DUP-112811-1	58.7%	54.9%	74.7%	59.2%	0
MB-120211	83.5%	76.5%	77.9%	84.0%	0
LCS-120211	80.8%	74.4%	89.1%	80.0%	0
MW-22-112811	47.7%	39.2%	80.5%	42.9%*	1
MW-22-112811 MS	68.5%	64.0%	81.3%	69.1%	0
MW-22-112811 MSD	52.3%	48.0%	71.2%	51.7%	0
MW-23-112811	52.5%	46.4%	72.0%	50.9%	0

	LCS/MB LIMITS	QC LIMITS
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27521 to 11-27525

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-1S-112911
SAMPLE

Lab Sample ID: TZ32A
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 20:35
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	65.9%
2-Fluorophenol	61.3%
2,4,6-Tribromophenol	74.7%
d4-2-Chlorophenol	66.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-1D-112911
SAMPLE

Lab Sample ID: TZ32B
LIMS ID: 11-27584
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 21:08
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	**Phenol**	**1.0**	**2.5**
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	73.1%
2-Fluorophenol	67.5%
2,4,6-Tribromophenol	89.3%
d4-2-Chlorophenol	73.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-7S-112911
SAMPLE

Lab Sample ID: TZ32C
LIMS ID: 11-27585
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 21:41
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	**Pentachlorophenol**	**5.0**	**480 ES**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**1.0**	**18**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	65.1%
2-Fluorophenol	59.2%
2,4,6-Tribromophenol	91.5%
d4-2-Chlorophenol	64.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-7S-112911
DILUTION

Lab Sample ID: TZ32C
LIMS ID: 11-27585
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/07/11 18:45
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 20.0

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
95-57-8	2-Chlorophenol	20	< 20 U
120-83-2	2,4-Dichlorophenol	100	< 100 U
88-06-2	2,4,6-Trichlorophenol	100	< 100 U
95-95-4	2,4,5-Trichlorophenol	100	< 100 U
87-86-5	**Pentachlorophenol**	**100**	**370**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**20**	**16 J**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	42.1%
2-Fluorophenol	50.7%
2,4,6-Tribromophenol	63.5%
d4-2-Chlorophenol	52.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: DUP-112911-2
SAMPLE

Lab Sample ID: TZ32D
LIMS ID: 11-27586
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 22:14
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	**Pentachlorophenol**	**5.0**	**330 ES**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**1.0**	**11**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	56.5%
2-Fluorophenol	53.6%
2,4,6-Tribromophenol	65.6%
d4-2-Chlorophenol	57.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: DUP-112911-2
DILUTION

Lab Sample ID: TZ32D
LIMS ID: 11-27586
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/07/11 19:18
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 20.0

CAS Number	Analyte	RL	Result
108-95-2	Phenol	20	< 20 U
95-57-8	2-Chlorophenol	20	< 20 U
120-83-2	2,4-Dichlorophenol	100	< 100 U
88-06-2	2,4,6-Trichlorophenol	100	< 100 U
95-95-4	2,4,5-Trichlorophenol	100	< 100 U
87-86-5	**Pentachlorophenol**	**100**	**240**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**20**	**12 J**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	41.1%
2-Fluorophenol	53.3%
2,4,6-Tribromophenol	54.4%
d4-2-Chlorophenol	49.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-13-112911
SAMPLE

Lab Sample ID: TZ32E
LIMS ID: 11-27587
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 22:46
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	**Pentachlorophenol**	**5.0**	**130 ES**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**1.0**	**9.6**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	63.7%
2-Fluorophenol	56.5%
2,4,6-Tribromophenol	84.8%
d4-2-Chlorophenol	61.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-13-112911
DILUTION

Lab Sample ID: TZ32E
LIMS ID: 11-27587
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/07/11 19:50
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 5.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	5.0	< 5.0 U
95-57-8	2-Chlorophenol	5.0	< 5.0 U
120-83-2	2,4-Dichlorophenol	25	< 25 U
88-06-2	2,4,6-Trichlorophenol	25	< 25 U
95-95-4	2,4,5-Trichlorophenol	25	< 25 U
87-86-5	**Pentachlorophenol**	**25**	**100**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**5.0**	**8.5**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	54.8%
2-Fluorophenol	54.8%
2,4,6-Tribromophenol	69.6%
d4-2-Chlorophenol	59.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-10-112911
SAMPLE

Lab Sample ID: TZ32F
LIMS ID: 11-27588
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 23:19
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	**Pentachlorophenol**	**5.0**	**15**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**1.0**	**1.2**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	61.9%
2-Fluorophenol	53.3%
2,4,6-Tribromophenol	92.0%
d4-2-Chlorophenol	59.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: DUP-112911-3
SAMPLE

Lab Sample ID: TZ32G
LIMS ID: 11-27589
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 23:52
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	**Pentachlorophenol**	**5.0**	**130 ES**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**1.0**	**11**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	70.4%
2-Fluorophenol	63.5%
2,4,6-Tribromophenol	93.1%
d4-2-Chlorophenol	68.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: DUP-112911-3
DILUTION

Lab Sample ID: TZ32G
LIMS ID: 11-27589
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted: 12/02/11
Date Analyzed: 12/07/11 20:23
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 5.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	5.0	< 5.0 U
95-57-8	2-Chlorophenol	5.0	< 5.0 U
120-83-2	2,4-Dichlorophenol	25	< 25 U
88-06-2	2,4,6-Trichlorophenol	25	< 25 U
95-95-4	2,4,5-Trichlorophenol	25	< 25 U
87-86-5	**Pentachlorophenol**	**25**	**98**
58-90-2	**2,3,4,6-Tetrachlorophenol**	**5.0**	**8.4**

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery	
d5-Phenol	60.9%
2-Fluorophenol	61.9%
2,4,6-Tribromophenol	76.4%
d4-2-Chlorophenol	66.5%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07

Client ID	PHL	2FP	TBP	2CP	TOT OUT
MB-120211	83.5%	76.5%	77.9%	84.0%	0
LCS-120211	80.8%	74.4%	89.1%	80.0%	0
MW-1S-112911	65.9%	61.3%	74.7%	66.1%	0
MW-1D-112911	73.1%	67.5%	89.3%	73.1%	0
MW-7S-112911	65.1%	59.2%	91.5%	64.0%	0
MW-7S-112911 DL	42.1%	50.7%	63.5%	52.3%	0
DUP-112911-2	56.5%	53.6%	65.6%	57.6%	0
DUP-112911-2 DL	41.1%	53.3%	54.4%	49.1%	0
MW-13-112911	63.7%	56.5%	84.8%	61.9%	0
MW-13-112911 DL	54.8%	54.8%	69.6%	59.7%	0
MW-10-112911	61.9%	53.3%	92.0%	59.2%	0
DUP-112911-3	70.4%	63.5%	93.1%	68.8%	0
DUP-112911-3 DL	60.9%	61.9%	76.4%	66.5%	0

	LCS/MB LIMITS	QC LIMITS
(PHL) = d5-Phenol	(50-100)	(41-100)
(2FP) = 2-Fluorophenol	(46-100)	(38-100)
(TBP) = 2,4,6-Tribromophenol	(52-123)	(48-118)
(2CP) = d4-2-Chlorophenol	(53-100)	(44-100)

Prep Method: SW3520C
Log Number Range: 11-27583 to 11-27589

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-22-112811 MS/MSD

Lab Sample ID: TZ21D
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling 128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted MS/MSD: 12/02/11

Date Analyzed MS: 12/06/11 18:57
MSD: 12/06/11 19:29
Instrument/Analyst MS: NT6/JZ
MSD: NT6/JZ
GPC Cleanup: NO

Sample Amount MS: 500 mL
MSD: 500 mL
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Phenol	< 1.0 U	20.6	25.0	82.4%	15.9	25.0	63.6%	25.8%
2-Chlorophenol	< 1.0 U	19.6	25.0	78.4%	14.9	25.0	59.6%	27.2%
2,4-Dichlorophenol	< 5.0 U	51.5	75.0	68.7%	42.9	75.0	57.2%	18.2%
2,4,6-Trichlorophenol	< 5.0 U	57.9	75.0	77.2%	50.6	75.0	67.5%	13.5%
2,4,5-Trichlorophenol	< 5.0 U	57.4	75.0	76.5%	50.4	75.0	67.2%	13.0%
Pentachlorophenol	< 5.0 U	62.7	75.0	83.6%	57.5	75.0	76.7%	8.7%
2,3,4,6-Tetrachlorophenol	< 1.0 U	22.0	25.0	88.0%	20.6	25.0	82.4%	6.6%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-22-112811
MATRIX SPIKE

Lab Sample ID: TZ21D
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 18:57
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	---
95-57-8	2-Chlorophenol	1.0	---
120-83-2	2,4-Dichlorophenol	5.0	---
88-06-2	2,4,6-Trichlorophenol	5.0	---
95-95-4	2,4,5-Trichlorophenol	5.0	---
87-86-5	Pentachlorophenol	5.0	---
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	---

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	68.5%
2-Fluorophenol	64.0%
2,4,6-Tribromophenol	81.3%
d4-2-Chlorophenol	69.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: MW-22-112811
MATRIX SPIKE DUP

Lab Sample ID: TZ21D
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 19:29
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	---
95-57-8	2-Chlorophenol	1.0	---
120-83-2	2,4-Dichlorophenol	5.0	---
88-06-2	2,4,6-Trichlorophenol	5.0	---
95-95-4	2,4,5-Trichlorophenol	5.0	---
87-86-5	Pentachlorophenol	5.0	---
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	---

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	52.3%
2-Fluorophenol	48.0%
2,4,6-Tribromophenol	71.2%
d4-2-Chlorophenol	51.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS
Page 1 of 1

Sample ID: LCS-120211
LAB CONTROL

Lab Sample ID: LCS-120211
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 15:40
Instrument/Analyst: NT6/JZ
GPC Cleanup: NO

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

Analyte	Lab Control	Spike Added	Recovery
Phenol	23.7	25.0	94.8%
2-Chlorophenol	22.1	25.0	88.4%
2,4-Dichlorophenol	58.1	75.0	77.5%
2,4,6-Trichlorophenol	61.2	75.0	81.6%
2,4,5-Trichlorophenol	61.6	75.0	82.1%
Pentachlorophenol	68.6	75.0	91.5%
2,3,4,6-Tetrachlorophenol	24.5	25.0	98.0%

Semivolatile Surrogate Recovery	
d5-Phenol	80.8%
2-Fluorophenol	74.4%
2,4,6-Tribromophenol	89.1%
d4-2-Chlorophenol	80.0%

Results reported in µg/L

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS **Sample ID: LCS-120811**
Page 1 of 1 **LAB CONTROL**

Lab Sample ID: LCS-120811
LIMS ID: 11-27521
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Date Extracted: 12/08/11
Date Analyzed: 12/09/11 15:00
Instrument/Analyst: NT6/JZ
GPC Cleanup: NO

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

Analyte	Lab Control	Spike Added	Recovery
Phenol	20.3	25.0	81.2%
2-Chlorophenol	18.8	25.0	75.2%
2,4-Dichlorophenol	51.2	75.0	68.3%
2,4,6-Trichlorophenol	55.2	75.0	73.6%
2,4,5-Trichlorophenol	57.1	75.0	76.1%
Pentachlorophenol	69.7	75.0	92.9%
2,3,4,6-Tetrachlorophenol	24.9	25.0	99.6%

Semivolatile Surrogate Recovery	
d5-Phenol	68.3%
2-Fluorophenol	61.1%
2,4,6-Tribromophenol	90.7%
d4-2-Chlorophenol	65.9%

Results reported in µg/L

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ21MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Lab File ID: 12061103 Date Extracted: 12/02/11

Instrument ID: NT6 Date Analyzed: 12/06/11

Matrix: LIQUID Time Analyzed: 1508

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ21LCSW1	TZ21LCSW1	12061104	12/06/11
02	MW-17-112811	TZ21A	12061105	12/06/11
03	MW-04S-112811	TZ21B	12061106	12/06/11
04	DUP-112811-1	TZ21C	12061107	12/06/11
05	MW-22-112811 MS	TZ21DMS	12061110	12/06/11
06	MW-22-112811 MSD	TZ21DMSD	12061111	12/06/11
07	MW-23-112811	TZ21E	12061112	12/06/11
08	MW-1S-112911	TZ32A	12061113	12/06/11
09	MW-1D-112911	TZ32B	12061114	12/06/11
10	MW-7S-112911	TZ32C	12061115	12/06/11
11	DUP-112911-2	TZ32D	12061116	12/06/11
12	MW-13-112911	TZ32E	12061117	12/06/11
13	MW-10-112911	TZ32F	12061118	12/06/11
14	DUP-112911-3	TZ32G	12061119	12/06/11
15	MW-22-112811	TZ21D	12071104	12/07/11
16	MW-7S-112911	TZ32C	12071110	12/07/11
17	DUP-112911-2	TZ32D	12071111	12/07/11
18	MW-13-112911	TZ32E	12071112	12/07/11
19	DUP-112911-3	TZ32G	12071113	12/07/11
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-120211
METHOD BLANK

Lab Sample ID: MB-120211
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Date Extracted: 12/02/11
Date Analyzed: 12/06/11 15:08
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	83.5%
2-Fluorophenol	76.5%
2,4,6-Tribromophenol	77.9%
d4-2-Chlorophenol	84.0%

4B

SEMIVOLATILE METHOD BLANK SUMMARY

BLANK NO.

TZ21MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Lab File ID: 12091102 Date Extracted: 12/08/11

Instrument ID: NT6 Date Analyzed: 12/09/11

Matrix: LIQUID Time Analyzed: 1426

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
01	TZ21LCSW1	TZ21LCSW1	12091103	12/09/11
02	MW-17-112811	TZ21ARE	12091104	12/09/11
03				
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

FORM IV SV

TZ21 : 00102

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270D GC/MS

Sample ID: MB-120811
METHOD BLANK

Lab Sample ID: MB-120811
LIMS ID: 11-27521
Matrix: Water
Data Release Authorized:
Reported: 12/13/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Date Extracted: 12/08/11
Date Analyzed: 12/09/11 14:26
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
58-90-2	2,3,4,6-Tetrachlorophenol	1.0	< 1.0 U

Reported in µg/L (ppb)

Semivolatile Surrogate Recovery

d5-Phenol	63.7%
2-Fluorophenol	58.4%
2,4,6-Tribromophenol	71.7%
d4-2-Chlorophenol	63.7%

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG FALL GW SAMPLING

DFTPP Injection Date: 11/21/11 DFTPP Injection Time: 1033

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.9
68	Less than 2.0% of mass 69	0.3 (0.6)1
69	Mass 69 relative abundance	41.5
70	Less than 2.0% of mass 69	0.2 (0.4)1
127	10.0 - 80.0% of mass 198	51.6
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	22.7
365	Greater than 1.0% of mass 198	2.28
441	0.0 - 24.0% of mass 442	11.1 (14.4)2
442	50.0 - 200.0% of mass 198	76.8
443	15.0 - 24.0% of mass 442	15.1 (19.6)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	IC11121	IC11121	11211102	11/21/11	1124
02	IC51121	IC51121	11211103	11/21/11	1157
03	IC101121	IC101121	11211104	11/21/11	1230
04	IC401121	IC401121	11211105	11/21/11	1320
05	IC601121	IC601121	11211106	11/21/11	1353
06	IC801121	IC801121	11211107	11/21/11	1426
07	IC251121	IC250121	11211109	11/21/11	1737
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ21:00104

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG FALL GW SAMPLING

DFTPP Injection Date: 12/06/11 DFTPP Injection Time: 1400

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	22.1
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	39.5
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	10.0 - 80.0% of mass 198	48.0
197	Less than 2.0% of mass 198	0.3
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.3
275	10.0 - 60.0% of mass 198	22.0
365	Greater than 1.0% of mass 198	2.69
441	0.0 - 24.0% of mass 442	11.9 (14.2)2
442	50.0 - 200.0% of mass 198	83.9
443	15.0 - 24.0% of mass 442	16.4 (19.5)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1206	CC1206	12061102	12/06/11	1433
02	TZ21MBW1	TZ21MBW1	12061103	12/06/11	1508
03	TZ21LCSW1	TZ21LCSW1	12061104	12/06/11	1540
04	MW-17-112811	TZ21A	12061105	12/06/11	1613
05	MW-04S-112811	TZ21B	12061106	12/06/11	1646
06	DUP-112811-1	TZ21C	12061107	12/06/11	1718
07	MW-22-112811 MS	TZ21DMS	12061110	12/06/11	1857
08	MW-22-112811 MSD	TZ21DMSD	12061111	12/06/11	1929
09	MW-23-112811	TZ21E	12061112	12/06/11	2002
10	MW-1S-112911	TZ32A	12061113	12/06/11	2035
11	MW-1D-112911	TZ32B	12061114	12/06/11	2108
12	MW-7S-112911	TZ32C	12061115	12/06/11	2141
13	DUP-112911-2	TZ32D	12061116	12/06/11	2214
14	MW-13-112911	TZ32E	12061117	12/06/11	2246
15	MW-10-112911	TZ32F	12061118	12/06/11	2319
16	DUP-112911-3	TZ32G	12061119	12/06/11	2352
17					
18					
19					
20					
21					
22					

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG FALL GW SAMPLING

DFTPP Injection Date: 12/07/11 DFTPP Injection Time: 1208

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	22.9
68	Less than 2.0% of mass 69	0.3 (0.7)1
69	Mass 69 relative abundance	40.9
70	Less than 2.0% of mass 69	0.1 (0.3)1
127	10.0 - 80.0% of mass 198	50.2
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.9
275	10.0 - 60.0% of mass 198	21.5
365	Greater than 1.0% of mass 198	2.29
441	0.0 - 24.0% of mass 442	11.3 (14.2)2
442	50.0 - 200.0% of mass 198	79.1
443	15.0 - 24.0% of mass 442	15.2 (19.2)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	CC1207	CC1207	12071102	12/07/11	1244
02	MW-22-112811	TZ21D	12071104	12/07/11	1350
03	MW-7S-112911	TZ32C	12071110	12/07/11	1845
04	DUP-112911-2	TZ32D	12071111	12/07/11	1918
05	MW-13-112911	TZ32E	12071112	12/07/11	1950
06	DUP-112911-3	TZ32G	12071113	12/07/11	2023
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

5B

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

Instrument ID: NT6 Project: RG FALL GW SAMPLING

DFTPP Injection Date: 12/09/11 DFTPP Injection Time: 1351

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	10.0 - 80.0% of mass 198	23.2
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	41.8
70	Less than 2.0% of mass 69	0.2 (0.5)1
127	10.0 - 80.0% of mass 198	49.8
197	Less than 2.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.7
275	10.0 - 60.0% of mass 198	23.1
365	Greater than 1.0% of mass 198	2.56
441	0.0 - 24.0% of mass 442	13.2 (15.0)2
442	50.0 - 200.0% of mass 198	88.1
443	15.0 - 24.0% of mass 442	16.7 (18.9)2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01		CC1209	12091101	12/09/11	1351
02	TZ21MBW1	TZ21MBW1	12091102	12/09/11	1426
03	TZ21LCSW1	TZ21LCSW1	12091103	12/09/11	1500
04	MW-17-112811	TZ21ARE	12091104	12/09/11	1532
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

FORM V SV

TZ21:00107

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	$\overline{RRF}$	%RSD /R^2
Phenol	2.046	1.795	1.782	1.677	1.628	1.542	1.504	1.710	10.8
Bis(2-Chloroethyl)ether	1.582	1.343	1.489	1.368	1.347	1.304	1.290	1.389	7.7
2-Chlorophenol	1.675	1.408	1.453	1.395	1.346	1.287	1.255	1.403	9.9
1,3-Dichlorobenzene	1.828	1.568	1.759	1.631	1.573	1.502	1.461	1.617	8.3
1,4-Dichlorobenzene	1.834	1.581	1.743	1.617	1.530	1.497	1.436	1.605	8.7
1,2-Dichlorobenzene	1.761	1.496	1.614	1.516	1.428	1.378	1.364	1.508	9.3
Benzyl alcohol	0.890	0.850	0.928	0.863	0.829	0.822	0.831	0.859	4.5
2,2'-oxybis(1-Chloropropane)	1.340	1.123	1.212	1.115	1.072	1.030	0.993	1.126	10.4
2-Methylphenol	1.488	1.327	1.302	1.250	1.219	1.168	1.100	1.265	9.9
Hexachloroethane	0.682	0.585	0.657	0.625	0.606	0.596	0.584	0.619	6.1
N-Nitroso-di-n-propylamine	1.090	0.950	1.005	0.927	0.882	0.878	0.837	0.938	9.2
4-Methylphenol	1.567	1.356	1.352	1.252	1.212	1.181	1.095	1.288	12.0
Nitrobenzene	0.441	0.378	0.428	0.396	0.379	0.363	0.354	0.391	8.3
Isophorone	0.652	0.568	0.635	0.584	0.563	0.567	0.545	0.588	6.8
2-Nitrophenol	0.190	0.181	0.192	0.198	0.192	0.190	0.187	0.190	2.7
2,4-Dimethylphenol	0.399	0.352	0.357	0.347	0.330	0.322	0.310	0.345	8.4
Bis(2-Chloroethoxy)methane	0.471	0.421	0.468	0.435	0.412	0.408	0.400	0.431	6.7
2,4-Dichlorophenol	0.318	0.293	0.300	0.296	0.280	0.273	0.261	0.289	6.6
1,2,4-Trichlorobenzene	0.368	0.310	0.347	0.325	0.307	0.303	0.296	0.322	8.2
Naphthalene	1.178	1.014	1.090	0.992	0.920	0.870	0.814	0.982	12.9
Benzoic acid		0.120	0.164	0.214	0.212	0.239	0.230	0.196	0.992
4-Chloroaniline	0.454	0.417	0.435	0.399	0.366	0.358	0.320	0.393	12.1
Hexachlorobutadiene	0.193	0.165	0.186	0.180	0.165	0.166	0.165	0.174	6.8
4-Chloro-3-methylphenol	0.307	0.288	0.282	0.275	0.262	0.271	0.248	0.276	6.8
2-Methylnaphthalene	0.621	0.531	0.563	0.518	0.478	0.481	0.446	0.520	11.4
Hexachlorocyclopentadiene	0.239	0.256	0.338	0.361	0.358	0.345	0.375	0.324	16.7
2,4,6-Trichlorophenol	0.320	0.312	0.346	0.351	0.343	0.341	0.340	0.336	4.3
2,4,5-Trichlorophenol	0.330	0.320	0.362	0.373	0.360	0.361	0.363	0.353	5.6
2-Chloronaphthalene	1.301	1.086	1.198	1.110	1.029	0.949	0.943	1.088	12.0
2-Nitroaniline	0.247	0.266	0.295	0.281	0.269	0.280	0.266	0.272	5.6
Acenaphthylene	1.786	1.610	1.787	1.664	1.561	1.492	1.445	1.621	8.3
Dimethylphthalate	1.323	1.124	1.212	1.122	1.057	1.097	1.064	1.143	8.3
2,6-Dinitrotoluene	0.234	0.248	0.279	0.271	0.255	0.272	0.262	0.260	6.0
Acenaphthene	1.213	1.012	1.098	1.035	0.964	0.951	0.924	1.028	9.8
3-Nitroaniline	0.293	0.280	0.292	0.270	0.248	0.227		0.268	9.8
2,4-Dinitrophenol		0.060	0.099	0.143	0.140	0.163	0.158	0.127	0.995
Dibenzofuran	1.704	1.471	1.541	1.419	1.315	1.298	1.204	1.422	11.9

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-1

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	RRF	%RSD /R^2
4-Nitrophenol	0.066	0.109	0.112	0.127	0.117	0.129	0.117	0.111	19.2
2,4-Dinitrotoluene	0.310	0.315	0.353	0.349	0.328	0.368	0.345	0.338	6.3
Fluorene	1.346	1.162	1.250	1.170	1.074	1.083	1.029	1.159	9.5
4-Chlorophenyl-phenylether	0.668	0.548	0.600	0.565	0.530	0.536	0.516	0.566	9.3
Diethylphthalate	1.263	1.088	1.145	1.067	0.990	1.031	0.971	1.079	9.3
4-Nitroaniline	0.240	0.268	0.269	0.271	0.242	0.279	0.246	0.259	6.2
4,6-Dinitro-2-methylphenol		0.104	0.123	0.142	0.140	0.142	0.145	0.133	12.0
N-Nitrosodiphenylamine (1)	0.697	0.598	0.658	0.597	0.589	0.554	0.568	0.609	8.4
4-Bromophenyl-phenylether	0.252	0.203	0.238	0.215	0.214	0.202	0.210	0.219	8.6
Hexachlorobenzene	0.264	0.220	0.248	0.228	0.223	0.210	0.217	0.230	8.3
Pentachlorophenol		0.079	0.110	0.117	0.122	0.129	0.130	0.114	16.5
Phenanthrene	1.306	1.096	1.165	1.076	1.017	0.962	0.947	1.081	11.6
Anthracene	1.262	1.117	1.215	1.126	1.059	0.993	0.984	1.108	9.5
Carbazole	1.122	1.038	1.095	1.047	0.963	0.951	0.916	1.019	7.6
Di-n-butylphthalate	1.220	1.155	1.248	1.218	1.118	1.088	1.056	1.158	6.4
Fluoranthene	1.098	1.046	1.090	1.062	0.972	0.968	0.951	1.027	6.0
Pyrene	1.517	1.207	1.344	1.210	1.183	1.116	1.090	1.238	11.9
Butylbenzylphthalate	0.485	0.496	0.567	0.559	0.549	0.542	0.534	0.533	5.8
Benzo(a)anthracene	1.044	0.938	1.042	0.994	0.966	0.922	0.913	0.974	5.6
3,3'-Dichlorobenzidine	0.322	0.334	0.357	0.341	0.320	0.286	0.277	0.320	9.1
Chrysene	1.162	0.950	1.057	1.012	0.969	0.934	0.929	1.002	8.4
bis(2-Ethylhexyl)phthalate	0.615	0.538	0.612	0.607	0.594	0.585	0.586	0.591	4.4
Di-n-octylphthalate	1.192	0.962	1.061	1.038	0.988	0.978	0.962	1.026	8.1
Benzo(b)fluoranthene	1.041	0.998	1.057	1.058	1.053	1.000	1.007	1.030	2.7
Benzo(k)fluoranthene	1.261	1.058	1.255	1.092	1.011	0.946	0.903	1.075	13.0
Benzo(a)pyrene	0.926	0.882	0.993	0.956	0.934	0.893	0.893	0.925	4.3
Indeno(1,2,3-cd)pyrene	1.249	1.102	1.325	1.269	1.241	1.177	1.231	1.228	5.8
Dibenzo(a,h)anthracene	1.016	0.916	1.088	1.064	1.018	0.965	0.998	1.009	5.7
Benzo(g,h,i)perylene	1.094	0.968	1.157	1.103	1.103	1.058	1.108	1.084	5.4
N-Nitrosodimethylamine	0.953	0.886	1.001	0.951	0.959	0.934	0.950	0.948	3.6
Aniline	2.291	2.084	2.213	2.022	1.955	1.884	1.752	2.029	9.2
Benzidine		0.092	0.176	0.217	0.248	0.239	0.252	0.204	0.992
Pyridine	1.564	1.631	1.863	1.811	1.771	1.760	1.742	1.734	6.0
1-methylnaphthalene	0.599	0.531	0.555	0.519	0.473	0.485	0.448	0.516	10.0
Azobenzene (1,2-DP-Hydrazine	1.372	1.231	1.322	1.242	1.151	1.159	1.096	1.225	8.0
2,3,4,6-Tetrachlorophenol	0.201	0.214	0.229	0.246	0.238	0.253	0.243	0.232	8.1
1,2,4,5-Tetrachlorobenzene	0.530	0.463	0.526	0.500	0.477	0.452	0.476	0.489	6.2

(1) Cannot be seperated from Diphenylamine

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-2

6B

SEMIVOLATILE 8270-D INITIAL CALIBRATION DATA

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Calibration Date: 11/21/11

LAB FILE ID: RRF1 =11211102 RRF5 =11211103 RRF10 =11211104
RRF25 =11211109 RRF40 =11211105 RRF60 =11211106
RRF80 =11211107

COMPOUND	RRF 1	RRF 5	RRF 10	RRF 25	RRF 40	RRF 60	RRF 80	RRF	%RSD /R^2
Total Benzofluoranthenes	1.094	0.982	1.099	1.022	0.985	0.921	0.898	1.000	7.8
2-Fluorophenol	1.558	1.439	1.559	1.465	1.394	1.361		1.463	5.6
Phenol-d5	2.012	1.839	1.911	1.729	1.669	1.638		1.800	8.1
2-Chlorophenol-d4	1.543	1.393	1.498	1.381	1.333	1.302		1.408	6.7
1,2-Dichlorobenzene-d4	1.124	0.997	1.030	0.944	0.890	0.858		0.974	10.0
Nitrobenzene-d5	0.414	0.396	0.436	0.417	0.408	0.402		0.412	3.3
2-Fluorobiphenyl	1.483	1.302	1.425	1.318	1.258	1.191		1.330	8.1
2,4,6-Tribromophenol	0.133	0.128	0.146	0.144	0.135	0.149		0.139	6.0
Terphenyl-d14	1.089	0.778	0.826	0.736	0.731	0.708		0.811	17.5

<- Outside QC limits: %RSD <20% or R^2 > 0.990

FORM VI SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/06/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1433

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Phenol	1.710	1.789	0.800	AVRG	4.6	
Bis(2-Chloroethyl)ether	1.389	1.417	0.700	AVRG	2.0	
2-Chlorophenol	1.403	1.438	0.800	AVRG	2.5	
1,3-Dichlorobenzene	1.617	1.625	0.010	AVRG	0.5	
1,4-Dichlorobenzene	1.605	1.628	0.010	AVRG	1.4	
1,2-Dichlorobenzene	1.508	1.530	0.010	AVRG	1.4	
Benzyl alcohol	0.859	0.912	0.010	AVRG	6.2	
2,2'-oxybis(1-Chloropropane)	1.126	1.141	0.010	AVRG	1.3	
2-Methylphenol	1.265	1.322	0.700	AVRG	4.5	
Hexachloroethane	0.619	0.605	0.300	AVRG	-2.3	
N-Nitroso-di-n-propylamine	0.938	1.026	0.500	AVRG	9.4	
4-Methylphenol	1.288	1.372	0.600	AVRG	6.5	
Nitrobenzene	0.391	0.397	0.200	AVRG	1.5	
Isophorone	0.588	0.602	0.400	AVRG	2.4	
2-Nitrophenol	0.190	0.200	0.100	AVRG	5.3	
2,4-Dimethylphenol	0.345	0.350	0.200	AVRG	1.4	
Bis(2-Chloroethoxy)methane	0.431	0.442	0.300	AVRG	2.6	
2,4-Dichlorophenol	0.289	0.301	0.200	AVRG	4.2	
1,2,4-Trichlorobenzene	0.322	0.320	0.010	AVRG	-0.6	
Naphthalene	0.982	0.990	0.700	AVRG	0.8	
Benzoic acid	50.00	31.69	0.010	LINR	-36.6	<- NC
4-Chloroaniline	0.393	0.402	0.010	AVRG	2.3	
Hexachlorobutadiene	0.174	0.173	0.010	AVRG	-0.6	
4-Chloro-3-methylphenol	0.276	0.294	0.200	AVRG	6.5	
2-Methylnaphthalene	0.520	0.533	0.400	AVRG	2.5	
Hexachlorocyclopentadiene	0.324	0.307	0.050	AVRG	-5.2	* 12/12/11
2,4,6-Trichlorophenol	0.336	0.358	0.200	AVRG	6.5	
2,4,5-Trichlorophenol	0.353	0.370	0.200	AVRG	4.8	
2-Chloronaphthalene	1.088	1.084	0.800	AVRG	-0.4	
2-Nitroaniline	0.272	0.286	0.010	AVRG	5.1	
Acenaphthylene	1.621	1.704	0.900	AVRG	5.1	
Dimethylphthalate	1.143	1.158	0.010	AVRG	1.3	
2,6-Dinitrotoluene	0.260	0.285	0.200	AVRG	9.6	
Acenaphthene	1.028	1.023	0.900	AVRG	-0.5	
3-Nitroaniline	0.268	0.266	0.010	AVRG	-0.7	
2,4-Dinitrophenol	50.00	40.66	0.010	2ORDR	-18.7	
Dibenzofuran	1.422	1.447	0.800	AVRG	1.8	

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/06/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1433

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.130	0.010	AVRG	17.1	
2,4-Dinitrotoluene	0.338	0.370	0.200	AVRG	9.5	
Fluorene	1.159	1.201	0.900	AVRG	3.6	
4-Chlorophenyl-phenylether	0.566	0.588	0.400	AVRG	3.9	
Diethylphthalate	1.079	1.098	0.010	AVRG	1.8	
4-Nitroaniline	0.259	0.290	0.010	AVRG	12.0	
4,6-Dinitro-2-methylphenol	0.133	0.126	0.010	AVRG	-5.3	
N-Nitrosodiphenylamine(1)	0.609	0.592	0.010	AVRG	-2.8	
4-Bromophenyl-phenylether	0.219	0.211	0.100	AVRG	-3.6	
Hexachlorobenzene	0.230	0.223	0.100	AVRG	-3.0	
Pentachlorophenol	0.114	0.104	0.050	AVRG	-8.8	
Phenanthrene	1.081	1.075	0.700	AVRG	-0.6	
Anthracene	1.108	1.111	0.700	AVRG	0.3	
Carbazole	1.019	1.049	0.010	AVRG	2.9	
Di-n-butylphthalate	1.158	1.228	0.010	AVRG	6.0	
Fluoranthene	1.027	1.094	0.600	AVRG	6.5	
Pyrene	1.238	1.229	0.600	AVRG	-0.7	
Butylbenzylphthalate	0.533	0.582	0.010	AVRG	9.2	
Benzo(a)anthracene	0.974	1.036	0.800	AVRG	6.4	
3,3'-Dichlorobenzidine	0.320	0.365	0.010	AVRG	14.1	
Chrysene	1.002	1.014	0.700	AVRG	1.2	
bis(2-Ethylhexyl)phthalate	0.591	0.608	0.010	AVRG	2.9	
Di-n-octylphthalate	1.026	1.009	0.010	AVRG	-1.6	
Benzo(b)fluoranthene	1.030	1.050	0.700	AVRG	1.9	
Benzo(k)fluoranthene	1.075	1.117	0.700	AVRG	3.9	
Benzo(a)pyrene	0.925	0.963	0.700	AVRG	4.1	
Indeno(1,2,3-cd)pyrene	1.228	1.257	0.500	AVRG	2.4	
Dibenzo(a,h)anthracene	1.009	1.043	0.400	AVRG	3.4	
Benzo(g,h,i)perylene	1.084	1.084	0.500	AVRG	0.0	
N-Nitrosodimethylamine	0.948	0.949	0.010	AVRG	0.1	
Aniline	2.029	1.945	0.010	AVRG	-4.1	
Benzidine	25.00	16.82	0.010	LINR	-32.7	<- NC
Pyridine	1.734	1.705	0.010	AVRG	-1.7	
1-methylnaphthalene	0.516	0.534	0.010	AVRG	3.5	
Azobenzene (1,2-DP-Hydrazine	1.225	1.271	0.010	AVRG	3.8	
2,3,4,6-Tetrachlorophenol	0.232	0.238	0.010	AVRG	2.6	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

12/7/11

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/06/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1433

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.484	0.010	AVRG	-1.0
Total Benzofluoranthenes	1.000	1.022	0.010	AVRG	2.2
2-Fluorophenol	1.463	1.457	0.010	AVRG	-0.4
Phenol-d5	1.800	1.819	0.010	AVRG	1.0
2-Chlorophenol-d4	1.408	1.436	0.010	AVRG	2.0
1,2-Dichlorobenzene-d4	0.974	0.955	0.010	AVRG	-2.0
Nitrobenzene-d5	0.412	0.406	0.010	AVRG	-1.4
2-Fluorobiphenyl	1.330	1.310	0.010	AVRG	-1.5
2,4,6-Tribromophenol	0.139	0.155	0.010	AVRG	11.5
Terphenyl-d14	0.811	0.768	0.010	AVRG	-5.3

<- Exceeds QC limit of 20% D

* RF less than minimum RF

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/07/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1244

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
Phenol	1.710	1.739	0.800	AVRG	1.7	
Bis(2-Chloroethyl)ether	1.389	1.405	0.700	AVRG	1.2	
2-Chlorophenol	1.403	1.420	0.800	AVRG	1.2	
1,3-Dichlorobenzene	1.617	1.633	0.010	AVRG	1.0	
1,4-Dichlorobenzene	1.605	1.617	0.010	AVRG	0.7	
1,2-Dichlorobenzene	1.508	1.525	0.010	AVRG	1.1	
Benzyl alcohol	0.859	0.897	0.010	AVRG	4.4	
2,2'-oxybis(1-Chloropropane)	1.126	1.130	0.010	AVRG	0.4	
2-Methylphenol	1.265	1.294	0.700	AVRG	2.3	
Hexachloroethane	0.619	0.615	0.300	AVRG	-0.6	
N-Nitroso-di-n-propylamine	0.938	0.973	0.500	AVRG	3.7	
4-Methylphenol	1.288	1.336	0.600	AVRG	3.7	
Nitrobenzene	0.391	0.401	0.200	AVRG	2.6	
Isophorone	0.588	0.595	0.400	AVRG	1.2	
2-Nitrophenol	0.190	0.197	0.100	AVRG	3.7	
2,4-Dimethylphenol	0.345	0.346	0.200	AVRG	0.3	
Bis(2-Chloroethoxy)methane	0.431	0.436	0.300	AVRG	1.2	
2,4-Dichlorophenol	0.289	0.298	0.200	AVRG	3.1	
1,2,4-Trichlorobenzene	0.322	0.324	0.010	AVRG	0.6	
Naphthalene	0.982	0.990	0.700	AVRG	0.8	
Benzoic acid	50.00	35.32	0.010	LINR	-29.4	<- NC
4-Chloroaniline	0.393	0.396	0.010	AVRG	0.8	
Hexachlorobutadiene	0.174	0.172	0.010	AVRG	-1.1	
4-Chloro-3-methylphenol	0.276	0.284	0.200	AVRG	2.9	
2-Methylnaphthalene	0.520	0.530	0.400	AVRG	1.9	
Hexachlorocyclopentadiene	0.324	0.288	0.050	AVRG	-11.1	
2,4,6-Trichlorophenol	0.336	0.349	0.200	AVRG	3.9	
2,4,5-Trichlorophenol	0.353	0.368	0.200	AVRG	4.2	
2-Chloronaphthalene	1.088	1.089	0.800	AVRG	0.1	
2-Nitroaniline	0.272	0.286	0.010	AVRG	5.1	
Acenaphthylene	1.621	1.667	0.900	AVRG	2.8	
Dimethylphthalate	1.143	1.154	0.010	AVRG	1.0	
2,6-Dinitrotoluene	0.260	0.277	0.200	AVRG	6.5	
Acenaphthene	1.028	1.021	0.900	AVRG	-0.7	
3-Nitroaniline	0.268	0.276	0.010	AVRG	3.0	
2,4-Dinitrophenol	50.00	36.27	0.010	2ORDR	-27.5	<- NC
Dibenzofuran	1.422	1.445	0.800	AVRG	1.6	

<- Exceeds QC limit of 20% D

* RF less than minimum RF

12/12/11

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/07/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1244

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
4-Nitrophenol	0.111	0.131	0.010	AVRG	18.0
2,4-Dinitrotoluene	0.338	0.359	0.200	AVRG	6.2
Fluorene	1.159	1.194	0.900	AVRG	3.0
4-Chlorophenyl-phenylether	0.566	0.579	0.400	AVRG	2.3
Diethylphthalate	1.079	1.098	0.010	AVRG	1.8
4-Nitroaniline	0.259	0.277	0.010	AVRG	6.9
4,6-Dinitro-2-methylphenol	0.133	0.122	0.010	AVRG	-8.3
N-Nitrosodiphenylamine(1)	0.609	0.604	0.010	AVRG	-0.8
4-Bromophenyl-phenylether	0.219	0.215	0.100	AVRG	-1.8
Hexachlorobenzene	0.230	0.228	0.100	AVRG	-0.9
Pentachlorophenol	0.114	0.098	0.050	AVRG	-14.0
Phenanthrene	1.081	1.080	0.700	AVRG	-0.1
Anthracene	1.108	1.125	0.700	AVRG	1.5
Carbazole	1.019	1.058	0.010	AVRG	3.8
Di-n-butylphthalate	1.158	1.222	0.010	AVRG	5.5
Fluoranthene	1.027	1.084	0.600	AVRG	5.6
Pyrene	1.238	1.238	0.600	AVRG	0.0
Butylbenzylphthalate	0.533	0.577	0.010	AVRG	8.2
Benzo(a)anthracene	0.974	1.034	0.800	AVRG	6.2
3,3'-Dichlorobenzidine	0.320	0.371	0.010	AVRG	15.9
Chrysene	1.002	1.021	0.700	AVRG	1.9
bis(2-Ethylhexyl)phthalate	0.591	0.602	0.010	AVRG	1.9
Di-n-octylphthalate	1.026	1.016	0.010	AVRG	-1.0
Benzo(b)fluoranthene	1.030	1.018	0.700	AVRG	-1.2
Benzo(k)fluoranthene	1.075	1.171	0.700	AVRG	8.9
Benzo(a)pyrene	0.925	0.972	0.700	AVRG	5.1
Indeno(1,2,3-cd)pyrene	1.228	1.292	0.500	AVRG	5.2
Dibenzo(a,h)anthracene	1.009	1.083	0.400	AVRG	7.3
Benzo(g,h,i)perylene	1.084	1.134	0.500	AVRG	4.6
N-Nitrosodimethylamine	0.948	0.949	0.010	AVRG	0.1
Aniline	2.029	1.911	0.010	AVRG	-5.8
Benzidine	25.00	0.000	0.010	LINR	
Pyridine	1.734	1.754	0.010	AVRG	1.2
1-methylnaphthalene	0.516	0.530	0.010	AVRG	2.7
Azobenzene (1,2-DP-Hydrazine	1.225	1.264	0.010	AVRG	3.2
2,3,4,6-Tetrachlorophenol	0.232	0.237	0.010	AVRG	2.2

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/07/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1244

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.480	0.010	AVRG	-1.8
Total Benzofluoranthenes	1.000	1.033	0.010	AVRG	3.3
2-Fluorophenol	1.463	1.455	0.010	AVRG	-0.5
Phenol-d5	1.800	1.783	0.010	AVRG	-0.9
2-Chlorophenol-d4	1.408	1.422	0.010	AVRG	1.0
1,2-Dichlorobenzene-d4	0.974	0.953	0.010	AVRG	-2.2
Nitrobenzene-d5	0.412	0.406	0.010	AVRG	-1.4
2-Fluorobiphenyl	1.330	1.290	0.010	AVRG	-3.0
2,4,6-Tribromophenol	0.139	0.152	0.010	AVRG	9.4
Terphenyl-d14	0.811	0.766	0.010	AVRG	-5.5

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-3

7B

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
Phenol	1.710	1.838	0.800	AVRG	7.5
Bis(2-Chloroethyl)ether	1.389	1.430	0.700	AVRG	3.0
2-Chlorophenol	1.403	1.440	0.800	AVRG	2.6
1,3-Dichlorobenzene	1.617	1.598	0.010	AVRG	-1.2
1,4-Dichlorobenzene	1.605	1.592	0.010	AVRG	-0.8
1,2-Dichlorobenzene	1.508	1.513	0.010	AVRG	0.3
Benzyl alcohol	0.859	0.966	0.010	AVRG	12.4
2,2'-oxybis(1-Chloropropane)	1.126	1.168	0.010	AVRG	3.7
2-Methylphenol	1.265	1.368	0.700	AVRG	8.1
Hexachloroethane	0.619	0.604	0.300	AVRG	-2.4
N-Nitroso-di-n-propylamine	0.938	1.058	0.500	AVRG	12.8
4-Methylphenol	1.288	1.431	0.600	AVRG	11.1
Nitrobenzene	0.391	0.404	0.200	AVRG	3.3
Isophorone	0.588	0.625	0.400	AVRG	6.3
2-Nitrophenol	0.190	0.203	0.100	AVRG	6.8
2,4-Dimethylphenol	0.345	0.360	0.200	AVRG	4.3
Bis(2-Chloroethoxy)methane	0.431	0.446	0.300	AVRG	3.5
2,4-Dichlorophenol	0.289	0.303	0.200	AVRG	4.8
1,2,4-Trichlorobenzene	0.322	0.319	0.010	AVRG	-0.9
Naphthalene	0.982	0.988	0.700	AVRG	0.6
Benzoic acid	50.00	47.79	0.010	LINR	-4.4
4-Chloroaniline	0.393	0.414	0.010	AVRG	5.3
Hexachlorobutadiene	0.174	0.169	0.010	AVRG	-2.9
4-Chloro-3-methylphenol	0.276	0.311	0.200	AVRG	12.7
2-Methylnaphthalene	0.520	0.545	0.400	AVRG	4.8
Hexachlorocyclopentadiene	0.324	0.328	0.050	AVRG	1.2
2,4,6-Trichlorophenol	0.336	0.360	0.200	AVRG	7.1
2,4,5-Trichlorophenol	0.353	0.385	0.200	AVRG	9.1
2-Chloronaphthalene	1.088	1.060	0.800	AVRG	-2.6
2-Nitroaniline	0.272	0.304	0.010	AVRG	11.8
Acenaphthylene	1.621	1.696	0.900	AVRG	4.6
Dimethylphthalate	1.143	1.224	0.010	AVRG	7.1
2,6-Dinitrotoluene	0.260	0.300	0.200	AVRG	15.4
Acenaphthene	1.028	1.043	0.900	AVRG	1.4
3-Nitroaniline	0.268	0.290	0.010	AVRG	8.2
2,4-Dinitrophenol	50.00	53.41	0.010	2ORDR	6.8
Dibenzofuran	1.422	1.487	0.800	AVRG	4.6

<- Exceeds QC limit of 20% D

* RF less than minimum RF

FORM VII SV-1

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift	
4-Nitrophenol	0.111	0.162	0.010	AVRG	45.9	<- NC
2,4-Dinitrotoluene	0.338	0.401	0.200	AVRG	18.6	
Fluorene	1.159	1.208	0.900	AVRG	4.2	
4-Chlorophenyl-phenylether	0.566	0.608	0.400	AVRG	7.4	
Diethylphthalate	1.079	1.187	0.010	AVRG	10.0	
4-Nitroaniline	0.259	0.307	0.010	AVRG	18.5	
4,6-Dinitro-2-methylphenol	0.133	0.138	0.010	AVRG	3.8	
N-Nitrosodiphenylamine(1)	0.609	0.608	0.010	AVRG	-0.2	
4-Bromophenyl-phenylether	0.219	0.216	0.100	AVRG	-1.4	
Hexachlorobenzene	0.230	0.227	0.100	AVRG	-1.3	
Pentachlorophenol	0.114	0.117	0.050	AVRG	2.6	
Phenanthrene	1.081	1.065	0.700	AVRG	-1.5	
Anthracene	1.108	1.114	0.700	AVRG	0.5	
Carbazole	1.019	1.048	0.010	AVRG	2.8	
Di-n-butylphthalate	1.158	1.252	0.010	AVRG	8.1	
Fluoranthene	1.027	1.100	0.600	AVRG	7.1	
Pyrene	1.238	1.298	0.600	AVRG	4.8	
Butylbenzylphthalate	0.533	0.627	0.010	AVRG	17.6	
Benzo(a)anthracene	0.974	1.038	0.800	AVRG	6.6	
3,3'-Dichlorobenzidine	0.320	0.356	0.010	AVRG	11.2	
Chrysene	1.002	1.030	0.700	AVRG	2.8	
bis(2-Ethylhexyl)phthalate	0.591	0.618	0.010	AVRG	4.6	
Di-n-octylphthalate	1.026	1.005	0.010	AVRG	-2.0	
Benzo(b)fluoranthene	1.030	1.153	0.700	AVRG	11.9	
Benzo(k)fluoranthene	1.075	1.157	0.700	AVRG	7.6	
Benzo(a)pyrene	0.925	0.974	0.700	AVRG	5.3	
Indeno(1,2,3-cd)pyrene	1.228	1.001	0.500	AVRG	-18.5	
Dibenzo(a,h)anthracene	1.009	0.844	0.400	AVRG	-16.4	
Benzo(g,h,i)perylene	1.084	0.838	0.500	AVRG	-22.7	<- NC
N-Nitrosodimethylamine	0.948	0.940	0.010	AVRG	-0.8	
Aniline	2.029	1.986	0.010	AVRG	-2.1	
Benzidine	25.00	0.000	0.010	LINR		
Pyridine	1.734	1.652	0.010	AVRG	-4.7	
1-methylnaphthalene	0.516	0.542	0.010	AVRG	5.0	
Azobenzene (1,2-DP-Hydrazine	1.225		0.010	AVRG		
2,3,4,6-Tetrachlorophenol	0.232	0.273	0.010	AVRG	17.7	

(1) Cannot be separated from Diphenylamine

<- Exceeds QC limit of 20% D

* RF less than minimum RF

AD 12/12/11

FORM VII SV-2

7C

SEMIVOLATILE 8270-D CONTINUING CALIBRATION CHECK

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Instrument ID: NT6 Cont. Calib. Date: 12/09/11

Init. Calib. Date: 11/21/11 Cont. Calib. Time: 1351

COMPOUND	CalAmt or ARF	CC Amt or RF	MIN RRF	CURVE TYPE	%D or Drift
1,2,4,5-Tetrachlorobenzene	0.489	0.470	0.010	AVRG	-3.9
Total Benzofluoranthenes	1.000	1.096	0.010	AVRG	9.6
2-Fluorophenol	1.463	1.462	0.010	AVRG	-0.1
Phenol-d5	1.800	1.889	0.010	AVRG	4.9
2-Chlorophenol-d4	1.408	1.432	0.010	AVRG	1.7
1,2-Dichlorobenzene-d4	0.974	0.930	0.010	AVRG	-4.5
Nitrobenzene-d5	0.412	0.412	0.010	AVRG	0.0
2-Fluorobiphenyl	1.330	1.276	0.010	AVRG	-4.1
2,4,6-Tribromophenol	0.139	0.164	0.010	AVRG	18.0
Terphenyl-d14	0.811	0.808	0.010	AVRG	-0.4

<- Exceeds QC limit of 20% D

* RF less than minimum RF

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/06/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	432950	7.97	1664687	10.02	947707	12.89
	UPPER LIMIT		8.47		10.52		13.39
	LOWER LIMIT		7.47		9.52		12.39
01	TZ21MBW1	464315	7.96	1817003	10.02	1057599	12.89
02	TZ21LCSW1	482156	7.97	1912290	10.02	1129212	12.89
03	MW-17-112811	449664	7.96	1761511	10.02	1028501	12.89
04	MW-04S-11281	439087	7.96	1680910	10.02	955957	12.89
05	DUP-112811-1	453281	7.97	1745093	10.02	1020381	12.89
06	MW-22-112811	471810	7.96	1834160	10.02	1042944	12.89
07	MW-22-112811	500770	7.97	1966948	10.02	1150621	12.90
08	MW-23-112811	426564	7.96	1634749	10.02	936743	12.89
09	MW-1S-112911	483574	7.96	1862366	10.02	1083706	12.89
10	MW-1D-112911	467500	7.97	1804401	10.02	1071118	12.89
11	MW-7S-112911	473029	7.96	1810356	10.02	1054599	12.89
12	DUP-112911-2	481101	7.97	1847918	10.02	1087897	12.89
13	MW-13-112911	450130	7.96	1685513	10.01	983545	12.89
14	MW-10-112911	442897	7.96	1714321	10.02	1010536	12.89
15	DUP-112911-3	481915	7.96	1865390	10.02	1115949	12.89
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/06/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1430350	15.27	1305373	19.60	1291628	21.76
	UPPER LIMIT		15.77		20.10		22.26
	LOWER LIMIT		14.77		19.10		21.26
01	TZ21MBW1	1571418	15.27	1525164	19.59	1383473	21.76
02	TZ21LCSW1	1692639	15.28	1602345	19.60	1539438	21.76
03	MW-17-112811	1536054	15.27	1482544	19.59	1371019	21.76
04	MW-04S-11281	1404730	15.27	1338641	19.59	1266884	21.76
05	DUP-112811-1	1511948	15.27	1437914	19.60	1347103	21.76
06	MW-22-112811	1558398	15.27	1469760	19.60	1412719	21.76
07	MW-22-112811	1666399	15.27	1580984	19.60	1526415	21.76
08	MW-23-112811	1371492	15.27	1316614	19.60	1286393	21.76
09	MW-1S-112911	1651562	15.27	1540811	19.60	1443757	21.76
10	MW-1D-112911	1588975	15.27	1537553	19.60	1420715	21.76
11	MW-7S-112911	1593865	15.28	1562562	19.60	1443258	21.76
12	DUP-112911-2	1627445	15.28	1569266	19.59	1457315	21.76
13	MW-13-112911	1430983	15.27	1425241	19.60	1390615	21.76
14	MW-10-112911	1501851	15.27	1441195	19.59	1331661	21.76
15	DUP-112911-3	1698171	15.27	1602239	19.60	1530551	21.76
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/06/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1724600	20.75				
	UPPER LIMIT		21.25				
	LOWER LIMIT		20.25				
01	TZ21MBW1	2009092	20.75				
02	TZ21LCSW1	2121519	20.75				
03	MW-17-112811	1997597	20.75				
04	MW-04S-11281	1794762	20.75				
05	DUP-112811-1	1957823	20.75				
06	MW-22-112811	1926879	20.75				
07	MW-22-112811	2151715	20.75				
08	MW-23-112811	1818608	20.75				
09	MW-1S-112911	2148906	20.75				
10	MW-1D-112911	2141770	20.75				
11	MW-7S-112911	2112550	20.75				
12	DUP-112911-2	2170970	20.75				
13	MW-13-112911	1958680	20.75				
14	MW-10-112911	2010246	20.75				
15	DUP-112911-3	2263460	20.75				
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/07/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	375094	7.92	1419683	9.97	803001	12.84
	UPPER LIMIT		8.42		10.47		13.34
	LOWER LIMIT		7.42		9.47		12.34
01	MW-22-112811	458658	7.91	1748250	9.97	1005805	12.84
02	MW-7S-112911	433720	7.91	1557799	9.97	949766	12.84
03	DUP-112911-2	435261	7.91	1551154	9.97	945860	12.84
04	MW-13-112911	444923	7.92	1642003	9.97	989086	12.84
05	DUP-112911-3	488554	7.92	1797425	9.97	1062343	12.84
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/07/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1161835	15.22	1057470	19.54	1044686	21.70
	UPPER LIMIT		15.72		20.04		22.20
	LOWER LIMIT		14.72		19.04		21.20
01	MW-22-112811	1501979	15.22	1409683	19.53	1245604	21.70
02	MW-7S-112911	1433228	15.22	1337165	19.54	1332584	21.70
03	DUP-112911-2	1425781	15.22	1360989	19.54	1385460	21.70
04	MW-13-112911	1501265	15.22	1355209	19.54	1310921	21.70
05	DUP-112911-3	1592456	15.22	1350683	19.54	1271280	21.70
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

TZ21 : 00124

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/07/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1389967	20.69				
	UPPER LIMIT		21.19				
	LOWER LIMIT		20.19				
01	MW-22-112811	1884490	20.70				
02	MW-7S-112911	1789565	20.70				
03	DUP-112911-2	1825438	20.70				
04	MW-13-112911	1855416	20.69				
05	DUP-112911-3	1854456	20.69				
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS1(DCB) AREA #	RT #	IS2(NPT) AREA #	RT #	IS3(ANT) AREA #	RT #
	ICAL MIDPT	393702	8.10	1422023	10.15	754629	13.03
	UPPER LIMIT	787404		2844046		1509258	
	LOWER LIMIT	196851		711012		377314	
	CCAL	407145	7.81	1609797	9.87	951894	12.73
	UPPER LIMIT		8.31		10.37		13.23
	LOWER LIMIT		7.31		9.37		12.23
01	TZ21MBW1	438391	7.81	1741481	9.87	1055888	12.73
02	TZ21LCSW1	499867	7.81	1995339	9.87	1189175	12.73
03	MW-17-112811	446038	7.81	1757370	9.87	1057681	12.73
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS1 = 1,4-Dichlorobenzene-d4
IS2 = Naphthalene-d8
IS3 = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-1

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS4(PHN) AREA #	RT #	IS5(CRY) AREA #	RT #	IS6(PRY) AREA #	RT #
	ICAL MIDPT	1068116	15.41	993839	19.75	976441	21.91
	UPPER LIMIT	2136232		1987678		1952882	
	LOWER LIMIT	534058		496920		488220	
	CCAL	1491310	15.10	1304427	19.42	1085018	21.58
	UPPER LIMIT		15.60		19.92		22.08
	LOWER LIMIT		14.60		18.92		21.08
01	TZ21MBW1	1593497	15.10	1503829	19.42	1272316	21.58
02	TZ21LCSW1	1843443	15.11	1640278	19.42	1416196	21.57
03	MW-17-112811	1572450	15.10	1436388	19.42	1201711	21.58
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS4 = Phenanthrene-d10
IS5 = Chrysene-d12
IS6 = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-2

8B

SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

ARI Job No: TZ21 Project: RG FALL GW SAMPLING

Ical Midpoint ID: 11211109 Ical Date: 11/21/11

Instrument ID: NT6 Cont. Cal Date: 12/09/11

		IS7 AREA #	RT #	AREA #	RT #	AREA #	RT #
	ICAL MIDPT	1256584	20.88				
	UPPER LIMIT	2513168					
	LOWER LIMIT	628292					
	CCAL	1788937	20.58				
	UPPER LIMIT		21.08				
	LOWER LIMIT		20.08				
01	TZ21MBW1	2069238	20.58				
02	TZ21LCSW1	2217850	20.59				
03	MW-17-112811	1986518	20.59				
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

IS7 = Di-n-octylphthalate-d4

AREA UPPER LIMIT = +100% of internal standard area from Ical midpoint
AREA LOWER LIMIT = - 50% of internal standard area from Ical midpoint
RT UPPER LIMIT = + 0.50 minutes of internal standard RT from Cont. Cal
RT LOWER LIMIT = - 0.50 minutes of internal standard RT from Cont. Cal

* Values outside of QC limits.

FORM VIII SV-3

TPHD Analysis
Report and Summary QC Forms

ARI Job ID: TZ21, TZ32

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD by GC/FID
Page 1 of 1
Matrix: Water

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Received: 11/29/11

Data Release Authorized:
Reported: 12/05/11

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-120111	Method Blank	12/01/11	12/02/11	1.00	Diesel Range	0.10	< 0.10 U
11-27583	HC ID: ---		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		95.9%
TZ32A	MW-1S-112911	12/01/11	12/02/11	1.00	**Diesel Range**	**0.10**	**0.19**
11-27583	HC ID: **DIESEL/DRO**		FID4A	1.0	Motor Oil Range	0.20	< 0.20 U
					o-Terphenyl		84.4%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.
DL-Dilution of extract prior to analysis.
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.
Motor Oil range quantitation on total peaks in the range from C24 to C38.
HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in ranges are not identifiable.

MH 12/5/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111202.b/1202a007.d ARI ID: TZ32MBW1
Method: /chem3/fid4a.i/20111202.b/ftphfid4a.m Client ID: TZ32MBW1
Instrument: fid4a.i Injection: 02-DEC-2011 09:23
Operator: MH
Report Date: 12/02/2011 Dilution Factor: 1
Macro: 14-SEP-2011
Calibration Dates: Gas:11-AUG-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.436	0.041	2106	9619	GAS (Tol-C12)	279105	16.52
C8	1.679	-0.041	2390	6723	DIESEL (C12-C24)	64469	4.78
C10	3.411	0.004	314	509	M.OIL (C24-C38)	111642	9.97
C12	4.401	0.002	264	239	AK-102 (C10-C25)	88797	5.54
C14	5.184	0.017	259	483	AK-103 (C25-C36)	100119	14.51
C16	5.826	-0.006	169	165			
C18	6.453	-0.002	90	74			
C20	7.040	-0.011	451	821			
C22	7.608	-0.006	122	103			
C24	8.146	0.003	86	102			
C25	8.380	-0.016	136	240			
C26	8.633	-0.003	85	87			
C28	9.101	-0.028	161	319	IT.DIES (C10-C24)	87146	5.46
C32	10.149	-0.005	3902	6435			
C34	10.655	-0.012	330	531	BUNKERC (C10-C38)	198788	26.95
Filter Peak	12.995	0.002	2137	5261			
C36	11.159	-0.014	249	71			
C38	11.695	0.015	320	172			
C40	12.145	0.001	1681	3191			
o-terph	6.607	0.000	970278	777429	JET-A (C10-C18)	62609	4.22
Triacon Surr	9.646	-0.004	530898	603156			

M Indicates manual integration within range.
Range Times: NW Diesel(4.400 - 8.143) AK102(3.41 - 8.40) Jet A(3.41 - 6.46)
NW M.Oil(8.14 - 11.68) AK103(8.40 - 11.17) OR Diesel(3.41 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	777429	43.2	95.9
Triacontane	603156	36.8	81.7

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	16895.4	11-AUG-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

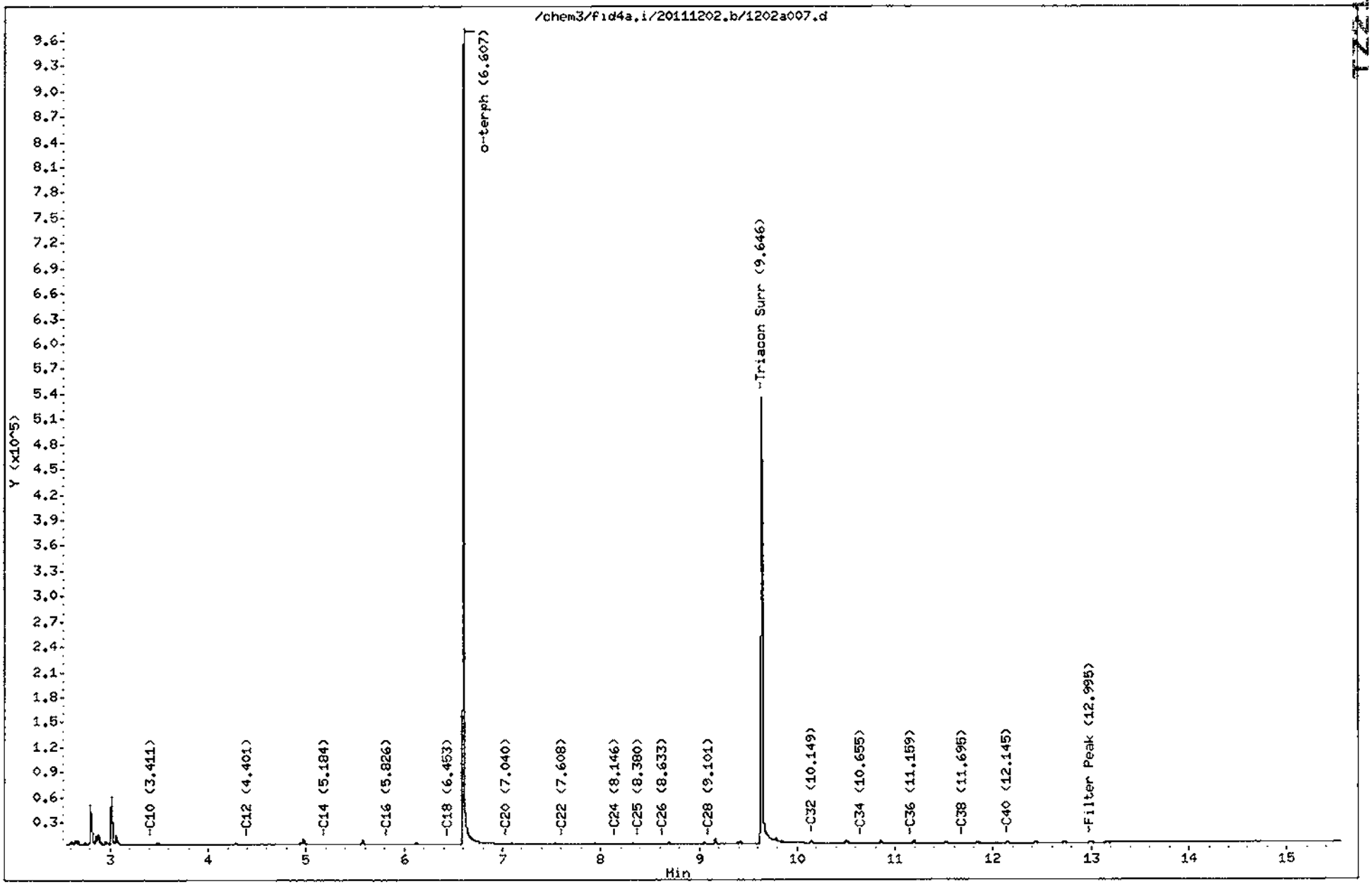
Data File: /chem3/fid4a.i/20111202.b/1202a007.d
Date : 02-DEC-2011 09:23
Client ID: TZ32MBW1
Sample Info: TZ32MBW1

Column phase: RTX-1

Instrument: fid4a.i

Operator: MH
Column diameter: 0.25

TZ21 00132



MH 12/5/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111202.b/1202a009.d ARI ID: TZ32A
Method: /chem3/fid4a.i/20111202.b/ftphfid4a.m Client ID: MW-1S-112911
Instrument: fid4a.i Injection: 02-DEC-2011 10:09
Operator: MH
Report Date: 12/02/2011 Dilution Factor: 1
Macro: 14-SEP-2011
Calibration Dates: Gas:11-AUG-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.441	0.046	2016	9223	GAS (Tol-C12)	168070	9.95	
C8	1.689	-0.032	1797	4867	DIESEL (C12-C24)	1297361	96.28	
C10	3.409	0.002	305	240	M.OIL (C24-C38)	410383	36.63	
C12	4.377	-0.023	108	164	AK-102 (C10-C25)	1362572	84.98	M
C14	----				AK-103 (C25-C36)	350156	50.73	
C16	5.834	0.001	2494	2820				
C18	6.436	-0.019	4129	4264				
C20	7.043	-0.008	7087	5583				
C22	7.608	-0.006	8222	3081				
C24	8.138	-0.005	7695	6384				
C25	8.403	0.007	7520	15574				
C26	8.637	0.001	4832	2838				
C28	9.116	-0.013	2540	1298	IT.DIES (C10-C24)	1310151	82.14	M
C32	10.149	-0.006	4520	7705				
C34	10.676	0.008	399	263	BUNKERC (C10-C38)	1720534	233.28	M
Filter Peak	12.992	-0.001	1601	3998				
C36	11.194	0.020	2935	4234				
C38	11.676	-0.004	192	263				
C40	12.146	0.002	1624	2743				
o-terph	6.606	-0.001	840469	684115	JET-A (C10-C18)	461396	31.09	
Triacon Surr	9.647	-0.003	582420	658771				

M Indicates manual integration within range.
Range Times: NW Diesel(4.400 - 8.143) AK102(3.41 - 8.40) Jet A(3.41 - 6.46)
NW M.Oil(8.14 - 11.68) AK103(8.40 - 11.17) OR Diesel(3.41 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	684115	38.0	84.4
Triacontane	658771	40.2	89.2

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	16895.4	11-AUG-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111202.b/1202a009.d

Date : 02-DEC-2011 10:09

Client ID: MW-1S-112911

Sample Info: TZ32A

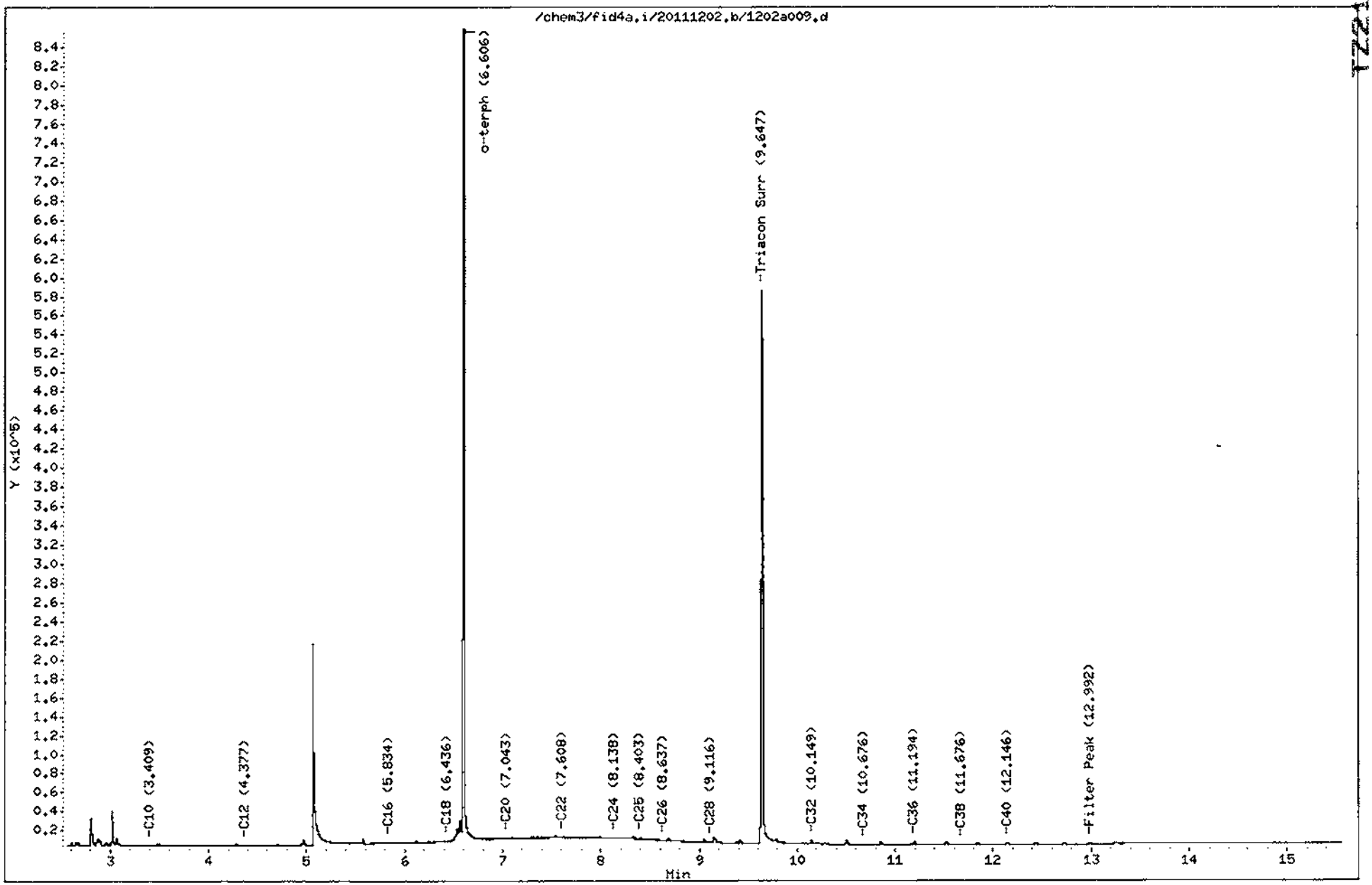
Column phase: RTX-1

Instrument: fid4a.i

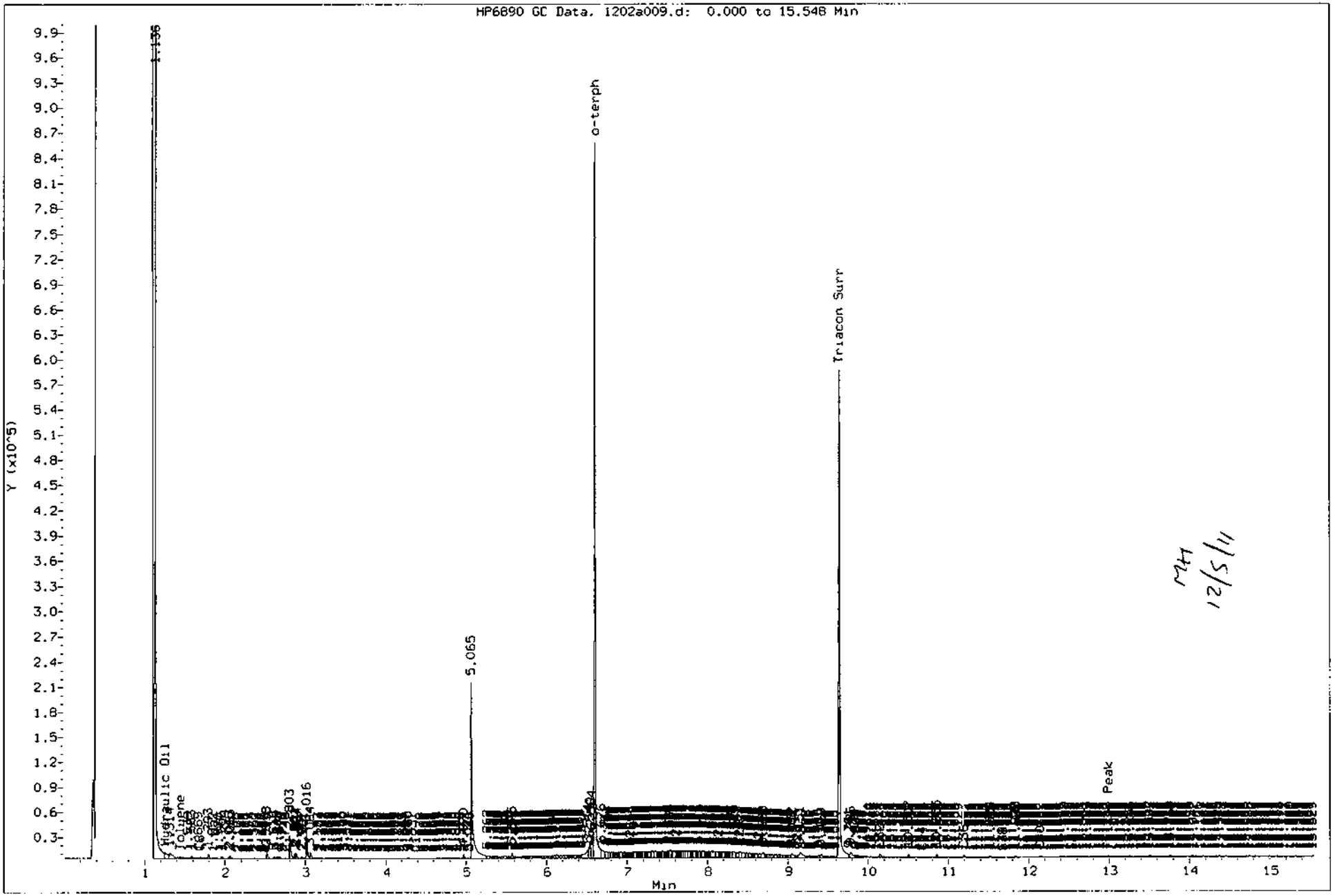
Operator: MH

Column diameter: 0.25

TZ21 - 00134



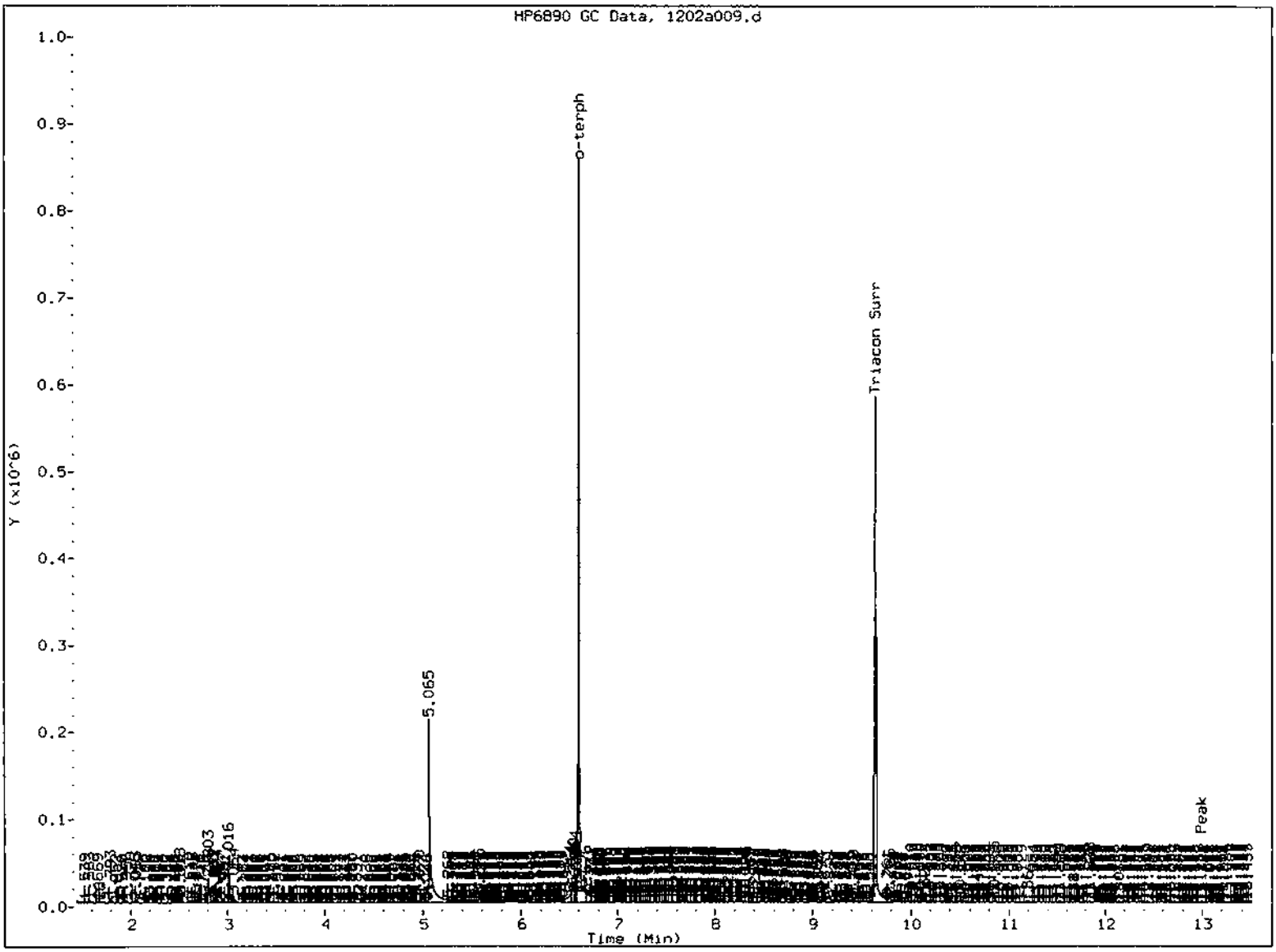
Data File: /chem3/fid4a.i/20111202.b/1202a009.d
Injection Date: 02-DEC-2011 10:09
Instrument: fid4a.i
Client Sample ID: MW-15-112911



MH 12/5/11

TZ21:00135

FID:4A-2C/RTX-1 TZ32A FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/5/11

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07

Client ID	OTER	TOT OUT
MB-120111	95.9%	0
LCS-120111	90.7%	0
MW-1S-112911	84.4%	0
MW-1S-112911 MS	83.5%	0
MW-1S-112911 MSD	85.1%	0

	LCS/MB LIMITS	QC LIMITS
(OTER) = o-Terphenyl	(50-150)	(50-150)

Prep Method: SW3510C
Log Number Range: 11-27583 to 11-27583

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID **Sample ID: MW-1S-112911**
Page 1 of 1 **MS/MSD**

Lab Sample ID: TZ32A
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/05/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Extracted MS/MSD: 12/01/11

Date Analyzed MS: 12/02/11 10:33
MSD: 12/02/11 10:56
Instrument/Analyst MS: FID4A/MH
MSD: FID4A/MH

Sample Amount MS: 500 mL
MSD: 500 mL
Final Extract Volume MS: 1.0 mL
MSD: 1.0 mL
Dilution Factor MS: 1.00
MSD: 1.00

Range	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Diesel	0.19	2.94	3.00	91.7%	3.03	3.00	94.7%	3.0%

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	83.5%	85.1%

Results reported in mg/L
RPD calculated using sample concentrations per SW846.

MH 12/5/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111202.b/1202a010.d ARI ID: TZ32AMS
Method: /chem3/fid4a.i/20111202.b/ftphfid4a.m Client ID: MW-1S-112911 MS
Instrument: fid4a.i Injection: 02-DEC-2011 10:33
Operator: MH
Report Date: 12/02/2011 Dilution Factor: 1
Macro: 14-SEP-2011
Calibration Dates: Gas:11-AUG-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.436	0.041	2458	8243	GAS (Tol-C12)	2827554	167.36	
C8	1.732	0.011	2246	3607	DIESEL (C12-C24)	19822190	1471.03	
C10	3.411	0.005	49601	49583	M.OIL (C24-C38)	603685	53.88	
C12	4.401	0.001	150200	145614	AK-102 (C10-C25)	21972834	1370.43	M
C14	5.170	0.003	273773	387562	AK-103 (C25-C36)	467641	67.75	
C16	5.837	0.005	452428	478144				
C18	6.460	0.004	393398	474746				
C20	7.051	0.001	295282	429412				
C22	7.613	-0.001	154968	211076				
C24	8.139	-0.004	44770	74646				
C25	8.391	-0.005	21404	52951				
C26	8.634	-0.001	10736	16556				
C28	9.130	0.001	3502	2518	IT.DIES (C10-C24)	21840329	1369.21	M
C32	10.147	-0.007	5663	9236				
C34	10.653	-0.014	314	563	BUNKERC (C10-C38)	22444013	3043.10	M
Filter Peak	12.989	-0.003	1283	2823				
C36	11.194	0.021	2576	3368				
C38	11.686	0.006	40	43				
C40	12.144	0.000	1398	1978				
o-terph	6.610	0.004	847728	676594	JET-A (C10-C18)	15395965	1037.32	
Triacon Surr	9.647	-0.003	590967	634721				

M Indicates manual integration within range.
Range Times: NW Diesel(4.400 - 8.143) AK102(3.41 - 8.40) Jet A(3.41 - 6.46)
NW M.Oil(8.14 - 11.68) AK103(8.40 - 11.17) OR Diesel(3.41 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	676594	37.6	83.5
Triacontane	634721	38.7	86.0

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	16895.4	11-AUG-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111202.b/1202a010.d

Date : 02-DEC-2011 10:33

Client ID: MW-1S-112911 MS

Sample Info: TZ32AMS

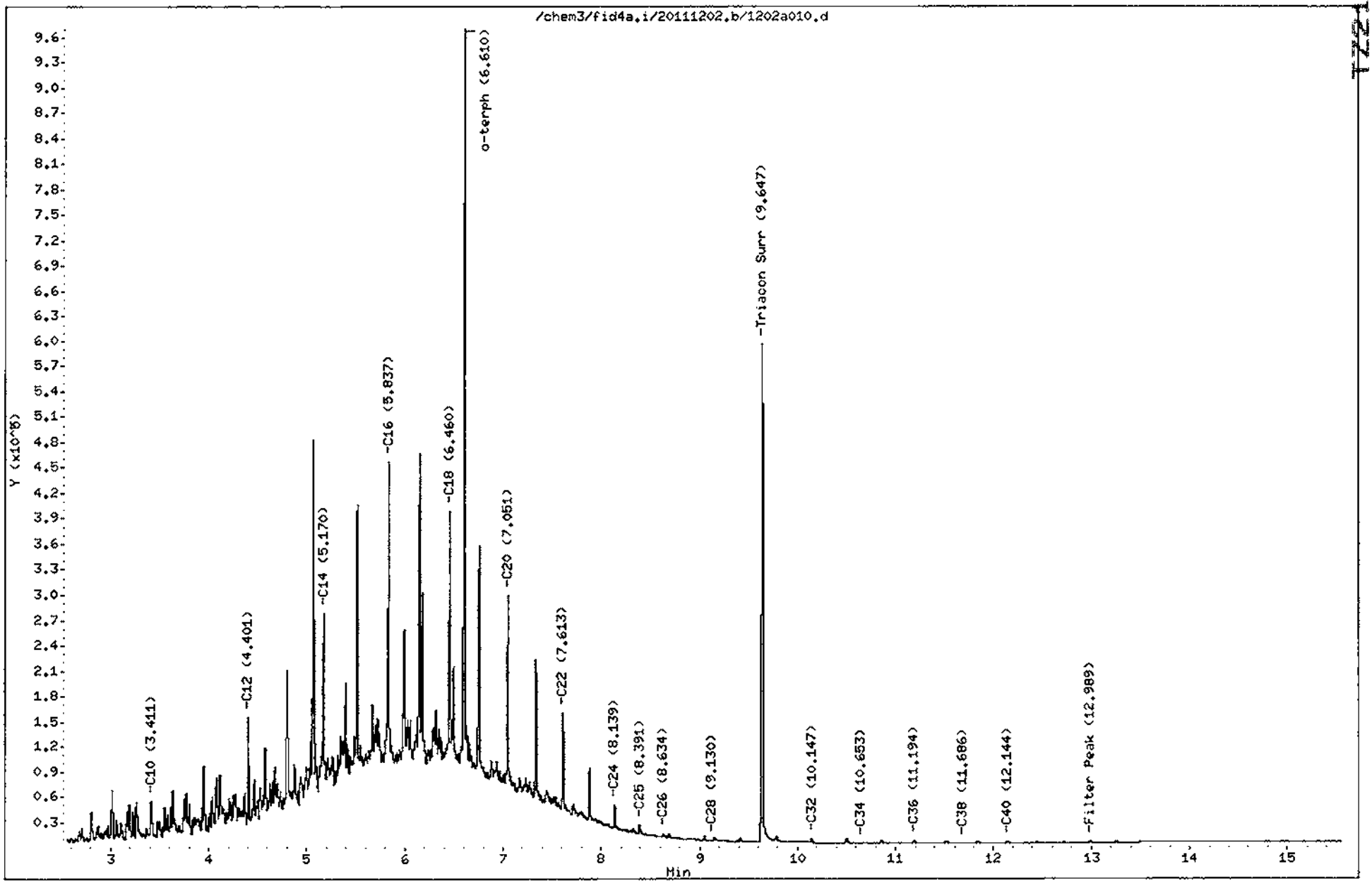
Column phase: RTX-1

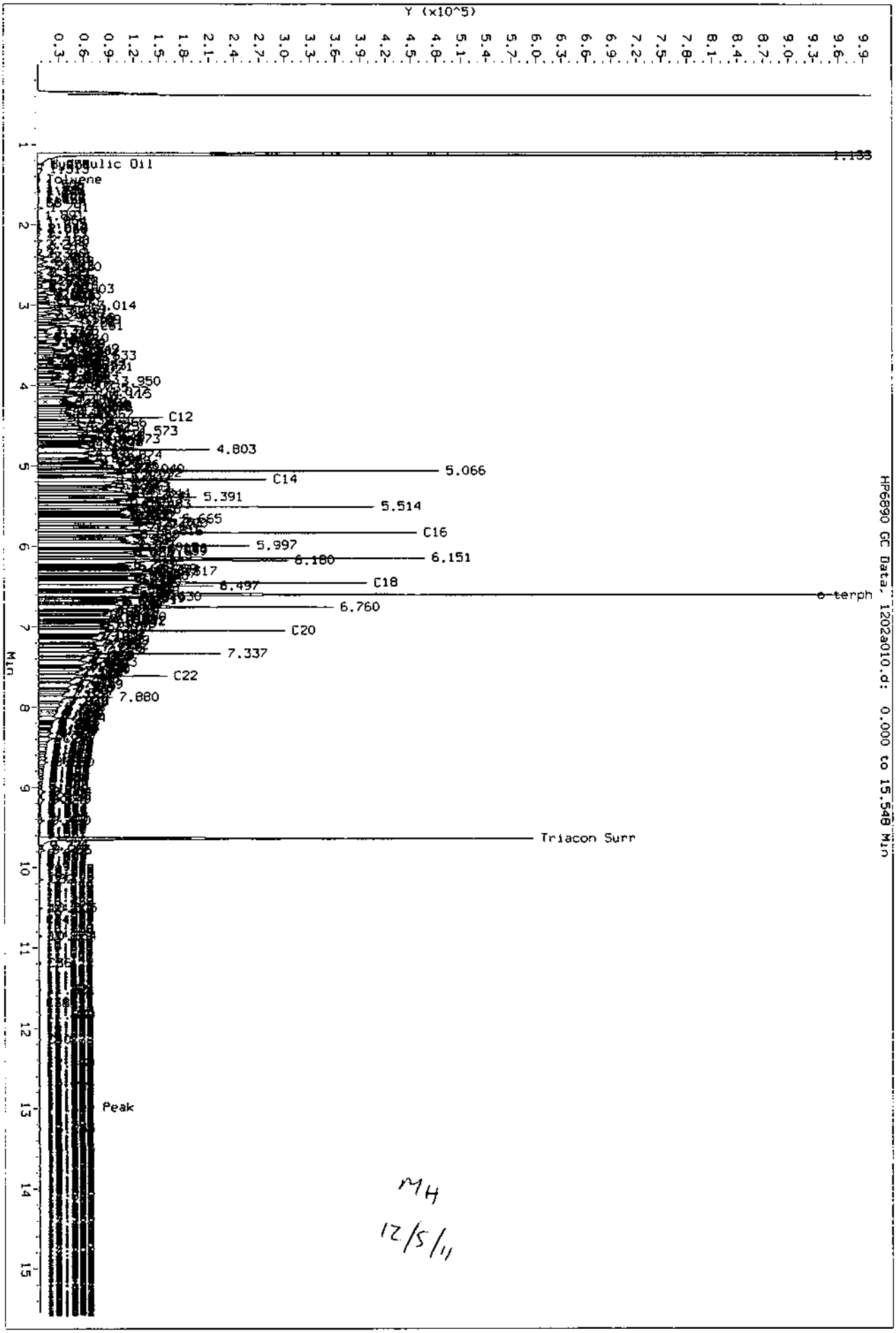
Instrument: fid4a.i

Operator: MH

Column diameter: 0.25

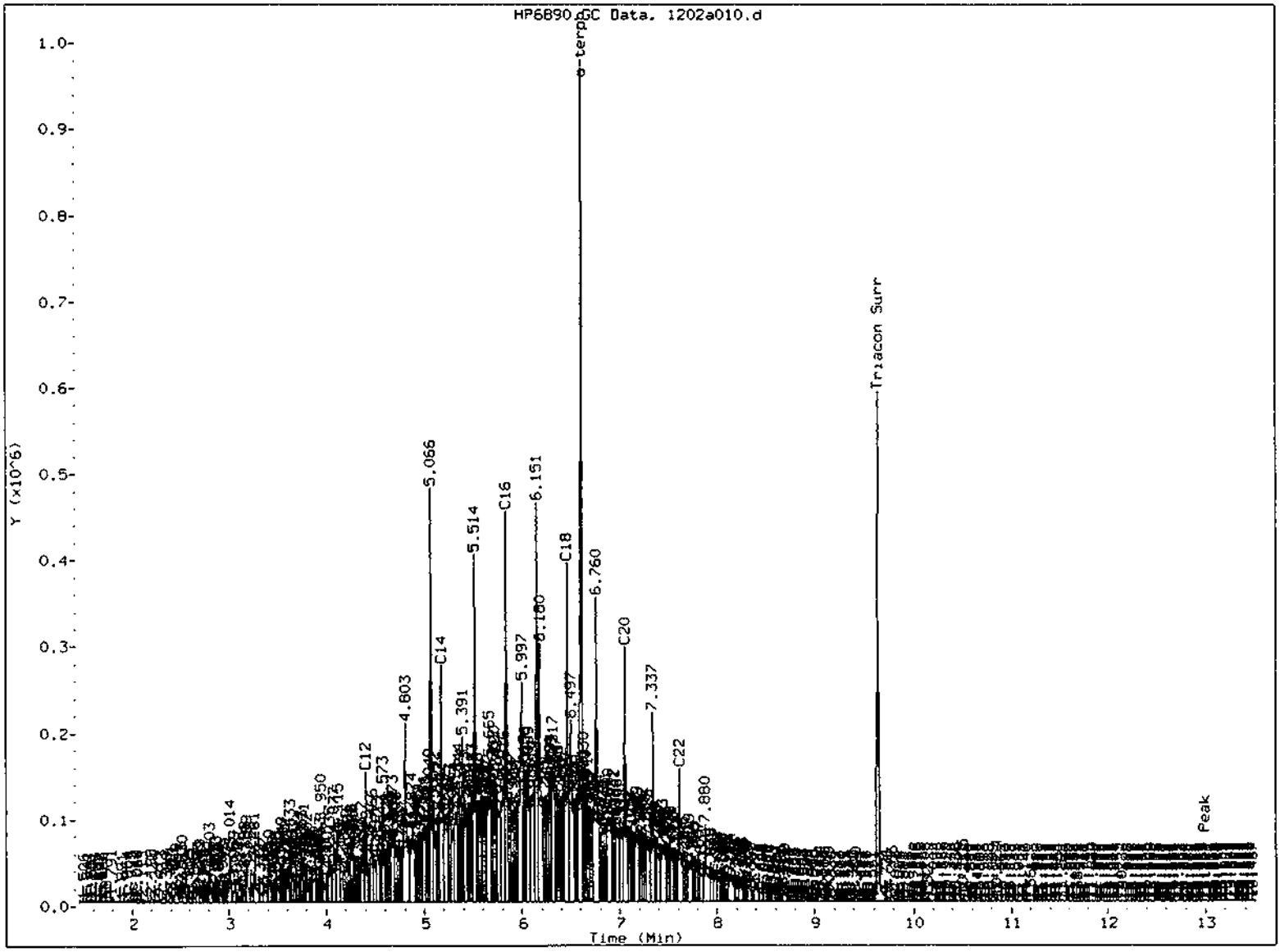
TZ21 : 0211 10




Data File: /chem3/fid4a.i/20111202.b/1202a010.d
Injection Date: 02-DEC-2011 10:33
Instrument: fid4a.i
Client Sample ID: MW-1S-112911 MS
Y (x10^5)
Hydraulic Oil
Toluene
1.133
3.014
3.950
C12
4.803
5.066
C14
5.391
5.514
C16
5.997
6.151
C18
6.497
o-terph
6.760
C20
7.337
C22
7.880
Triacon Surr
Peak
Min
HP6890 GC Data, 1202a010.d: 0.000 to 15.548 Min

MH
12/5/11

FID:4A-2C/RTX-1 TZ32AMS FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/5/11

MH 12/5/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111202.b/1202a011.d
Method: /chem3/fid4a.i/20111202.b/ftphfid4a.m
Instrument: fid4a.i
Operator: MH
Report Date: 12/02/2011
Macro: 14-SEP-2011
Calibration Dates: Gas:11-AUG-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

ARI ID: TZ32AMSD
Client ID: MW-1S-112911 MSD
Injection: 02-DEC-2011 10:56
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.403	0.008	1470	1290	GAS (Tol-C12)	3094670	183.17	
C8	1.731	0.010	2646	4162	DIESEL (C12-C24)	20428603	1516.04	
C10	3.410	0.003	57603	56926	M.OIL (C24-C38)	618617	55.22	
C12	4.402	0.002	156756	155927	AK-102 (C10-C25)	22721604	1417.13	M
C14	5.170	0.003	289992	317402	AK-103 (C25-C36)	506096	73.33	
C16	5.838	0.005	465977	476255				
C18	6.459	0.004	400429	532174				
C20	7.052	0.001	306741	418444				
C22	7.613	-0.001	163079	174865				
C24	8.139	-0.004	47373	84622				
C25	8.389	-0.007	22704	55217				
C26	8.635	-0.001	11029	23732				
C28	9.148	0.019	9963	27818	IT.DIES (C10-C24)	22612518	1417.62	M
C32	10.149	-0.005	5094	7982				
C34	10.660	-0.008	323	521	BUNKERC (C10-C38)	23231135	3149.82	M
Filter Peak	12.994	0.001	1194	2984				
C36	11.195	0.022	2357	3065				
C38	11.685	0.005	48	21				
C40	12.146	0.002	1403	1942				
o-terph	6.610	0.004	810954	689575	JET-A (C10-C18)	16053773	1081.64	
Triacon Surr	9.649	-0.001	626155	655547				

M Indicates manual integration within range.
Range Times: NW Diesel(4.400 - 8.143) AK102(3.41 - 8.40) Jet A(3.41 - 6.46)
NW M.Oil(8.14 - 11.68) AK103(8.40 - 11.17) OR Diesel(3.41 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	689575	38.3	85.1
Triacontane	655547	40.0	88.8

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	16895.4	11-AUG-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111202.b/1202a011.d

Date : 02-DEC-2011 10:56

Client ID: MW-1S-112911 MSD

Sample Info: TZ32AMSD

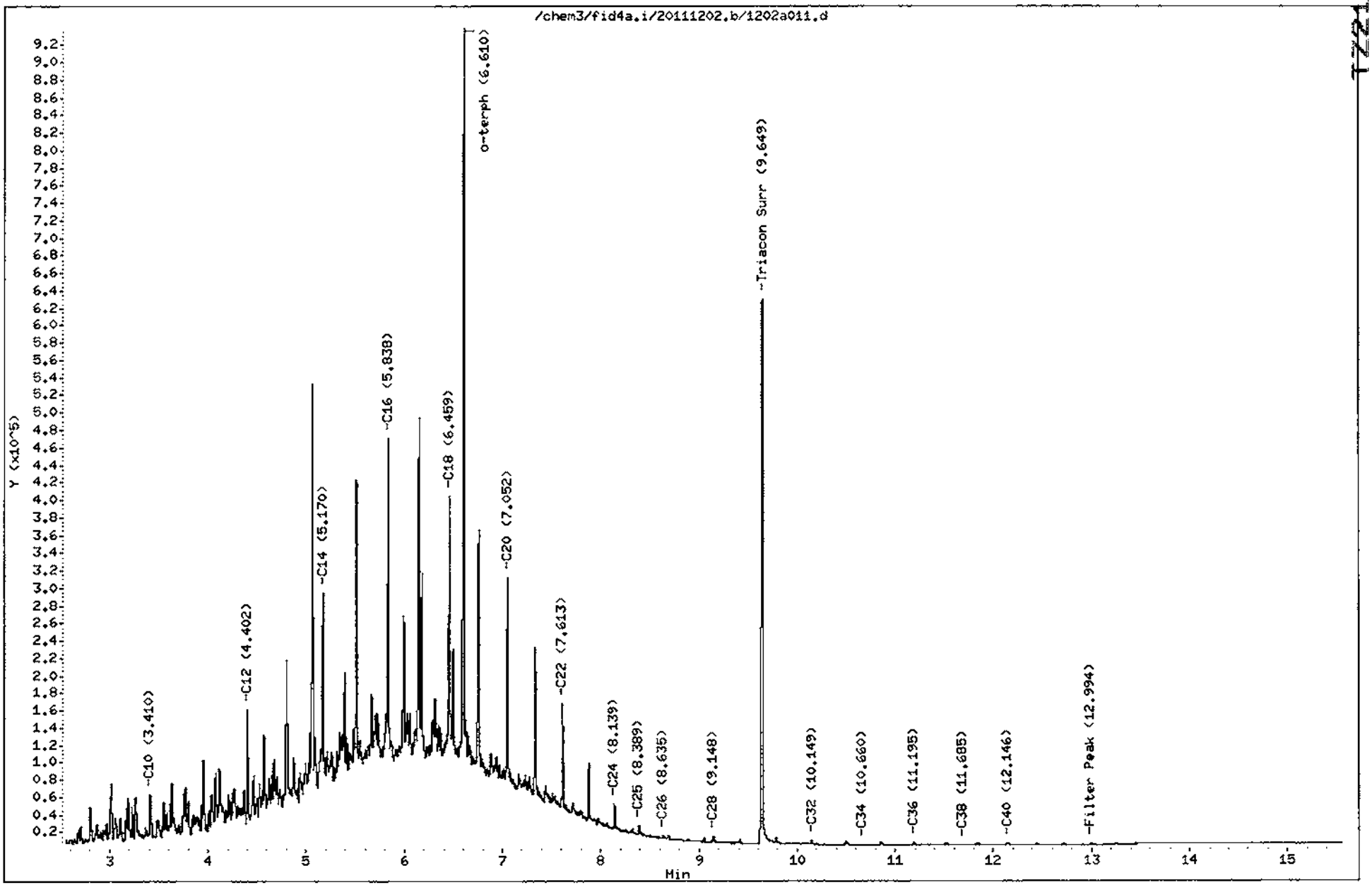
Column phase: RTX-1

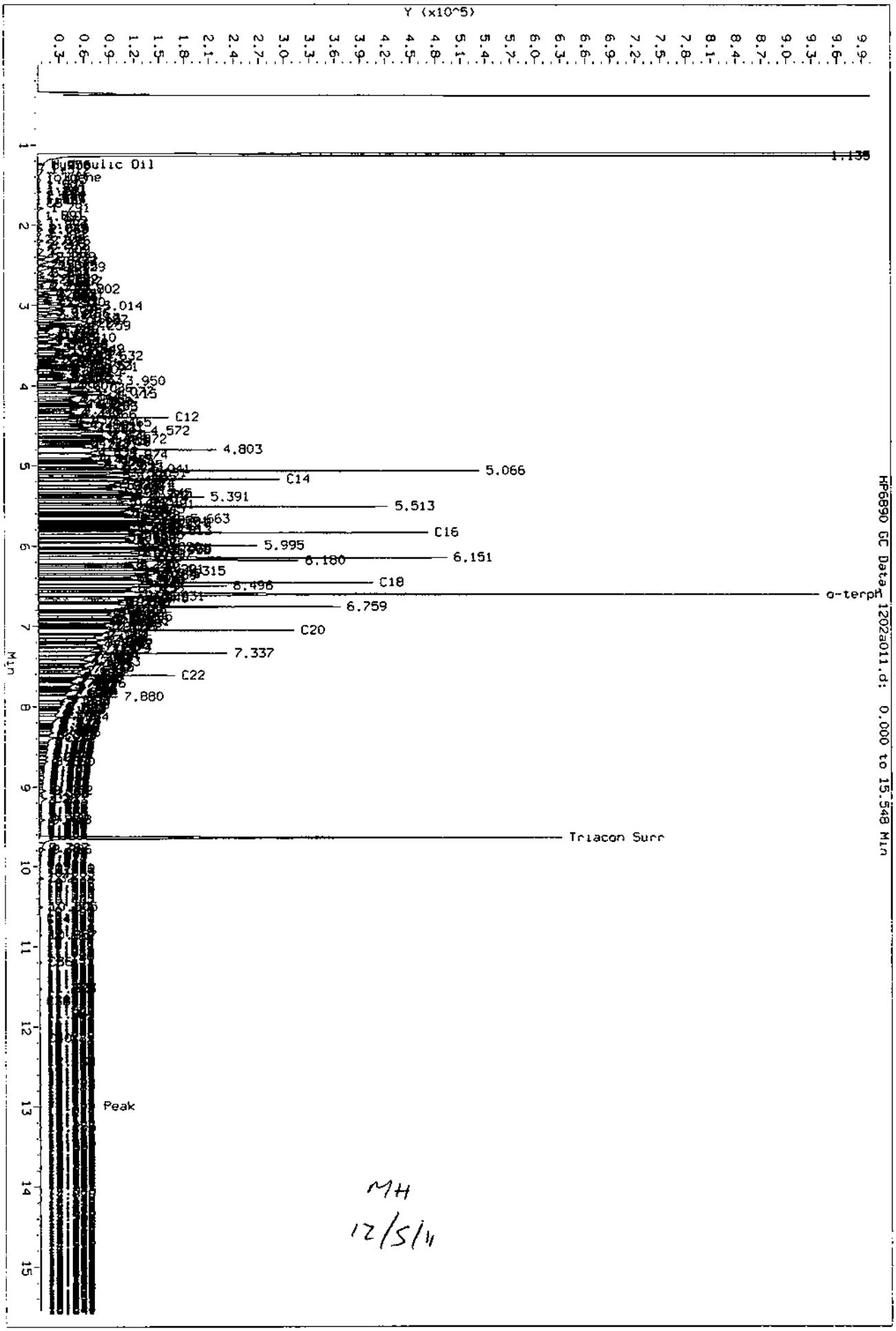
Instrument: fid4a.i

Operator: MH

Column diameter: 0.25

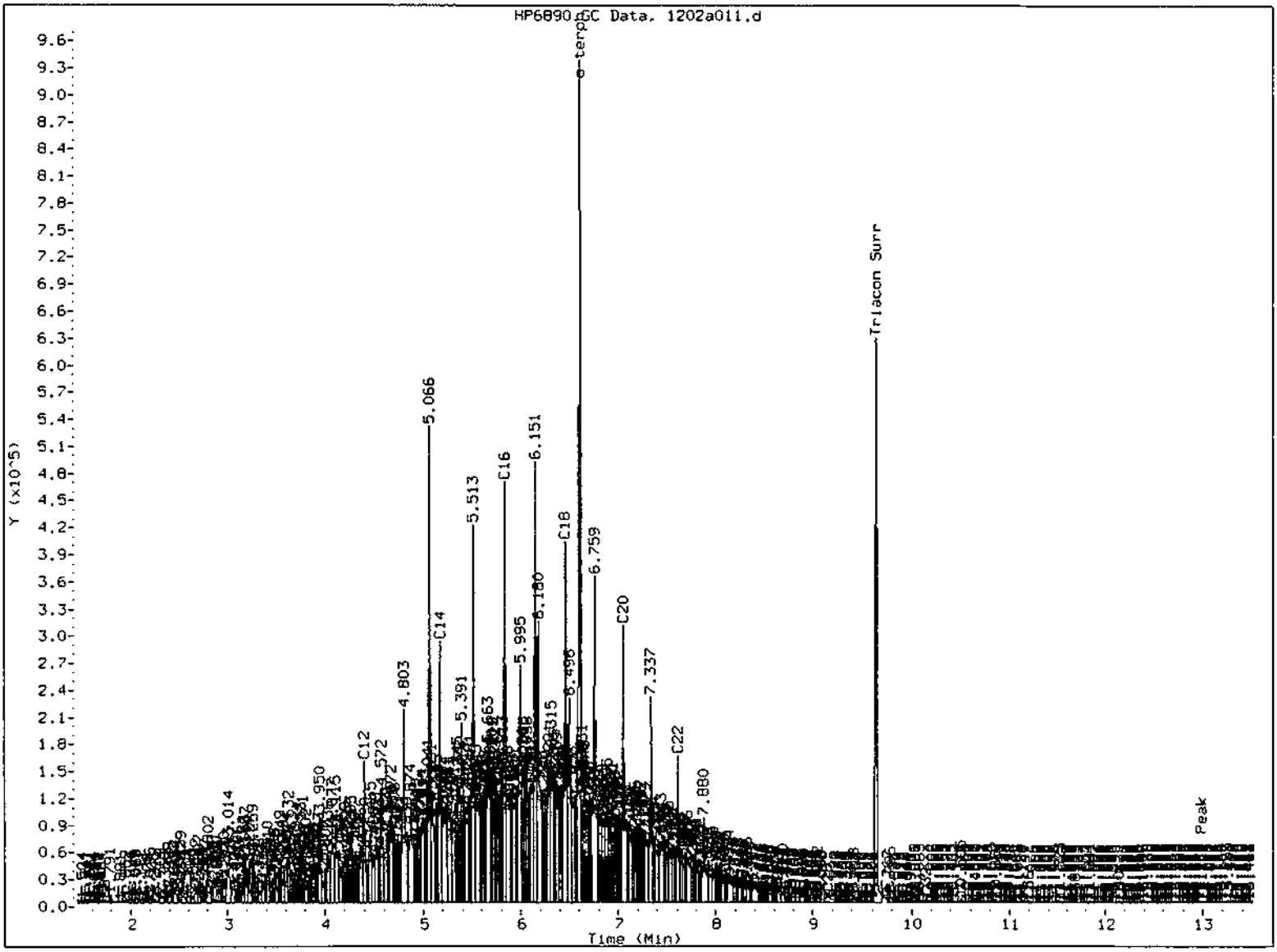
TZ21 : 001444




Data File: /chem3/fid4a.i/20111202.b/1202a011.d
Injection Date: 02-DEC-2011 10:56
Instrument: fid4a.i
Client Sample ID: MW-1S-112911 MSD
Y (x10^5)
Min
Hydraulic Oil
Toluene
1.135
3.014
3.950
C12
4.572
4.803
5.066
C14
5.391
5.513
C16
5.995
6.180
6.151
C18
6.496
o-terph
6.759
C20
7.337
C22
7.880
Triacon Surr
Peak
HP6890 GC Data 1202a011.d: 0.000 to 15.548 Min

MH
12/5/11

FID:4A-2C/RTX-1 TZ32AMSD FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/5/11

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
NWTPHD by GC/FID
Page 1 of 1

Sample ID: LCS-120111
LAB CONTROL

Lab Sample ID: LCS-120111
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized: MW
Reported: 12/05/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Date Extracted: 12/01/11
Date Analyzed: 12/02/11 09:00
Instrument/Analyst: FID4A/MH

Sample Amount: 500 mL
Final Extract Volume: 1.0 mL
Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	2.81	3.00	93.7%

TPHD Surrogate Recovery

o-Terphenyl	90.7%

Results reported in mg/L

MH 12/5/11

Analytical Resources Inc.
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20111202.b/1202a006.d ARI ID: TZ32LCSW1
Method: /chem3/fid4a.i/20111202.b/ftphfid4a.m Client ID: TZ32LCSW1
Instrument: fid4a.i Injection: 02-DEC-2011 09:00
Operator: MH
Report Date: 12/02/2011 Dilution Factor: 1
Macro: 14-SEP-2011
Calibration Dates: Gas:11-AUG-2011 Diesel:09-SEP-2011 M.Oil:05-AUG-2011

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc	
Toluene	1.422	0.027	3530	10079	GAS (Tol-C12)	3681497	217.90	
C8	1.718	-0.002	2728	5521	DIESEL (C12-C24)	18927933	1404.67	
C10	3.407	0.000	72189	68100	M.OIL (C24-C38)	304028	27.14	
C12	4.401	0.001	178244	172676	AK-102 (C10-C25)	21565729	1345.04	M
C14	5.170	0.003	298212	388813	AK-103 (C25-C36)	212307	30.76	
C16	5.838	0.006	488202	494127				
C18	6.461	0.006	407169	471827				
C20	7.053	0.003	311867	326720				
C22	7.616	0.002	158516	188405				
C24	8.145	0.002	35881	61898				
C25	8.401	0.005	11497	37977				
C26	8.628	-0.007	2730	1976				
C28	9.119	-0.010	551	602	IT.DIES (C10-C24)	21482357	1346.77	M
C32	10.152	-0.002	7865	9164				
C34	10.663	-0.004	162	328	BUNKERC (C10-C38)	21786386	2953.93	M
Filter Peak	12.997	0.005	7909	11929				
C36	11.160	-0.013	25	13				
C38	11.683	0.003	72	84				
C40	12.150	0.006	7826	9935				
o-terph	6.613	0.006	852763	735470	JET-A (C10-C18)	15805430	1064.91	
Triacon Surr	9.650	0.000	550978	591972				

M Indicates manual integration within range.
Range Times: NW Diesel(4.400 - 8.143) AK102(3.41 - 8.40) Jet A(3.41 - 6.46)
NW M.Oil(8.14 - 11.68) AK103(8.40 - 11.17) OR Diesel(3.41 - 9.13)

Surrogate	Area	Amount	%Rec
o-Terphenyl	735470	40.8	90.7
Triacontane	591972	36.1	80.2

Analyte	RF	Curve Date
o-Terph Surr	18015.7	09-SEP-2011
Triacon Surr	16406.0	05-AUG-2011
Gas	16895.4	11-AUG-2011
Diesel	13475.0	09-SEP-2011
Motor Oil	11203.3	05-AUG-2011
AK102	16033.6	09-SEP-2011
AK103	6902.1	10-DEC-2009
JetA	14842.0	13-APR-2011
IT Diesel	15951.0	18-AUG-2011
Bunker C	7375.4	14-SEPT-2011

Data File: /chem3/fid4a.i/20111202.b/1202a006.d

Date : 02-DEC-2011 09:00

Client ID: TZ32LCSW1

Sample Info: TZ32LCSW1

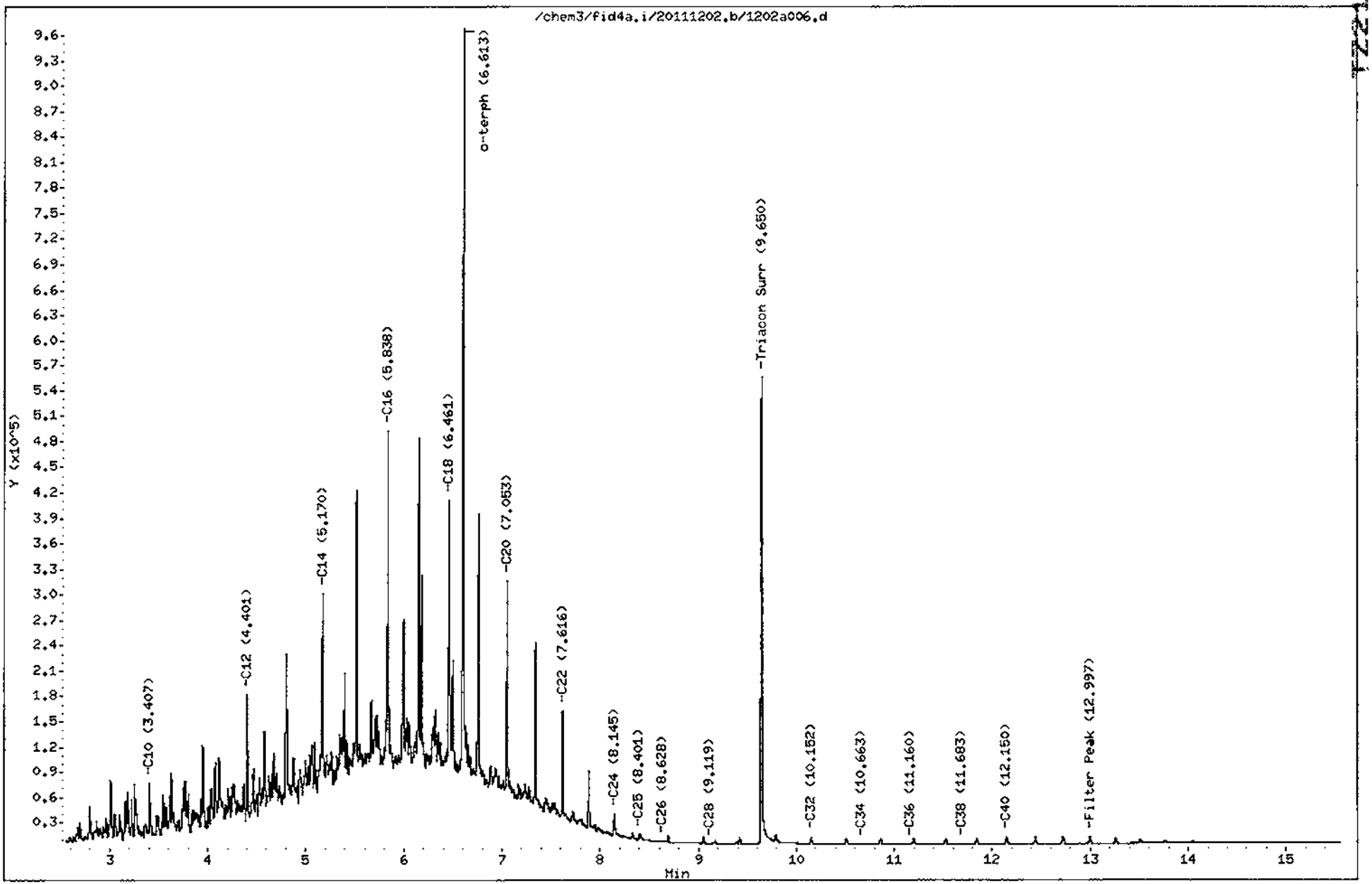
Column phase: RTX-1

Instrument: fid4a.i

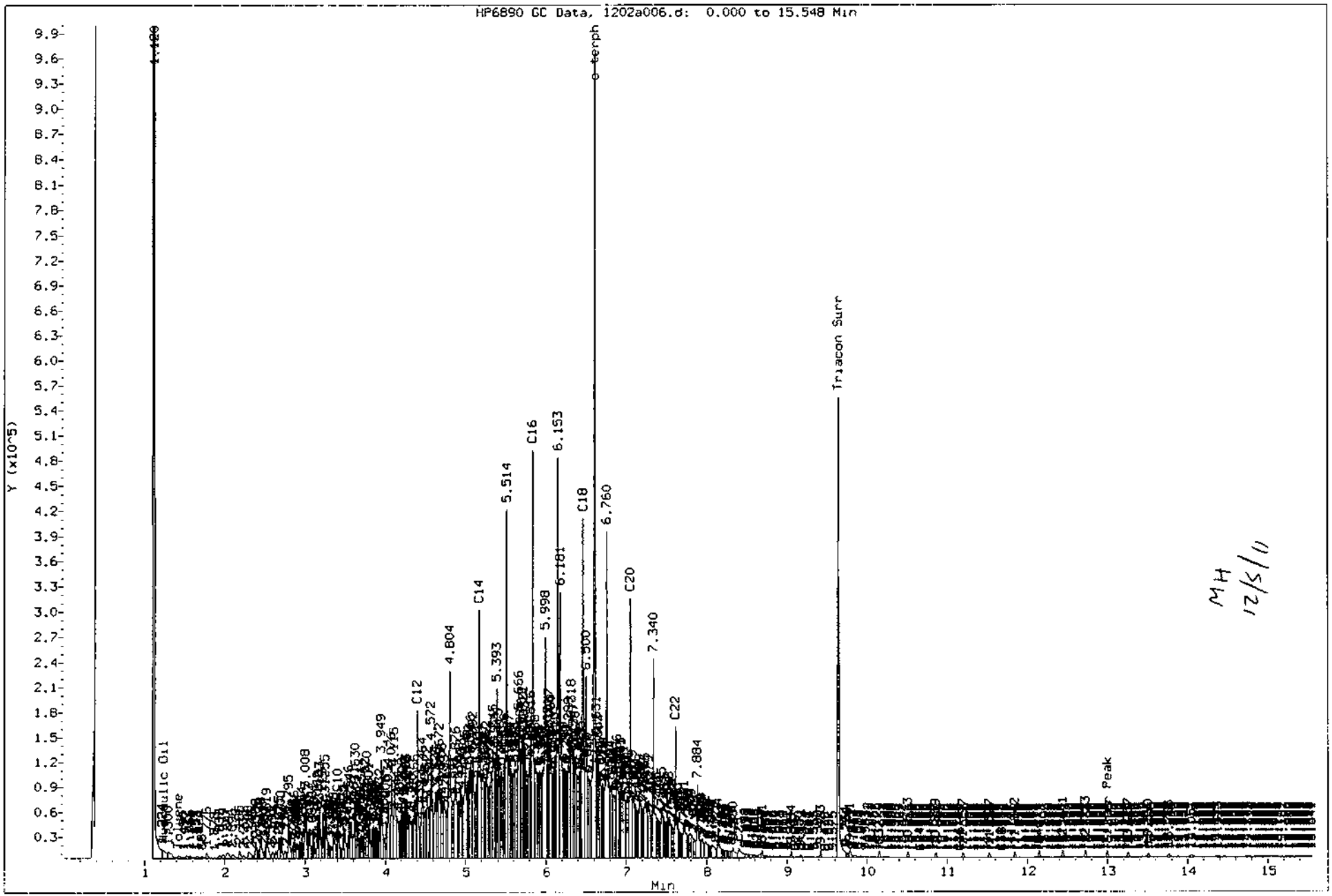
Operator: MH

Column diameter: 0.25

TZ21 : 60149



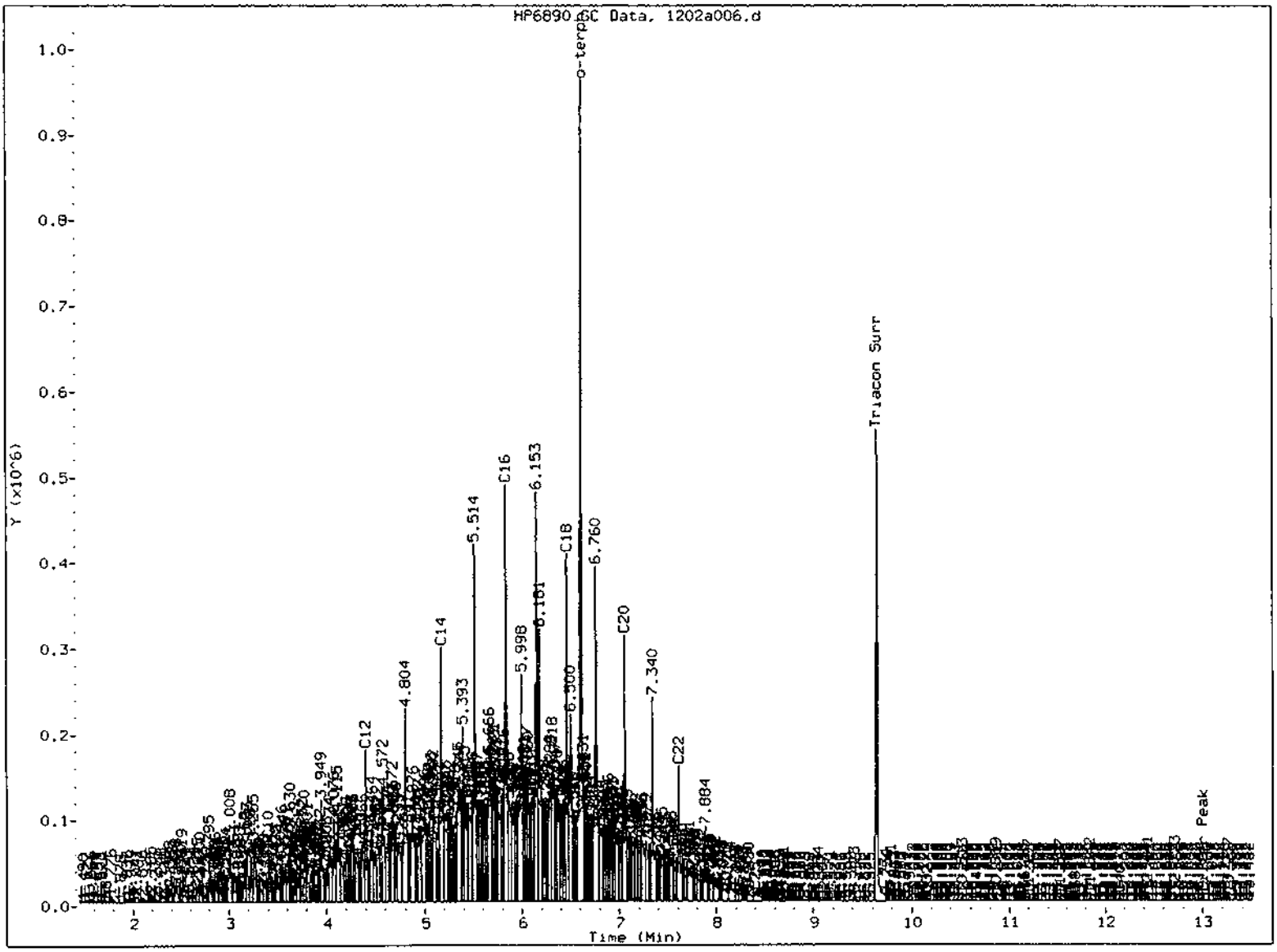
Data File: /chem3/fid4a.i/20111202.b/1202a006.d
Injection Date: 02-DEC-2011 09:00
Instrument: fid4a.i
Client Sample ID: TZ32LCSW1



MH
12/5/11

TZ21:001150

FID:4A-2C/RTX-1 TZ32LCSW1 FID:4A SIGNAL



MANUAL INTEGRATION

X 1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/5/11

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: TZ32
Matrix: Water
Project: RG Fall GW Sampling
Date Received: 11/29/11
128296.07

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
11-27583-120111MB1	Method Blank	500 mL	1.00 mL	12/01/11
11-27583-120111LCS1	Lab Control	500 mL	1.00 mL	12/01/11
11-27583-TZ32A	MW-1S-112911	500 mL	1.00 mL	12/01/11
11-27583-TZ32AMS	MW-1S-112911	500 mL	1.00 mL	12/01/11
11-27583-TZ32AMSD	MW-1S-112911	500 mL	1.00 mL	12/01/11

TPH METHOD BLANK SUMMARY

BLANK NO.

TZ32MBW1

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project No.: RG FALL GW

Date Extracted: 12/01/11 Matrix: LIQUID

Date Analyzed : 12/02/11 Instrument ID : FID4A

Time Analyzed : 0923

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	TZ32LCSW1	TZ32LCSW1	12/02/11
02	MW-1S-112911	TZ32A	12/02/11
03	MW-1S-112911	TZ32AMS	12/02/11
04	MW-1S-112911	TZ32AMSD	12/02/11
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

FORM IV TPH

6a
DIESEL INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

Instrument: FID4A.I Project: GR FALL GW SAMPLING

Calibration Date: 09-SEP-2011 SDG No.: TZ32

Diesel Range	RF1 50	RF2 100	RF3 250	RF4 500	RF5 1000	RF6 2500	Ave RF	%RSD
WA Diesel	14703	12956	13392	13411	13293	13096	13475	4.7
AK Diesel	17729	15603	15918	15893	15671	15387	16034	5.3
OR Diesel	17959	16022	16018	15997	15760	15452	16201	5.5
Cal Diesel	17660	15477	15870	15850	15624	15344	15971	5.3
o-Terph	19567	17603	18304	18243	17526	16851	18016	5.2

<- Indicates %RSD outside limits
Surrogate areas are not included in Diesel RF calculation.

Quant Ranges : WA Diesel C12-C24 (4.438-8.193)
AK Diesel C10-C25 (3.447-8.447)
OR Diesel C10-C28 (3.447-9.189)
Cal Diesel C10-C24 (3.447-8.193)

Calibration Files	Analysis Time
0909a011.d	09-SEP-2011 18:11
0909a012.d	09-SEP-2011 18:34
0909a013.d	09-SEP-2011 18:57
0909a014.d	09-SEP-2011 19:20
0909a015.d	09-SEP-2011 19:43
0909a016.d	09-SEP-2011 20:06

6a

NW MOTOR OIL RANGE INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

Instrument: FID4A.I Project: RG FALL GW SAMPLING

Calibration Date: 05-AUG-2011 SDG No.: TZ32

Product Range	RF1 100	RF2 250	RF3 500	RF4 1000	RF5 2500	RF6 5000	Ave RF	%RSD
WA M.Oil C24-C38	12204	11236	11461	11349	11170	9799	11203	7.0
Triac Surr	16464	15921	16623	16093	16929	----*	16406	2.4

<- Indicates %RSD outside limits
Surrogate areas are not included in Motor Oil RF calculation.

*The n-Triacontane high point (450ppm) is dropped because it shifts out of RT control limits of +/-.05min.

Calibration Files	Analysis Time
0805a011.d	05-AUG-2011 16:42
0805a012.d	05-AUG-2011 17:05
0805a013.d	05-AUG-2011 17:28
0805a014.d	05-AUG-2011 17:51
0805a015.d	05-AUG-2011 18:14
0805a016.d	05-AUG-2011 18:38

7a

DIESEL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC.
Client: ERM-WEST

ICal Date: 09-SEP-2011
Project: RG FALL GW

CCal Date: 02-DEC-2011
SDG No.: TZ32

Analysis Time: 07:44
Lab ID: DIESEL #2

Instrument: FID4A.I
Lab File Name: 1202a004.d

Diesel Range	Area*	CalcAmnt	NomAmnt	% D
WADies(C12-C24)	3490623	259.0	250	3.6
AK102 (C10-C25)	4116174	256.7	250	2.7
Terphenyl	857780	47.6	45	5.8

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA Diesel C12-C24
AK Diesel C10-C25

7a

MOTOR OIL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 05-AUG-2011 Project: RG FALL GW

CCal Date: 02-DEC-2011 SDG No.: TZ32

Analysis Time: 08:07 Lab ID: MOIL #2

Instrument: FID4A.I Lab File Name: 1202a005.d

M.oil Range	Area*	CalcAmnt	NomAmnt	% D	
WAMoil(C24-C38)	5384312	480.6	500	-3.9	
AK103 (C25-C36)	4874736	706.3	500	41.3	<-
CRUDE(Tol-C40)	6173697	817.4	500	63.5	
n-Triacontane	776794	47.3	45	5.2	

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA M.Oil C24-C38
AK M.Oil C25-C36

7a

DIESEL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-SEP-2011 Project: RG FALL GW

CCal Date: 02-DEC-2011 SDG No.: TZ32

Analysis Time: 11:20 Lab ID: DIESEL #3

Instrument: FID4A.I Lab File Name: 1202a012.d

Diesel Range	Area*	CalcAmnt	NomAmnt	% D
WADies(C12-C24)	3548262	263.3	250	5.3
AK102 (C10-C25)	4185360	261.0	250	4.4
Terphenyl	877966	48.7	45	8.3

* Surrogate areas are subtracted from range areas
<- Indicates a %D outside QC limits

Quant Ranges : WA Diesel C12-C24
AK Diesel C10-C25

7a

MOTOR OIL CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 05-AUG-2011 Project: RG FALL GW

CCal Date: 02-DEC-2011 SDG No.: TZ32

Analysis Time: 11:43 Lab ID: MOIL #3

Instrument: FID4A.I Lab File Name: 1202a013.d

M.oil Range	Area*	CalcAmnt	NomAmnt	% D	
WAMoil(C24-C38)	5365957	479.0	500	-4.2	
AK103 (C25-C36)	4927622	713.9	500	42.8	<-
CRUDE(Tol-C40)	6105041	808.3	500	61.7	
n-Triacontane	786544	47.9	45	6.5	

* Surrogate areas are subtracted from range areas

<- Indicates a %D outside QC limits

Quant Ranges : WA M.Oil C24-C38
AK M.Oil C25-C36

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project: RG FALL GW

Instrument ID: FID4A GC Column: RTX-1

Run Date: 12/02/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 6.61 TRIAC: 9.65

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	ZZZZZ	ZZZZZ	12/02/11	0635	6.61	9.65
02	RT	RT	12/02/11	0658	6.61	9.65
03	IB	IB	12/02/11	0721	6.61	9.65
04	RG FALL GW	DIESEL #2	12/02/11	0744	6.61	9.64
05	RG FALL GW	MOIL #2	12/02/11	0807	6.61	9.66
06	TZ32LCSW1	TZ32LCSW1	12/02/11	0900	6.61	9.65
07	TZ32MBW1	TZ32MBW1	12/02/11	0923	6.61	9.65
08	ZZZZZ	ZZZZZ	12/02/11	0946	6.61	9.65
09	MW-1S-112911	TZ32A	12/02/11	1009	6.61	9.65
10	MW-1S-112911	TZ32AMS	12/02/11	1033	6.61	9.65
11	MW-1S-112911	TZ32AMSD	12/02/11	1056	6.61	9.65
12	RG FALL GW	DIESEL #3	12/02/11	1120	6.61	9.67
13	RG FALL GW	MOIL #3	12/02/11	1143	6.61	9.65

	QC LIMITS
TERPH = o-terph	(+/- 0.05 MINUTES)
TRIAC = Triacon Surr	(+/- 0.05 MINUTES)

* Values outside of QC limits.

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project: RG FALL GW

Instrument ID: FID4A GC Column: RTX-1

Run Date: 08/05/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 6.68 TRIAC: 9.77

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01	RT	RT	08/05/11	1312	6.68	9.77
02	IB	IB	08/05/11	1335	6.68	9.76
03	DIESEL 50	DIESEL 50	08/05/11	1359	6.67	9.77
04	DIESEL 100	DIESEL 100	08/05/11	1422	6.67	9.77
05	DIESEL 250	DIESEL 250	08/05/11	1446	6.68	9.77
06	DIESEL 500	DIESEL 500	08/05/11	1509	6.69	9.77
07	DIESEL 1000	DIESEL 1000	08/05/11	1532	6.70	9.76
08	DIESEL 2500	DIESEL 2500	08/05/11	1555	6.72	9.77
09	MOIL 100	MOIL 100	08/05/11	1642	6.67	9.74
10	MOIL 250	MOIL 250	08/05/11	1705	6.73	9.75
11	MOIL 500	MOIL 500	08/05/11	1728	6.73	9.77
12	MOIL 1000	MOIL 1000	08/05/11	1751	6.73	9.78
13	MOIL 2500	MOIL 2500	08/05/11	1814	6.73	9.81
14	MOIL 5000	MOIL 5000	08/05/11	1838	6.73	9.84*

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

*The n-Triacontane high point (450ppm) is dropped because it shifts out of RT control limits of +/-.05min.

TPH ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project: RG FALL GW

Instrument ID: FID4A GC Column: RTX-1

Run Date: 09/09/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

SURROGATE RT FROM DAILY STANDARD
TERPH: 6.65 TRIAC: 9.72

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	TERPH RT #	TRIAC RT #
01		RT	09/09/11	1639	6.65	9.72
02		DIESEL 50	09/09/11	1811	6.65	9.71
03		DIESEL 100	09/09/11	1834	6.65	9.73
04		DIESEL 250	09/09/11	1857	6.66	9.73
05		DIESEL 500	09/09/11	1920	6.66	9.73
06		DIESEL 1000	09/09/11	1943	6.67	9.73
07		DIESEL 2500	09/09/11	2006	6.70	9.73
08		DIESEL ICV	09/09/11	2029	6.65	9.73

QC LIMITS

TERPH = o-terph (+/- 0.05 MINUTES)
TRIAC = Triacon Surr (+/- 0.05 MINUTES)

* Values outside of QC limits.

TPHG Analysis
Report and Summary QC Forms

ARI Job ID: TZ21, TZ32

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-120511	Method Blank	12/05/11	1.0	Gasoline	< 0.25 U
11-27590		PID2		HC ID	---
				Trifluorotoluene	87.1%
				Bromobenzene	87.2%
TZ32H	FB-112911-1	12/05/11	1.0	Gasoline	< 0.25 U
11-27590		PID2		HC ID	---
				Trifluorotoluene	92.9%
				Bromobenzene	88.8%
TZ32I	TB-112911-1	12/05/11	1.0	Gasoline	< 0.25 U
11-27591		PID2		HC ID	---
				Trifluorotoluene	77.9%
				Bromobenzene	74.5%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

FORM I

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111205-1.b/1205a006.d
Data file 2: /chem3/pid2.i/111205-2.b/1205a006.d
Method: /chem3/pid2.i/111205-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 01-NOV-2011
BETX Ical Date: 02-DEC-2011

ARI ID: MB1205
Client ID:
Injection Date: 05-DEC-2011 12:56
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.136	-0.004	4979	65161	87.1	TFT(Surr)
15.173	-0.001	2511	28513	87.2	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.21)	623583	21652	0.035
8015C 2MP-TMB	(4.56 to 16.17)	1257545	32946	0.026
AK101 nC6-nC10	(5.06 to 14.70)	1002280	28960	0.029
NWTPHG Tol-Nap	(9.94 to 19.40)	651164	25064	0.038

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.149	-0.004	23165	85.9	TFT(Surr)
15.187	-0.001	41251	86.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
12.794	-0.002	210	0.12	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JLW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111205-1.b/1205a006.d

Date : 05-DEC-2011 12:56

Client ID:

Sample Info: MB1205

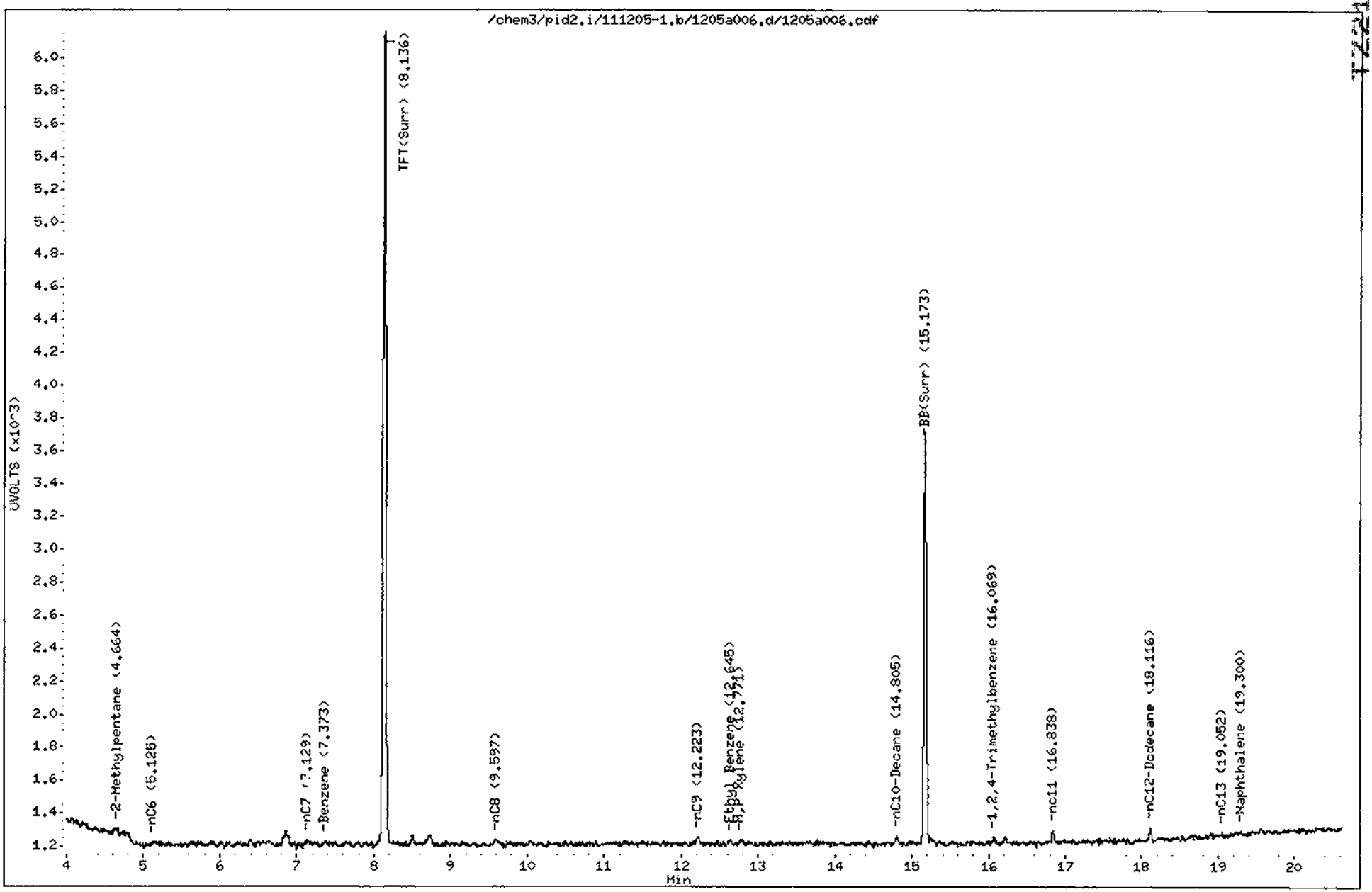
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: PC

Column diameter: 0.18

T221 - 00166



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111205-1.b/1205a009.d
Data file 2: /chem3/pid2.i/111205-2.b/1205a009.d
Method: /chem3/pid2.i/111205-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 01-NOV-2011
BETX Ical Date: 02-DEC-2011

ARI ID: TZ32H
Client ID: FB-112911-1
Injection Date: 05-DEC-2011 15:38
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.140	0.000	5316	68340	92.9	TFT(Surr)
15.177	0.002	2558	29938	88.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.21)	623583	12313	0.020
8015C 2MP-TMB	(4.56 to 16.17)	1257545	16249	0.013
AK101 nC6-nC10	(5.06 to 14.70)	1002280	13605	0.014
NWTPHG Tol-Nap	(9.94 to 19.40)	651164	13444	0.021

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.153	0.000	24860	92.2	TFT(Surr)
15.191	0.003	42151	88.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

SW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

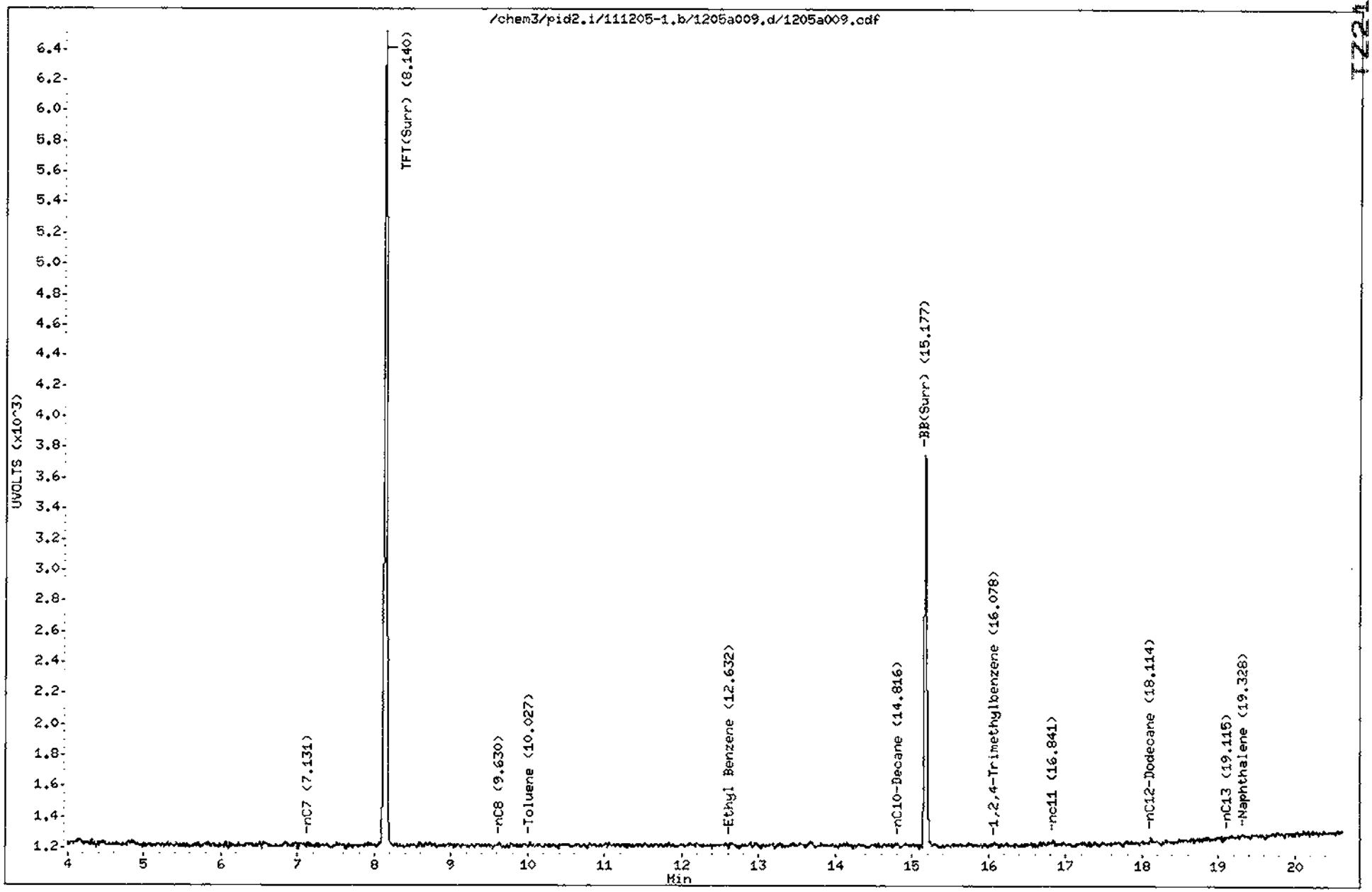
Data File: /chem3/pid2.i/111205-1.b/1205a009.d
Date : 05-DEC-2011 15:38
Client ID: FB-112911-1
Sample Info: TZ32H

Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: PC
Column diameter: 0.18

TZ221 : 00168



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111205-1.b/1205a008.d
Data file 2: /chem3/pid2.i/111205-2.b/1205a008.d
Method: /chem3/pid2.i/111205-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 01-NOV-2011
BETX Ical Date: 02-DEC-2011

ARI ID: TZ32I
Client ID: TB-112911-1
Injection Date: 05-DEC-2011 15:12
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.143	0.003	4455	58718	77.9	TFT(Surr)
15.179	0.004	2145	24740	74.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.21)	623583	14092	0.023
8015C 2MP-TMB	(4.56 to 16.17)	1257545	19417	0.015
AK101 nC6-nC10	(5.06 to 14.70)	1002280	16663	0.017
NWTPHG Tol-Nap	(9.94 to 19.40)	651164	15865	0.024

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.157	0.004	20802	77.2	TFT(Surr)
15.193	0.005	35254	73.8	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111205-1.b/1205a008.d

Date : 05-DEC-2011 15:12

Client ID: TB-112911-1

Sample Info: TZ32I

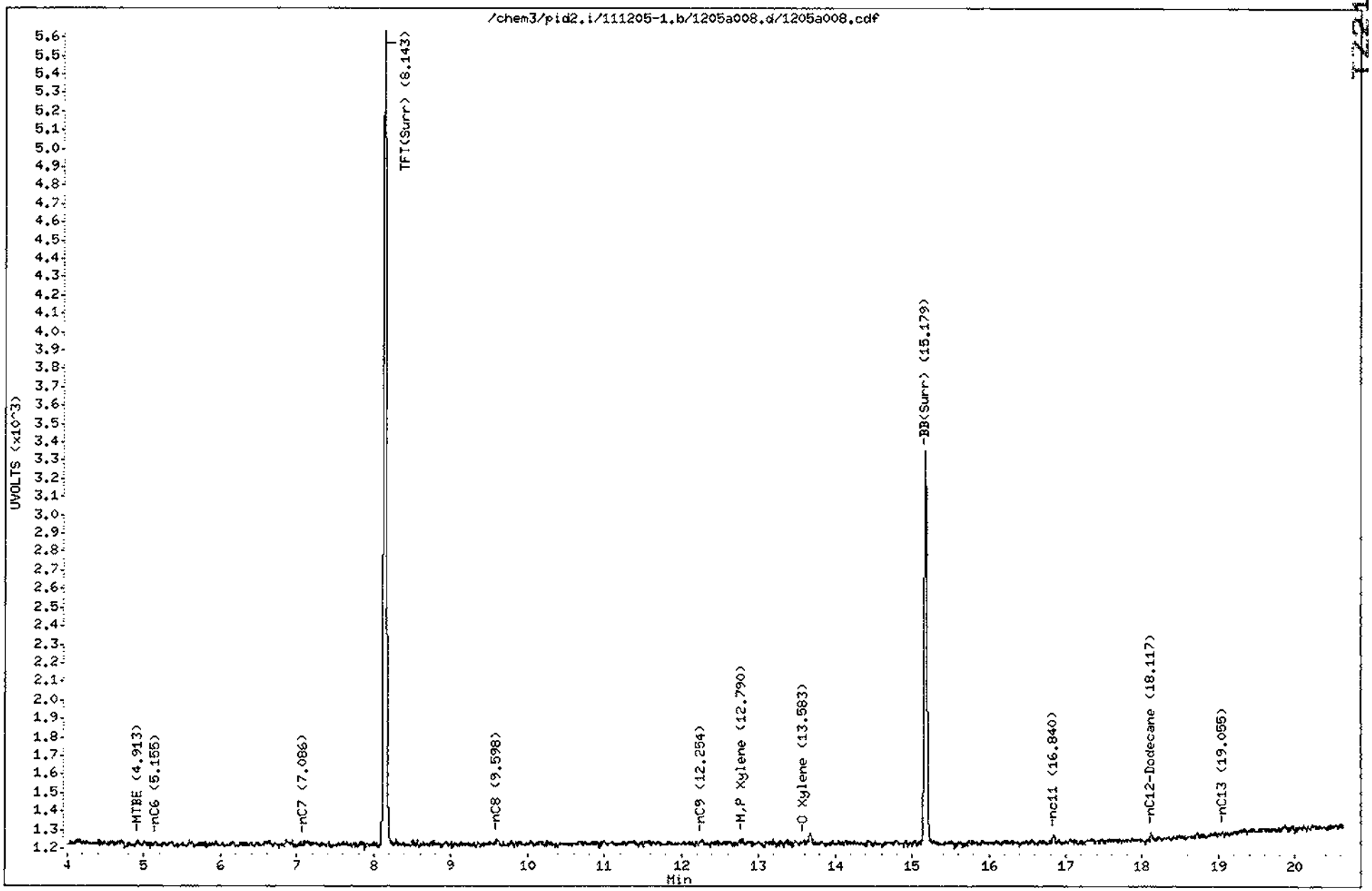
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: PC

Column diameter: 0.18

TZ21 : 00170



ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: TZ32
Matrix: Water

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
Event: 128296.07

Client ID	TFT	BBZ	TOT OUT
MB-120511	87.1%	87.2%	0
LCS-120511	90.5%	88.5%	0
LCSD-120511	97.1%	94.5%	0
FB-112911-1	92.9%	88.8%	0
TB-112911-1	77.9%*	74.5%*	2

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 11-27590 to 11-27591

FORM II TPHG

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Matrix: Water

Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-121011	Method Blank	12/10/11	1.0	Gasoline	< 0.03 U
11-27583		PID2		HC ID	---
				Trifluorotoluene	83.3%
				Bromobenzene	84.3%
TZ32A	MW-1S-112911	12/10/11	1.0	**Gasoline**	**0.03**
11-27583		PID2		HC ID	GRO
				Trifluorotoluene	102%
				Bromobenzene	98.8%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.
GRO: Positive result that does not match an identifiable gasoline pattern.

FORM I

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a006.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a006.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: MB1210
Client ID:
Injection Date: 10-DEC-2011 11:19
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.148	0.005	6432	84769	83.3	TFT(Surr)
15.178	0.003	3108	37673	84.3	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	51884	0.023
8015B 2MP-TMB	(4.58 to 16.10)	4503375	80708	0.018
AK101 nC6-nC10	(5.07 to 14.70)	3606280	69637	0.019
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	58079	0.025

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.162	0.005	30073	82.9	TFT(Surr)
15.192	0.003	51772	84.6	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
10.057	-0.001	135	0.02	Toluene
ND	---	---	---	Ethylbenzene
12.802	-0.001	228	0.04	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a006.d

Date : 10-DEC-2011 11:19

Client ID:

Sample Info: MB1210

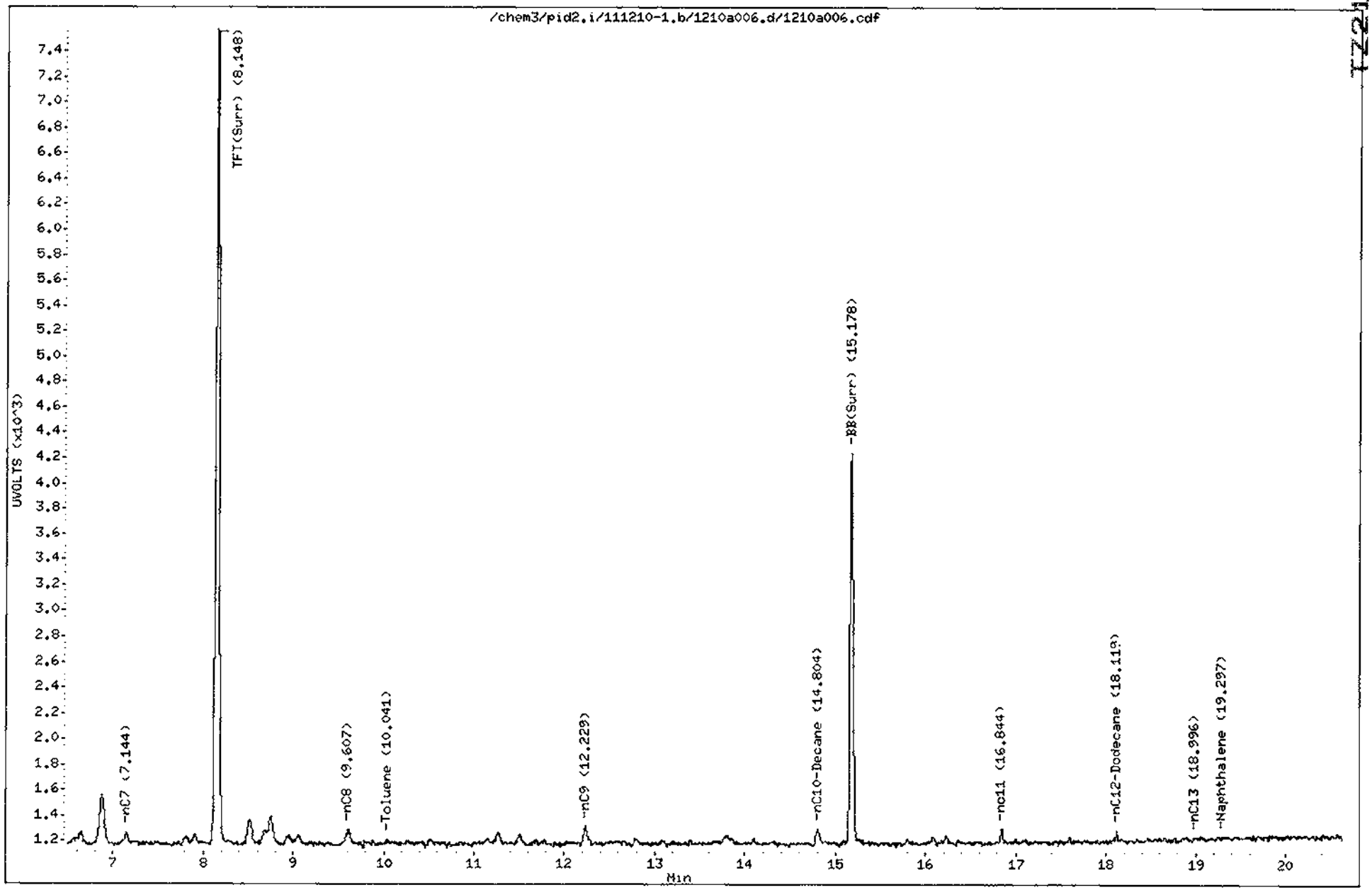
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW

Column diameter: 0.18

T221 001714



Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a008.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a008.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ32A
Client ID: MW-1S-112911
Injection Date: 10-DEC-2011 12:37
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	0.004	7853	103167	101.7	TFT(Surr)
15.180	0.005	3641	42592	98.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	63151	0.028 M
8015B 2MP-TMB	(4.58 to 16.10)	4503375	89346	0.020 M
AK101 nC6-nC10	(5.07 to 14.70)	3606280	72978	0.020 M
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	72948	0.031 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.161	0.004	37546	103.5	TFT(Surr)
15.194	0.005	61400	100.3	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.408	0.003	215	0.04	Benzene
10.062	0.003	398	0.07	Toluene
12.663	0.005	210	0.04	Ethylbenzene
12.804	0.002	562	0.10	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a008.d

Date : 10-DEC-2011 12:37

Client ID: MW-1S-112911

Sample Info: TZ32A

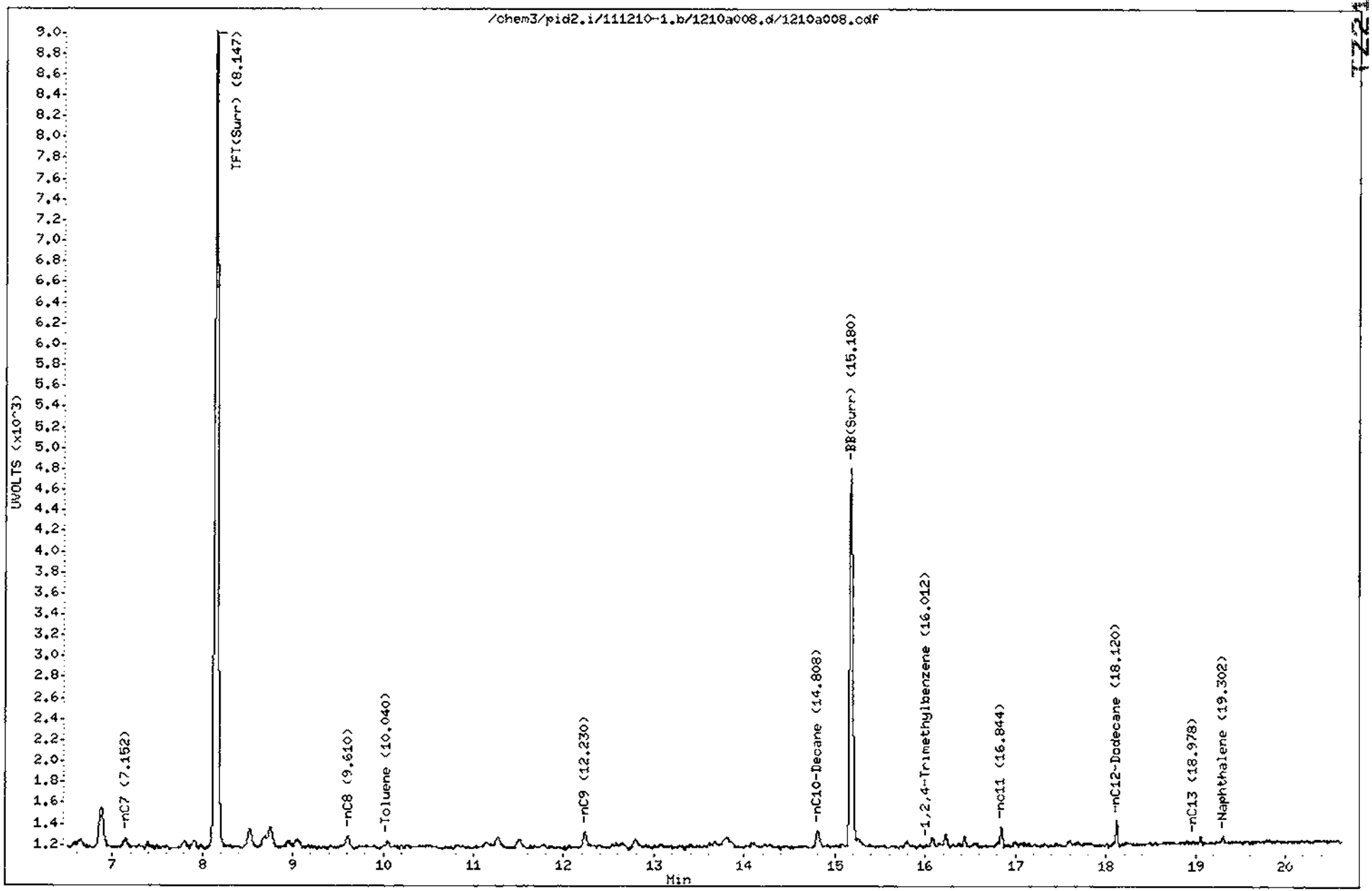
Column phase: RTX 502-2 FID

Instrument: pid2.i

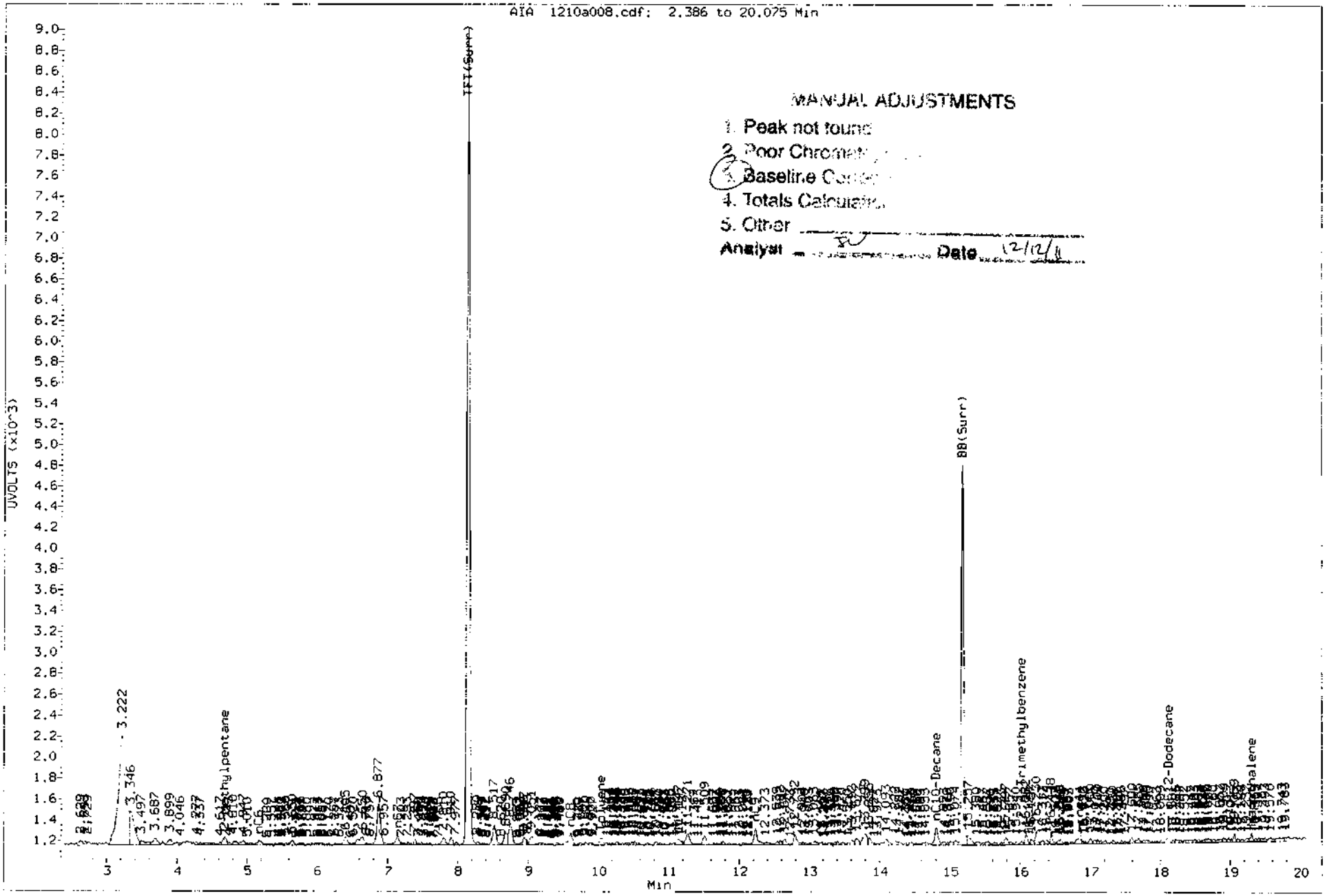
Operator: JW

Column diameter: 0.18

TZ21 - 00176



Data File: /chem3/pid2.i/111210-1.b/1210a008.d/1210a008.cdf
Injection Date: 10-DEC-2011 12:37
Instrument: pid2.i
Client Sample ID: MW-15-112911



T221 : 00177

Data File: /chem3/pid2.i/111210-1.b/1210a008.d/1210a008.cdf
Injection Date: 10-DEC-2011 12:37
Instrument: pid2.i
Client Sample ID: MW-1S-112911

UVOLTS (x10^3)

3.222
3.346
3.687
3.899
4.046
4.277
2-Methylpentane
4.947
nC6
5.766
5.919
6.256
6.405
6.650
6.877
nC7
7.603
7.807
8.280
8.517
8.946
9.413
nC8
Toluene
10.284
10.829
11.142
11.271
11.509
11.778
12.061
nC9
13.063
13.360
14.093
14.480
nC10-Decane
15.074
15.257
Trimethylbenzene
16.588
18.009
n-Dodecane
18.226
18.904
19.059
Naphthalene
19.783
20.335

IFT(Surr)
BB(Surr)

AIA 1210a008.cdf: 2.550 to 20.712 Min

Min

Before
12/12/11

ANALYTICAL RESOURCES INCORPORATED

TPHG WATER SURROGATE RECOVERY SUMMARY

ARI Job: TZ32
Matrix: Water

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
Event: 128296.07

Client ID	TFT	BBZ	TOT OUT
MB-121011	83.3%	84.3%	0
LCS-121011	103%	96.5%	0
LCSD-121011	102%	101%	0
MW-1S-112911	102%	98.8%	0
MW-1S-112911 MS	107%	102%	0

	LCS/MB LIMITS	QC LIMITS
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 11-27583 to 11-27583

TZ21 00179

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: MW-1S-112911
MATRIX SPIKE

Lab Sample ID: TZ32A
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Date Analyzed MS: 12/10/11 13:03
Instrument/Analyst MS: PID2/JLW

Purge Volume: 15. mL
Dilution Factor MS: 1.0

Analyte	Sample	MS	Spike Added	Recovery
Gasoline Range Hydrocarbons	0.0	0.94	1.00	91.0%

Reported in mg/L (ppm)

TPHG Surrogate Recovery

Trifluorotoluene	107%
Bromobenzene	102%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a009.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a009.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: TZ32AMS
Client ID: MW-1S-112911 MS
Injection Date: 10-DEC-2011 13:03
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	0.004	8242	147006	106.8	TFT(Surr)
15.183	0.008	3762	45395	102.1	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	2083728	0.938 M
8015B 2MP-TMB	(4.58 to 16.10)	4503375	4573666	1.016 M
AK101 nC6-nC10	(5.07 to 14.70)	3606280	3696126	1.025 M
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	2171618	0.937 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.162	0.005	39103	107.8	TFT(Surr)
15.195	0.006	63578	103.9	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.411	0.006	18623	3.48	Benzene
10.064	0.006	208245	36.63	Toluene
12.664	0.006	56087	10.55	Ethylbenzene
12.808	0.006	215917	38.18	M/P-Xylene
13.627	0.006	84860	17.35	O-Xylene
4.948	0.007	4267	3.31	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111210-1.b/1210a009.d

Date : 10-DEC-2011 13:03

Client ID: MW-1S-112911 MS

Sample Info: TZ32AMS

Column phase: RTX 502-2 FID

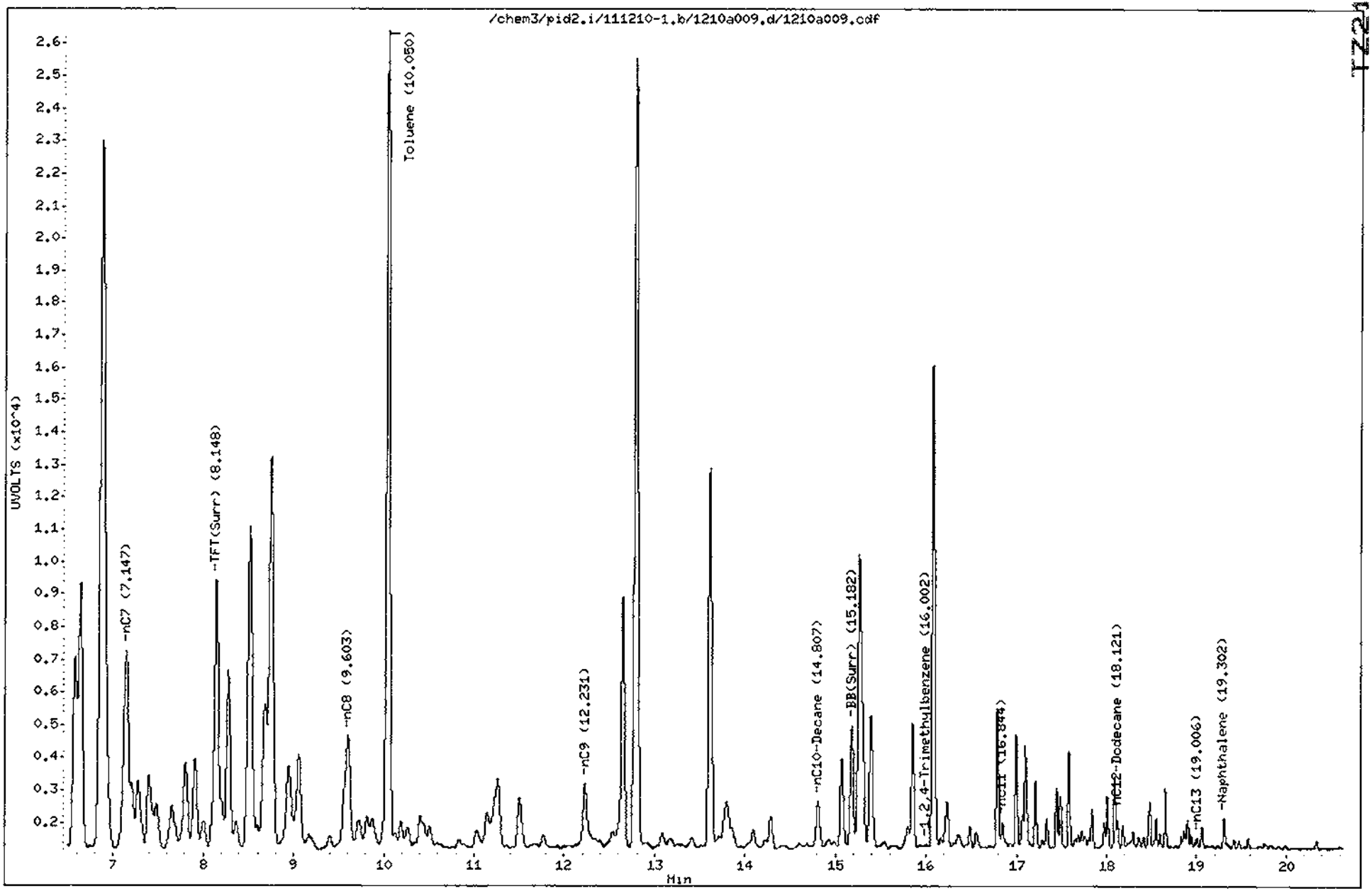
Instrument: pid2.i

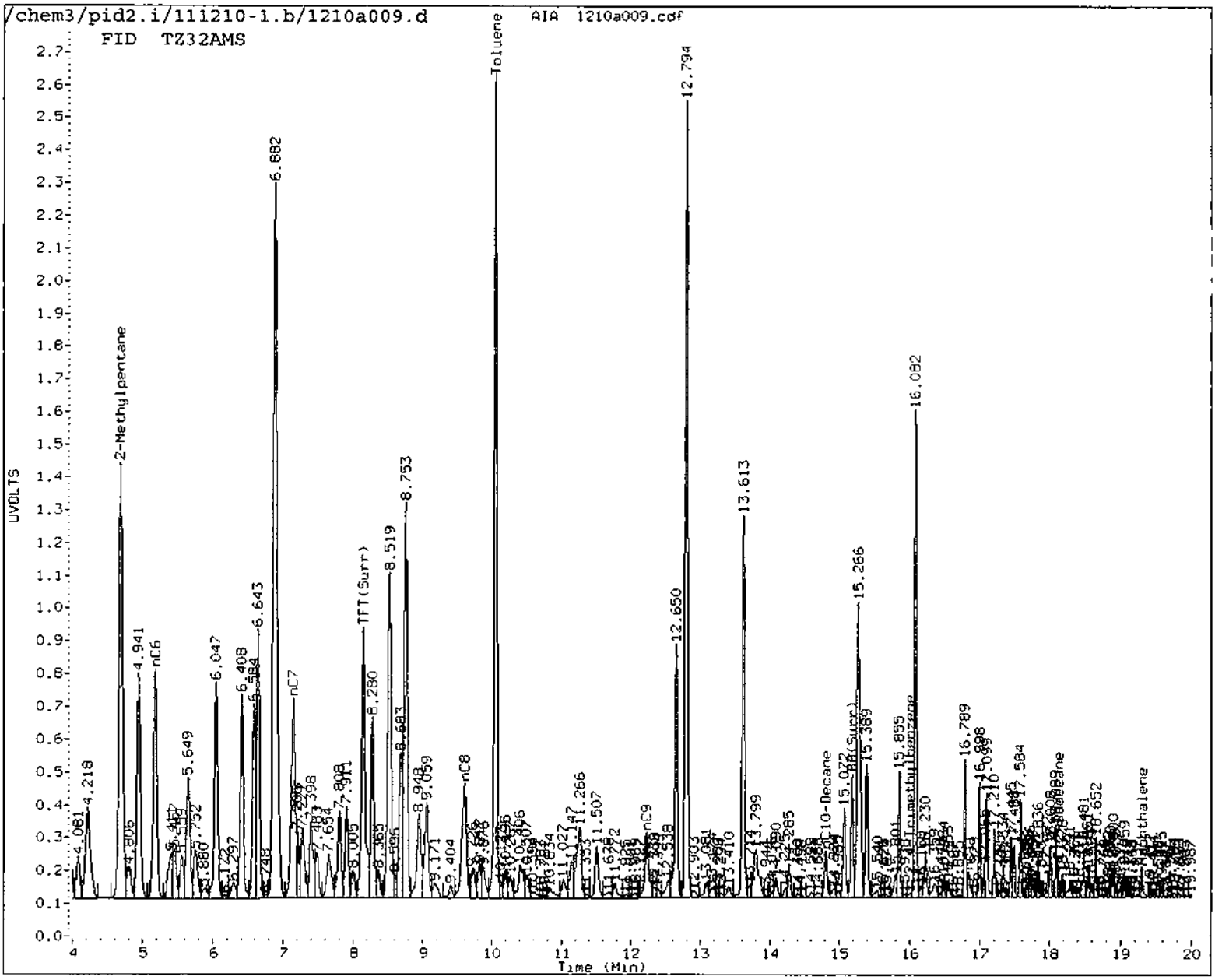
Operator: JW

Column diameter: 0.18

TZ21 : 00182

/chem3/pid2.i/111210-1.b/1210a009.d/1210a009.cdf



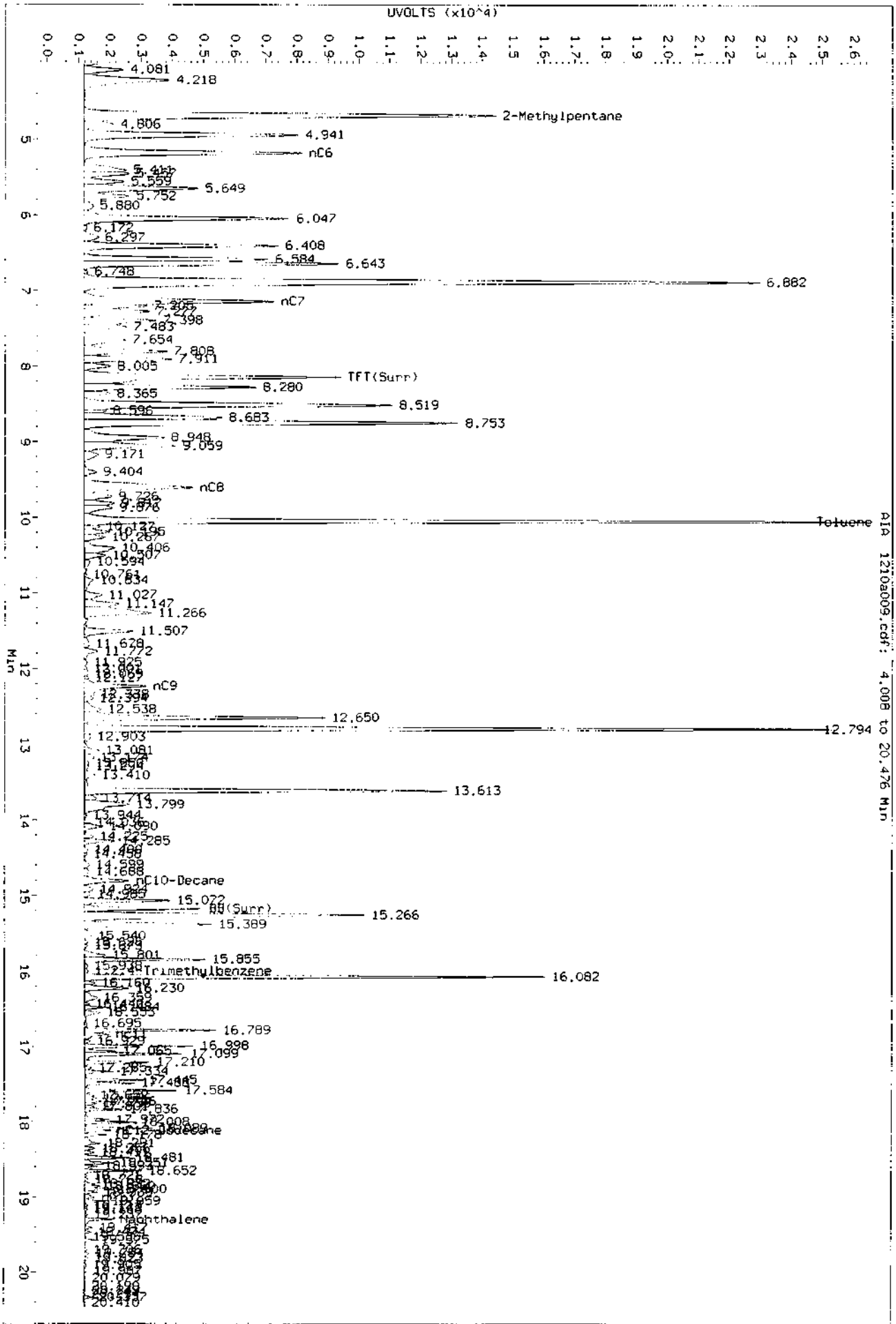


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 12/12/11



Before
12/12/11
JV

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-120511
LAB CONTROL SAMPLE

Lab Sample ID: LCS-120511
LIMS ID: 11-27590
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 12/05/11 12:04
LCSD: 12/05/11 12:30
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 5.0 mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	0.89	1.00	89.0%	0.99	1.00	99.0%	10.6%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	90.5%	97.1%
Bromobenzene	88.5%	94.5%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111205-1.b/1205a004.d
Data file 2: /chem3/pid2.i/111205-2.b/1205a004.d
Method: /chem3/pid2.i/111205-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 01-NOV-2011
BETX Ical Date: 02-DEC-2011

ARI ID: LCS1205
Client ID:
Injection Date: 05-DEC-2011 12:04
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.139	-0.001	5176	76796	90.5	TFT(Surr)
15.174	0.000	2548	29895	88.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.21)	623583	551281	0.884 M
8015C 2MP-TMB	(4.56 to 16.17)	1257545	1124481	0.894 M
AK101 nC6-nC10	(5.06 to 14.70)	1002280	893161	0.891 M
NWTPHG Tol-Nap	(9.94 to 19.40)	651164	577090	0.886 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.153	0.000	24327	90.2	TFT(Surr)
15.188	0.000	42731	89.4	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.397	0.000	5014	3.04	Benzene
10.055	0.000	55872	31.97	Toluene
12.656	0.000	14825	9.16	Ethylbenzene
12.798	0.002	58401	33.60	M/P-Xylene
13.618	0.000	22711	15.15	O-Xylene
4.921	-0.029	1068	1.66	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111205-1.b/1205a004.d

Date : 05-DEC-2011 12:04

Client ID:

Sample Info: LCS1205

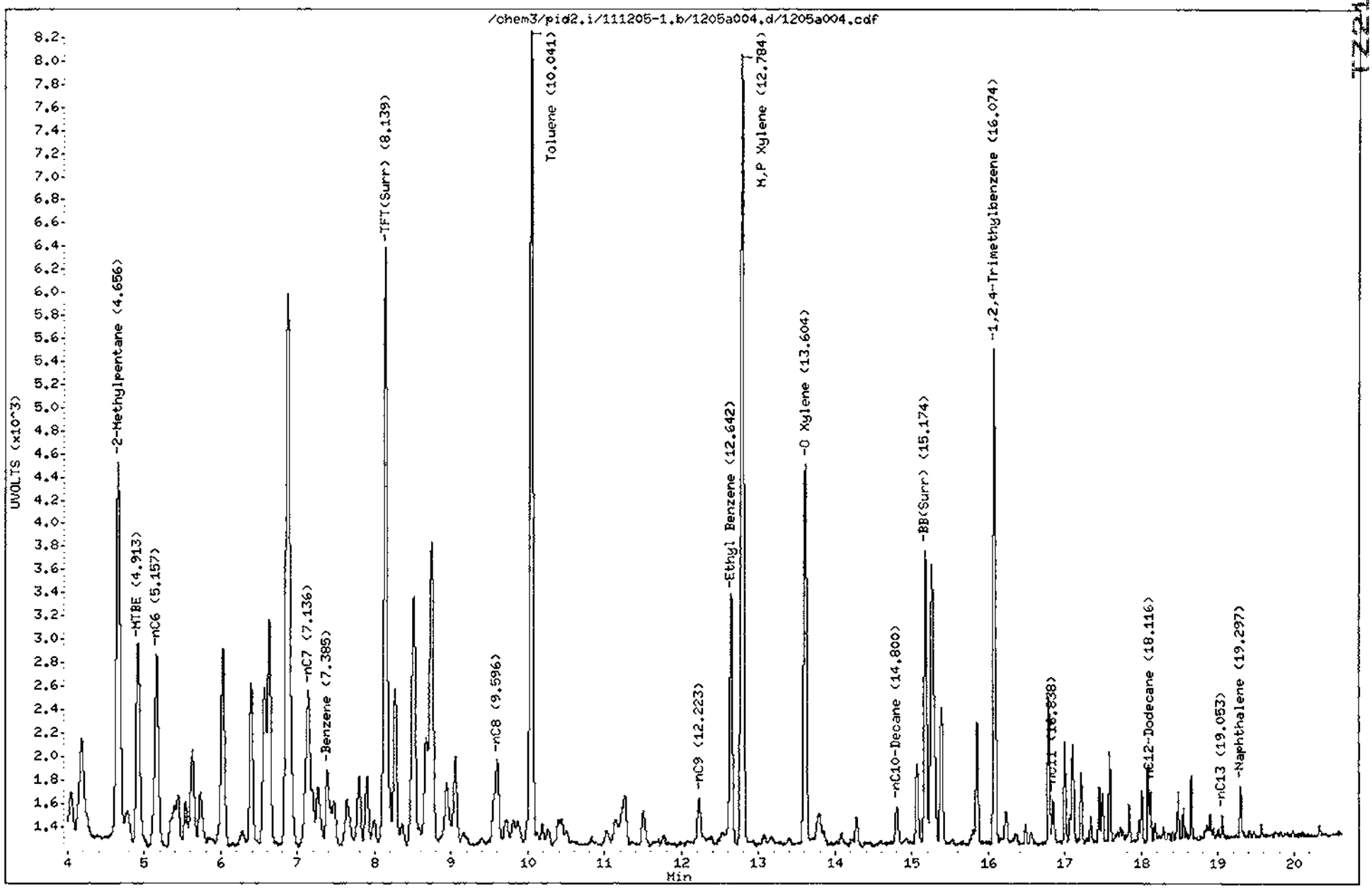
Column phase: RTX 502-2 FID

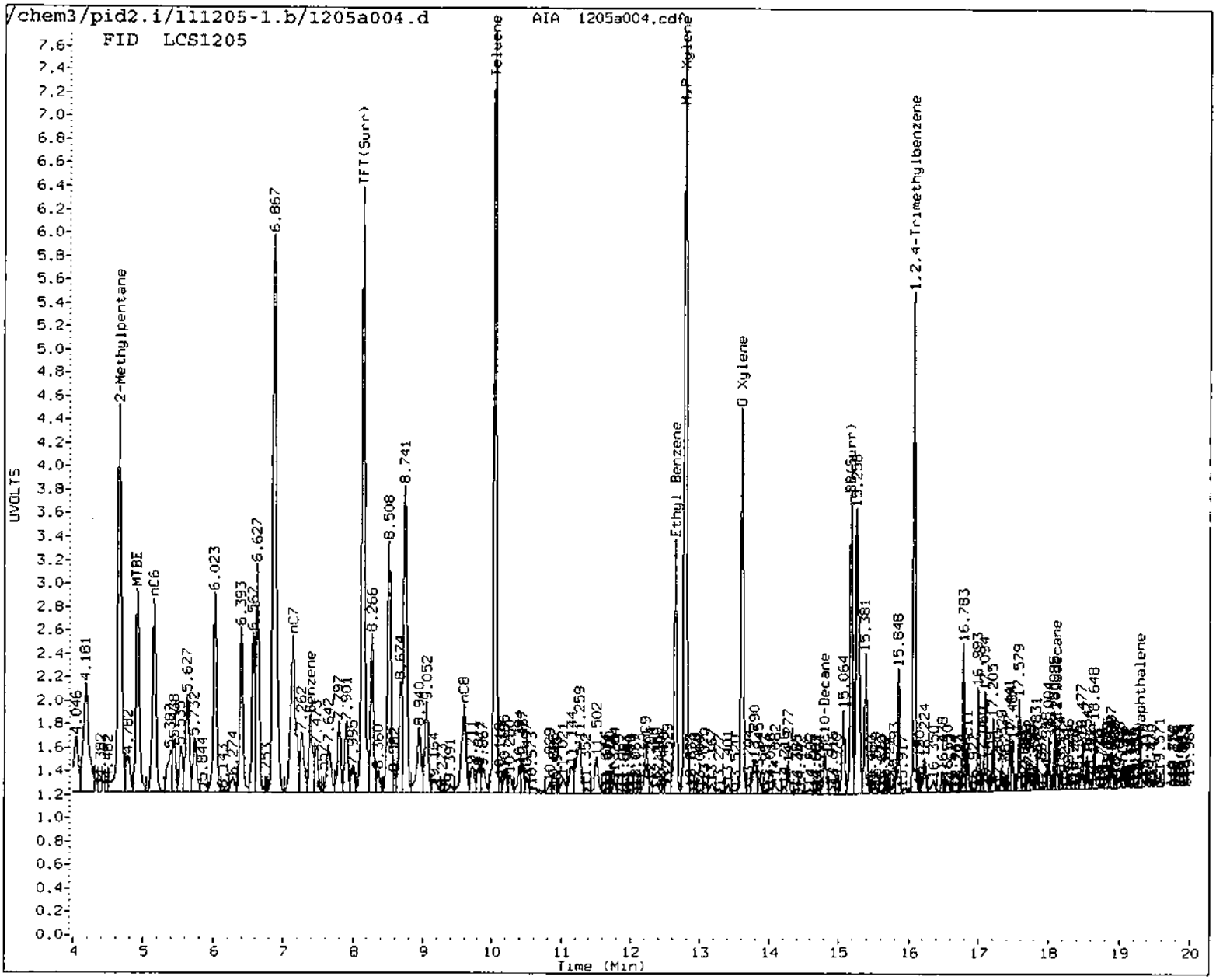
Instrument: pid2.i

Operator: PC

Column diameter: 0.18

TZ24 : 00187



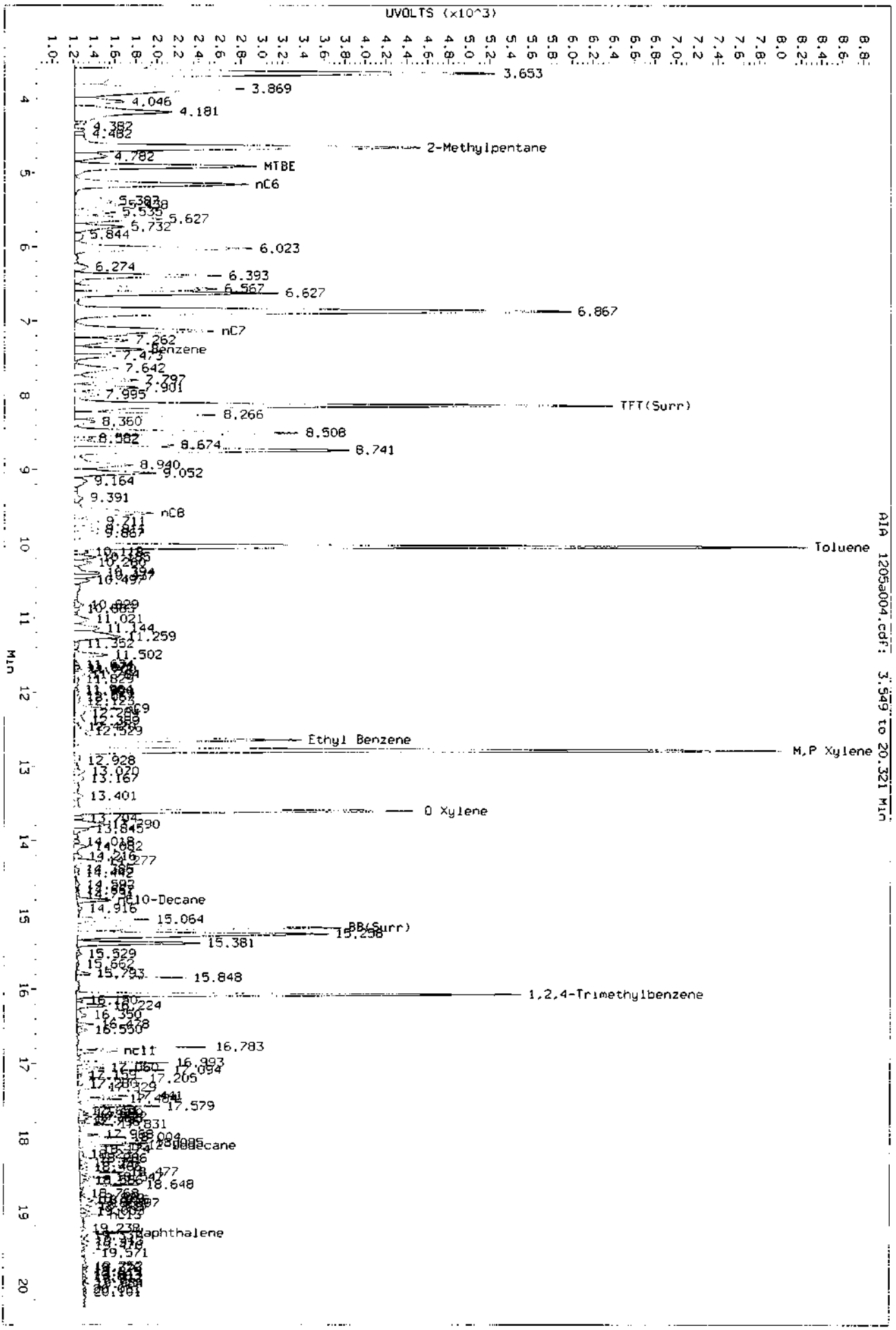


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: MH Date: 12/12/11


Data File: /chem3/pid2.i/111205-1.b/1205a004.d/1205a004.cdf
Injection Date: 05-DEC-2011 12:04
Instrument: pid2.i
Client Sample ID:
UVOLTS (x10^3)
Min
AIA 1205a004.cdf: 3.549 to 20.321 Min
3.653
3.869
4.046
4.181
4.382
4.482
2-Methylpentane
4.782
MTBE
nC6
5.383
5.530
5.627
5.732
5.844
6.023
6.274
6.393
6.567
6.627
6.867
nC7
7.262
Benzene
7.475
7.642
7.797
7.901
7.995
TFT(Surr)
8.266
8.360
8.508
8.582
8.674
8.741
8.940
9.052
9.164
9.391
nC8
9.867
Toluene
10.497
11.021
11.144
11.259
11.352
11.502
Ethyl Benzene
M,P Xylene
12.928
13.020
13.167
13.401
O Xylene
13.794
13.845
14.018
14.082
14.277
14.916
15.064
BB(Surr)
15.258
15.381
15.529
15.662
15.793
15.848
1,2,4-Trimethylbenzene
16.224
16.350
16.488
16.550
nC11
16.783
16.993
17.094
17.205
17.579
18.004
18.477
18.648
Naphthalene
19.971

TZ21 : 00189

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111205-1.b/1205a005.d
Data file 2: /chem3/pid2.i/111205-2.b/1205a005.d
Method: /chem3/pid2.i/111205-2.b/PIDB.m
Instrument: pid2.i
Gas Ical Date: 01-NOV-2011
BETX Ical Date: 02-DEC-2011

ARI ID: LCSD1205
Client ID:
Injection Date: 05-DEC-2011 12:30
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.141	0.002	5552	82750	97.1	TFT(Surr)
15.175	0.000	2721	32131	94.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.21)	623583	616729	0.989 M
8015C 2MP-TMB	(4.56 to 16.17)	1257545	1279166	1.017 M
AK101 nC6-nC10	(5.06 to 14.70)	1002280	1025161	1.023 M
NWTPHG Tol-Nap	(9.94 to 19.40)	651164	645864	0.992 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.155	0.002	26167	97.0	TFT(Surr)
15.189	0.001	45624	95.5	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.399	0.002	5383	3.26	Benzene
10.056	0.001	60680	34.73	Toluene
12.657	0.000	16002	9.88	Ethylbenzene
12.799	0.003	62662	36.05	M/P-Xylene
13.619	0.001	24613	16.42	O-Xylene
4.927	-0.023	1169	1.81	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

Data File: /chem3/pid2.i/111205-1.b/1205a005.d

Date : 05-DEC-2011 12:30

Client ID:

Sample Info: LCSD1205

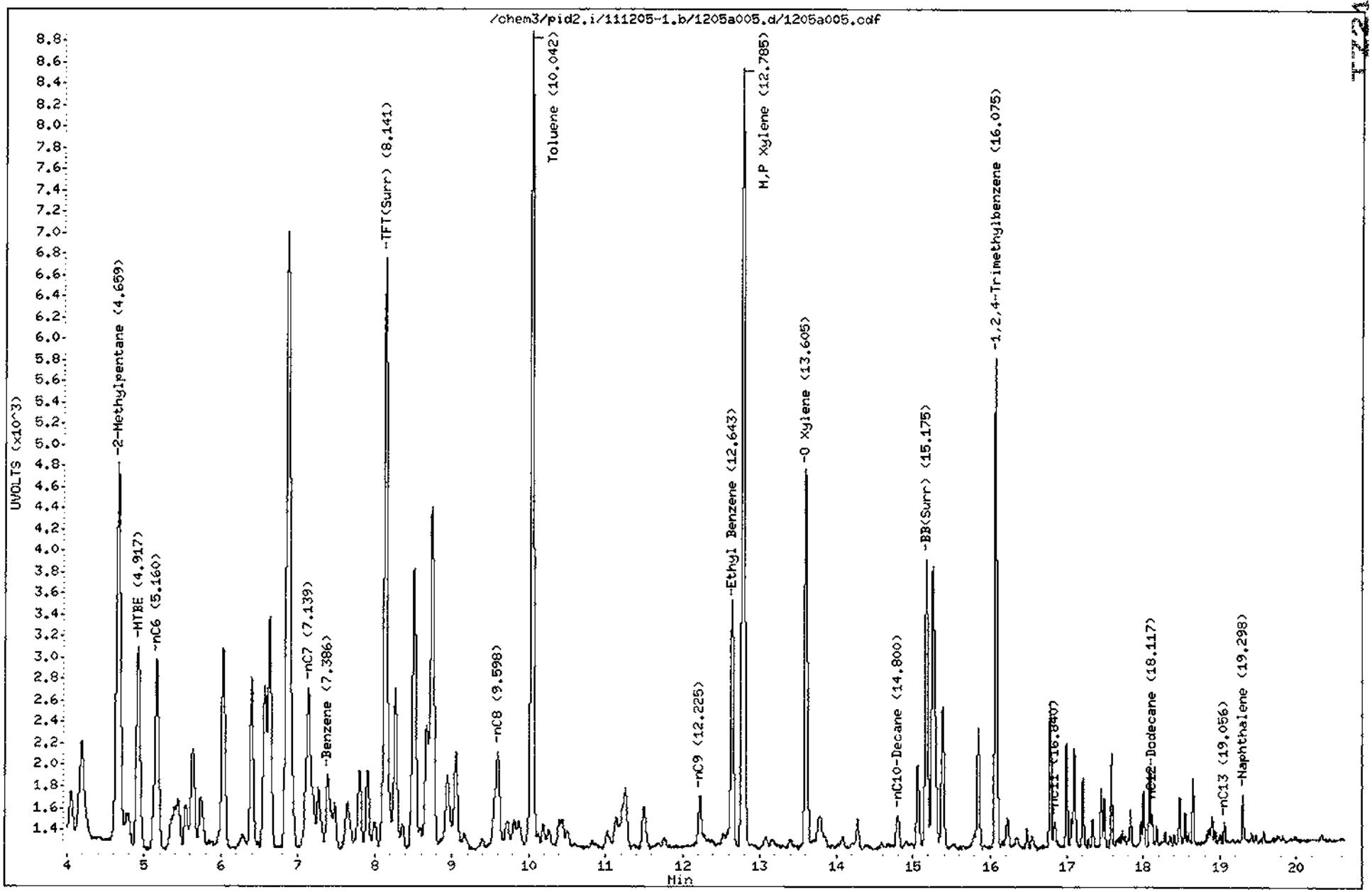
Column phase: RTX 502-2 FID

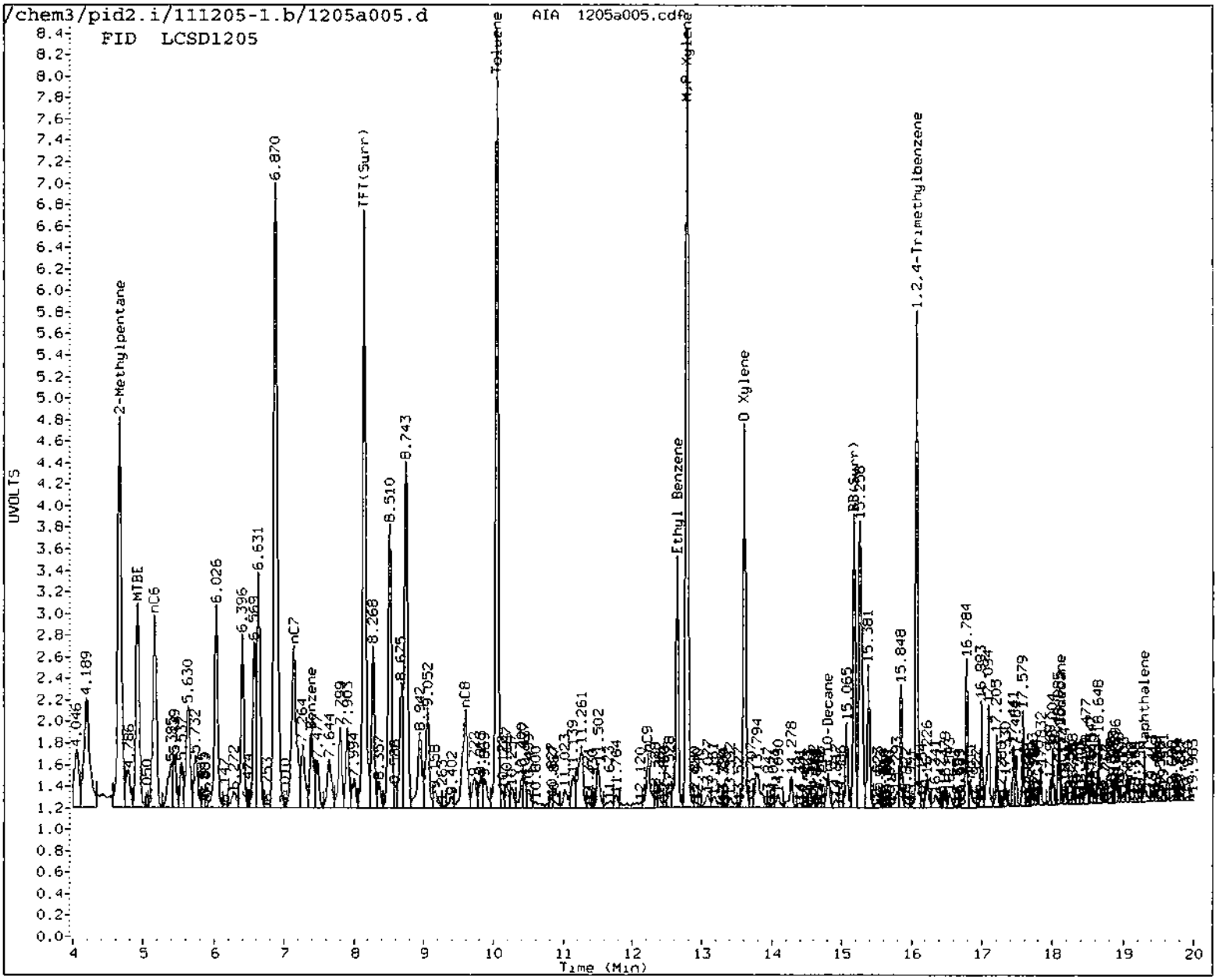
Instrument: pid2.i

Operator: PC

Column diameter: 0.18

T221 00191





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: AU Date: 12/12/11

Data File: /chem3/pid2.i/111205-1.b/1205a005.d/1205a005.cdf
Injection Date: 05-DEC-2011 12:30
Instrument: pid2.i
Client Sample ID:

UVOLTS (x10^3)

AIA 1205a005.cdf: 3.144 to 19.910 Min

Min

3.243
3.663
3.877
4.046
4.189
2-Methylpentane
4.786
MTBE
nC6
5.630
5.845
6.026
6.272
6.396
6.474
6.569
6.631
6.870
nC7
7.264
Benzene
7.447
7.644
7.903
7.994
TFT(Surr)
8.268
8.357
8.510
8.588
8.625
8.743
8.942
9.052
9.158
9.402
nC8
Toluene
10.499
11.023
11.139
11.261
11.371
11.502
11.764
nC9
12.528
Ethyl Benzene
M,P Xylene
12.890
13.077
13.161
13.294
13.392
13.527
O Xylene
13.707
13.794
14.021
14.080
14.278
nC10-Decane
14.966
15.065
BB(Surr)
15.258
15.381
15.523
15.793
15.848
1,2,4-Trimethylbenzene
16.154
16.226
16.341
16.429
nC11
16.784
16.993
17.094
17.205
17.441
17.579
17.832
17.969
18.004
nC12 Dodecane
18.477
18.648
Naphthalene

12/12/11

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
TPHG by Method NWTPHG
Page 1 of 1

Sample ID: LCS-121011
LAB CONTROL SAMPLE

Lab Sample ID: LCS-121011
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/14/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: NA
Date Received: NA

Date Analyzed LCS: 12/10/11 11:52
LCSD: 12/10/11 10:53
Instrument/Analyst LCS: PID2/JLW
LCSD: PID2/JLW

Purge Volume: 15. mL

Dilution Factor LCS: 1.0
LCSD: 1.0

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Gasoline Range Hydrocarbons	0.99	1.00	99.0%	0.90	1.00	90.0%	9.5%

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

TPHG Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	103%	102%
Bromobenzene	96.5%	101%

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a007.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a007.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: LCS21210
Client ID:
Injection Date: 10-DEC-2011 11:52
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.147	0.004	7918	145208	102.6	TFT(Surr)
15.180	0.005	3557	43010	96.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	2194890	0.988 M
8015B 2MP-TMB	(4.58 to 16.10)	4503375	4792341	1.064 M
AK101 nC6-nC10	(5.07 to 14.70)	3606280	3862994	1.071 M
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	2293316	0.990 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.160	0.003	37193	102.5	TFT(Surr)
15.195	0.005	60652	99.1	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.409	0.004	19408	3.62	Benzene
10.063	0.004	221269	38.92	Toluene
12.663	0.005	59318	11.15	Ethylbenzene
12.808	0.005	234581	41.48	M/P-Xylene
13.627	0.005	92228	18.85	O-Xylene
4.943	0.001	4491	3.48	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

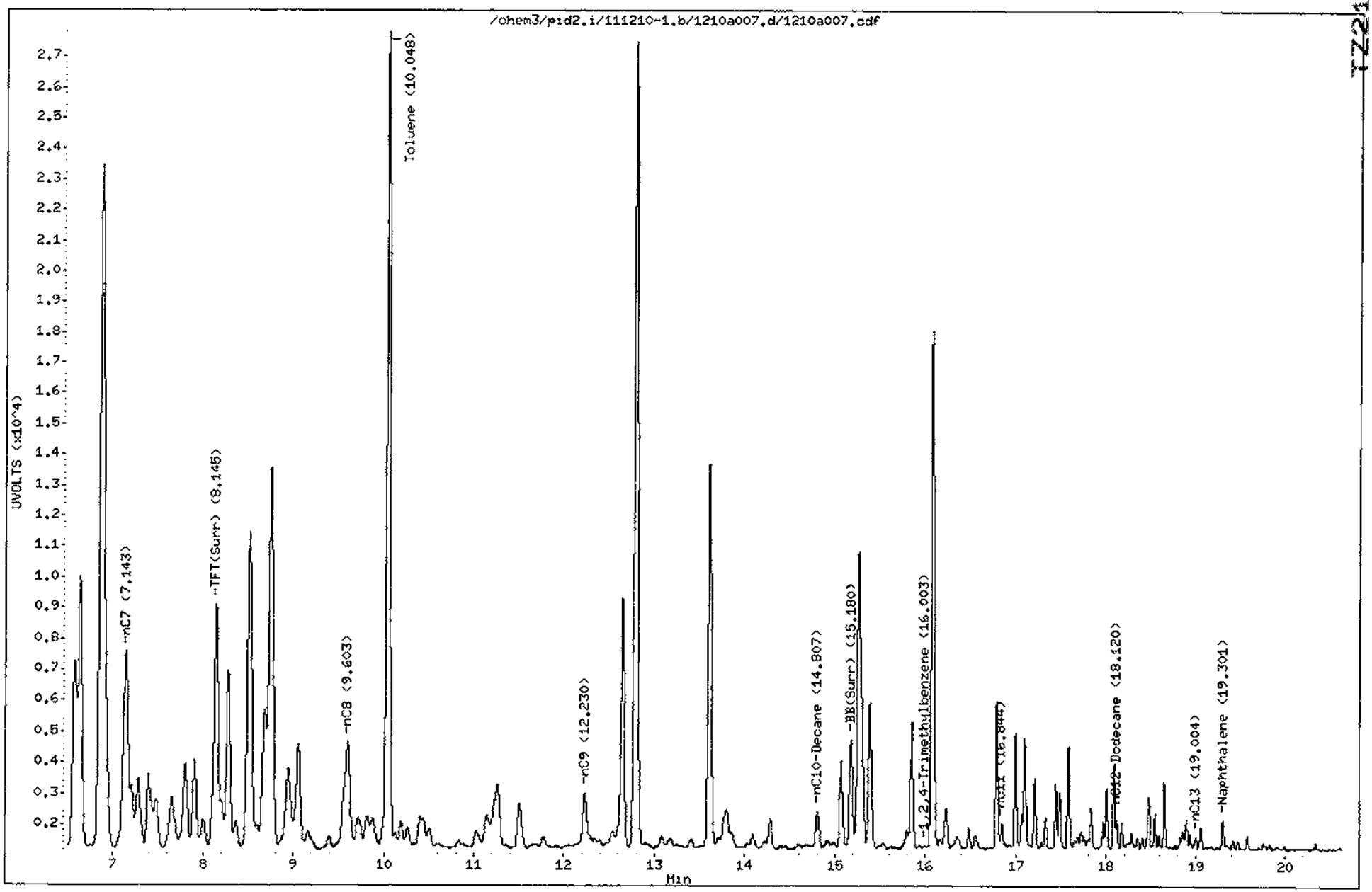
Data File: /chem3/pid2.i/111210-1.b/1210a007.d
Date : 10-DEC-2011 11:52
Client ID:
Sample Info: LCS21210

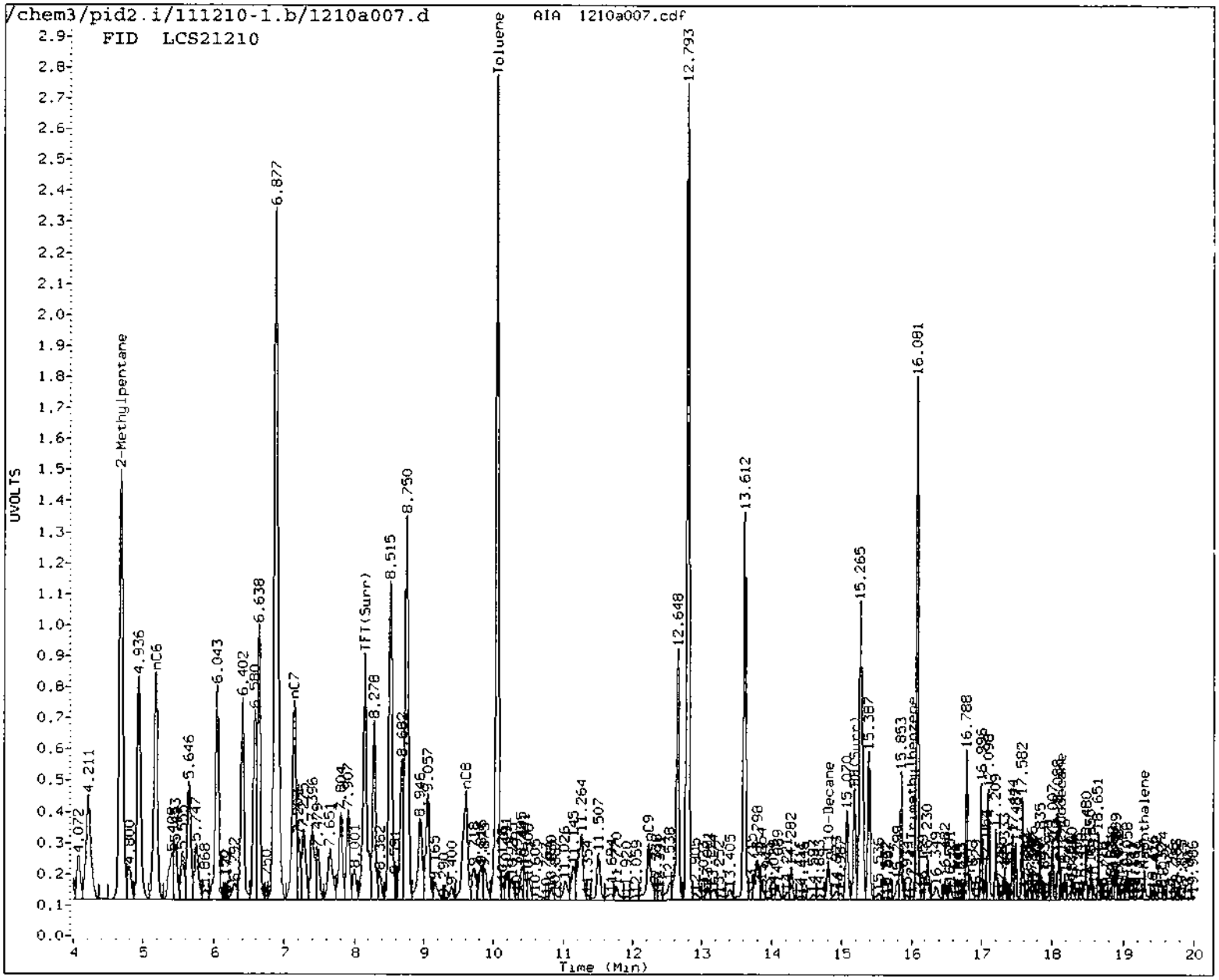
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW
Column diameter: 0.18

TZ21 00156





MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JW Date: 12/12/11

Data File: /chem3/pid2.i/111210-1.b/1210a007.d/1210a007.cdf
Injection Date: 10-DEC-2011 11:52
Instrument: pid2.i
Client Sample ID:

AIA 1210a007.cdf: 3.325 to 20.513 Min

Before
12/12/11

Analytical Resources Inc.
BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/111210-1.b/1210a005.d
Data file 2: /chem3/pid2.i/111210-2.b/1210a005.d
Method: /chem3/pid2.i/111210-2.b/PIDB15ml.m
Instrument: pid2.i
Gas Ical Date: 09-DEC-2011
BETX Ical Date: 09-DEC-2011

ARI ID: LCSD1210
Client ID:
Injection Date: 10-DEC-2011 10:53
Matrix: WATER
Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
8.150	0.007	7894	142123	102.3	TFT(Surr)
15.180	0.005	3718	44196	100.9	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Range		RF	Total Area*	Amount
WAGas Tol-C12	(9.94 to 18.22)	2221806	1998775	0.900 M
8015B 2MP-TMB	(4.58 to 16.10)	4503375	4316691	0.959 M
AK101 nC6-nC10	(5.07 to 14.70)	3606280	3480039	0.965 M
NWTPHG Tol-Nap	(9.94 to 19.40)	2317394	2090191	0.902 M

M Indicates manual integration within range

* Surrogate areas are subtracted from Total Area
Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
8.163	0.006	37375	103.0	TFT(Surr)
15.194	0.005	63128	103.2	BB(Surr)

SW8021 (PID)

RT	Shift	Response	Amount	Compound
7.412	0.007	17479	3.26	Benzene
10.064	0.005	200195	35.22	Toluene
12.663	0.005	53990	10.15	Ethylbenzene
12.807	0.005	211721	37.44	M/P-Xylene
13.626	0.005	83186	17.01	O-Xylene
4.948	0.006	4110	3.18	MTBE

JW 12/12/11

A Indicates Peak Area was used for quantitation instead of Height
N Indicates peak was manually integrated

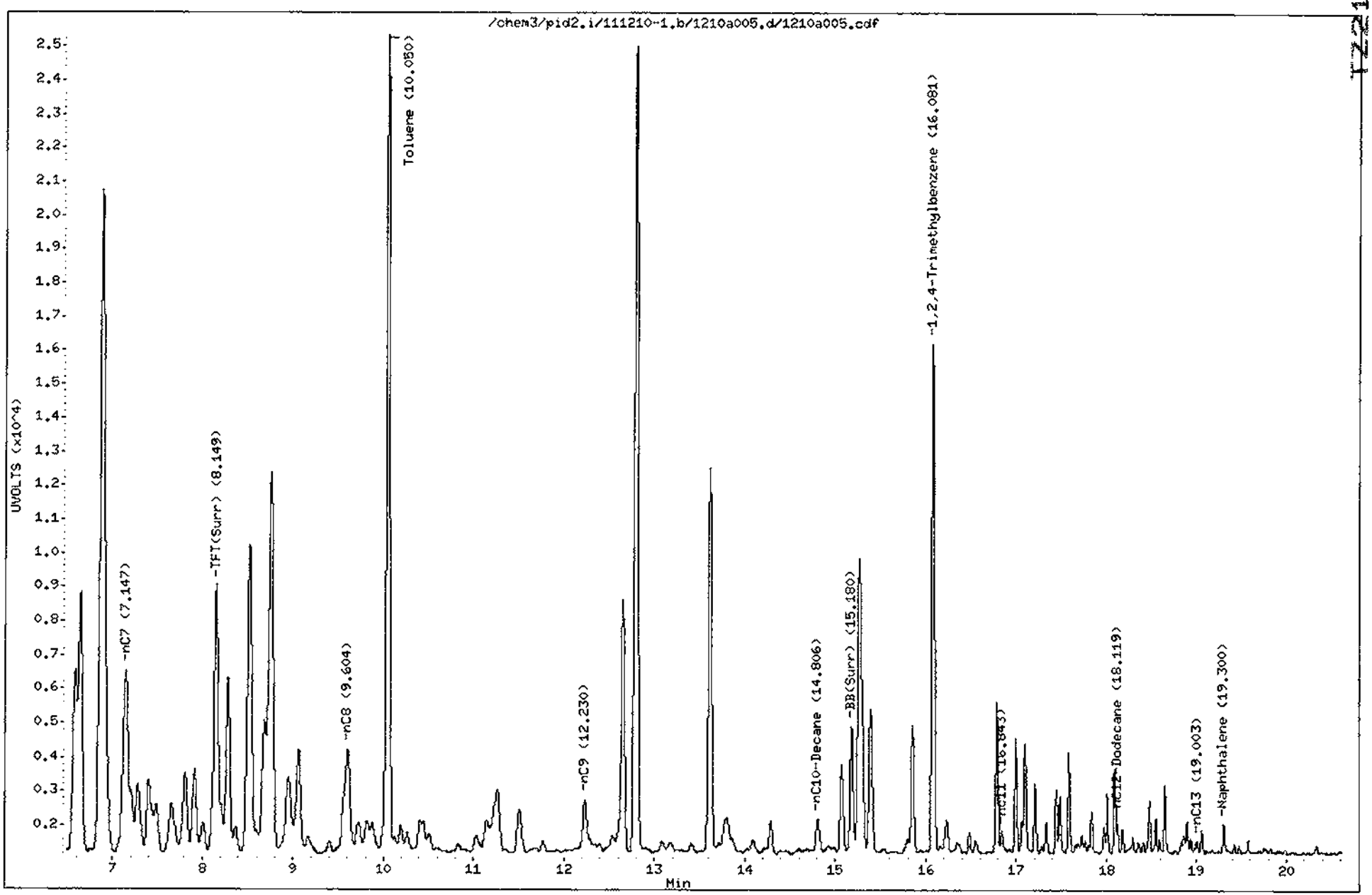
Data File: /chem3/pid2.i/111210-1.b/1210a005.d
Date : 10-DEC-2011 10:53
Client ID:
Sample Info: LCSD1210

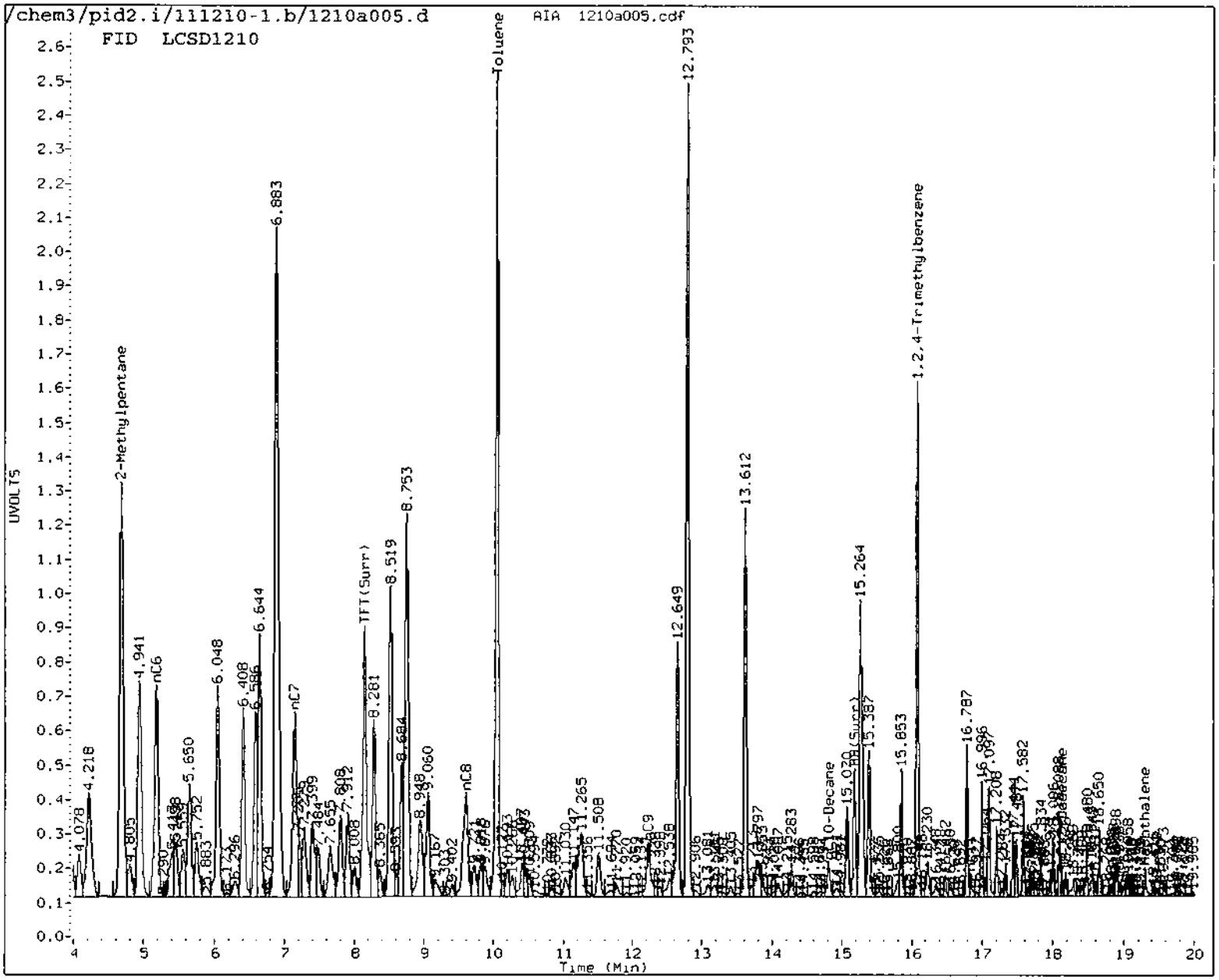
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JW
Column diameter: 0.18

T221 002000



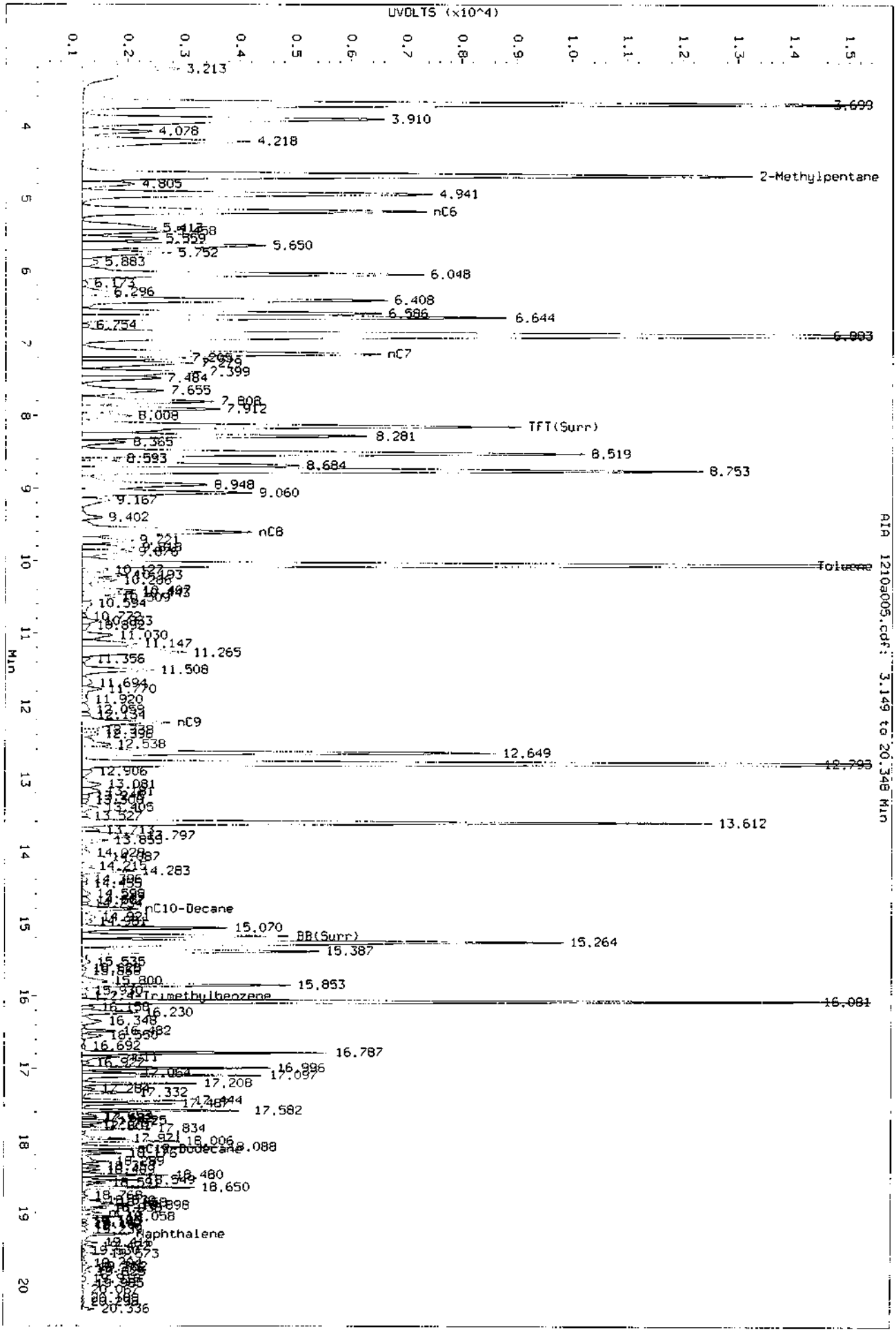


MANUAL INTEGRATION

1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation

5. Other _____

Analyst: JCW Date: 12/12/11



Before
12/12/11
JW

BETX/GAS METHOD BLANK SUMMARY

BLANK NO.

MB1205

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project No.: RG

Date Analyzed : 12/05/11 Matrix: WATER

Time Analyzed : 1256 Instrument ID : PID2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	LCS1205	LCS1205	12/05/11
02	LCSD1205	LCSD1205	12/05/11
03	TB-112911-1	TZ32I	12/05/11
04	FB-112911-1	TZ32H	12/05/11
05			
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

BETX/GAS METHOD BLANK SUMMARY

BLANK NO.

MB1210

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project No.: RG

Date Analyzed : 12/10/11 Matrix: WATER

Time Analyzed : 1119 Instrument ID : PID2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS, and MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED
01	RT+BCAL1	RT+BCAL1	12/10/11
02	LCSD1210	LCSD1210	12/10/11
03	LCS21210	LCS21210	12/10/11
04	MW-1S-112911	TZ32A	12/10/11
05	MW-1S-112911	TZ32AMS	12/10/11
06			
07			
08			
09			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

6a

GAS INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-West

Instrument/Det: PID2.I/RTX 502-2 FID Project: RG

Calibration Date: 01-NOV-2011 SDG No.: TZ32

Gas Range	RF1 0.1	RF2 0.25	RF3 1.0	RF4 2.5	RF5 5.0	RF6 10	Ave RF	%RSD
WA Gas	738325	695410	606844	558982	551230	590708	623583	12.2
AK Gas	1056300	1104226	1040450	916695	900519	995491	1002280	8.0
NW Gas	790305	727178	628384	577255	571512	612347	651164	13.6
Cal Gas	1345755	1372174	1266342	1130656	1111083	1217054	1240511	8.7
8015Gas	1338380	1388438	1299696	1152690	1134821	1231248	1257545	8.1
Surrogates Rel. Rec.	RF1/RF7 22/200	RF2 44	RF3 67	RF4 100	RF5 133	RF6 178	Ave RF	%RSD
$ TFT(Surr)	56.27273	54.04545	51.67164	50.32000	49.43609	49.76966		
	50.03500						51.65008	4.994
$ BB(Surr)	29.63636	28.18182	26.92537	26.62000	25.90226	26.06180		
	26.31000						27.09109	4.998

<- Indicates %RSD outside limits
Surrogate areas are not included in RF calculation.

Quant Ranges : WA Gas Toluene - nC12
AK Gas nC6 - nC10
NW Gas Toluene - Naphthalene
Cal Gas nC6 - nC12
8015 Gas 2-Methylpentane - 1,2,4-Trimethylbenzene

Calibration Files	Analysis Time
1101a015.d	01-NOV-2011 22:25
1101a016.d	01-NOV-2011 22:52
1101a017.d	01-NOV-2011 23:19
1101a018.d	01-NOV-2011 23:46
1101a019.d	02-NOV-2011 00:12
1101a020.d	02-NOV-2011 00:39

Surr. Calibration Files	Analysis Time
1101a006.d	01-NOV-2011 18:24
1101a007.d	01-NOV-2011 18:51
1101a008.d	01-NOV-2011 19:18
1101a009.d	01-NOV-2011 19:44
1101a010.d	01-NOV-2011 20:11
1101a011.d	01-NOV-2011 20:38
1101a012.d	01-NOV-2011 21:05

6a

GAS INITIAL CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-West

Instrument/Det: PID2.I/RTX 502-2 FID Project: RG

Calibration Date: 09-DEC-2011 SDG No.: TZ32,TZ84,TZ97,UA20,UA33

Gas Range	RF1 .03	RF2 0.10	RF3 0.25	RF4 1.0	RF5 2.5	RF6 5.0	Ave RF	%RSD
WA Gas	2948167	2304585	2102370	1896113	2023904	2055697	2221806	17.1
AK Gas	4420450	3837380	3569696	3279322	3262011	3268819	3606280	12.7
NW Gas	3078500	2418895	2195392	1982354	2111757	2117465	2317394	17.2
Cal Gas	5608317	4732460	4355392	3998758	4061928	4062875	4469955	13.9
8015Gas	5542283	4776840	4435376	4079243	4095006	4091500	4503375	12.9
Surrogates Rel. Rec.	RF1 22	RF2 44	RF3 67	RF4 100	RF5 133	RF6 178	Ave RF	%RSD
$ TFT(Surr)	85.77273	81.61364	77.97015	76.56000	72.03759	73.65730		
	72.76000						77.19592	6.539
$ BB(Surr)	40.77273	39.09091	36.16418	37.01000	34.22556	35.80337		
	34.93500						36.85739	6.320

<- Indicates %RSD outside limits
Surrogate areas are not included in RF calculation.

Quant Ranges : WA Gas Toluene - nC12
AK Gas nC6 - nC10
NW Gas Toluene - Naphthalene
Cal Gas nC6 - nC12
8015 Gas 2-Methylpentane - 1,2,4-Trimethylbenzene

Calibration Files	Analysis Time
1209a014.d	09-DEC-2011 19:18
1209a015.d	09-DEC-2011 19:44
1209a016.d	09-DEC-2011 20:10
1209a017.d	09-DEC-2011 20:36
1209a018.d	09-DEC-2011 21:02
1209a019.d	09-DEC-2011 21:28

Surr. Calibration Files	Analysis Time
1209a005.d	09-DEC-2011 15:23
1209a006.d	09-DEC-2011 15:49
1209a007.d	09-DEC-2011 16:15
1209a008.d	09-DEC-2011 16:41
1209a009.d	09-DEC-2011 17:08
1209a010.d	09-DEC-2011 17:34
1209a011.d	09-DEC-2011 18:00

7a
GAS CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-West

ICal Date: 01-NOV-2011 Project: RG

CCal Date: 05-DEC-2011 SDG No.: TZ32

Lab File Name: 1205a003.d Inst/Det: PID2.I/RTX 502-2 FID

Gas Range	Area*	CalcAmnt	NomAmnt	%D
WAGas (Tol-C12)	1519201	2.44	2.50	-2.6
AKGas (C6-C10)	2498355	2.49	2.50	-0.3
NWGas (Tol-Nap)	1591372	2.44	2.50	-2.2
8015C (2MP-TMB)	3119448	2.48	2.50	-0.8

* Surrogate areas are subtracted from Total Area
<- Indicates an RPD outside QC limits

7b
FID SURROGATE CONTINUING CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-West

ICal Date: 01-NOV-2011 Project: RG

CCal Date: 05-DEC-2011 SDG No.: TZ32

Lab File Name: 1205a003.d Inst/Det: PID2.I/RTX 502-2 FID

Surrogate	Area	CalcAmnt	NomAmnt	RPD
Trifluorotol	101060	101.5	100.0	1.5
Bromoflrbenz	33697	97.7	100.0	-2.3

TZ21:00208

7a
GAS CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-West

ICal Date: 01-NOV-2011 Project: RG

CCal Date: 05-DEC-2011 SDG No.: TZ32

Lab File Name: 1205a015.d Inst/Det: PID2.I/RTX 502-2 FID

Gas Range	Area*	CalcAmnt	NomAmnt	%D
WAGas (Tol-C12)	1423533	2.28	2.50	-8.7
AKGas (C6-C10)	2268268	2.26	2.50	-9.5
NWGas (Tol-Nap)	1490574	2.29	2.50	-8.4
8015C (2MP-TMB)	2840628	2.26	2.50	-9.6

* Surrogate areas are subtracted from Total Area
<- Indicates an RPD outside QC limits

7b
FID SURROGATE CONTINUING CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-West

ICal Date: 01-NOV-2011 Project: RG

CCal Date: 05-DEC-2011 SDG No.: TZ32

Lab File Name: 1205a015.d Inst/Det: PID2.I/RTX 502-2 FID

Surrogate	Area	CalcAmnt	NomAmnt	RPD
Trifluorotol	94923	96.3	100.0	-3.7
Bromoflrbenz	32612	94.3	100.0	-5.7

TZ21 : 00210

7a

GAS CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ32

Lab File Name: 1210a003.d Inst/Det: PID2.I/RTX 502-2 FID

Gas Range	Area*	CalcAmnt	NomAmnt	%D
WAGas (Tol-C12)	1987084	0.89	1.00	-10.6
AKGas (C6-C10)	3431314	0.95	1.00	-4.9
NWGas (Tol-Nap)	2078995	0.90	1.00	-10.3
8015B (2MP-TMB)	4269237	0.95	1.00	-5.2

* Surrogate areas are subtracted from Total Area

<- Indicates an RPD outside QC limits

TZ21:00211

7b
FID SURROGATE CONTINUING CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ32

Lab File Name: 1210a003.d Inst/Det: PID2.I/RTX 502-2 FID

Surrogate	Area	CalcAmnt	NomAmnt	RPD
Trifluorotol	134039	97.5	100.0	-2.5
Bromoflrbenz	40752	93.4	100.0	-6.6

TZ21 00212

7a
GAS CONTINUING CALIBRATION VERIFICATION

Lab Name: ANALYTICAL RESOURCES, INC. Client: ERM-WEST

ICal Date: 09-DEC-2011 Project: RG

CCal Date: 10-DEC-2011 SDG No.: TZ32

Lab File Name: 1210a011.d Inst/Det: PID2.I/RTX 502-2 FID

Gas Range	Area*	CalcAmnt	NomAmnt	%D
WAGas (Tol-C12)	2139744	0.96	1.00	-3.7
AKGas (C6-C10)	3687229	1.02	1.00	2.2
NWGas (Tol-Nap)	2235814	0.96	1.00	-3.5
8015B (2MP-TMB)	4585818	1.02	1.00	1.8

* Surrogate areas are subtracted from Total Area
<- Indicates an RPD outside QC limits

TZ21:00213

7b
FID SURROGATE CONTINUING CALIBRATION

Lab Name: ANALYTICAL RESOURCES, INC.
Client: ERM-WEST

ICal Date: 09-DEC-2011
Project: RG

CCal Date: 10-DEC-2011
SDG No.: TZ32

Lab File Name: 1210a011.d
Inst/Det: PID2.I/RTX 502-2 FID

Surrogate	Area	CalcAmnt	NomAmnt	RPD
Trifluorotol	142303	102.9	100.0	2.9
Bromoflrbenz	43353	97.7	100.0	-2.3

FORM VII-Surr

BETX/GAS ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-West

SDG No.: TZ32 Project: RG

Instrument ID: PID2 GC Detector: RTX 502-2 FID/PID

Run Date: 11/01/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

METHOD SURROGATE RT
S1 : 8.16 S2 : 15.19

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		RINSE	11/01/11	1611	8.17		15.20	
02		RT+BCAL 1	11/01/11	1638	8.17		15.20	
03		C6-C15	11/01/11	1704			15.20	
04		RT+NAP	11/01/11	1731				
05		RINSE	11/01/11	1758				
06		BETX .25	11/01/11	1824	8.16		15.19	
07		BETX .5	11/01/11	1851	8.17		15.19	
08		BETX 5	11/01/11	1918	8.16		15.19	
09		BETX 25	11/01/11	1944	8.16		15.19	
10		BETX 50	11/01/11	2011	8.16		15.19	
11		BETX 100	11/01/11	2038	8.16		15.19	
12		BETX 200	11/01/11	2105	8.16		15.19	
13		BETX ICV	11/01/11	2132	8.16		15.19	
14		RINSE	11/01/11	2158			15.19	
15		GAS .1	11/01/11	2225	8.16		15.19	
16		GAS .25	11/01/11	2252	8.16		15.19	
17		GAS 1	11/01/11	2319	8.16		15.19	
18		GAS 2.5	11/01/11	2346	8.16		15.19	
19		GAS 5	11/02/11	0012	8.16		15.19	
20		GAS 10	11/02/11	0039	8.16		15.19	
21		RINSE	11/02/11	0106			15.19	
22		GAS ICV	11/02/11	0133	8.16		15.19	

QC LIMITS

S1 = TFT(Surr) (+/- 0.05 MINUTES)
S2 = BB(Surr) (+/- 0.05 MINUTES)

* Values outside of QC limits.

BETX/GAS ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project: RG

Instrument ID: PID2 GC Detector: RTX 502-2 FID

Run Date: 12/05/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

METHOD SURROGATE RT
S1 : 8.14 S2 : 15.17

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01	RT+BCAL 1	RT+BCAL 1	12/05/11	1112	8.14		15.17	
02	RG	GCAL 1	12/05/11	1138	8.14		15.17	
03	LCS1205	LCS1205	12/05/11	1204	8.14		15.17	
04	LCSD1205	LCSD1205	12/05/11	1230	8.14		15.17	
05	MB1205	MB1205	12/05/11	1256	8.14		15.17	
06	TB-112911-1	TZ32I	12/05/11	1512	8.14		15.18	
07	FB-112911-1	TZ32H	12/05/11	1538	8.14		15.18	
08	RG	GCAL 2	12/05/11	1815	8.14		15.17	

QC LIMITS

S1 = TFT(Surr) (+/- 0.07 MINUTES)
S2 = BB(Surr) (+/- 0.07 MINUTES)

* Values outside of QC limits.

TZ21:00216

BETX/GAS ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project: RG

Instrument ID: PID2 GC Detector: RTX 502-2 FID

Run Date: 12/09/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

METHOD SURROGATE RT
S1 : 8.15 S2 : 15.18

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01		RINSE	12/09/11	0932	8.14		15.19	
02		RT1209+BCAL	12/09/11	0958	8.15		15.18	
03		GCAL 1	12/09/11	1024	8.15		15.18	
04		RINSE	12/09/11	1457	8.15		15.19	
05		BTEX .08	12/09/11	1523	8.15		15.18	
06		BTEX .25	12/09/11	1549	8.15		15.18	
07		BTEX 1	12/09/11	1615	8.15		15.18	
08		BTEX 5	12/09/11	1641	8.15		15.18	
09		BTEX 25	12/09/11	1708	8.15		15.18	
10		BTEX 50	12/09/11	1734	8.15		15.18	
11		BTEX 100	12/09/11	1800	8.15		15.18	
12		BTEX ICV 5	12/09/11	1826	8.14		15.18	
13		RINSE	12/09/11	1852	8.13		15.19	
14		GAS .03	12/09/11	1918	8.15		15.18	
15		GAS .1	12/09/11	1944	8.15		15.18	
16		GAS .25	12/09/11	2010	8.15		15.18	
17		GAS 1	12/09/11	2036	8.15		15.18	
18		GAS 2.5	12/09/11	2102	8.15		15.18	
19		GAS 5	12/09/11	2128	8.14		15.18	
20		GAS ICV 1	12/09/11	2154	8.14		15.18	

QC LIMITS

S1 = TFT(Surr) (+/- 0.07 MINUTES)
S2 = BB(Surr) (+/- 0.07 MINUTES)

* Values outside of QC limits.

BETX/GAS ANALYTICAL SEQUENCE

Lab Name: ANALYTICAL RESOURCES INC Client: ERM-WEST

SDG No.: TZ32 Project: RG

Instrument ID: PID2 GC Detector: RTX 502-2 FID

Run Date: 12/10/11

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, AND STANDARDS, IS GIVEN BELOW:

METHOD SURROGATE RT
S1 : 8.15 S2 : 15.18

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT	S1 #	S2 RT	S2 #
01	RT+BCAL1	RT+BCAL1	12/10/11	0935	8.15		15.18	
02	RG	GCAL1	12/10/11	1001	8.15		15.18	
03	LCSD1210	LCSD1210	12/10/11	1053	8.15		15.18	
04	MB1210	MB1210	12/10/11	1119	8.15		15.18	
05	LCS21210	LCS21210	12/10/11	1152	8.15		15.18	
06	MW-1S-112911	TZ32A	12/10/11	1237	8.15		15.18	
07	MW-1S-112911	TZ32AMS	12/10/11	1303	8.15		15.18	
08	RG	GCAL2	12/10/11	1355	8.15		15.18	

QC LIMITS

S1 = TFT(Surr) (+/- 0.07 MINUTES)
S2 = BB(Surr) (+/- 0.07 MINUTES)

* Values outside of QC limits.

Metals Analysis
Report and Summary QC Forms

ARI Job ID: TZ21, TZ32

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ21

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-17-112811	TZ21A	11-27521	
MW-045-112811	TZ21B	11-27522	
MW-22-112811	TZ21D	11-27524	
MW-22-112811D	TZ21DDUP	11-27524	
MW-22-112811S	TZ21DSPK	11-27524	
MW-23-112811	TZ21E	11-27525	
PBW	TZ21MB1	11-27525	
LCSW	TZ21MB1SPK	11-27525	
MW-17-112811	TZ21G	11-27527	
MW-045-112811	TZ21H	11-27528	
MW-22-112811	TZ21I	11-27529	
MW-22-112811D	TZ21IDUP	11-27529	
MW-22-112811S	TZ21ISPK	11-27529	
MW-23-112811	TZ21J	11-27530	
PBW	TZ21MB2	11-27530	
LCSW	TZ21MB2SPK	11-27530	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/8/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-17-112811
SAMPLE

Lab Sample ID: TZ21A
LIMS ID: 11-27521
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**49.8**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-04S-112811
SAMPLE

Lab Sample ID: TZ21B
LIMS ID: 11-27522
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**44.7**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-22-112811
SAMPLE

Lab Sample ID: TZ21D
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	7.9	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-23-112811**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ21E
LIMS ID: 11-27525
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**2.7**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-22-112811**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ21D
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6020	7.94	36.1	25.0	113%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-22-112811
DUPLICATE

Lab Sample ID: TZ21D
LIMS ID: 11-27524
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6020	7.9	8.3	4.9%	+/- 20%	

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ21LCS
LIMS ID: 11-27525
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6020	27.1	25.0	108%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ21MB
LIMS ID: 11-27525
Matrix: Water
Data Release Authorized:
Reported: 12/08/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-17-112811
SAMPLE

Lab Sample ID: TZ21G
LIMS ID: 11-27527
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**47.5**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-04S-112811
SAMPLE

Lab Sample ID: TZ21H
LIMS ID: 11-27528
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**42.7**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-22-112811
SAMPLE

Lab Sample ID: TZ21I
LIMS ID: 11-27529
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**7.9**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-23-112811
SAMPLE

Lab Sample ID: TZ21J
LIMS ID: 11-27530
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**2.9**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-22-112811
MATRIX SPIKE

Lab Sample ID: TZ21I
LIMS ID: 11-27529
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6020	7.89	41.5	25.0	134%	N

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-22-112811
DUPLICATE

Lab Sample ID: TZ21I
LIMS ID: 11-27529
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/28/11
Date Received: 11/28/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6020	7.9	8.4	6.1%	+/- 20%	

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ21LCS
LIMS ID: 11-27530
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6020	26.2	25.0	105%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

TZ21:00235

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ21MB
LIMS ID: 11-27530
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ21-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	7440-38-2	Arsenic	0.2	0.2	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ21

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS120781	50.0	51.13	102.3	50.0	49.92	99.8	50.06	100.1	49.73	99.5	50.11	100.2		

TZ21.00287

Control Limits: Mercury 80-120; Other Metals 90-110

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ21

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I	TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Arsenic	AS	PMS	MS120781		0.2	0.23	115.0										

Control Limits: no control limits have been established by the EPA at this time.

TZ21 : 06238

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ21

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS120781	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U		

TZ21 : 00239

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG Fall GW Sampling

RUNID: MS120781

SDG: TZ21

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.2	**96.0**						
Cadmium		20	0.0	19.5	**97.5**						
Chromium		20	0.8	20.7	**103.5**						
Cobalt		20	0.0	20.1	**100.5**						
Copper		20	0.4	20.0	**100.0**						
Manganese		20	0.1	19.9	**99.5**						
Molybdenum	400	400	389.6	399.0	**99.8**						
Nickel		20	0.5	19.4	**97.0**						
Selenium			-0.1	-0.1							
Silver		20	0.0	19.4	**97.0**						
Thallium			1.4	0.5							
Vanadium			0.0	-0.2							
Zinc		20	0.9	20.0	**100.0**						

TZ21:00210

Post Digest Spike Sample Recovery

ANALYTICAL RESOURCES INCORPORATED

CLIENT:ERM-West

PROJECT:RG Fall GW Sampling

ANALYSIS METHOD:PMS

SDG:TZ21

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	RUNID	SPIKED SAMPLE RESULT C	SAMPLE RESULT C	SPIKE ADDED	MATRIX	%R
As	MW-22-112811	11-27529	MS1207181	33.923	7.894	25.0	WATER	104.1

FORM V

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ21 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ21

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-17-112811	TZ21A	0.000	50.0	25.0
MW-045-112811	TZ21B	0.000	50.0	25.0
MW-22-112811	TZ21D	0.000	50.0	25.0
MW-22-112811D	TZ21DDUP	0.000	50.0	25.0
MW-22-112811S	TZ21DSPK	0.000	50.0	25.0
MW-23-112811	TZ21E	0.000	50.0	25.0
MW-17-112811	TZ21G	0.000	50.0	25.0
MW-045-112811	TZ21H	0.000	50.0	25.0
MW-22-112811	TZ21I	0.000	50.0	25.0
MW-22-112811D	TZ21IDUP	0.000	50.0	25.0
MW-22-112811S	TZ21ISPK	0.000	50.0	25.0
MW-23-112811	TZ21J	0.000	50.0	25.0
PBW	TZ21MB1	0.000	50.0	25.0
LCSW	TZ21MB1SPK	0.000	50.0	25.0
PBW	TZ21MB2	0.000	50.0	25.0
LCSW	TZ21MB2SPK	0.000	50.0	25.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/7/2011

SDG: TZ21 | RUNID: MS120781 | METHOD: PMS | END DATE: 12/7/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	12580				X																										
S1	S1	1.00	13040				X																										
S2	S2	1.00	13100				X																										
S3	S3	1.00	13160				X																										
S4	S4	1.00	13220				X																										
ZZZZZZ	Rinse Sampl	1.00	13290																														
ICV	MICV	1.00	13410				X																										
ICB	ICB	1.00	13470				X																										
CCV	MCCV1	1.00	13530				X																										
CCB	CCB1	1.00	14000				X																										
CRI	MCRI	1.00	14050				X																										
ICSA	ICSAI	1.00	14110				X																										
ICSAB	ICSABI	1.00	14180				X																										
ZZZZZZ	LR200	1.00	14240																														
ZZZZZZ	LR300	1.00	14300																														
CCV	MCCV2	1.00	14370				X																										
CCB	CCB2	1.00	14440				X																										
PBW	TZ21MB1	2.00	14490				X																										
PBW	TZ21MB2	2.00	14550				X																										
LCSW	TZ21MB2SPK	2.00	15010				X																										
LCSW	TZ21MB1SPK	2.00	15070				X																										
MW-22-112811L	TZ21D-L	10.00	15140				X																										
MW-22-112811	TZ21D	2.00	15200				X																										
MW-22-112811D	TZ21DDUP	2.00	15260				X																										
MW-22-112811S	TZ21DSPK	2.00	15320				X																										
ZZZZZZ	ZZZZZZ	2.00	15390																														
MW-17-112811	TZ21A	2.00	15450				X																										
CCV	MCCV3	1.00	15510				X																										
CCB	CCB3	1.00	15580				X																										
MW-22-112811L	TZ21I-L	10.00	16100				X																										
MW-22-112811	TZ21I	2.00	16160				X																										
MW-22-112811D	TZ21IDUP	2.00	16230				X																										
MW-22-112811S	TZ21ISPK	2.00	16290				X																										
MW-22-112811A	TZ21IPOST	2.00	16350				X																										
MW-045-112811	TZ21B	2.00	16410				X																										

FORM XIV

TZ21.0021h

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/7/2011

SDG: TZ21 | RUNID: MS120781 | METHOD: PMS | END DATE: 12/7/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-23-112811	TZ21E	2.00	16480				X																										
MW-17-112811	TZ21G	2.00	16540				X																										
MW-045-112811	TZ21H	2.00	17000				X																										
MW-23-112811	TZ21J	2.00	17060				X																										
CCV	MCCV4	1.00	17130				X																										
CCB	CCB4	1.00	17190				X																										

TZ21.00215

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
MW-1S-112911	TZ32A	11-27583	
MW-1S-112911D	TZ32ADUP	11-27583	
MW-1S-112911S	TZ32ASPK	11-27583	
PBW	TZ32MB1	11-27583	
LCSW	TZ32MB1SPK	11-27583	
MW-1D-112911	TZ32B	11-27584	
MW-7S-112911	TZ32C	11-27585	
MW-13-112911	TZ32E	11-27587	
MW-10-112911	TZ32F	11-27588	
DUP-112911-1	TZ32J	11-27592	
MW-1S-112911	TZ32K	11-27593	
MW-1S-112911D	TZ32KDUP	11-27593	
MW-1S-112911S	TZ32KSPK	11-27593	
PBW	TZ32MB2	11-27593	
LCSW	TZ32MB2SPK	11-27593	
MW-1D-112911	TZ32L	11-27594	
MW-7S-112911	TZ32M	11-27595	
MW-13-112911	TZ32N	11-27596	
MW-10-112911	TZ32O	11-27597	
DUP-112911-1	TZ32P	11-27598	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 12/12/11 Title: Inorganics Director

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-1D-112911
SAMPLE

Lab Sample ID: TZ32B
LIMS ID: 11-27584
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**9.2**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-7S-112911**
Page 1 of 1 **SAMPLE**

Lab Sample ID: TZ32C
LIMS ID: 11-27585
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**22.6**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-13-112911
SAMPLE

Lab Sample ID: TZ32E
LIMS ID: 11-27587
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	2	1,010	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-10-112911
SAMPLE

Lab Sample ID: TZ32F
LIMS ID: 11-27588
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**23.8**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: DUP-112911-1
SAMPLE

Lab Sample ID: TZ32J
LIMS ID: 11-27592
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**15.4**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS
Page 1 of 1

Sample ID: MW-1S-112911
SAMPLE

Lab Sample ID: TZ32K
LIMS ID: 11-27593
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**16.1**	
200.8	12/06/11	6020	12/07/11	**7440-47-3**	**Chromium**	0.5	**1.9**	
3010A	12/01/11	6010B	12/02/11	**7440-50-8**	**Copper**	2	**7**	
3010A	12/01/11	6010B	12/02/11	7440-22-4	Silver	3	3	U
3010A	12/01/11	6010B	12/02/11	**7440-66-6**	**Zinc**	10	**70**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-1S-112911**
Page 1 of 1 **MATRIX SPIKE**

Lab Sample ID: TZ32K QC Report No: TZ32-ERM-West
LIMS ID: 11-27593 Project: RG Fall GW Sampling
Matrix: Water 128296.07
Data Release Authorized: Date Sampled: 11/29/11
Reported: 12/12/11 Date Received: 11/29/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6020	16.1	43.8	25.0	111%	
Chromium	6020	1.91	24.1	25.0	88.8%	
Copper	6010B	7.28	523	500	103%	
Silver	6010B	3.00 U	502	500	100%	
Zinc	6010B	71.7	552	500	96.1%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked
NR-Not Recovered

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: MW-1S-112911**
Page 1 of 1 **DUPLICATE**

Lab Sample ID: TZ32K
LIMS ID: 11-27593
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6020	16.1	16.3	1.2%	+/- 20%	
Chromium	6020	1.9	2.0	5.1%	+/- 0.5	L
Copper	6010B	7	7	0.0%	+/- 2	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Zinc	6010B	70	70	0.0%	+/- 20%	

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: LAB CONTROL**

Lab Sample ID: TZ32LCS
LIMS ID: 11-27593
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6020	26.6	25.0	106%	
Chromium	6020	25.9	25.0	104%	
Copper	6010B	522	500	104%	
Silver	6010B	520	500	104%	
Zinc	6010B	480	500	96.0%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS **Sample ID: METHOD BLANK**

Lab Sample ID: TZ32MB
LIMS ID: 11-27593
Matrix: Water
Data Release Authorized:
Reported: 12/12/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/07/11	**7440-47-3**	**Chromium**	0.5	**0.8**	
3010A	12/01/11	6010B	12/02/11	7440-50-8	Copper	2	2	U
3010A	12/01/11	6010B	12/02/11	7440-22-4	Silver	3	3	U
3010A	12/01/11	6010B	12/02/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: MW-1S-112911
SAMPLE

Lab Sample ID: TZ32A
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**14.9**	
200.8	12/06/11	6020	12/07/11	**7440-47-3**	**Chromium**	0.5	**1.0**	
6010B	12/01/11	6010B	12/02/11	**7440-50-8**	**Copper**	2	**2**	
6010B	12/01/11	6010B	12/02/11	7440-22-4	Silver	3	3	U
6010B	12/01/11	6010B	12/02/11	**7440-66-6**	**Zinc**	10	**70**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-1D-112911
SAMPLE

Lab Sample ID: TZ32L
LIMS ID: 11-27594
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**8.0**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-7S-112911
SAMPLE

Lab Sample ID: TZ32M
LIMS ID: 11-27595
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**22.0**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-13-112911
SAMPLE

Lab Sample ID: TZ32N
LIMS ID: 11-27596
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/08/11	**7440-38-2**	**Arsenic**	2	**963**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-10-112911
SAMPLE

Lab Sample ID: TZ320
LIMS ID: 11-27597
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**22.4**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: DUP-112911-1
SAMPLE

Lab Sample ID: TZ32P
LIMS ID: 11-27598
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	**7440-38-2**	**Arsenic**	0.2	**13.0**	

U-Analyte undetected at given RL
RL-Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-1S-112911
MATRIX SPIKE

Lab Sample ID: TZ32A
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	6020	14.9	41.7	25.0	107%	
Chromium	6020	0.990	23.3	25.0	89.2%	
Copper	6010B	2.22	507	500	101%	
Silver	6010B	3.00 U	437	500	87.4%	
Zinc	6010B	68.3	566	500	99.5%	

Reported in µg/L

N-Control Limit Not Met
H-% Recovery Not Applicable, Sample Concentration Too High
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: MW-1S-112911 DUPLICATE

Lab Sample ID: TZ32A
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling 128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	6020	14.9	14.7	1.4%	+/- 20%	
Chromium	6020	1.0	1.0	0.0%	+/- 0.5	L
Copper	6010B	2	2	0.0%	+/- 2	L
Silver	6010B	3 U	3 U	0.0%	+/- 3	L
Zinc	6010B	70	70	0.0%	+/- 20%	

Reported in µg/L

*-Control Limit Not Met
L-RPD Invalid, Limit = Detection Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS
Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: TZ32LCS
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	6020	26.3	25.0	105%	
Chromium	6020	25.7	25.0	103%	
Copper	6010B	498	500	99.6%	
Silver	6010B	509	500	102%	
Zinc	6010B	500	500	100%	

Reported in µg/L

N-Control limit not met
Control Limits: 80-120%

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample ID: METHOD BLANK

Lab Sample ID: TZ32MB
LIMS ID: 11-27583
Matrix: Water
Data Release Authorized:
Reported: 12/19/11

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07
Date Sampled: NA
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	12/06/11	6020	12/07/11	7440-38-2	Arsenic	0.2	0.2	U
200.8	12/06/11	6020	12/07/11	7440-47-3	Chromium	0.5	0.5	U
6010B	12/01/11	6010B	12/02/11	7440-50-8	Copper	2	2	U
6010B	12/01/11	6010B	12/02/11	7440-22-4	Silver	3	3	U
6010B	12/01/11	6010B	12/02/11	7440-66-6	Zinc	10	10	U

U-Analyte undetected at given RL
RL-Reporting Limit

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS120781	50.0	51.13	**102.3**	50.0	49.92	**99.8**	50.06	**100.1**	49.73	**99.5**	50.11	**100.2**	49.87	**99.7**
Chromium	CR	PMS	MS120781	50.0	51.40	**102.8**	50.0	51.04	**102.1**	50.61	**101.2**	49.82	**99.6**	51.57	**103.1**	51.51	**103.0**
Copper	CU	ICP	IP120271	1000.0	1030.34	**103.0**	1000.0	1019.03	**101.9**	1004.04	**100.4**	1013.29	**101.3**	1004.85	**100.5**	1008.29	**100.8**
Silver	AG	ICP	IP120271	1000.0	1068.14	**106.8**	1000.0	1032.87	**103.3**	1008.81	**100.9**	1012.24	**101.2**	1065.19	**106.5**	1008.77	**100.9**
Zinc	ZN	ICP	IP120271	1000.0	996.81	**99.7**	1000.0	987.72	**98.8**	974.72	**97.5**	979.35	**97.9**	975.41	**97.5**	976.23	**97.6**

Control Limits: Mercury 80-120; Other Metals 90-110

TZ21 : 00257

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS: ug/L

ANALYTE	EL	M	RUN	CCVTV	CCV6	%R	CCV7	%R	CCV8	%R	CCV9	%R	CCV10	%R	CCV11	%R
Arsenic	AS	PMS	MS120781	50.0	49.85	99.7	49.85	99.7								
Chromium	CR	PMS	MS120781	50.0	51.94	103.9	53.11	106.2								
Copper	CU	ICP	IP120271	1000.0	1020.30	102.0	1010.90	101.1								
Silver	AG	ICP	IP120271	1000.0	1012.58	101.3	1003.71	100.4								
Zinc	ZN	ICP	IP120271	1000.0	967.55	96.8	970.06	97.0								

Control Limits: Mercury 80-120; Other Metals 90-110

TZ21.00258

Calibration Verification

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS: ug/L

ANALYTE	EL	M	RUN	ICVTV	ICV	%R	CCVTV	CCV1	%R	CCV2	%R	CCV3	%R	CCV4	%R	CCV5	%R
Arsenic	AS	PMS	MS120881	50.0	51.59	103.2	50.0	50.25	100.5	50.06	100.1	50.18	100.4	50.00	100.0		

Control Limits: Mercury 80-120; Other Metals 90-110

TZ32.90295

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Arsenic	AS	PMS	MS120781	0.2	0.23	115.0										
Chromium	CR	PMS	MS120781	0.5	0.51	102.0										
Copper	CU	ICP	IP120271	2.0	1.91	95.5	2.22	111.0	2.46	123.0						
Silver	AG	ICP	IP120271	3.0	3.01	100.3	2.98	99.3	2.96	98.7						
Zinc	ZN	ICP	IP120271	10.0	9.45	94.5	10.35	103.5	9.83	98.3						

Control Limits: no control limits have been established by the EPA at this time.

TZ21 : 060270

CRDL Standard

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS: ug/L

ANALYTE	EL	M	RUN	CRA/I	TV	CR-1	%R	CR-2	%R	CR-3	%R	CR-4	%R	CR-5	%R	CR-6	%R
Arsenic	AS	PMS	MS120881		0.2	0.20	100.0										

Control Limits: no control limits have been established by the EPA at this time.

TZ21.0021

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS120781	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Chromium	CR	PMS	MS120781	10.0	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Copper	CU	ICP	IP120271	25.0	2.0	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
Silver	AG	ICP	IP120271	10.0	3.0	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
Zinc	ZN	ICP	IP120271	20.0	10.0	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U	10.0	U

1221.00272

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS: ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	CCB6	C	CCB7	C	CCB8	C	CCB9	C	CCB10	C	CCB11	C
Arsenic	AS	PMS	MS120781	10.0	0.2	0.2	U	0.2	U								
Chromium	CR	PMS	MS120781	10.0	0.5	0.5	U	0.5	U								
Copper	CU	ICP	IP120271	25.0	2.0	2.0	U	2.0	U								
Silver	AG	ICP	IP120271	10.0	3.0	3.0	U	3.0	U								
Zinc	ZN	ICP	IP120271	20.0	10.0	10.0	U	10.0	U								

TZ21 : 062713

Calibration Blanks

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

UNITS:ug/L

ANALYTE	EL	METH	RUN	CRDL	IDL	ICB	C	CCB1	C	CCB2	C	CCB3	C	CCB4	C	CCB5	C
Arsenic	AS	PMS	MS120881	10.0	0.2	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U		

TZ21:00274

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG Fall GW Sampling

RUNID: IP120271

SDG: TZ32

INSTRUMENT ID: OPTIMA ICP 2

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Aluminum	200000	200000	199427.3	199366.2	**99.7**	197354.7	196690.8	**98.3**	195261.9	196086.0	**98.0**
Antimony		1000	2.7	979.9	**98.0**	-1.4	971.0	**97.1**	-6.2	940.6	**94.1**
Arsenic		1000	1.1	995.0	**99.5**	0.8	982.6	**98.3**	3.1	961.4	**96.1**
Barium		1000	-0.4	990.8	**99.1**	0.2	966.5	**96.7**	-1.0	964.3	**96.4**
Beryllium		1000	0.0	987.2	**98.7**	0.0	965.5	**96.6**	-0.1	957.1	**95.7**
Boron			-13.1	-8.6		-12.9	-10.0		-11.1	-10.5	
Cadmium		1000	0.8	1021.7	**102.2**	0.8	1028.2	**102.8**	0.7	1008.0	**100.8**
Calcium	100000	100000	100681.7	101122.6	**101.1**	100408.7	100623.9	**100.6**	99518.9	99819.3	**99.8**
Chromium		1000	-1.7	1000.7	**100.1**	-0.4	982.8	**98.3**	-1.0	983.7	**98.4**
Cobalt		1000	1.7	956.2	**95.6**	1.5	961.1	**96.1**	1.7	942.3	**94.2**
Copper		1000	-2.1	1057.8	**105.8**	-1.4	1066.4	**106.6**	-1.1	1048.1	**104.8**
Iron	200000	200000	198619.1	198328.7	**99.2**	194634.6	195144.6	**97.6**	191807.8	193250.9	**96.6**
Lead		1000	-3.9	989.0	**98.9**	-4.0	977.0	**97.7**	-3.8	958.7	**95.9**
Magnesium	100000	100000	101635.3	98531.4	**98.5**	100796.8	97676.7	**97.7**	98793.9	96846.2	**96.8**
Manganese		1000	0.3	984.2	**98.4**	0.4	958.8	**95.9**	0.2	955.4	**95.5**
Molybdenum			6.2	5.9		6.0	6.2		5.4	6.0	
Nickel		1000	-3.6	933.6	**93.4**	-1.7	911.8	**91.2**	-1.4	906.7	**90.7**
Potassium			32.7	241.6		75.5	228.6		75.8	239.4	
Selenium		1000	12.2	1014.6	**101.5**	14.4	997.4	**99.7**	20.8	974.3	**97.4**
Silicon			-13.7	-21.4		-16.2	-14.2		-4.0	-9.4	
Silver		1000	-0.8	1065.2	**106.5**	-0.5	1052.7	**105.3**	-0.6	1031.7	**103.2**
Sodium			13.3	13.3		14.8	14.3		38.6	45.3	
Strontium			10.2	10.2		10.1	10.1		9.9	10.0	
Thallium		1000	5.0	971.7	**97.2**	6.9	960.8	**96.1**	7.0	935.3	**93.5**
Tin			-12.0	-12.8		-13.0	-13.4		-12.8	-12.3	
Titanium			1.0	1.1		0.9	0.9		0.6	0.8	
Vanadium		1000	7.5	994.9	**99.5**	6.4	997.1	**99.7**	6.1	980.8	**98.1**
Zinc		1000	-1.1	924.5	**92.5**	-0.4	911.4	**91.1**	0.4	912.6	**91.3**

TZ21 : 902763

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG Fall GW Sampling

RUNID: MS120781

SDG: TZ32

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.1	0.1							
Arsenic		20	0.0	19.2	**96.0**						
Cadmium		20	0.0	19.5	**97.5**						
Chromium		20	0.8	20.7	**103.5**						
Cobalt		20	0.0	20.1	**100.5**						
Copper		20	0.4	20.0	**100.0**						
Manganese		20	0.1	19.9	**99.5**						
Molybdenum	400	400	389.6	399.0	**99.8**						
Nickel		20	0.5	19.4	**97.0**						
Selenium			-0.1	-0.1							
Silver		20	0.0	19.4	**97.0**						
Thallium			1.4	0.5							
Vanadium			0.0	-0.2							
Zinc		20	0.9	20.0	**100.0**						

TZ21 : 00276

ICP Interference Check Sample

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

ICS SOURCE: I.V.

PROJECT: RG Fall GW Sampling

RUNID: MS120881

SDG: TZ32

INSTRUMENT ID: PE ELAN 6000

UNITS: ug/L

ANALYTE	ICSA TV	ICSAB TV	ICSA1	ICSAB1	%R	ICSA2	ICSAB2	%R	ICSA3	ICSAB3	%R
Antimony			0.2	0.1							
Arsenic		20	0.0	19.3	96.5						
Barium			0.0	0.1							
Cadmium		20	0.1	19.3	96.5						
Chromium		20	0.7	20.5	102.5						
Cobalt		20	0.0	19.5	97.5						
Copper		20	0.4	19.8	99.0						
Lead			0.1	0.1							
Manganese		20	0.1	19.7	98.5						
Molybdenum	400	400	405.0	400.4	100.1						
Nickel		20	0.5	19.1	95.5						
Selenium			-0.2	-0.1							
Silver		20	0.0	18.9	94.5						
Thallium			0.4	0.5							
Vanadium			0.0	-0.3							
Zinc		20	1.0	20.6	103.0						

TZ21 00277

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

ANALYSIS METHOD: ICP

SDG: TZ32

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Copper	MW-1S-112911L	TZ32A-L	Water	IP120271	2.22	B	10.00	U	100.0	
Silver	MW-1S-112911L	TZ32A-L	Water	IP120271	3.00	U	15.00	U		
Zinc	MW-1S-112911L	TZ32A-L	Water	IP120271	68.29		67.85	B	0.6	

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

ANALYSIS METHOD: ICP

SDG: TZ32

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Copper	MW-1S-112911L	TZ32K-L	Water	IP120271	7.28	B	10.00	U	100.0	
Silver	MW-1S-112911L	TZ32K-L	Water	IP120271	3.00	U	15.00	U		
Zinc	MW-1S-112911L	TZ32K-L	Water	IP120271	71.70		78.80	B	9.9	

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

ANALYSIS METHOD: PMS

SDG: TZ32

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-1S-112911L	TZ32A-L	Water	MS120781	14.94		14.80	B	0.9	
Chromium	MW-1S-112911L	TZ32A-L	Water	MS120781	0.99	B	1.25	B	26.3	

ICP Serial Dilutions

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

ANALYSIS METHOD: PMS

SDG: TZ32

UNITS: ug/L

ANALYTE	CLIENT ID	ARI ID	MATRIX	RUNID	INITIAL SAMPLE RESULT (I)	C	SERIAL DILUTION RESULT (S)	C	% DIFFERENCE	Q
Arsenic	MW-1S-112911L	TZ32K-L	Water	MS120781	16.12		16.15	B	0.2	
Chromium	MW-1S-112911L	TZ32K-L	Water	MS120781	1.91	B	2.10	B	9.9	

IDLs and ICP Linear Ranges

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32 UNITS: ug/L

ANALYTE	EL	METH	INSTRUMENT	WAVELENTH (nm)	GFA BACK-GROUND	CLP CRDL	RL	RL DATE	ICP LINEAR RANGE (ug/L)	ICP LR DATE
Arsenic	AS	PMS	PE ELAN 6000 MS	0.00		10	0.2	4/1/2011		
Chromium	CR	PMS	PE ELAN 6000 MS	0.00		10	0.5	4/1/2011		
Copper	CU	ICP	OPTIMA ICP 2	324.75		25	2.0	4/1/2011	40000.0	8/3/2011
Silver	AG	ICP	OPTIMA ICP 2	328.07		10	3.0	4/1/2011	5000.0	8/3/2011
Zinc	ZN	ICP	OPTIMA ICP 2	213.86		20	10.0	4/1/2011	100000.0	8/3/2011

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

IEC DATE: 11/29/2011

SDG: TZ32

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	AL	AS	BA	BE	CA	CD	CO	CR	CU	FE
Aluminum	308.22	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Antimony	206.84	0.3891270	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	10.6149000	0.0000000	0.1208350
Arsenic	188.98	0.0000000	0.0000000	0.0000000	0.0000000	0.0339516	0.0000000	-0.8345790	1.1215100	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0000000	-0.0076716	0.0000000	-0.1892080	0.0000000	0.0000000	0.0522067
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	228.80	0.0000000	5.2418600	0.0000000	0.0000000	0.0000000	0.0000000	0.1195910	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.5252460	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	0.0242504	0.0000000	0.0000000	0.0000000	0.0000000	-0.0377814
Cobalt	228.62	0.0000000	0.0000000	0.1238430	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.2279050	-0.0318969	0.0000000	-0.0584929
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6163900	0.0000000	0.0000000
Lead	220.35	-0.2018030	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.3072100	1.2452600	0.0540270
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-1.6380600	-1.2519300	0.0000000	0.5652870
Manganese	257.61	0.0071394	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0051324
Molybdenum	202.03	0.0000000	0.0000000	0.0000000	0.0000000	0.0123608	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.2053280	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.3514040	0.0000000	0.0000000	-0.1233420
Silicon	288.16	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.4885200	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000000	0.0000000	0.0000000	0.0108199	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.80	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.7836600	0.3510820	0.0000000	-0.1141760
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.0000000	0.0000000	0.0387268	0.0000000	0.0000000	0.1632010	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-3.9361800	0.0000000	0.0730907
Zinc	206.20	0.0000000	0.0000000	0.0000000	0.0000000	0.0258303	0.0000000	0.0000000	-0.1475900	0.0000000	0.0000000

TZ21 09283

ICP Interelement Correction Factors

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

IEC DATE: 11/29/2011

SDG: TZ32

INSTRUMENT ID: OPTIMA ICP 2

ANALYTE	WAVELENGTH	MG	MN	MO	NI	PB	SB	TI	TL	V	ZN
Aluminum	308.22	0.0000000	0.0000000	15.3131000	0.0000000	0.0000000	0.0000000	1.5167500	0.0000000	17.6996000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000000	-0.4730780	0.0000000	0.0000000	-0.8897510	0.0000000	-3.3546800	0.0000000
Arsenic	188.98	0.0000000	0.0000000	2.3330800	0.0000000	0.0000000	0.0000000	-5.4412000	0.0000000	0.0000000	0.0000000
Barium	233.53	0.0000000	0.0000000	0.0000000	0.0766262	0.0000000	0.0000000	0.0000000	0.0000000	0.6419380	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2960780	0.0000000
Cadmium	228.80	0.0000000	0.0000000	0.0000000	-0.7324130	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0405628	0.0000000	0.1395070	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.2773470	0.0000000
Cobalt	228.62	0.0000000	0.0000000	-0.1579570	0.1588330	0.0000000	0.0000000	1.8115900	0.0000000	0.0000000	0.0000000
Copper	324.75	0.0057432	0.0000000	0.2688440	0.0000000	0.0000000	0.0000000	0.2461180	0.0000000	0.0000000	0.0000000
Iron	273.96	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	8.4403600	0.0000000
Lead	220.35	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	-4.6256200	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	257.61	0.0041261	0.0000000	0.0000000	0.0000000	-0.2175850	0.0000000	0.0000000	0.0000000	-0.0271775	0.0000000
Molybdenum	202.03	0.0107429	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.7744280	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0736777	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silicon	288.16	0.0000000	0.0000000	-2.7358100	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Silver	328.07	0.0000000	0.2442620	0.2419260	0.0000000	0.0000000	0.0000000	-0.0470302	0.0000000	-0.2758080	0.0000000
Sodium	589.59	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	242.4230000	0.0000000	0.0000000	318.1570000
Thallium	190.80	0.0000000	-1.4179000	1.9562000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	1.2892100	0.0000000
Tin	189.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.5848020	-0.3044710	0.0000000	0.0000000	0.0000000
Titanium	334.90	0.0000000	0.0000000	0.9873960	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Vanadium	292.40	0.0000000	-0.1398510	-0.6804250	0.0000000	0.0000000	0.0000000	0.6004670	0.0000000	0.0000000	0.0000000
Zinc	206.20	0.0000000	0.0000000	0.2377960	0.0000000	-0.0708227	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

182209 TZ21

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

ANALYSIS METHOD: ICP

ARI PREP CODE: TWC

PREPDATE: 12/1/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-1S-112911	T232K	0.000	50.0	50.0
MW-1S-112911D	T232KDUP	0.000	50.0	50.0
MW-1S-112911S	T232KSPK	0.000	50.0	50.0
PBW	T232MB2	0.000	50.0	50.0
LCSW	T232MB2SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

ANALYSIS METHOD: ICP

ARI PREP CODE: WMN

PREPDATE: 12/1/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-1S-112911	TZ32A	0.000	50.0	50.0
MW-1S-112911D	TZ32ADUP	0.000	50.0	50.0
MW-1S-112911S	TZ32ASPK	0.000	50.0	50.0
PBW	TZ32MB1	0.000	50.0	50.0
LCSW	TZ32MB1SPK	0.000	50.0	50.0

Preparation Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling

SDG: TZ32

ANALYSIS METHOD: PMS

ARI PREP CODE: REN

PREPDATE: 12/6/2011

CLIENT ID	ARI ID	MASS (g)	INITIAL VOLUME (mL)	FINAL VOLUME (mL)
MW-1S-112911	TZ32A	0.000	50.0	25.0
MW-1S-112911D	TZ32ADUP	0.000	50.0	25.0
MW-1S-112911S	TZ32ASPK	0.000	50.0	25.0
MW-1D-112911	TZ32B	0.000	50.0	25.0
MW-7S-112911	TZ32C	0.000	50.0	25.0
MW-13-112911	TZ32E	0.000	50.0	25.0
MW-10-112911	TZ32F	0.000	50.0	25.0
DUP-112911-1	TZ32J	0.000	50.0	25.0
MW-1S-112911	TZ32K	0.000	50.0	25.0
MW-1S-112911D	TZ32KDUP	0.000	50.0	25.0
MW-1S-112911S	TZ32KSPK	0.000	50.0	25.0
MW-1D-112911	TZ32L	0.000	50.0	25.0
MW-7S-112911	TZ32M	0.000	50.0	25.0
PBW	TZ32MB1	0.000	50.0	25.0
LCSW	TZ32MB1SPK	0.000	50.0	25.0
PBW	TZ32MB2	0.000	50.0	25.0
LCSW	TZ32MB2SPK	0.000	50.0	25.0
MW-13-112911	TZ32N	0.000	50.0	25.0
MW-10-112911	TZ32O	0.000	50.0	25.0
DUP-112911-1	TZ32P	0.000	50.0	25.0

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/2/2011

SDG: TZ32 | RUNID: IP120271 | METHOD: ICP | END DATE: 12/2/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	10561		X										X																	X
S2	S2	1.00	11003												X																	
S3	S3	1.00	11021		X																											X
S4	S4	1.00	11045																													
S5	S5	1.00	11070																													
ICV	ICV	1.00	11134		X										X																	X
ICB	ICB	1.00	11174		X										X																	X
CRI	CRII	1.00	11215		X										X																	X
ICSA	ICSAI	1.00	11261		X										X																	X
ICSAB	ICSABI	1.00	11302		X										X																	X
CCV	CCV1	1.00	11342		X										X																	X
CCB	CCB1	1.00	11382		X										X																	X
PBW	TZ32MB1	1.00	11424		X										X																	X
MW-1S-112911L	TZ32A-L	5.00	11465		X										X																	X
MW-1S-112911	TZ32A	1.00	11510		X										X																	X
MW-1S-112911D	TZ32ADUP	1.00	11550		X										X																	X
MW-1S-112911S	TZ32ASPK	1.00	11592		X										X																	X
ZZZZZZ	TZ16ADUP	2.00	12033																													
ZZZZZZ	TZ16A	2.00	12073																													
ZZZZZZ	TZ16ASPK	2.00	12113																													
ZZZZZZ	TZ16MB1SPK	2.00	12143																													
LCSW	TZ32MB1SPK	1.00	12183		X										X																	X
CCV	CCV2	1.00	12223		X										X																	X
CCB	CCB2	1.00	12263		X										X																	X
CRI	CRIF	1.00	12305		X										X																	X
ICSA	ICSAF	1.00	12350		X										X																	X
ICSAB	ICSABF	1.00	12392		X										X																	X
CCV	CCV3	1.00	12432		X										X																	X
CCB	CCB3	1.00	12472		X										X																	X
ZZZZZZ	TZ16MB1	2.00	12513																													
ZZZZZZ	TZ18MB2	1.00	12555																													
ZZZZZZ	TZ18CDUP	1.00	13000																													
ZZZZZZ	TZ18C	1.00	13044																													
ZZZZZZ	TZ18CSPK	1.00	13090																													
ZZZZZZ	TZ18MB2SPK	1.00	13132																													

FORM XIV

TZ221:00286

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: OPTIMA ICP 2 | START DATE: 12/2/2011

SDG: TZ32 | RUNID: IP120271 | METHOD: ICP | END DATE: 12/2/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
CCV	CCV4	1.00	13172		X										X																		X
CCB	CCB4	1.00	13213		X										X																		X
CCV	CCV5	1.00	14020		X										X																		X
CCB	CCB5	1.00	14061		X										X																		X
PBW	TZ32MB2	1.00	14102		X										X																		X
MW-1S-112911L	TZ32K-L	5.00	14144		X										X																		X
MW-1S-112911	TZ32K	1.00	14185		X										X																		X
MW-1S-112911D	TZ32KDUP	1.00	14230		X										X																		X
MW-1S-112911S	TZ32KSPK	1.00	14271		X										X																		X
ZZZZZZ	ZZZZZZ	1.00	14313																														
ZZZZZZ	TZ30ADUP	1.00	14354																														
ZZZZZZ	TZ30A	1.00	14400																														
ZZZZZZ	TZ30ASPK	1.00	14441																														
LCSW	TZ32MB2SPK	1.00	14483		X										X																		X
CCV	CCV6	1.00	14523		X										X																		X
CCB	CCB6	1.00	14563		X										X																		X
CRI	CRIF1	1.00	15004		X										X																		X
ICSA	ICSAF1	1.00	15050		X										X																		X
ICSAB	ICSABF1	1.00	15091		X										X																		X
CCV	CCV7	1.00	15131		X										X																		X
CCB	CCB7	1.00	15171		X										X																		X

TZ21 00289

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/7/2011

SDG: TZ32 | RUNID: MS120781 METHOD: PMS | END DATE: 12/7/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	12580				X							X																			
S1	S1	1.00	13040				X							X																			
S2	S2	1.00	13100				X							X																			
S3	S3	1.00	13160				X							X																			
S4	S4	1.00	13220				X							X																			
ZZZZZZ	Rinse Sampl	1.00	13290																														
ICV	MICV	1.00	13410				X							X																			
ICB	ICB	1.00	13470				X							X																			
CCV	MCCV1	1.00	13530				X							X																			
CCB	CCB1	1.00	14000				X							X																			
CRI	MCRI	1.00	14050				X							X																			
ICSA	ICSAI	1.00	14110				X							X																			
ICSAB	ICSABI	1.00	14180				X							X																			
ZZZZZZ	LR200	1.00	14240																														
ZZZZZZ	LR300	1.00	14300																														
CCV	MCCV2	1.00	14370				X							X																			
CCB	CCB2	1.00	14440				X							X																			
ZZZZZZ	TZ21MB1	2.00	14490																														
ZZZZZZ	TZ21MB2	2.00	14550																														
ZZZZZZ	TZ21MB2SPK	2.00	15010																														
ZZZZZZ	TZ21MB1SPK	2.00	15070																														
ZZZZZZ	TZ21D-L	10.00	15140																														
ZZZZZZ	TZ21D	2.00	15200																														
ZZZZZZ	TZ21DDUP	2.00	15260																														
ZZZZZZ	TZ21DSPK	2.00	15320																														
ZZZZZZ	ZZZZZZ	2.00	15390																														
ZZZZZZ	TZ21A	2.00	15450																														
CCV	MCCV3	1.00	15510				X							X																			
CCB	CCB3	1.00	15580				X							X																			
ZZZZZZ	TZ21I-L	10.00	16100																														
ZZZZZZ	TZ21I	2.00	16160																														
ZZZZZZ	TZ21IDUP	2.00	16230																														
ZZZZZZ	TZ21ISPK	2.00	16290																														
ZZZZZZ	TZ21IPOST	2.00	16350																														
ZZZZZZ	TZ21B	2.00	16410																														

TZ21 00290

FORM XIV

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/7/2011

SDG: TZ32 | RUNID: MS120781 | METHOD: PMS | END DATE: 12/7/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
ZZZZZZ	TZ21E	2.00	16480																														
ZZZZZZ	TZ21G	2.00	16540																														
ZZZZZZ	TZ21H	2.00	17000																														
ZZZZZZ	TZ21J	2.00	17060																														
CCV	MCCV4	1.00	17130				X							X																			
CCB	CCB4	1.00	17190				X							X																			
PBW	TZ32MB1	2.00	17250				X							X																			
PBW	TZ32MB2	2.00	17310				X							X																			
LCSW	TZ32MB2SPK	2.00	17370				X							X																			
LCSW	TZ32MB1SPK	2.00	17430				X							X																			
MW-1S-112911L	TZ32A-L	10.00	17490				X							X																			
MW-1S-112911	TZ32A	2.00	17560				X							X																			
MW-1S-112911D	TZ32ADUP	2.00	18020				X							X																			
MW-1S-112911S	TZ32ASPK	2.00	18080				X							X																			
ZZZZZZ	ZZZZZZ	2.00	18140																														
MW-1D-112911	TZ32B	2.00	18210				X																										
CCV	MCCV5	1.00	18270				X							X																			
CCB	CCB5	1.00	18340				X							X																			
MW-1S-112911L	TZ32K-L	10.00	18390				X							X																			
MW-1S-112911	TZ32K	2.00	18460				X							X																			
MW-1S-112911D	TZ32KDUP	2.00	18520				X							X																			
MW-1S-112911S	TZ32KSPK	2.00	18580				X							X																			
ZZZZZZ	ZZZZZZ	2.00	19050																														
MW-7S-112911	TZ32C	2.00	19110				X																										
MW-13-112911	TZ32E	2.00	19170																														
MW-10-112911	TZ32F	2.00	19230				X																										
DUP-112911-1	TZ32J	2.00	19300				X																										
MW-1D-112911	TZ32L	2.00	19360				X																										
CCV	MCCV6	1.00	19420				X							X																			
CCB	CCB6	1.00	19490				X							X																			
ZZZZZZ	TZ72MB	2.00	19550																														
ZZZZZZ	TZ72MBSPK	2.00	20000																														
ZZZZZZ	TZ72ADUP	2.00	20070																														
ZZZZZZ	TZ72A	2.00	20130																														
ZZZZZZ	TZ72ASPK	2.00	20190																														

TZ21 09251

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/7/2011

SDG: TZ32 | RUNID: MS120781 METHOD: PMS | END DATE: 12/7/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
MW-7S-112911	TZ32M	2.00	20260				X																										
MW-13-112911	TZ32N	2.00	20320																														
MW-10-112911	TZ32O	2.00	20380				X																										
DUP-112911-1	TZ32P	2.00	20440				X																										
CCV	MCCV7	1.00	20510				X							X																			
CCB	CCB7	1.00	20570				X							X																			

TZ21-002S2

Analysis Run Log

ANALYTICAL RESOURCES INCORPORATED

CLIENT: ERM-West

PROJECT: RG Fall GW Sampling | INSTRUMENT ID: PE ELAN 6000 MS | START DATE: 12/8/2011

SDG: TZ32 | RUNID: MS120881 | METHOD: PMS | END DATE: 12/8/2011

CLIENT ID	ARI ID	DIL.	TIME	%R	AG	AL	AS	B	BA	BE	CA	CD	CO	CR	CU	FE	HG	K	MG	MN	MO	NA	NI	PB	SB	SE	SI	SN	TI	TL	U	V	ZN
S0	S0	1.00	11280				X																										
S1	S1	1.00	11350				X																										
S2	S2	1.00	11410				X																										
S3	S3	1.00	11470				X																										
S4	S4	1.00	11530				X																										
ZZZZZZ	Rinse Samp1	1.00	12000																														
ICV	MICV	1.00	12090				X																										
ICB	ICB	1.00	12160				X																										
CCV	MCCV1	1.00	12220				X																										
CCB	CCB1	1.00	12280				X																										
CRI	MCRI	1.00	12340				X																										
ZZZZZZ	ZZZZZZ	1.00	12400																														
ICSAB	ICSABI	1.00	12460				X																										
ZZZZZZ	LR200	1.00	12530																														
ZZZZZZ	LR300	1.00	12590																														
ICSA	ICSAI	1.00	13060				X																										
CCV	MCCV2	1.00	13150				X																										
CCB	CCB2	1.00	13210				X																										
S0	S0	1.00	13280				X																										
CCV	MCCV3	1.00	13340				X																										
CCB	CCB3	1.00	13410				X																										
PBW	TZ32MB2	2.00	13460																														
ZZZZZZ	UA26MB	2.00	13520																														
ZZZZZZ	UA26MBSPK	2.00	13580																														
ZZZZZZ	UA26ADUP	2.00	14040																														
ZZZZZZ	UA26A	2.00	14100																														
ZZZZZZ	UA26ASPK	2.00	14170																														
ZZZZZZ	TZ50A	2.00	14230																														
ZZZZZZ	TZ50B	2.00	14290																														
MW-13-112911	TZ32E	20.00	14360				X																										
MW-13-112911	TZ32N	20.00	14420				X																										
CCV	MCCV4	1.00	14480				X																										
CCB	CCB4	1.00	14550				X																										

TZ21-9295

COMPLETED JOB LIST: 12/12/11 11:15:25

	ACTIVE WAS	LIMSID	COMMENTS	
Job TY84	P	11-27384 - 11-27402	2WK PKG	2WK PKG
Job TZ32	Y	11-27583 - 11-27598	2WK CLP-Q	2WK CLP-Q

General Chemistry Analysis
Report and Summary QC Forms

ARI Job ID: TZ21, TZ32

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Hexavalent Chrome by Method SW7196A

Data Release Authorized:
Reported: 12/20/11
Date Received: 11/29/11
Page 1 of 1

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
MW-1S-112911 TZ32A 11-27583	11/29/11	Water	11/29/11 16:05 112911#1	0.010	< 0.010 U

Reported in mg/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

TZ21 : 00296

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
Total Suspended Solids by Method SM2540D

Data Release Authorized:
Reported: 12/20/11
Date Received: 11/29/11
Page 1 of 1

QC Report No: TZ32-ERM-West
Project: RG Fall GW Sampling
128296.07

Client/ ARI ID	Date Sampled	Matrix	Analysis Date & Batch	RL	Result
MW-7S-112911 TZ32C 11-27585	11/29/11	Water	12/02/11 12:10 120211#1	1.1	6.6
MW-13-112911 TZ32E 11-27587	11/29/11	Water	12/02/11 12:10 120211#1	1.1	3.3
MW-10-112911 TZ32F 11-27588	11/29/11	Water	12/02/11 12:10 120211#1	1.1	< 1.1 U

Reported in mg/L

RL-Analytical reporting limit
U-Undetected at reported detection limit

TZ21 : 00297

MS/MSD RESULTS-CONVENTIONALS
TZ32-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Analyte	Date	Units	Sample	Spike	Spike Added	Recovery
ARI ID: TZ32A Client ID: MW-1S-112911						
Hexavalent Chrome	11/29/11	mg/L	< 0.010	0.349	0.627	55.7%

REPLICATE RESULTS-CONVENTIONALS
TZ32-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: 11/29/11
Date Received: 11/29/11

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: TZ32A Client ID: MW-1S-112911					
Hexavalent Chrome	11/29/11	mg/L	< 0.010	< 0.010	NA

LAB CONTROL RESULTS-CONVENTIONALS
TZ32-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	LCS	Spike Added	Recovery
Total Suspended Solids	12/02/11 12:10	mg/L	48.4	50.0	96.8%

METHOD BLANK RESULTS-CONVENTIONALS
TZ32-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte	Date/Time	Units	Blank
Hexavalent Chrome	11/29/11 16:05	mg/L	< 0.010 U
Total Suspended Solids	12/02/11 12:10	mg/L	< 1.0 U

STANDARD REFERENCE RESULTS-CONVENTIONALS
TZ32-ERM-West

ANALYTICAL RESOURCES INCORPORATED

Matrix: Water
Data Release Authorized:
Reported: 12/20/11

Project: RG Fall GW Sampling
Event: 128296.07
Date Sampled: NA
Date Received: NA

Analyte/SRM ID	Date/Time	Units	SRM	True Value	Recovery
Hexavalent Chrome ERA #41065	11/29/11 16:05	mg/L	0.615	0.630	97.6%

General Chemistry Raw Data
Analyst Notes and Raw Data

ARI Job ID: TZ21, TZ32

12-2-11

TOTAL SUSPENDED SOLIDS / VOLATILE SUSPENDED SOLIDS (TSS / TVSS)

Methods : SM 2540 D-97, 2540 E-97

DATE: 12/2/11 1210

ANALYST: SM

Instrumentation ***Drying Ovens:*** 12 ***Analytical Balance:*** 1123230597

Muffle Furnace:

make no entries to shaded cells
they are calculated !!

TSS (mg/l) calculated as:
Final dry wt (mg) = (minimum Dry Wt - Tare Wt)*1000
TSS = [(Final Dry Wt)/ ml Sample] * 1000
if dy wt < 1mg, TSS = <1mg / mL sample * 1000
with "<" flag

Loss on ignition (LOI) = TVSS (mg/L) calculated as:
LOI (mg) = Dry wt(mg) -((min ash wt - tare wt) * 1000)
TVSS (mg/L) = LOI / mL sample * 1000
if LOI <1mg, TVSS = <1mg / mL sample * 1000
with "<" flag

LCS source: *Cellulose, MP Biomedicals Lot# 6399J* 0.05 grams to 1000 mL = **50** ***mg/L TSS***

SAMPLE ID	DISH #	filtered (mL)	TARE WT (grams)	DRY WT 104C (grams) 1	2	3	4	DryWT (mg)	TSS (mg/L)	ASH WT 550C (grams) 1	2	3	4	LOI (mg)	TVSS (mg/l)
Cal Weight ID			CV-02	CV-02	CV-02	CV-02	CV-02			CV-02	CV-02	CV-02	CV-02		
Date & Time				12/2/11 1419	12/2/11 1545										
Cal Wt (g) 10.0000				10.0000	10.0000										
record weights to 4 places				*Cal OK!*	*Cal OK!*										
BLANK		1000	0.1169	0.1170	0.1169	STOP		0.0	**< 1**						
LCS # 586-1		1000	0.1171	0.1656	0.1655	STOP		48.4	**48.4**	96.8%	% Recovery				
TZ32 C1		910	0.1153	0.1214	0.1213	STOP		6.0	**6.6**						
TZ32 D1		940	0.1163	0.1224	0.1224	STOP		6.1	**6.5**						
TZ32 E1		940	0.1170	0.1202	0.1201	STOP		3.1	**3.3**						
TZ32 F1		905	0.1190	0.1199	0.1199	STOP		0.9	**< 1.1**						
TZ67 A2		670	0.1200	0.1650	0.1650	STOP		45.0	**67.2**						
TZ52 A1		100	0.1163	0.1318	0.1317	STOP		15.4	**154.0**						
TZ52 A1 dup		100	0.1162	0.1311	0.1311	STOP		14.9	**149.0**						
								RPD =	3.3%					*RPD =*	*NA*

h6506 : 1221

Analytical Resources, Incorporated
Analytical Chemists and Consultants

TOTAL SUSPENDED (TSS) / TOTAL VOLATILE SUSPENDED SOLID(TVSS) BENCHSHEET

Analyst: SM	Date/Time: 12-2-11 1210	Oven #: 0012	Muffle Furnance:	Balance: 1123230597

Dry at 104 °C (12-24 hrs) then combust at 550 °C for 30 min. Record Weights to 4 places

TSS (mg/L) calculated as:
Final Dry Weight (mg) = (Min Dry Weight – Tare Weight) * 1000
TSS = (Final Dry Weight) / (mL Sample) * 1000
If dry wt < 1 mg / mL sample * 1000 use "<" flag

Loss on Ignition (LOI) = TVSS (mg / L) is calculated as:
LOI (mg / L) = Dry Weight (mg) – [(Minimum Ash Weight – Tare Weight) * 1000]
TVSS (mg / L) = LOI / mL sample * 1,000
If LOI < 1 mg, TVSS = < 1 mg / mL sample * 1000 use "<" flag

LCS (Cellulose from MP Biochemicals) Lott #	6399J	0.0500 Gram to 1000 mL = **50 mg / L TSS**							
Cal Weight ID	CV-02	CV-02	CV-02	CV-02	CV-02	[redacted]		CV-02	CV-02
Date & Time:			12-2-11 1119	12-2-11 1345					
Cal Weight (10.0000g):			10.0000	10.0000					

Sample ID	Dish #	Filtered mL	Tare	Dry Weight 104°C (grams)			Dry Wt mg	TSS	Ash Weight 550°C		LOI - mg	TVSS mg/L
				1	2	3			1	2		
BLANK	P2961	1000	0.1169	0.1176	0.1169							
LCS 586-1	62	1000	0.1171	0.1656	0.1655							
T232 C1	63	910	0.1153	0.1214	0.1213							
" D1	64	940	0.1163	0.1224	0.1224							
" E1	65	940	0.1170	0.1202	0.1201							
↓ F1	66	905	0.1190	0.1199	0.1199							
~~T252 A1~~	~~67~~		~~0.1164~~	~~0.00~~	0							
↓ A1dup	~~68~~		0.1159	0.00	0							
T267 A2	↓ 69	670	0.1200	0.1650	0.1650							
T252 A1	P2971	100	0.1163	0.1318	0.1317							
↓ A1dup	P2982	100	0.1162	0.1311	0.1311							

SSC00127

(1) SM 12-2-11

W
12-6-11

HEXAVALENT CHROMIUM BENCHSHEET

Diphenyl carbazide colorimetric (SW-846 7196A)

Date / Time: 11/29/11 16:05
Analyst: CDE / SM

REAGENTS	ID
Sulfuric Acid:	8072C
Acetone:	
Diphenylcarbazide:	8745C

pH METER
Meter ID: ACCUMET AR60
Electrode ID: 9154015P 18

CALIBRATION

Cr+6 Curve Standard		*ARI ID:*	00116-1		*Date Prepared:*	5/2/2011	
Stock	0.0709	*g K2Cr2O7 to*	500	*mL =*	50.1	*mg/L Cr+6*	
Intermediate	5	*mL Stock to*	50	*mL =*	5.01	*mg/L Cr+6*	

Standard Curve Data *final volume of prepared standards =* **50** *mL*
TIME: *Instrument Used:* SPEC 1

ml Intermediate	Conc (mg/l)	Absorbance @ 540 nm 1	Absorbance @ 540 nm 2	Avg Blk Corr Abs	
0.0	0.00	0.000		0.000	*= blank abs*
0.1	0.01	0.008		0.008	*E 0.01*
0.5	0.05	0.042		0.042	*0.05*
1.0	0.10	0.084		0.084	*0.10*
5.0	0.50	0.414		0.414	*0.51*
10.0	1.00	0.814		0.814	*1.00*

Regression Data
Conc = (abs-intercept)/slope

intercept =	0.0020
slope =	0.8123
r =	1.000
Comment:	Calibration OK!
maxabs =	0.814

Calibration Verification Standard

Source	*ERA # 0504093*			*Stock Conc*	1,000	*mg/L Cr+6*
DQL Int.=	0.10	*ml stock to*	10	*mL pH2 =*	10.00	*mg/L Cr+6*
DQL =	0.40	*ml DQL Int. to*	100	*mL pH2 =*	0.04	*mg/L Cr+6*
CVS =	0.05	*ml stock to*	200	*mL pH2 =*	**0.25**	***mg/L Cr+6***

Prep Check Standard

Dilution	0.50	*ml stock to*	40.00	*mL DI =*	**0.63**	***mg/L Cr+6***

SAMPLE DATA ***Sample pre-dilution assumes 40 mL of sample are pH adjusted then diluted to 50 mL***

mg/L = ((Abs - Blkabs -Bkgabs) - intercept) / slope *NOTE: enter dilution factor as mLfinal/mLsample (e.g. 1mL diluted to 5mL = 5/1 = 2.0)*

SAMPLE ID	Time of Analysis	Sample pre-dilution	Spectrophotometric Data: dilution	Background	ABS @ 540nm	(mg/L)	Corrected (mg/L)	NOTES
ICB		1.000	1		0.000	-0.003	**< 0.01**	*Blk OK*
ICV		1.000	1		0.207	0.252	**0.252**	*100.93%*
Prep Blk		1.250	1		0.000	-0.003	**< 0.01**	*Blk OK*
Prep Chk		1.250	1		0.402	0.615	**0.615**	*98.23%*
DQL		1.250	1		0.025	0.035	**0.035**	
TZ32 A1		1.250	1		0.001	-0.002	**< 0.01**	
TZ32 A1 dup		1.250	1		0.001	-0.002	**< 0.01**	*RPD NA*
TZ32 A1 ms		1.250	1		0.229	0.349	**0.349**	*% Rec= 55.7*
Spike at	0.500	*mL stock to*		40	*mLsample=*	0.627	*mg/L*	*Error, dilute*
TZ32 A1		1.250	1		0.001	-0.002	**< 0.01**	
TZ32 A1 ver		1.000	1		0.016	0.017	**0.017**	*% Rec= 57.7*
desired spike =	0.03	*mg/L by adding*	0.060	*mL intstd to 10 mL adjusted sample*		0.03	*mg/L*	*interference*
CCB		1.000	1		-0.001	-0.004	**< 0.01**	*Blk OK*
CCV		1.000	1		0.207	0.252	**0.252**	*100.93%*

HEXAVALENT CHROMIUM BENCHSHEET

Diphenyl carbazide colorimetric (SW-846 7196A)

Date / Time: 11-29-11 16:05

Analyst: CMC / SM

REAGENTS ID

Sulfuric Acid: 3072C

Acetone:

Diphenylcarbazide: 8345C

pH METER

Meter ID: ACCUMET AR60

Electrode ID: 9154015P 18

CALIBRATION

Cr+6 Curve Standard

		ARI ID: 00116-1			Date Prepared: 5-2-11	
Stock	0.0709	*g K2Cr2O7 to*	500	*mL =*	50.1	*mg/L Cr+6*
Intermediate	5	*mL Stock to*	50	*mL =*	5.01	*mg/L Cr+6*

Standard Curve Data *final volume of prepared standards =* **50** *mL*

TIME: *Instrument Used:*

ml Intermediate	Conc (mg/l)	Absorbance @ 540 nm 1	2	Avg Blk Corr Abs	
0.0	0.00	0.000			= blank abs
0.1	0.01	0.008			
0.5	0.05	0.042			
1.0	0.10	0.084			
5.0	0.50	0.414			
10.0	1.00	0.814			

Regression Data

Conc = (abs-intercept)/slope

intercept =

slope =

r =

Comment:

maxabs =

Calibration Verification Standard

Source	*ERA # 0504093*			*Stock Conc*	1,000	*mg/L Cr+6*
DQL Int.=	0.10	*ml stock to*	10	*mL pH2 =*	10.00	*mg/L Cr+6*
DQL =	0.40	*ml DQL Int. to*	100	*mL pH2 =*	0.04	*mg/L Cr+6*
CVS =	0.05	*ml stock to*	200	*mL pH2 =*	**0.25**	***mg/L Cr+6***

Prep Check Standard

Dilution	0.50	*ml stock to*	40.00	*mL DI =*	**0.63**	***mg/L Cr+6***

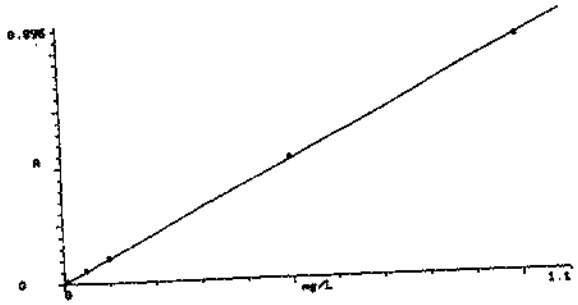
SAMPLE DATA ***Sample pre-dilution assumes 40 mL of sample are pH adjusted then diluted to 50 mL***

mg/L = ((Abs - Blkabs -Bkgabs) - intercept) / slope *NOTE: enter dilution factor as mLfinal/mLsample (e.g 1mL diluted to 5mL = 5/1 = 2.0)*

SAMPLE ID	Time of Analysis	Sample pre-dilution	Spectrophotometric Data: dilution	Background	ABS @ 540nm	(mg/L)	Corrected (mg/L)	NOTES
ICB		1.000	1		0.000			
ICV		1.000	1		0.207			
Prep Blk		1.250	1		0.000			
Prep Chk		1.250	1		0.402			
DQL		1.250	1		0.025			
TZ32x1		1.250	1		0.001			
A' dup		1.250	1		0.001			
A' MS		1.250	1		0.229			0.06 corr
A lvcl		1.250	1		0.016 mabs			0.03 corr Int to 10 ml Sample
CCB		1.250	1		-0.0001			
CCV		1.250	1		0.207			
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					
		1.250	1					

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Standard Curve	17:27 29Nov11
Test Name	CHROME 6
Date Standards Measured	29Nov11
Wavelength	540nm
Ref. Wavelength Correction	Off
Curve Fit	Linear
Number of Standards	6
Units	mg/L
ID# (0=OFF)	Off
Low/High Limits	0.000/1.000
Statistics	Off
Auto Print	On



Curve Fit	Linear
Slope	0.815
Intercept	0.0015
Std Dev	0.003
Corr Coeff	1.000

Conc. mg/L	Abs 540nm
0.000	0.000
0.010	0.008
0.050	0.042
0.100	0.084
0.500	0.414
1.000	0.814

11-29-11
ddy/sm

TEST SETUP
GENESYS 10 v2.021 2G2G048006

Advanced A-%T-C	17:32 29Nov11
Test Name	CHROME 6[Saved]
Measurement Mode	Absorbance
Wavelength	540nm
Ref. Wavelength Correction	Off
Delay Time (min:sec)	0:00
ID# (0=OFF)	1
Low/High Limits	0.000/1.000
Statistics	Off
Auto Print	On

ID#	Abs 540nm
1	0.000

2	0.207
3	0.000
4	0.402
5	0.025
6	0.001
7	0.001
8	0.229
9	0.016
10	-0.001
11	0.207

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Corrective Actions
Inorganic Analyses

Criteria Flagged:		ARI Job No.:	TZ32
Unacceptable Blank:	☐	Date of Event:	11-29-11
Unacceptable Duplicate:	☐	Client ID:	
Unacceptable Spike:	☒	Method/Element:	Cr^{6+}
Unacceptable Reference:	☐	Prep Code:	

Details of Problem/Recommended Corrective Action:
Low spike recovery of ≈56%.

Samples Affected: TZ32 A'

Corrective Action Taken: verification spike was performed on pH adjusted sample and had a recovery of ≈58%. Sample flagged as matrix interference. Data entered as is.

Analyst Initials: CMC **Supervisor:** W

Date: 11-29-11 **Date:** 12-5-11

5049F

Revision 007
6/11/10

TZ21:00309

AXYS | Axys Analytical Services Ltd
2045 Mills Road West
SIDNEY, BRITISH COLUMBIA, CANADA V8L 5X2
TEL 250-655-5800 FAX 250-655-5811
www.axysanalytical.com

AXYS Client No.: 4184

Client Address: Environmental Resources Management (ERM)
1218 3rd Avenue, Suite 1412
Seattle, WA, US, 98101

The AXYS contact for these data is Cynthia Tomey.

DIOXIN/FURAN ANALYSIS

AQUEOUS SAMPLES

PROJECT NAME: 128296.07

Contract: 4184
Data Package Identification: DPWG38865

Analysis WG38741

16 January 2012

www.axysanalytical.com

ENVIRONMENTAL RESOURCE MANAGEMENT (ERM)
AQUEOUS SAMPLES

DIOXIN AND FURAN ANALYSIS
AXYS METHOD: MLA-017
4184: L17223-1 to -4

Project Name: 128296.07

18 January 2012

NARRATIVE

This narrative describes the analysis of four aqueous samples for the determination of polychlorinated dibenzodioxins and dibenzofurans using High Resolution Gas Chromatography / High Resolution Mass Spectrometry (HRGC/HRMS).

SAMPLE RECEIPT AND STORAGE

The samples were received on the 30th of November 2011. Details of sample conditions upon receipt are provided on the Sample Receiving Record form included in this data package. The samples were stored at 4°C prior to extraction and analysis.

SAMPLE PREPARATION AND ANALYSIS

The samples were tested for pH and residual chlorine, as documented on the Sample Pretreatment Records section of this data package.

Extraction and analysis procedures were in general accordance with **USEPA Method 1613B,** as documented in AXYS Method MLA-017: "***Analytical Method for the Determination of Polychlorinated Dibenzodioxins and Dibenzofurans by EPA Method 1613B, EPA Method 8290/8290A, Env. Canada EPS 1/RM/19 or EPA Method DLM02.2***". A method summary (MSU-017) of the AXYS Method MLA-017 with a list of modifications of USEPA Method 1613B is included in this data package.

The samples and QC samples (a procedural blank, a known sample called Ongoing Precision and Recovery (OPR), a Matrix Spike (MS) and Matrix Spike Duplicate (MSD)) were analyzed in a single batch named WG38741. The composition of the batch is shown on the Correlation Table and the Batch list form included in this data package. Ultra pure Seastar water was used as the matrix for the procedural blank and the OPR. The MS and MSD were prepared from a separate aliquot of sample MW-13-112911 (AXYS ID: L17223-4).

Approximately 1-liter of each sample was accurately weighed, spiked with labeled quantification standards, and then filtered. The filtrate was liquid-liquid extracted with dichloromethane and the particulate was Soxhlet extracted using 80:20 toluene/acetone. The aqueous- and particulate-phase extracts were combined and then the combined extract was spiked with cleanup standards. The united extract was cleaned up using automated cleanup procedures that were performed on Fluid Management Systems (FMS), Inc *'Power-Prep™ System'* equipped with standard chromatographic cleanup columns. Details of the column packings are included on the laboratory extraction logs within this data package. Following cleanup, the extract was reduced in volume and spiked with ^{13}C-labeled recovery (internal) standards prior to instrumental analysis. Final extract volume was 20 µL. 1µL was injected for the DB5 column analysis.

CALCULATION

Target analyte concentrations were determined by isotope dilution or internal standard quantification procedures using Waters MassLynx or Micromass OPUSQuan software. Formulae used in the conversion of the raw chromatograms to concentrations are provided in the method summary document.

Sample specific detection limits (SDLs) were determined from the analysis data following the same procedures used to convert target peak responses to concentrations. The SDLs were and used as the

detection qualifier. In cases when the software selects unrepresentative area for detection limit calculations, the data interpretation chemist or the QA chemists made corrections; these corrections are hand noted on the quantification report pages.

Because of instrument variability and laboratory background levels, it is the policy of AXYS to report detection limits no lower than 0.5 pg absolute (0.5 pg/L on a 1L sample). In cases where a detection limit is observed to be less than 0.5 pg absolute, the reporting limit is raised to 0.5 pg absolute.

Homologue totals were obtained by summing the concentration of all detected congeners at each level of chlorination. Toxic Equivalents (TEQ) were calculated using WHO 2005 TEFs. Congener peaks that did not meet the method ion abundance ratio criteria were excluded from the homologue totals and TEQ calculations.

REPORTING CONVENTIONS

The AXYS contract number assigned for internal tracking was 4184. The samples were assigned a unique laboratory identifier of L17223-X, where 'X' is a numeral; all data reports reference both the AXYS ID and the client sample identifier. To assist with locating data a table correlating AXYS ID with the client sample number is included in this data package.

Any extra work required and performed after the initial instrumental analysis of the sample's extract is given an extra "test suffix" code. The single letter code per extra work performed is added to the AXYS sample ID as a suffix, and is combined with any other applicable test suffix codes. The extra work code used to report data in this package includes:

R = repeat analysis using a fresh aliquot of sample

The following data qualifier flags are used in this data package:

J = concentration less than lowest calibration equivalent
K = identifies a target that could not be confirmed by virtue of not satisfying all method required criteria, the reported value may be interpreted as an estimated maximum possible concentration
U = identifies a compound that was not detected

Results are reported in concentration units of picograms per litre (pg/L), dry weight basis. Concentrations and detection limits are provided to three significant figures.

QA/QC NOTES

Samples and QC samples analyzed in an analysis batch were carried intact through the entire analytical process. The sample data were reviewed and evaluated in relation to the batch QC samples.

- Sample analyte concentrations are not blank corrected. Sample data should be evaluated with consideration of the procedural blank results.
- By virtue of the isotope dilution/internal standard quantification procedures, data are recovery corrected for possible losses during extraction and cleanup.
- All linearity, calibration verification, OPR and labeled compound recovery specifications were met with the following exception:

The MS and MSD meet the method acceptance criteria for those analytes for which the contribution from the parent sample is insignificant relative to the spiked amount. Where the parent sample contribution

exceeds the spiked amount, they can appear to have high recoveries and the RPDs (which is based on the percent recovery, not the measured concentration) can appear to be large.

ANALYTICAL DISCUSSION

Initial analysis of the samples was conducted in batch WG38427; however, analysis results did not meet all method specifications. A repeat analysis of theses samples was conducted using a fresh aliquot of sample. The repeat analysis data met method specifications and are reported, indicated by the test suffix 'R' on the AXYS ID.

DATA PACKAGE

This data package has been assigned a unique identifier, DPWG38865, shown on the front page of this data package. Included in the data package following the narrative is the following documentations:

- Method summary
- Sample Correlation Table
- Sample Receiving Documentation
- Sample pretreatment records
- Laboratory extraction logs for each sample
- Sample data reports
- QC sample data reports
- Instrumental QC data reports (organized by analysis start date)
- Sample raw data
- QC sample raw data
- Instrumental QC raw data (organized by analysis start date)
- Accreditation Scope

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, except for the conditions detailed above. In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate. The following signature, on behalf of AXYS Analytical Services Ltd, authorizes the release of the data contained in this data package.

Shelley Facchin

Signed: Shelley Facchin, QC Chemist

18-Jan-2012

Date Signed

AXYS Analytical Services Ltd.

Summary of AXYS Method MLA-017 Rev 20 Ver 02:

ANALYTICAL METHOD FOR THE DETERMINATION OF POLYCHLORINATED DIBENZODIOXINS AND DIBENZOFURANS

BY

EPA METHOD 1613B[1], EPA METHOD 8290[2]/8290A[3], ENV. CANADA EPS 1/RM/19[4] OR EPA METHOD DLM02.2[5]

AXYS Method MLA-017 describes the analysis of polychlorinated (tetra-octa) dibenzo-dioxins and dibenzofurans in solids (sediment, soil, biosolid, pulp), tissues (including blood, serum, plasma and milk), aqueous samples, XAD-2 columns, air samples, particulate filters and solvent extracts.

Target Analytes

Dioxins (PCDD)	Furans (PCDF)
2,3,7,8 Tetrachlorodibenzodioxin (TCDD)	2,3,7,8 Tetrachlorodibenzofuran (TCDF)
Total TCDD	Total TCDF
1,2,3,7,8 Pentachlorodibenzodioxin (PeCDD)	1,2,3,7,8 Pentachlorodibenzofuran (PeCDF)
Total PeCDD	2,3,4,7,8 PeCDF
	Total PeCDF
1,2,3,4,7,8 Hexachlorodibenzodioxin (HxCDD)	1,2,3,4,7,8 Hexachlorodibenzofuran (HxCDF)
1,2,3,6,7,8 HxCDD	1,2,3,6,7,8 HxCDF
1,2,3,7,8,9 HxCDD	1,2,3,7,8,9 HxCDF
Total HxCDD	2,3,4,6,7,8 HxCDF
	Total HxCDF
1,2,3,4,6,7,8 Heptachlorodibenzodioxin (HpCDD)	1,2,3,4,6,7,8 Heptachlorodibenzofuran (HpCDF)
Total HpCDD	1,2,3,4,7,8,9 HpCDF
	Total HpCDF
Octachlorodibenzodioxin (OCDD)	Octachlorodibenzofuran (OCDF)

EXTRACTION

All samples are spiked with ^{13}C-labelled surrogate standards prior to extraction and extracted as per the table below. Optional extraction procedures are shown within parentheses.

Sample Extraction

Matrix	Extraction
Aqueous	Liquid-liquid extraction with dichloromethane. (If visible particulates are present the sample is filtered prior to extraction and the particulate fraction separately extracted by Soxhlet extraction or Dean-Stark Soxhlet extraction. The two extracts are then combined.)
Solid (sediment, soil, sludge, particles on filter paper)	Soxhlet extraction with toluene:acetone 80:20. (optional: Dean-Stark Soxhlet extraction with toluene)
Solid (pulp, black liquor)	Soxhlet extraction with toluene:acetone 80:20.
Solid (ash, slag)	Sonication with hydrochloric acid and filtering. Liquid-liquid extraction of filtrate using dichloromethane, Soxhlet extraction of particulate using toluene:acetone 80:20. The two extracts are combined.
Tissue	Soxhlet extraction with dichloromethane:hexane 1:1 (optional: Base digestion and liquid-liquid extraction with hexane)
Whole blood/serum	Liquid-liquid extraction with ethanol:hexane:saturated ammonium sulphate.
Milk	Liquid-liquid extraction with acetone and hexane.
XAD-2 column and filter	XAD-2 adsorbent is dried and extracted by Soxhlet (with toluene:acetone 80:20) or Dean-Stark Soxhlet (with toluene) extraction. The filter is extracted by Dean-Stark Soxhlet extraction using toluene.
Ambient air (PUF and filter)	The PUF and filter(s) are Soxhlet extracted together using toluene:acetone 80:20.
Stationary Source Air Samples (Stack Gas sample trains)	The filter is sonicated with dilute hydrochloride acid and filtered. Equipment rinsates are collected, filtered, dried and/or extracted depending on sampling conditions.

COLUMN CHROMATOGRAPHY CLEANUP

Extracts are routinely cleaned up manually, by an automated fluid management (FMS) system, or by using a combined ("hybrid") manual and FMS cleanup procedure according to the following table:

Water Soil Sediment XAD-2 adsorbent Air samples Sludge High organic soil	1) Manual: (M base/acid wash →) M DX $AgNO_3$ 20g 44% → (M DX Florisil →) M Copper → M Alumina/carbon/Celite combination column 2) Hybrid: (M base/acid wash →) M DX $AgNO_3$ 20g 44% → F Alumina → F Carbon/Celite 3) Full FMS: (M base/acid wash →) F Jumbo Layered Silica Columns → F Small Layered Silica Columns → F Alumina → F Carbon/Celite
Tissue Blood/serum/ plasma Milk	1) Manual: (M Biobead →) M DX 20g 44% → M DX Florisil → (M Copper →) M Alumina/carbon/Celite combination column 2) Full FMS: (M Biobead →) F Jumbo Acid Silica Column → F Small Layered Silica Columns → F Alumina → F Carbon/Celite

Notes:

Options listed as 1) in the table above are the current default options. Items in brackets are optional procedures that may be used if needed or if required by Project Managers.

M = Manual column or cleanup step

F = FMS column

An optional Biobead clean-up may be carried out for biosolid sample extracts.

AXYS Analytical Services Ltd.

INSTRUMENTAL ANALYSIS

Instrumental analysis is performed on a DB-5 capillary chromatography column coupled to a high-resolution mass spectrometer (HRMS). The HRMS is operated at a static (10000) mass resolution in the voltage selected ion-recording mode (V-SIR) using selected PFK ions as a reference for mass lock. Two masses from the molecular ion cluster are used to monitor each of the target analytes and ^{13}C-labelled surrogate standards. A second column DB-225 is used for confirmation of 2,3,7,8-TCDF identification. Five additional ions are monitored to check for interference from chlorinated diphenylethers.

Upon client request, the concentrations of PCDD/F may be determined using bracketing calibration procedures and a smaller suite of surrogate standards.

Analyte Ions Monitored, Surrogates Used and RRF Determination for Dioxins/Furans

Analytes	Quantification Ion (m/z)	Confirmation Ion (m/z)	Surrogate	RRF Determined From
2,3,7,8-TCDD	320	322	$^{13}C_{12}$-2,3,7,8-TCDD	2,3,7,8-TCDD
1,3,6,8-TCDD *	320	322	$^{13}C_{12}$-2,3,7,8-TCDD	2,3,7,8-TCDD
1,3,7,9-TCDD *	320	322	$^{13}C_{12}$-2,3,7,8-TCDD	2,3,7,8-TCDD
1,2,3,7,8-PeCDD	354	356	$^{13}C_{12}$-1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDD
1,2,3,4,7,8-HxCDD	390	392	$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	1,2,3,4,7,8-HxCDD
1,2,3,6,7,8-HxCDD	390	392	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDD
1,2,3,7,8,9-HxCDD	390	392	Mean of $^{13}C_{12}$-1,2,3,6,7,8/1,2,3,4,7,8-HxCDD	1,2,3,7,8,9-HxCDD
1,2,3,4,6,7,8-HpCDD	424	426	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDD
OCDD	458	460	$^{13}C_{12}$-OCDD	OCDD
2,3,7,8-TCDF	304	306	$^{13}C_{12}$-2,3,7,8 -TCDF	2,3,7,8-TCDF
1,2,7,8-TCDF *	304	306	$^{13}C_{12}$-2,3,7,8 -TCDF	2,3,7,8-TCDF
1,2,3,7,8-PeCDF	340	342	$^{13}C_{12}$-1,2,3,7,8-PeCDF	1,2,3,7,8-PeCDF
2,3,4,7,8-PeCDF	340	342	$^{13}C_{12}$-2,3,4,7,8-PeCDF	2,3,4,7,8-PeCDF
1,2,3,4,7,8-HxCDF	374	376	$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-HxCDF	374	376	$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	1,2,3,6,7,8-HxCDF
2,3,4,6,7,8-HxCDF	374	376	$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF
1,2,3,7,8,9-HxCDF	374	376	$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	1,2,3,7,8,9-HxCDF
1,2,3,4,6,7,8-HpCDF	408	410	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8,9-HpCDF	408	410	$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	1,2,3,4,7,8,9-HpCDF
OCDF	442	444	$^{13}C_{12}$-OCDD	OCDF
Cleanup Standard				
$^{37}Cl_4$-2,3,7,8-TCDD	328	-	$^{13}C_{12}$-1,2,3,4-TCDD	
Labelled Surrogates	**Quantification Ion (m/z)**	**Confirmation Ion (m/z)**	**Recovery Calculated Using**	
$^{13}C_{12}$-2,3,7,8-TCDD	332	334	$^{13}C_{12}$-1,2,3,4-TCDD	
$^{13}C_{12}$-1,2,3,7,8-PeCDD	366	368	$^{13}C_{12}$-1,2,3,4-TCDD	
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	402	404	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	402	404	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	436	438	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	
$^{13}C_{12}$-OCDD	470	472	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	
$^{13}C_{12}$-2,3,7,8 -TCDF	316	318	$^{13}C_{12}$-1,2,3,4-TCDD	

$^{13}C_{12}$-1,2,3,7,8-PeCDF	352	354	$^{13}C_{12}$-1,2,3,4-TCDD
$^{13}C_{12}$-2,3,4,7,8-PeCDF	352	354	$^{13}C_{12}$-1,2,3,4-TCDD
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	384	386	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	384	386	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	384	386	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	384	386	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	418	420	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	418	420	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD
Recovery Stds			
$^{13}C_{12}$-1,2,3,4-TCDD	332	334	*Optional isomers which may be reported upon client request.
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	402	404	

CALIBRATION

Initial calibration is performed using a five point calibration series of solutions that encompass the working concentration range. Initial calibration solutions contain the suite of labelled surrogate and recovery standards and authentic target PCDDs/PCDFs. Calibration is verified at least once every 12 hours by analysis of a mid-level calibration solution. Calibration procedures use the mean RRFs determined from the initial calibration to calculate analyte concentrations.

Alternately clients may request initial calibration be performed using a six point calibration series of solutions if lower detection limits are required.

Concentration of PCDD/PCDF Calibration Solutions

	Concentration (ng/mL)						Authentic Standard Amount added to sample (pg)
	CS0.2	CS1	CS2	CS3	CS4	CS5	
Native Compound							
2,3,7,8-TCDD	0.1	0.5	2	10	40	200	200
2,3,7,8-TCDF	0.1	0.5	2	10	40	200	200
1,2,3,7,8-PeCDD	0.5	2.5	10	50	200	1000	1000
1,2,3,7,8-PeCDF	0.5	2.5	10	50	200	1000	1000
2,3,4,7,8-PeCDF	0.5	2.5	10	50	200	1000	1000
1,2,3,4,7,8-HxCDD	0.5	2.5	10	50	200	1000	1000
1,2,3,6,7,8-HxCDD	0.5	2.5	10	50	200	1000	1000
1,2,3,7,8,9-HXCDD	0.5	2.5	10	50	200	1000	1000
1,2,3,4,7,8-HxCDF	0.5	2.5	10	50	200	1000	1000
1,2,3,6,7,8-HxCDF	0.5	2.5	10	50	200	1000	1000
1,2,3,7,8,9-HxCDF	0.5	2.5	10	50	200	1000	1000
2,3,4,6,7,8-HxCDF	0.5	2.5	10	50	200	1000	1000
1,2,3,4,6,7,8-HpCDD	0.5	2.5	10	50	200	1000	1000
1,2,3,4,6,7,8-HpCDF	0.5	2.5	10	50	200	1000	1000
1,2,3,4,7,8,9-HpCDF	0.5	2.5	10	50	200	1000	1000
OCDD	1.0	5.0	20	100	400	2000	2000
OCDF	1.0	5.0	20	100	400	2000	2000

Surrogate Standards							Surrogate Standard Amount added to sample (pg)
$^{13}C_{12}$-2,3,7,8-TCDD	100	100	100	100	100	100	2000
$^{13}C_{12}$-2,3,7,8-TCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	100	100	100	100	100	2000
$^{13}C_{12}$-OCDD	200	200	200	200	200	200	4000
Cleanup Standard							
$^{37}Cl_4$-2,3,7,8-TCDD	0.1	0.5	2	10	40	200	200
Recovery Standard							
$^{13}C_{12}$-1,2,3,4-TCDD	100	100	100	100	100	100	2000
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	100	100	100	100	100	100	2000

ANALYTE IDENTIFICATION

A chromatographic peak is identified as a target compound if the following criteria are met for the quantification and confirmation ions (where confirmation ions are available):

1. Peak responses must be at least 2.5 times the background noise level.
2. All peaks are acquired in the appropriate acquisition windows, when compared to the window standard.
3. Peak centroids for the quantification and confirmation ions must coincide within two seconds.
4. The relative ion abundance ratios must be within 15% of the expected ratio.

QUANTIFICATION

The response for any component is taken as the sum of the integrated peak areas for the two characteristic masses for that compound. Quantification is by the isotope dilution method. Target concentrations are determined with respect to labelled surrogate standards. Mean relative response factors (RRF), determined from the multi-level initial calibration series are used to convert raw peak areas in sample chromatograms to final concentrations as follows:

$$\text{Concentration of Target} = \left(\frac{\text{area of Target}}{\text{area of Qt Std}}\right) \times \left(\frac{\text{weight of Qt Std}}{\text{RRF}}\right) \times \left(\frac{1}{\text{weight of sample}}\right)$$

$$\textit{where} \quad \text{RRF} = \left(\frac{\text{area of Target}}{\text{area of Qt Std}}\right) \times \left(\frac{\text{weight of Qt Std}}{\text{weight of Target}}\right)$$

and the Qt Std is either the surrogate or the internal standard

Those compounds quantified against a labelled standard added at the beginning of the analysis procedure are recovery corrected by the method of quantification. Surrogate recoveries are determined similarly against the recovery (internal) standard and are used as general indicators of overall analytical quality.

REPORTING LIMITS

Concentrations and detection limits for the 2,3,7,8-polychlorinated dioxins and furans (tetra-octa) are reported. Typical reporting units for all data are pg/g, pg/L or pg/sample. Concentrations for solids are reported on a dry weight basis. Concentrations in tissues (including blood and milk) are reported on a wet weight basis and/or on a lipid weight basis when requested. Concentrations in aqueous samples are reported on a volume basis. Concentrations in XAD-2 resin, filters and stack gas samples are reported on a per sample basis or a per volume basis. Concentrations in particulate filters are reported on a per sample basis.

The following are commonly requested reporting limits:

Sample Specific Detection Limit or Sample Detection Limit (SDL) – determined individually for every sample analysis run by converting the area equivalent of 3.0 times (2.5 times for EPA 1600 series methods) the estimated chromatographic noise height to a concentration in the same manner that target peak responses are converted to final concentrations. The SDL accounts for any effect of matrix on the detection system and for recovery achieved through the analytical work-up. Equivalent term(s): Estimated Detection Limit (EDL) from EPA method 8290.

Method Detection Limit (MDL) - determined as specified by EPA Fed. Reg. 40 CFR Part 136 Appendix B (no iteration option). The 99% confidence level MDL is determined based on analysis of a minimum of 7 replicate matrix spikes fortified at 1-10 times the estimated detection limit. MDL is determined as required based on accreditation, contract and workload requirements.

Lower Method Calibration Limit (LMCL) - determined by prorating the concentration of the lowest calibration limit for sample size and extract volume. The following equation is used. ((lowest level cal conc.) x (extract volume))/sample size. Typical extract volume for PCDDs/PCDFs is 20 µL.

For the analysis of PCDDs/PCDFs AXYS standard is to report sample concentrations using the SDL with a minimum reporting limit of 0.5 pg absolute.

AXYS Analytical Services Ltd.

QUALITY ASSURANCE/QUALITY CONTROL

All samples are analyzed in batches with the following composition:

- Batch Size - Each batch consists of up to twenty test samples and additional QC samples.
- Blanks - One procedural blank is analyzed for each batch. The procedural blank is prepared by spiking an aliquot of the surrogate standard solution into a clean matrix.
- On-going Precision and Recovery (OPR) Samples – On-going Precision and Recovery (OPR) is demonstrated by the analysis of a spiked reference matrix (SPM) analyzed with each batch. The reference sample to be analyzed is assigned to the analyst when the batch is assigned. The OPR sample is prepared by spiking an aliquot of the authentic spiking solution into an accurately weighed in-house reference matrix (known to contain low background levels of target analytes). The matrix is spiked with an aliquot of surrogate standard solution and, after an equilibration time of at least 30 minutes is extracted.
- Duplicates - Sample duplicates are analyzed (provided sufficient sample is available) for batches with 7-20 test samples, or when specified by the contract. For some matrices (XAD columns, filters, air samples) only field duplicates (if available) can be analyzed.
- Reference Samples – Certified reference materials are commercially available and are used to validate and periodically check methods. Additionally reference samples may be analyzed with a batch at the client's request.

The batch composition may vary according to batch or quality control requirements specified by a client. Each batch is carried through the complete analytical process as a unit. For sample data to be reportable the batch QC data must meet the acceptance criteria.

QC Specification Table: Authentic and Surrogate Standard Recoveries, CAL/VER, IPR, OPR and Samples

	Test Conc. (ng/mL)	IPR		OPR (%)	I-CAL (%)	CAL/VER (%)	Labelled Compound % Rec. in Sample		
		SD (%) *	$\bar{X}$ (%)				Warning Limits	Control Limits	EPS 1/RM/19 Limits
Native Compound									
2,3,7,8-TCDD	10	28	83-129	70-130	20	78-125	-	-	-
2,3,7,8-TCDF	10	20	87-137	75-130	20	84-120	-	-	-
1,2,3,7,8-PeCDD	50	15	76-132	70-130	20	78-125	-	-	-
1,2,3,7,8-PeCDF	50	15	86-124	80-130	20	82-120	-	-	-
2,3,4,7,8-PeCDF	50	17.2	72-150	70-130	20	82-122	-	-	-
1,2,3,4,7,8-HxCDD	50	18.8	78-152	70-130	20	78-125	-	-	-
1,2,3,6,7,8-HxCDD	50	15.4	84-124	76-130	20	78-125	-	-	-
1,2,3,7,8,9-HXCDD	50	22.2	74-142	70-130	35	82-122	-	-	-
1,2,3,4,7,8-HxCDF	50	17.4	82-118	72-130	20	90-112	-	-	-
1,2,3,6,7,8-HxCDF	50	13.4	92-120	84-130	20	88-114	-	-	-
1,2,3,7,8,9-HxCDF	50	12.8	84-122	78-130	20	90-112	-	-	-
2,3,4,6,7,8-HxCDF	50	14.8	74-148	70-130	20	88-114	-	-	-
1,2,3,4,6,7,8-HpCDD	50	15.4	76-130	70-130	20	86-116	-	-	-
1,2,3,4,6,7,8-HpCDF	50	12.6	90-112	82-122	20	90-110	-	-	-
1,2,3,4,7,8,9-HpCDF	50	16.2	86-126	78-130	20	86-116	-	-	-
OCDD	100	19	89-127	78-130	20	79-125	-	-	-

OCDF	100	27	74-146	70-130	35	75-125	-	-	-
Surrogate Standards									
$^{13}C_{12}$-2,3,7,8-TCDD	100	37	28-134	25-130	35	82-121	40-120	25-130	40-130
$^{13}C_{12}$-2,3,7,8-TCDF	100	35	31-113	25-130	35	71-130	40-120	24-130	40-130
$^{13}C_{12}$-1,2,3,7,8-PeCDD	100	39	27-184	25-150	35	70-130	40-120	25-130	30-130
$^{13}C_{12}$-1,2,3,7,8-PeCDF	100	34	27-156	25-130	35	76-130	40-120	24-130	30-130
$^{13}C_{12}$-2,3,4,7,8-PeCDF	100	38	16-279	25-130	35	77-130	40-120	21-130	
$^{13}C_{12}$-1,2,3,4,7,8-HxCDD	100	41	29-147	25-130	35	85-117	40-120	32-130	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	100	38	34-122	25-130	35	85-118	40-120	28-130	30-130
$^{13}C_{12}$-1,2,3,4,7,8-HxCDF	100	43	27-152	25-130	35	76-130	40-120	26-130	30-130
$^{13}C_{12}$-1,2,3,6,7,8-HxCDF	100	35	30-122	25-130	35	70-130	40-120	26-123	
$^{13}C_{12}$-1,2,3,7,8,9-HxCDF	100	40	24-157	25-130	35	74-130	40-120	29-130	
$^{13}C_{12}$-2,3,4,6,7,8-HxCDF	100	37	29-136	25-130	35	73-130	40-120	28-130	
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	100	35	34-129	26-130	35	72-130	40-120	23-130	30-130
$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	100	41	32-110	25-130	35	78-129	40-120	28-130	30-130
$^{13}C_{12}$-1,2,3,4,7,8,9-HpCDF	100	40	28-141	25-130	35	77-129	40-120	26-130	
$^{13}C_{12}$-OCDD	200	47.5	20.5-138	25-130	35	70-130	25-120	17-130	30-130
Cleanup Standard									
$^{37}Cl_4$-2,3,7,8-TCDD	10	36	39-154	31-130	35	79-127	40-120	35-130	

* For comparability with EPA 1613B the precision specification for IPR is stated as %SD (=standard deviation relative to the fortification level,)

QC Specification Table: QC Samples, Instrumental Analysis, and Analyte Quantification

QC Parameter	Specification
Analysis Duplicate	Must agree to within ±20% of the mean (applicable to concentrations >10 times the DL)[1]
Procedural Blank	**Blood/serum/plasma:** TCDD/F <0.2 pg/sample, PeCDD/F <0.5 pg/sample, HxCDD/F and HpCDD/F <1.0 pg/ sample, OCDD/F<5 pg/sample. **Other matrices:** TCDD/F <0.5 pg/sample, PeCDD/F, HxCDD/F, HpCDD/F <1.0 pg/sample, OCDD/F <5 pg/sample. Higher levels acceptable where all sample concentrations are > 10X the blank concentrations.
Detection Limit	SDL Requirements **Blood/serum/plasma:** Tetra-penta-CDD/F 0.2 pg/sample Hexa-octa-CDD/F 0.5 pg/sample **Other matrices**: 0.5 pg/sample
Instrument Carry over and Background: **Toluene Blank** **Samples**	A. 1st toluene blank following Cal Ver must have <0.6 pg TCDD and <25 pg OCDD[2]. B. 2nd toluene blank following Cal Ver must have <0.2 pg TCDD/F, <0.8 pg Pe-HpCDD/F, and <5.0 pg OCDD[2]. Blood/serum/plasma extract analysis: As many toluene blanks as necessary are run to achieve an instrument blank level of <0.1 pg TCDD/F, <0.3 pg PeCDD/F, <0.5 pg HxCDD/F, <0.5 pg HpCDD/F and <3.5 pg OCDD. <10% contribution from preceding sample (based on observed instrument carryover rate).
Analyte/Surrogate Ratios	Response must be within the calibrated range of the instrument. Data may be taken from more than one chromatogram to get the responses in the calibrated range.

Ion Ratios	Must be within ±15% of theoretical. For 1613B applications only an alternate acceptance criteria of within ±10% of the ratio in the midpoint calibration (CS3) or calibration verification (Cal Ver), whichever is most recent., may be applied.
Sensitivity	S:N ≥10:1 for all compounds for 0.1 pg/µL (CS-0.2) plus, for blood/serum/plasma, S:N ≥3:1 for 0.025 pg/µL 2,3,7,8-TCDD.

[1] Duplicate criterion is a guideline; final assessment depends upon sample characteristics, overall batch QC and on-going lab performance.

[2] Instrument background specifications are calculated from spiking labelled standard into the toluene blank and expressed as pg in a 20 µL extract.

REFERENCES:

1. United States Environmental Protection Agency *Method 1613, Revision B. Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS.*
2. USEPA *Method 8290, Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS)* Revision 0, September 1994.
3. USEPA *Method 8290A, Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS)* Revision 1, January 1998.
4. Environment Canada: *Reference Method for the Determination of Polychlorinated Dibenzo-para-dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) in Pulp and Paper Mill Effluents,* Report EPS 1/RM/19 Feb 1992.
5. USEPA Method DLM02.1, *Statement of Work (SOW) for Analysis of Chlorinated Dibenzo-p-dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs)*, January 2009.

APPENDIX A

SUMMARY OF MODIFICATIONS TO EPA METHOD 1613B

The following sections of EPA Method 1613B have been modified as described below.

Section 2.1.2

Non-aqueous liquid from multiphase samples is combined with the solid phase and extracted by Dean Stark soxhlet.

Section 7.2.1

Anhydrous sodium sulphate (Na_2SO_4) is baked overnight prior to use. There is no solvent rinse with dichloromethane.

Section 7.10

The concentration of the labelled compound spiking solution is 100 ng/mL (except for OCDD which is 200 ng/mL) and the sample spiking volume is 20 µL. The resulting concentrations in the final extracts are as specified in the method.

Section 7.11

The concentration of the clean-up standard spiking solution is 10 ng/mL and the sample spiking volume is 20 µL. The resulting concentration in the final extracts are as specified in the method.

Sections 7.13, 14.0, 15.0

An additional lower level calibration solution, 0.2 times the concentration of CS1, is prepared and may be included in the initial calibration series so that initial calibration is based on a six-point series.

Section 7.14

The concentration of the PAR spiking solutions is 0.2/1.0/2.0 ng/mL for tetra/penta, hexa, hepta, hexa/octas respectively and the spiking volume is 1 mL. The resulting final concentration in the extracts are as specified in the method.

Section 9.3.3

Table 7 (EPA 1613B) specifications for the percent recovery of surrogate standards in samples that are higher than 130% have been lowered to 130%, as presented in table ”QC Specification Table: Authentic and Surrogate Standard Recoveries, CAL/VER, IPR, OPR and Samples” of this document.

Section 11.5

Aqueous samples containing >1% visible solids are prepared and extracted using the same procedure as samples containing $\leq$1% visible solids. This involves extracting the solids by soxhlet and the filtrate by separatory funnel extraction and combining the extract from the two phases.

Section 12.0

Samples with sufficiently low moisture content are mixed with Na_2SO_4 and extracted using regular soxhlet apparatus in 80:20 toluene:acetone.

Section 12.3.1 – 12.3.5

Silica or quartz sand is not pre-extracted in the Dean Stark apparatus. Silica is baked the lab. Quartz sand is proofed prior to use. Sand is mixed with the sample in a beaker and then loaded into the soxhlet thimble.

Section 12.3.9.1.1

Sample extracts are reduced to approximately 1mL after extraction, not 5 mL.

Section 12.4

The equilibration time for the sodium sulphate drying step is sufficient to produce a dry, free-flowing powder (minimum 30 minutes). This may be less than the 12-hour minimum specified in EPA 1613B.

Section 12.5.1

Samples are spiked with cleanup standard right after extraction and before reduction; not spiked into the separatory funnels containing the extracts prior to the acid/base wash.

Section 12.5.3

Ultra-pure water is used to rinse the extract between base and acid washes, not NaCl solution.

Section 12.6.1.1

Rotary evaporator baths are maintained at 35°C. Mimic proofs are collected instead of collecting proofs each day and archiving.

Section 12.7.3

Water baths are not used with the nitrogen blowdown apparatus.

Section 12.7.4

Solvent exchange is dependent on the type of solvent present: if toluene is present the extract is reduced to 50 µL and topped up to 1 mL with hexane; if dichloromethane is present the extract is reduced to 300 µL and topped up to 1 mL with hexane.

Section 12.7.7

Sample extracts are concentrated in a microvial using nitrogen to near dryness before adding the recovery standard.

Section 13.0

Extracts may be cleaned up on silica, alumina and carbon chromatographic columns using a Fluid Management System (FMS) automated cleanup system.

Section 13.7

Gravimetric lipid analysis is carried out on two subsamples of the extract, representing 2/15ths of the extract. A correction factor is applied to the surrogate recovery standards.

Sections 14.0, 15.0, 16.0, Table 8, Table 9

M/Z channels 354/356 and 366/368 are used to confirm and quantify the native and surrogate penta-substituted dioxins, respectively; this change from the method's specification is made in the instrument method in order to avoid a persistent interference in the 356/358 and 368/370 M/Z channels. The theoretical ratio for the P5CDD M/M+2 ions is 0.61; therefore, the acceptance range is 0.52 - 0.70.

Section 14.2

Toluene instead of nonane is used to bring extracts back to volume.

Section 15.3.5

Table 6 (EPA 1613B) specifications for CAL-VER solution concentrations outside the 70-130% range have been revised to be 70-130%, as presented in table "QC Specification Table: Authentic and Surrogate Standard Recoveries, CAL/VER, IPR, OPR and Samples" of this document.

Section 15.5.3

Table 6 (EPA 1613B) specifications for OPR concentrations outside the 70-130% range have been revised to be 70-130%, as presented in table "QC Specification Table: Authentic and Surrogate Standard Recoveries, CAL/VER, IPR, OPR and Samples" of this document.

Section 17.0

Conci - the concentrations of target analytes, and the labelled compound concentrations and recoveries, are calculated using the equations below. These procedures are equivalent to those described in the method but are more direct.

$$Conc_i = \frac{A_i}{A_{si}} \times \frac{M_{si}}{RRF_{i,si}} \times \frac{1}{M_x}$$

where Ai = summed areas of the primary and secondary m/z's for the analyte peak of interest (compound i)

Asi = summed areas of the primary and secondary m/z's for the labelled surrogate peak used to quantify i)

Mx = mass of sample taken for analysis

Msi = mass of labelled surrogate (compound si) added to sample as calculated by the concentration of standard spiked (pg/mL) multiplied by the volume spiked (mL)

$RRFi, si$ = mean relative response factor of i to si from the five-point calibration range and defined individually as:

$$\frac{A_i}{A_{si}} \times \frac{M_{si}}{M_i}$$

Calculation of Surrogate Standard Concentrations and Percent Recoveries:
Concentrations of surrogate standards are calculated using the following equation:

$$Conc_{si} = \frac{A_{si}}{A_{rs}} \times \frac{M_{rs}}{RRF_{si,rs}}$$

and, the percent recoveries of the surrogate standards are calculated using the following equation:

$$\%Recovery = \frac{A_{si}}{A_{rs}} \times \frac{M_{rs}}{RRF_{si,rs}} \times \frac{1}{M_{si}} \times 100$$

where A_{rs} and A_{si} are the summed peak areas (from the primary and secondary m/z channels) of recovery standard and labelled surrogate added to the sample;
M_{rs} and M_{si} are the masses of recovery standard and labelled surrogate added to the sample, and;
$RRF_{si,rs}$ is the mean relative response factor of the labelled surrogate to the recovery standard as determined by the five-point calibration range and defined individually as:

$$\frac{A_{si}}{A_{rs}} \; x \; \frac{M_{rs}}{M_{si}}$$

Section 17.5

Extracts may be diluted with solvent and re-analyzed by GC/MS to bring the instrumental response to within the linear range of the instrument. Typically, no additional recovery (internal) standard is added. For very high-level samples where a smaller sample aliquot may not be representative, extracts may be diluted and respiked with labelled quantification standards and re-analyzed by GC/MS to bring the instrumental response analytes within range. Final results are recovery corrected using the mean recovery of labelled quantification standards.

APPENDIX B

SUMMARY OF MODIFICATIONS TO EPA METHOD 8290

The following modifications apply to EPA Method 8290.

1. A sample hold time of 30 days from time of sample collection is recommended. Extract hold time, stored at <-10°C, is 45 days.
2. Solid samples are dried with sodium sulphate and Soxhlet extracted using 80:20 toluene:acetone. Upon client request, optional extraction using soxhlet Dean-Stark and toluene is available.
3. The same surrogate, recovery, authentic spike and calibration solutions that are used for EPA method 1613B (described in table “Concentration of PCDD/PCDF Calibration Solutions” of this document) are used to perform EPA Method 8290.
4. The quantification is performed according to EPA Method 1613B, using an expanded suite of surrogate standards as summarized in Table “Analyte Ions Monitored, Surrogates Used and RRF Determination for Dioxins/Furans” of this document. On client request ,quantification may be performed using the smaller suite of surrogate standards described in EPA 8290 (refer to table “Analyte Ions Monitored, Surrogates Used and RRF Determination for Dioxins/Furans by EPA 8290” below).
5. Sample Specific Estimated Detection Limits (EDL) are reported as Sample Specific Detection Limits (SDL), calculated as described in Section “Reporting Limits” of this document.
6. Modifications made to EPA 1613B, as described in Appendix A of this document, are applicable.
7. The QC specifications in the table “QC Criteria for PCDD/F Analysis by EPA 8290” (see below) of this document are used for evaluating data.

QC Criteria for PCDD/F Analysis by EPA 8290

Initial Calibration	Native analytes: ±20% RSD for mean RRF Labelled Compounds: ±30% RSD for mean RRF
CAL-VER	Native Analytes: RRF must be ±20% of mean RRF from ICAL Labelled Compounds: RRF must be ±30% of mean RRF from ICAL
Sample Surrogate Recovery	40-135% (lower or higher recoveries for the procedural blank may be accepted based on analyst professional judgement.)
Spiked Reference Sample	In house specification: 70%-130% of the expected value for all targets except 1,2,3,7,8,9-HxCDF, which is 60%-140%. Professional judgement may be applied in consideration of overall QC data, including MS/MSD to determine acceptability.
Analysis Duplicate	Must agree to within 25% RPD
MS/MSD	Must agree to within 20% RPD

Analyte Ions Monitored, Surrogates Used and RRF Determination for Dioxins/Furans by EPA 8290

Analytes	Quantification Ion (m/z)	Confirmation Ion (m/z)	Surrogate	RRF Determined From
2,3,7,8-TCDD	320	322	$^{13}C_{12}$-2,3,7,8-TCDD	2,3,7,8-TCDD
1,2,3,7,8-PeCDD	354	356	$^{13}C_{12}$-1,2,3,7,8-PeCDD	1,2,3,7,8-PeCDD
1,2,3,4,7,8-HxCDD	390	392	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1,2,3,4,7,8-HxCDD
1,2,3,6,7,8-HxCDD	390	392	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1,2,3,6,7,8-HxCDD
1,2,3,7,8,9-HxCDD	390	392	$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD
1,2,3,4,6,7,8-HpCDD	424	426	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDD	1,2,3,4,6,7,8-HpCDD
OCDD	458	460	$^{13}C_{12}$-OCDD	OCDD
2,3,7,8-TCDF	304	306	$^{13}C_{12}$-2,3,7,8-TCDF	2,3,7,8-TCDF
1,2,3,7,8-PeCDF	340	342	$^{13}C_{12}$-1,2,3,7,8-PeCDF	1,2,3,7,8-PeCDF
2,3,4,7,8-PeCDF	340	342	$^{13}C_{12}$-1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF
1,2,3,4,7,8-HxCDF	374	376	$^{13}C_{12}$-1,2,3,4,7,8-HxDCF	1,2,3,4,7,8-HxCDF
1,2,3,6,7,8-HxCDF	374	376	$^{13}C_{12}$-1,2,3,4,7,8-HxDCF	1,2,3,6,7,8-HxCDF
2,3,4,6,7,8-HxCDF	374	376	$^{13}C_{12}$-1,2,3,4,7,8-HxDCF	2,3,4,6,7,8-HxCDF
1,2,3,7,8,9-HxCDF	374	376	$^{13}C_{12}$-1,2,3,4,7,8-HxDCF	1,2,3,7,8,9-HxCDF
1,2,3,4,6,7,8-HpCDF	410	412	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1,2,3,4,6,7,8-HpCDF
1,2,3,4,7,8,9-HpCDF	410	412	$^{13}C_{12}$-1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF
OCDF	442	444	$^{13}C_{12}$-OCDD	OCDF
Labelled Surrogate Stds	**Quantification Ion (m/z)**	**Confirmation Ion (m/z)**	**Recovery Calculated Using**	
$^{13}C_{12}$-2,3,7,8-TCDF	316	318	$^{13}C_{12}$-1,2,3,4-TCDD	
$^{13}C_{12}$-2,3,7,8-TCDD	332	334	$^{13}C_{12}$-1,2,3,4-TCDD	
$^{13}C_{12}$-1,2,3,7,8-PeCDF	352	354	$^{13}C_{12}$-1,2,3,4-TCDD	
$^{13}C_{12}$-1,2,3,7,8-PeCDD	366	368	$^{13}C_{12}$-1,2,3,4-TCDD	
$^{13}C_{12}$-1,2,3,4,7,8-HxDCF	384	386	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	
$^{13}C_{12}$-1,2,3,6,7,8-HxCDD	402	404	$^{13}C_{12}$-1,2,3,7, 8,9-HxCDD	
$^{13}C_{12}$-1,2,3,4,6,7,8-H$_x$CDF	418	420	$^{13}C_{12}$-1,2,3,7,8,9 -HxCDD	
$^{13}C_{12}$-1,2,3,4,6,7,8-H$_x$CDD	436	438	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	
$^{13}C_{12}$-OCDD	470	472	$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	
Labelled Recovery Stds				
$^{13}C_{12}$-1,2,3,4-TCDD	332	334		
$^{13}C_{12}$-1,2,3,7,8,9-HxCDD	402	404		

ERM

CORRELATION TABLE

DIOXIN/FURAN ANALYSIS

Lab Name: AXYS Analytical Services Ltd.	**Project Manager: Cynthia Tomey**
Project Number: N/A	**Contract No: 4184**
Project Name: 128296.07	**AXYS Method: MLA-017**
Data Package Identification: DPWG38865	**Program: Aqueous Samples**
Client Sample No.	**Lab Sample ID**
LAB BLANK	WG38741-101
OPR	WG38741-102
MATRIX SPIKE	WG38741-103
MATRIX SPIKE DUPLICATE	WG38741-104
MW-7S-112911	L17223-1
DUP-112911-2	L17223-2
MW-10-112911	L17223-3
MW-13-112911	L17223-4

AXYS | Axys Analytical Services Ltd

2045 Mills Road West TEL: (250) 655-5800
Sidney, British Columbia, Canada V8L 5X2 FAX: (250) 655-5811

CHAIN OF CUSTODY

AXYS CLIENT #: 4184

REPORT TO:		INVOICE TO:	
Company	Erm	Company	Erm
Address	1218 3rd Ave, Ste 1412 Seattle WA 98101	Address	
Contact	Mike Mendes	Contact	
Phone	425 214 0458	Phone	
FAX	—	FAX	—
E-mail	mike.mendes@erm.com	E-mail	ermwaexpenses@erm.com

Project Name/Number: RG 128296.07

Sampler's Name: Cyrus Gorman, Matt Cranelli

Signature: CG MC

Client Sample Identification	Matrix	Sampling Date	Sampling Time	Container Type/No.	AXYS Lab Sample ID (Lab use only)	ANALYSIS REQUESTED: Dioxin/furan 7 point linearity
MW-7S-112911	water	11/29/11	821	1L x (2)	L17223-1	X
DUP-112911-2	water	11/29/11	0530	1L x (2)	-2	X
MW-10-112911	water	11/29/11	1050	1L x (2)	-3	X
~~MW-13S/13M~~	~~water~~	~~11/29/11~~	~~1228~~	~~1L x (2)~~		~~X~~ CG 11/29/11 ERM

Relinquished by (Signature)	Date	Time	Received by (Signature)	Courier	Waybill No.
CG	11/29/11	1523	M. Wilman Date 30 NOV 11 Time 11:00		
Relinquished by (Signature)	Date	Time	Received by (Signature) Date Time	Sample Receipt	
Remarks				Temp °C	Cooler
				Custody Seal #	
				Seal Intact Y / N	
				Sample Tags Y / N	

AXYS | Axys Analytical Services Ltd

2045 Mills Road West TEL: (250) 655-5800
Sidney, British Columbia, Canada V8L 5X2 FAX: (250) 655-5811

CHAIN OF CUSTODY

AXYS CLIENT #: 4184

REPORT TO:		INVOICE TO:	
Company	ERM	Company	ERM
Address	1218 3rd Ave Ste 1412 Seattle WA 98101	Address	
Contact	Mike Mendes	Contact	
Phone	425 214 0458	Phone	
FAX	N/A	FAX	
E-mail	mike.mendes@erm.com	E-mail	ermwdexpense@erm.com

Project Name/Number: R6 128246.07

Sampler's Name: Chris Gorman, Matt Cranfill

Signature:

Client Sample Identification	Matrix	Sampling Date	Sampling Time	Container Type/No.	AXYS Lab Sample ID (Lab use only)	ANALYSIS REQUESTED: Dioxin / Furan 7 point linearity	MS / MSD
MW-13-112911	water	11/29/11	1225	1L x(6)	L17223-4	X	X

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
	11/29/11	1523	M. Wilman	30NOV11	11:00
Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time

Remarks

Courier	Waybill No.

Sample Receipt

	Cooler
Temp °C	
Custody Seal #	
Seal Intact Y / N	
Sample Tags Y / N	

www.axysanalytical.com

FedEx Express

Expanded Service International Air Waybill

4184

8724 3523 9561 0426

Not all services and options are available to all destinations.

8:40 30NOV2011 8724 3523 9561
EMP#842071 QTY 2
SVC: PO 7957 6032 8108

CLEARED

1750083855814 7

68 kg

58 kg

1 From

Date 11/29/11 Sender's FedEx Account Number

Sender's Name Matt Cundell Phone 425 214

Company ERM

Address 1218 3rd Ave, Ste 1412 Dept/Floor

Address

City Seattle Province WA CANADA Postal Code 9

2 Your Internal Reference

3 To

Recipient's Name Phone [illegible]

Company AXYS ANALYTICAL SERVICES

Address Dept/Floor

Address 2045 MILLS RD

City SIDNEY State/Province BC

Country CA ZIP/Postal Code V8L 5X2

Recipient's Tax ID Number Required for Customs Purposes
e.g., EIN/TAX/VAT/IRD/ABN, or as locally required.

4 Shipment Information

Total Packages (Shipper's Load and Count) 2 Total Weight 91 lb. kg DIM 25 / 14 / 14 in. cm

Commodity Description DETAIL REQUIRED	Harmonized Code	Country of Manufacture	Value for Customs REQUIRED
1L Amber Glass bottles containing groundwater samples for chemical analysis	3822.00	USA	60.00

Canada Export Declaration / B13A: No B13A required. Total Declared Value for Carriage: Total Declared Value for Customs (Specify Currency): 60 USD

Manual B13A attached. B13A filed electronically. 913A Summary Reporting.

Auth. ID / Form ID

Origin Station ID SEAR Destination Station ID YYJA URSA Routing XQ

Handling Units Total Volume

Received At: 1 Rep. Stop 2 On-Call Stop 3 Drop Box 4 World Service Center 5 Station Forms Attached: CI CO

FedEx Emp. # Audit Emp. # Date 11/29 Time Del. Courier Emp. # Date Time

Freight Other / Autre Total

6 1 FedEx Envelope 2 FedEx Pak 3 FedEx Box 4 FedEx Tube
1 X Other Cooler PW FedEx 10kg Box* PX FedEx 25kg Box*

7 Special Handling

1 HOLD at FedEx Location 3 SATURDAY Delivery
Available to select locations for FedEx International Priority and FedEx International Priority Freight only.

Does this shipment contain dangerous goods? One box must be checked.

X No 4 Yes As per attached Shipper's Declaration. 8 Yes Shipper's Declaration not required. 6 Dry Ice 9, UN 1845 x kg

CA Cargo Aircraft Only

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

8 Broker Selection

Not available with FedEx International First. 40 International Broker Select To specify a broker other than FedEx.

Broker's Name

City / State / Country

Zip / Postal Code Phone

9a Payment Bill transportation charges to:

Enter FedEx Acct. No. or Credit Card No. below.

1 Sender Acct. No. in Section 1 will be billed 2 Recipient 3 Third Party 4 Credit Card 5 Cash / Cheque

FedEx Acct. No. [redacted]

Credit Card Cert. Date Credit Card Auth.

9b Payment Bill Customs charges to:

ALL shipments may be subject to Customs charges, which FedEx does not estimate prior to clearance.

Enter FedEx Acct. No. below.

1 Sender Acct. No. in Section 1 will be billed 2 Recipient 3 Third Party 5 Cash / Cheque

FedEx Acct. No.

10 Required Signature

Use of this Air Waybill constitutes your agreement to the Conditions of Contract on the back of this Air Waybill. Certain international treaties, including the Warsaw Convention, may apply to this shipment and limit our liability for damage, loss, or delay, as described in the Conditions of Contract.

Sender's Signature [signature]

This is not authorization to deliver this shipment without a recipient signature.

Received above shipment in good order and condition. We agree to pay all charges, including Customs duties and taxes as applicable, and we agree to the Conditions of Contract as stated on the reverse side of the Recipient's Copy.

Recipient's Signature: M. Wilman

30NOV11 11:00

FedEx Tracking Number 8724 3523 9561 0426

Shipper's ID No.

512 PART #57683 Rev. Date 5/06 ©1994–2006 FedEx

www.axysanalytical.com

AXYS Analytical Services Ltd
SAMPLE RECEIVING RECORD

Waybill : (Yes)/No
Waybill #: 872435239561
Date Shipped: 29-NOV-11
Date /Time Received: 30-NOV-11 11:00
AXYS Client & Contract # 4184-ERM
Project Number:
Receipt No: WB12462
Login Number:
Received By: MWILMAN
Log in by: M. Wilman Signature: M. Wilman
Axys Sample ID's: LL7223-1 to 3
Matrix Type: 3 water
Condition of Shipping Container: Intact.
Temperature upon Receipt: 4 Celcius ice packs frozen
Thermometer ID: 3093

Custody Seals: Shipping Containers (Yes)/No Intact (Yes)/No Seal Numbers Yes (No) date + signature
Samples Yes (No) Intact Yes /No Seal Numbers Yes /No
→ see reverse.

Chain of Custody or Documents: (Yes)/No
Sample ID's (Yes)/No
Collection Location Yes (No)
Date & Time Collection (Yes)/No
Collector's Name (Yes)/No

Tracking Report /Packing List: Yes (No)
Sample Tag Numbers Yes (No)
Sample Type (Yes) No
Preservative Added Yes (No)
Preservation Requested Yes (No)

Sample Tags Yes (No)
Sample Labels (Yes)/No
Sample Labels Cross Referenced to COC (Yes)/No Information Agrees (Yes)/No
Sample Tags Cross Referenced to Sample Labels Yes /No Information Agrees Yes /No
Sample Tags Cross Referenced to COC Yes /No Information Agrees Yes /No

Comments:

Action Taken:

www.axysanalytical.com

AXYS Analytical Services Ltd
SAMPLE RECEIVING RECORD

Waybill : (Yes)/No
Waybill #: 795760328108
Date Shipped: 29-NOV-11
Date /Time Received: 30-NOV-11 11:00
AXYS Client & Contract # 4184-ERM
Project Number:
Receipt No: WB12463
Login Number:
Received By: MWILMAN
Log in by: M.Wilman Signature: M.Wilman
Axys Sample ID's: L17223-4
Matrix Type: water
Condition of Shipping Container: Intact.
Temperature upon Receipt: 4 Celcius ice packs frozen
Thermometer ID: 3093

Custody Seals: Shipping Containers (Yes)/No Intact (Yes)/No Seal Numbers Yes /(No) date + signature
Samples Yes /(No) Intact Yes /No Seal Numbers Yes /No → see reverse

Chain of Custody or Documents:	(Yes)/No	Tracking Report /Packing List:	Yes /(No)
Sample ID's	(Yes)/No	Sample Tag Numbers	Yes /(No)
Collection Location	Yes /(No)	Sample Type	(Yes)/No
Date & Time Collection	(Yes)/No	Preservative Added	Yes /(No)
Collector's Name	(Yes)/No	Preservation Requested	Yes /(No)

Sample Tags	Yes /(No)		
Sample Labels	(Yes)/No		
Sample Labels Cross Referenced to COC	(Yes)/No	Information Agrees	(Yes)/No
Sample Tags Cross Referenced to Sample Labels	Yes /No	Information Agrees	Yes /No
Sample Tags Cross Referenced to COC	Yes /No	Information Agrees	Yes /No

Comments:

Action Taken:

www.axysanalytical.com

For Scanning
CT
30 Nov 11

AXYS

AXYS Analytical Services Ltd.

Login Chain of Custody Report (In01)

Nov. 30, 2011
02:57 PM

Login Number: L17223
Account: 4184 ERM
Project: REICHHOLD

Axys ID versus Client Sample Identification			Received	Due	PR
L17223-1			30-NOV-11		
		Storage: WIC-2, Shelf A			
MW-75-112911					
29-NOV-11 08:21		Project #: REICHHOLD			
EDataDeliv	DX EDD		:		USD
D.Package	DX DATA PKG		:		USD
Aqueous	DX017.1613		:		USD
Aqueous	DX017.1613-2		:		USD
Aqueous	PRETREAT		:		USD
ANY	SAMPLE RECEIPT		2	: 1 L glass	USD
L17223-2			30-NOV-11		
		Storage: WIC-2, Shelf A			
DUP-112911-2					
29-NOV-11 05:30		Project #: REICHHOLD			
EDataDeliv	DX EDD		:		USD
D.Package	DX DATA PKG		:		USD
Aqueous	DX017.1613		:		USD
Aqueous	DX017.1613-2		:		USD
Aqueous	PRETREAT		:		USD
ANY	SAMPLE RECEIPT		2	: 1 L glass	USD
L17223-3			30-NOV-11		
		Storage: WIC-2, Shelf A			
MW-10-112911					
29-NOV-11 10:50		Project #: REICHHOLD			
EDataDeliv	DX EDD		:		USD
D.Package	DX DATA PKG		:		USD
Aqueous	DX017.1613		:		USD
Aqueous	DX017.1613-2		:		USD
Aqueous	PRETREAT		:		USD
ANY	SAMPLE RECEIPT		2	: 1 L glass	USD

AXYS

AXYS Analytical Services Ltd.

Login Chain of Custody Report (ln01)

Nov. 30, 2011
02:57 PM

Login Number: L17223
Account: 4184 ERM
Project: REICHHOLD

Axys ID versus Client Sample Identification		Received	Due	PR
L17223-4		30-NOV-11		
	Storage: WIC-2, Shelf A			
MW-13-112911 29-NOV-11 12:25	Project #: REICHHOLD			
EDataDeliv	DX EDD	:		USD
D.Package	DX DATA PKG	:		USD
Aqueous	DX017.1613	:		USD
Aqueous	DX017.1613-2	:		USD
Aqueous	PRETREAT	:		USD
ANY	SAMPLE RECEIPT	6	: 1 L glass	USD

www.axysanalytical.com

Cynthia Tomey

DATA PKG.

From: Mike Mendes [Mike.Mendes@erm.com]
Sent: Wednesday, December 21, 2011 10:57 AM
To: Cynthia Tomey
Subject: RE: Emailing: Email_L17223-[Products]-REICHHOLD.htm

Thanks, Cynthia. No worries.

MW-75 should actually be MW-7

Thanks,

Mike

Michael F. Mendes, P.G.
Senior Project Manager

T: 425.214.0458 (direct)
M: 631.463.3492

From: Cynthia Tomey [mailto:ctomey@axys.com]
Sent: Wednesday, December 21, 2011 10:54 AM
To: Mike Mendes
Subject: FW: Emailing: Email_L17223-[Products]-REICHHOLD.htm

Hi Mike,

Sorry, I forgot I was replying not forwarding!

Cynthia

Cynthia Tomey
Project Manager
AXYS Analytical Services Ltd.
2045 Mills Road West
Sidney, BC V8L 5X2
Tel (250) 655-5800
Direct Tel (250) 655-5839

This email including attachments is confidential and contains privileged information. If you are not the intended recipient, any redistribution or copying of this message is prohibited. If you have received this email in error please notify us immediately, by return email, and delete this email.

From: Debbie Taylor
Sent: Friday, December 02, 2011 3:04 PM
To: mike.mendes@erm.com
Cc: Cynthia Tomey
Subject: Emailing: Email_L17223-[Products]-REICHHOLD.htm

<<Email_L17223-[Products]-REICHHOLD.htm.htm>>

Confirmation of Samples Received by Axys Analytical Services Ltd. Please confirm sample IDs and sample collection dates as these will appear on the final reports.

Debbie Taylor
Receptionist
Axys Analytical Services

This email including attachments is confidential and contains privileged information. If you are not the intended recipient, any redistribution or copying of this message is prohibited. If you have received this email in error please notify us immediately, by return email, and delete this email.

This message contains information which may be confidential, proprietary, privileged, or otherwise protected by law from disclosure or use by a third party. If you have received this message in error, please contact us immediately at (925) 946-0455 and take the steps necessary to delete the message completely from your computer system. Thank you.

Please visit ERM's web site: http://www.erm.com