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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Westfield
Westfield Executive Park
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Westfield, MA 01085
Tel: (413)572-4000

CHECKED FOR COMPLETENESS OF PARAMETERS ORDERED BY: 9/24/12

TestAmerica Job ID: 360-42351-1
Client Project/Site: Olin Chemical Quarterly Groundwater

For:
Olin Corporation
PO BOX 248
Charleston, Tennessee 37310-0248

Attn: Mr. James Cashwell

Authorized for release by:
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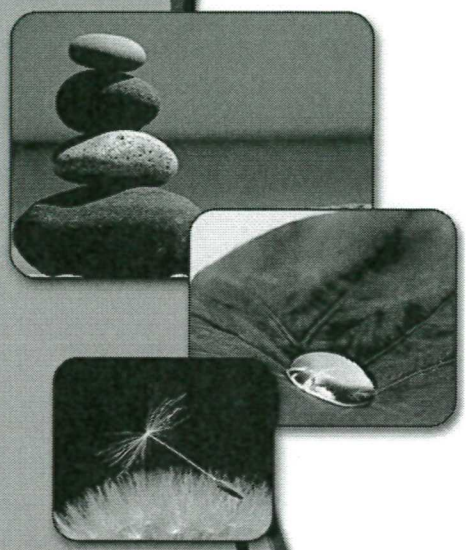

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Case Narrative 3
Detection Summary 6
Method Summary 8
Sample Summary 9
Client Sample Results 10
Definitions 20
QC Association 21
QC Sample Results 24
Chronicle 30
Certification Summary 33
Receipt Checklists 35
Chain of Custody 36

Job ID: 360-42351-1

Laboratory: TestAmerica Westfield

Narrative

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

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

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

RECEIPT

The samples were received on 08/23/2012; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.2,3.0 and 1.2°C.

Note: All samples that require thermal preservation are considered acceptable if the arrival temperature is within the method's specified temperature range or for general analysis, ranging from 6°C to just above the freezing temperature of water. Samples that are hand delivered, immediately following collection, may not meet these criteria; however, they will be considered acceptable according to NELAC and State standards, if there is evidence that the chilling process has begun, such as stored and transported to the laboratory on ice.

METALS (ICP)

Samples PZ-25 (360-42351-1), OC-GW-202S (360-42351-2), OC-GW-202D (360-42351-3), OC-GW-25 (360-42351-4), OC-PZ-18R (360-42351-5), PZ-24 (360-42351-6), OC-PZ-17RR (360-42351-7), OC-GW-78S (360-42351-8), OC-GW-79S (360-42351-9) and PZ-16RR (360-42351-10) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared and analyzed on 08/30/2012.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the metals (ICP) analyses.

All quality control parameters were within the acceptance limits.

SPECIFIC CONDUCTIVITY

Samples PZ-25 (360-42351-1), OC-GW-202S (360-42351-2), OC-GW-202D (360-42351-3), OC-GW-25 (360-42351-4), OC-PZ-18R (360-42351-5), PZ-24 (360-42351-6), OC-PZ-17RR (360-42351-7), OC-GW-78S (360-42351-8), OC-GW-79S (360-42351-9) and PZ-16RR (360-42351-10) were analyzed for specific conductivity in accordance with SM20 2510B. The samples were analyzed on 09/04/2012.

No difficulties were encountered during the conductivity analyses.

All quality control parameters were within the acceptance limits.

ANIONS (28 DAY HOLD TIME)

Samples PZ-25 (360-42351-1), OC-GW-202S (360-42351-2), OC-GW-202D (360-42351-3), OC-GW-25 (360-42351-4), OC-PZ-18R (360-42351-5), PZ-24 (360-42351-6), OC-PZ-17RR (360-42351-7), OC-GW-78S (360-42351-8), OC-GW-79S (360-42351-9) and PZ-16RR (360-42351-10) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 08/27/2012, 08/28/2012, 08/30/2012 and 09/05/2012.

Samples PZ-25 (360-42351-1)[10X], OC-GW-202S (360-42351-2)[10X], OC-GW-202D (360-42351-3)[10X], OC-GW-202D (360-42351-3)[50X], OC-GW-25 (360-42351-4)[10X], OC-PZ-18R (360-42351-5)[10X], PZ-24 (360-42351-6)[10X], OC-PZ-17RR (360-42351-7)[10X], OC-GW-78S (360-42351-8)[10X], OC-GW-79S (360-42351-9)[20X] and PZ-16RR (360-42351-10)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

Job ID: 360-42351-1 (Continued)

Laboratory: TestAmerica Westfield (Continued)

AMMONIA

Samples PZ-25 (360-42351-1), OC-GW-202S (360-42351-2), OC-GW-202D (360-42351-3), OC-GW-25 (360-42351-4), OC-PZ-18R (360-42351-5), PZ-24 (360-42351-6), OC-PZ-17RR (360-42351-7), OC-GW-78S (360-42351-8), OC-GW-79S (360-42351-9) and PZ-16RR (360-42351-10) were analyzed for ammonia in accordance with Lachat 107-06-1B. The samples were prepared on 09/04/2012 and analyzed on 09/05/2012.

Samples PZ-25 (360-42351-1)[10X], OC-GW-202S (360-42351-2)[10X], OC-GW-202D (360-42351-3)[20X], OC-GW-25 (360-42351-4)[10X], OC-PZ-18R (360-42351-5)[10X], PZ-24 (360-42351-6)[10X], OC-PZ-17RR (360-42351-7)[5X], OC-GW-78S (360-42351-8)[10X], OC-GW-79S (360-42351-9)[20X] and PZ-16RR (360-42351-10)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the ammonia analyses.

All quality control parameters were within the acceptance limits.

MassDEP Analytical Protocol Certification Form

Laboratory Name: **TestAmerica Westfield** Project #: **360-42351-1**

Project Location: **Olin chemical Quarterly** RTN:

This form provides certifications for the following data set: list Laboratory Sample ID Number(s):

360-42351-1 [1-10]

Matrices: ☐ Groundwater/Surface Water ☐ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocols (check all that apply below):

8260 VOC CAM II A ☐	7470/7471 Hg CAM III B ☐	Mass DEP VPH CAM IV A ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	Mass DEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	Mass DEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☒	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9014 Total Cyanide/PAC CAM VI A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding time.	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	a. VPH, EPH and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☒ Yes ☐ No[1]

***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WCS-07-350**

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s) ?	☐ Yes ☒ No[1]

[1] All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature: Position: Laboratory Director

Printed Name: Steven C. Hartmann Date: 9/7/12 14:07

This form has been electronically signed and approved

Detection Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: PZ-25 — Lab Sample ID: 360-42351-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	7.6		5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	460		20	20	mg/L	10		300.0	Total/NA
Chloride	20		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	48		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-202S — Lab Sample ID: 360-42351-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	13	J	100	13	ug/L	1		6010C	Dissolved
Chromium	4.0	J	5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	270		20	20	mg/L	10		300.0	Total/NA
Chloride	51		10	10	mg/L	10		300.0	Total/NA
Ammonia	55		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	980		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-202D — Lab Sample ID: 360-42351-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	8800		100	13	ug/L	1		6010C	Dissolved
Chromium	790		5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1500		100	100	mg/L	50		300.0	Total/NA
Chloride	250		10	10	mg/L	10		300.0	Total/NA
Ammonia	240		2.0	2.0	mg/L	20		L107-06-1B	Total/NA
Specific Conductance	3600		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-25 — Lab Sample ID: 360-42351-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	1.6	J	5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	72		20	20	mg/L	10		300.0	Total/NA
Chloride	120		10	10	mg/L	10		300.0	Total/NA
Ammonia	42		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	750		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-18R — Lab Sample ID: 360-42351-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	14	J	100	13	ug/L	1		6010C	Dissolved
Chromium	11		5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	14		2.0	2.0	mg/L	1		300.0	Total/NA
Chloride	84		10	10	mg/L	10		300.0	Total/NA
Ammonia	35		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	630		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: PZ-24 — Lab Sample ID: 360-42351-6

Detection Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: PZ-24 (Continued) — Lab Sample ID: 360-42351-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	17	J	100	13	ug/L	1		6010C	Dissolved
Chromium	18		5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	700		20	20	mg/L	10		300.0	Total/NA
Chloride	17		10	10	mg/L	10		300.0	Total/NA
Ammonia	60		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1800		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-17RR — Lab Sample ID: 360-42351-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	40	J	100	13	ug/L	1		6010C	Dissolved
Chromium	10		5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	230		20	20	mg/L	10		300.0	Total/NA
Chloride	150		10	10	mg/L	10		300.0	Total/NA
Ammonia	28		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-78S — Lab Sample ID: 360-42351-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	2.1	J	5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	480		20	20	mg/L	10		300.0	Total/NA
Chloride	22		10	10	mg/L	10		300.0	Total/NA
Ammonia	52		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-79S — Lab Sample ID: 360-42351-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	74	J	100	13	ug/L	1		6010C	Dissolved
Chromium	26		5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	980		40	40	mg/L	20		300.0	Total/NA
Chloride	230		20	20	mg/L	20		300.0	Total/NA
Ammonia	150		2.0	2.0	mg/L	20		L107-06-1B	Total/NA
Specific Conductance	2800		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: PZ-16RR — Lab Sample ID: 360-42351-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	2.9	J	5.0	0.53	ug/L	1		6010C	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	500		20	20	mg/L	10		300.0	Total/NA
Chloride	160		10	10	mg/L	10		300.0	Total/NA
Ammonia	130		2.0	2.0	mg/L	20		L107-06-1B	Total/NA
Specific Conductance	1800		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Method Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Method	Method Description	Protocol	Laboratory
6010C	Metals (ICP)	SW846	TAL WFD
300.0	Chloride & Sulfate	40CFR136A	TAL WFD
L107-06-1B	Nitrogen Ammonia	LACHAT	TAL WFD
SM 2510B	Conductivity, Specific Conductance	SM	TAL WFD

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
LACHAT = LACHAT

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

Sample Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
360-42351-1	PZ-25	Water	08/20/12 09:30	08/23/12 17:00
360-42351-2	OC-GW-202S	Water	08/20/12 10:10	08/23/12 17:00
360-42351-3	OC-GW-202D	Water	08/20/12 10:50	08/23/12 17:00
360-42351-4	OC-GW-25	Water	08/21/12 07:55	08/23/12 17:00
360-42351-5	OC-PZ-18R	Water	08/21/12 09:00	08/23/12 17:00
360-42351-6	PZ-24	Water	08/21/12 10:10	08/23/12 17:00
360-42351-7	OC-PZ-17RR	Water	08/21/12 11:30	08/23/12 17:00
360-42351-8	OC-GW-78S	Water	08/22/12 10:45	08/23/12 17:00
360-42351-9	OC-GW-79S	Water	08/22/12 11:20	08/23/12 17:00
360-42351-10	PZ-16RR	Water	08/22/12 11:40	08/23/12 17:00

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: PZ-25

Lab Sample ID: 360-42351-1

Date Collected: 08/20/12 09:30

Matrix: Water

Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L		08/30/12 08:55	08/30/12 16:29	1
Chromium	**7.6**		5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:29	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**460**		20	20	mg/L			08/27/12 20:33	10
Chloride	**20**		1.0	1.0	mg/L			08/27/12 20:15	1
Ammonia	**48**		1.0	1.0	mg/L		09/04/12 12:49	09/05/12 12:58	10
Specific Conductance	**1300**		1.0	1.0	umhos/cm			09/04/12 13:52	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-GW-202S

Lab Sample ID: 360-42351-2

Date Collected: 08/20/12 10:10

Matrix: Water

Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	13	J	100	13	ug/L		08/30/12 08:55	08/30/12 16:32	1
Chromium	4.0	J	5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:32	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	270		20	20	mg/L			08/27/12 20:50	10
Chloride	51		10	10	mg/L			08/27/12 20:50	10
Ammonia	55		1.0	1.0	mg/L		09/04/12 12:49	09/05/12 12:59	10
Specific Conductance	980		1.0	1.0	umhos/cm			09/04/12 13:55	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-GW-202D

Lab Sample ID: 360-42351-3

Date Collected: 08/20/12 10:50
Matrix: Water
Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	8800		100	13	ug/L		08/30/12 08:55	08/30/12 16:35	1
Chromium	790		5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:35	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1500		100	100	mg/L			08/27/12 21:24	50
Chloride	250		10	10	mg/L			08/27/12 21:07	10
Ammonia	240		2.0	2.0	mg/L		09/04/12 12:49	09/05/12 13:00	20
Specific Conductance	3600		1.0	1.0	umhos/cm			09/04/12 13:57	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-GW-25

Lab Sample ID: 360-42351-4

Date Collected: 08/21/12 07:55
Matrix: Water
Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L		08/30/12 08:55	08/30/12 16:38	1
Chromium	**1.6**	**J**	5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:38	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**72**		20	20	mg/L			08/27/12 23:41	10
Chloride	**120**		10	10	mg/L			08/27/12 23:41	10
Ammonia	**42**		1.0	1.0	mg/L		09/04/12 12:49	09/05/12 13:00	10
Specific Conductance	**750**		1.0	1.0	umhos/cm			09/04/12 13:58	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-PZ-18R

Lab Sample ID: 360-42351-5

Date Collected: 08/21/12 09:00

Matrix: Water

Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	14	J	100	13	ug/L		08/30/12 08:55	08/30/12 16:41	1
Chromium	11		5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:41	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	14		2.0	2.0	mg/L			08/30/12 00:44	1
Chloride	84		10	10	mg/L			08/27/12 23:58	10
Ammonia	35		1.0	1.0	mg/L		09/04/12 12:49	09/05/12 13:01	10
Specific Conductance	630		1.0	1.0	umhos/cm			09/04/12 14:00	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: PZ-24

Lab Sample ID: 360-42351-6

Date Collected: 08/21/12 10:10

Matrix: Water

Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	17	J	100	13	ug/L		08/30/12 08:55	08/30/12 16:45	1
Chromium	18		5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:45	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	700		20	20	mg/L			08/28/12 00:15	10
Chloride	17		10	10	mg/L			08/28/12 00:15	10
Ammonia	60		1.0	1.0	mg/L		09/04/12 12:49	09/05/12 13:02	10
Specific Conductance	1800		1.0	1.0	umhos/cm			09/04/12 14:01	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-PZ-17RR

Lab Sample ID: 360-42351-7

Date Collected: 08/21/12 11:30

Matrix: Water

Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	40	J	100	13	ug/L		08/30/12 08:55	08/30/12 16:53	1
Chromium	10		5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:53	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	230		20	20	mg/L			08/28/12 00:32	10
Chloride	150		10	10	mg/L			08/28/12 00:32	10
Ammonia	28		0.50	0.50	mg/L		09/04/12 12:49	09/05/12 13:03	5
Specific Conductance	1300		1.0	1.0	umhos/cm			09/04/12 14:03	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-GW-78S

Lab Sample ID: 360-42351-8

Date Collected: 08/22/12 10:45
Matrix: Water
Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L		08/30/12 08:55	08/30/12 16:56	1
Chromium	**2.1**	**J**	5.0	0.53	ug/L		08/30/12 08:55	08/30/12 16:56	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**480**		20	20	mg/L			08/28/12 00:49	10
Chloride	**22**		10	10	mg/L			08/28/12 00:49	10
Ammonia	**52**		1.0	1.0	mg/L		09/04/12 12:49	09/05/12 13:04	10
Specific Conductance	**1300**		1.0	1.0	umhos/cm			09/04/12 14:04	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-GW-79S

Lab Sample ID: 360-42351-9

Date Collected: 08/22/12 11:20

Matrix: Water

Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	74	J	100	13	ug/L		08/30/12 08:55	08/30/12 17:00	1
Chromium	26		5.0	0.53	ug/L		08/30/12 08:55	08/30/12 17:00	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	980		40	40	mg/L			08/28/12 01:06	20
Chloride	230		20	20	mg/L			08/28/12 01:06	20
Ammonia	150		2.0	2.0	mg/L		09/04/12 12:49	09/05/12 13:04	20
Specific Conductance	2800		1.0	1.0	umhos/cm			09/04/12 14:05	1

Client Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: PZ-16RR

Lab Sample ID: 360-42351-10

Date Collected: 08/22/12 11:40

Matrix: Water

Date Received: 08/23/12 17:00

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L		08/30/12 08:55	08/30/12 17:03	1
Chromium	**2.9**	**J**	5.0	0.53	ug/L		08/30/12 08:55	08/30/12 17:03	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**500**		20	20	mg/L			09/05/12 15:19	10
Chloride	**160**		10	10	mg/L			09/05/12 15:19	10
Ammonia	**130**		2.0	2.0	mg/L		09/04/12 12:49	09/05/12 13:07	20
Specific Conductance	**1800**		1.0	1.0	umhos/cm			09/04/12 14:14	1

Definitions/Glossary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Qualifiers

Metals

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Association Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Metals

Prep Batch: 94836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-1	PZ-25	Dissolved	Water	3010A	
360-42351-2	OC-GW-202S	Dissolved	Water	3010A	
360-42351-3	OC-GW-202D	Dissolved	Water	3010A	
360-42351-4	OC-GW-25	Dissolved	Water	3010A	
360-42351-5	OC-PZ-18R	Dissolved	Water	3010A	
360-42351-6	PZ-24	Dissolved	Water	3010A	
360-42351-7	OC-PZ-17RR	Dissolved	Water	3010A	
360-42351-8	OC-GW-78S	Dissolved	Water	3010A	
360-42351-9	OC-GW-79S	Dissolved	Water	3010A	
360-42351-10	PZ-16RR	Dissolved	Water	3010A	
LCS 360-94836/2-A	Lab Control Sample	Total/NA	Water	3010A	
LCSD 360-94836/3-A	Lab Control Sample Dup	Total/NA	Water	3010A	
MB 360-94836/1-A	Method Blank	Total/NA	Water	3010A	

Analysis Batch: 94890

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-1	PZ-25	Dissolved	Water	6010C	94836
360-42351-2	OC-GW-202S	Dissolved	Water	6010C	94836
360-42351-3	OC-GW-202D	Dissolved	Water	6010C	94836
360-42351-4	OC-GW-25	Dissolved	Water	6010C	94836
360-42351-5	OC-PZ-18R	Dissolved	Water	6010C	94836
360-42351-6	PZ-24	Dissolved	Water	6010C	94836
360-42351-7	OC-PZ-17RR	Dissolved	Water	6010C	94836
360-42351-8	OC-GW-78S	Dissolved	Water	6010C	94836
360-42351-9	OC-GW-79S	Dissolved	Water	6010C	94836
360-42351-10	PZ-16RR	Dissolved	Water	6010C	94836
LCS 360-94836/2-A	Lab Control Sample	Total/NA	Water	6010C	94836
LCSD 360-94836/3-A	Lab Control Sample Dup	Total/NA	Water	6010C	94836
MB 360-94836/1-A	Method Blank	Total/NA	Water	6010C	94836

General Chemistry

Analysis Batch: 94757

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-1	PZ-25	Total/NA	Water	300.0	
360-42351-1	PZ-25	Total/NA	Water	300.0	
360-42351-2	OC-GW-202S	Total/NA	Water	300.0	
360-42351-3	OC-GW-202D	Total/NA	Water	300.0	
360-42351-3	OC-GW-202D	Total/NA	Water	300.0	
LCS 360-94757/4	Lab Control Sample	Total/NA	Water	300.0	
MB 360-94757/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 94759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-4	OC-GW-25	Total/NA	Water	300.0	
360-42351-5	OC-PZ-18R	Total/NA	Water	300.0	
360-42351-6	PZ-24	Total/NA	Water	300.0	
360-42351-7	OC-PZ-17RR	Total/NA	Water	300.0	
360-42351-8	OC-GW-78S	Total/NA	Water	300.0	
360-42351-9	OC-GW-79S	Total/NA	Water	300.0	
LCS 360-94759/6	Lab Control Sample	Total/NA	Water	300.0	
MB 360-94759/5	Method Blank	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 94969

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-5	OC-PZ-18R	Total/NA	Water	300.0	
LCS 360-94969/6	Lab Control Sample	Total/NA	Water	300.0	
MB 360-94969/5	Method Blank	Total/NA	Water	300.0	

Prep Batch: 94991

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-1	PZ-25	Total/NA	Water	Distill/Ammonia	
360-42351-2	OC-GW-202S	Total/NA	Water	Distill/Ammonia	
360-42351-3	OC-GW-202D	Total/NA	Water	Distill/Ammonia	
360-42351-4	OC-GW-25	Total/NA	Water	Distill/Ammonia	
360-42351-5	OC-PZ-18R	Total/NA	Water	Distill/Ammonia	
360-42351-6	PZ-24	Total/NA	Water	Distill/Ammonia	
360-42351-7	OC-PZ-17RR	Total/NA	Water	Distill/Ammonia	
360-42351-8	OC-GW-78S	Total/NA	Water	Distill/Ammonia	
360-42351-9	OC-GW-79S	Total/NA	Water	Distill/Ammonia	
360-42351-10	PZ-16RR	Total/NA	Water	Distill/Ammonia	
LCS 360-94991/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	
MB 360-94991/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 95004

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-1	PZ-25	Total/NA	Water	SM 2510B	
360-42351-1 DU	PZ-25	Total/NA	Water	SM 2510B	
360-42351-2	OC-GW-202S	Total/NA	Water	SM 2510B	
360-42351-3	OC-GW-202D	Total/NA	Water	SM 2510B	
360-42351-4	OC-GW-25	Total/NA	Water	SM 2510B	
360-42351-5	OC-PZ-18R	Total/NA	Water	SM 2510B	
360-42351-6	PZ-24	Total/NA	Water	SM 2510B	
360-42351-7	OC-PZ-17RR	Total/NA	Water	SM 2510B	
360-42351-8	OC-GW-78S	Total/NA	Water	SM 2510B	
360-42351-9	OC-GW-79S	Total/NA	Water	SM 2510B	
360-42351-10	PZ-16RR	Total/NA	Water	SM 2510B	
360-42351-10 DU	PZ-16RR	Total/NA	Water	SM 2510B	
LCS 360-95004/1	Lab Control Sample	Total/NA	Water	SM 2510B	
LCS 360-95004/31	Lab Control Sample	Total/NA	Water	SM 2510B	
MB 360-95004/3	Method Blank	Total/NA	Water	SM 2510B	
MB 360-95004/30	Method Blank	Total/NA	Water	SM 2510B	

Analysis Batch: 95082

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-10	PZ-16RR	Total/NA	Water	300.0	
360-42351-10 MS	PZ-16RR	Total/NA	Water	300.0	
360-42351-10 MSD	PZ-16RR	Total/NA	Water	300.0	
LCS 360-95082/4	Lab Control Sample	Total/NA	Water	300.0	
MB 360-95082/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 95105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-1	PZ-25	Total/NA	Water	L107-06-1B	94991
360-42351-2	OC-GW-202S	Total/NA	Water	L107-06-1B	94991
360-42351-3	OC-GW-202D	Total/NA	Water	L107-06-1B	94991
360-42351-4	OC-GW-25	Total/NA	Water	L107-06-1B	94991

General Chemistry (Continued)

Analysis Batch: 95105 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-42351-5	OC-PZ-18R	Total/NA	Water	L107-06-1B	94991
360-42351-6	PZ-24	Total/NA	Water	L107-06-1B	94991
360-42351-7	OC-PZ-17RR	Total/NA	Water	L107-06-1B	94991
360-42351-8	OC-GW-78S	Total/NA	Water	L107-06-1B	94991
360-42351-9	OC-GW-79S	Total/NA	Water	L107-06-1B	94991
360-42351-10	PZ-16RR	Total/NA	Water	L107-06-1B	94991
LCS 360-94991/2-A	Lab Control Sample	Total/NA	Water	L107-06-1B	94991
MB 360-94991/1-A	Method Blank	Total/NA	Water	L107-06-1B	94991

QC Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 360-94836/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94890 — **Prep Batch: 94836**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L		08/30/12 08:55	08/30/12 14:39	1
Chromium	ND		5.0	0.53	ug/L		08/30/12 08:55	08/30/12 14:39	1

Lab Sample ID: LCS 360-94836/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94890 — **Prep Batch: 94836**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	5000	5240		ug/L		105	80 - 120
Chromium	1000	1050		ug/L		105	80 - 120

Lab Sample ID: LCSD 360-94836/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94890 — **Prep Batch: 94836**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aluminum	5000	5360		ug/L		107	80 - 120	2	20
Chromium	1000	1080		ug/L		108	80 - 120	3	20

Method: 300.0 - Chloride & Sulfate

Lab Sample ID: MB 360-94757/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94757

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/27/12 14:50	1
Chloride	ND		1.0	1.0	mg/L			08/27/12 14:50	1

Lab Sample ID: LCS 360-94757/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94757

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	80.0	82.3		mg/L		103	85 - 115
Chloride	40.0	41.0		mg/L		102	85 - 115

Lab Sample ID: MB 360-94759/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94759

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/27/12 22:15	1
Chloride	ND		1.0	1.0	mg/L			08/27/12 22:15	1

Lab Sample ID: LCS 360-94759/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94759

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	80.0	82.9		mg/L		104	85 - 115

Method: 300.0 - Chloride & Sulfate (Continued)

Lab Sample ID: LCS 360-94759/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94759

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	40.0	41.2		mg/L		103	85 - 115

Lab Sample ID: MB 360-94969/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94969

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/29/12 18:45	1
Chloride	ND		1.0	1.0	mg/L			08/29/12 18:45	1

Lab Sample ID: LCS 360-94969/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 94969

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	80.0	81.5		mg/L		102	85 - 115
Chloride	40.0	40.9		mg/L		102	85 - 115

Lab Sample ID: MB 360-95082/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95082

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			09/05/12 12:11	1
Chloride	ND		1.0	1.0	mg/L			09/05/12 12:11	1

Lab Sample ID: LCS 360-95082/4 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95082

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	80.0	82.2		mg/L		103	85 - 115
Chloride	40.0	40.7		mg/L		102	85 - 115

Lab Sample ID: 360-42351-10 MS — **Client Sample ID: PZ-16RR**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95082

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	500		200	660		mg/L		82	75 - 125
Chloride	160		100	249		mg/L		93	75 - 125

Lab Sample ID: 360-42351-10 MSD — **Client Sample ID: PZ-16RR**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95082

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	500		200	668		mg/L		87	75 - 125	1	20
Chloride	160		100	252		mg/L		96	75 - 125	1	20

QC Sample Results

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Method: L107-06-1B - Nitrogen Ammonia

Lab Sample ID: MB 360-94991/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95105 — **Prep Batch: 94991**

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.10	0.10	mg/L		09/04/12 12:49	09/05/12 12:19	1

Lab Sample ID: LCS 360-94991/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95105 — **Prep Batch: 94991**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	10.0	10.9		mg/L		109	90 - 110

Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 360-95004/3 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95004

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			09/04/12 13:32	1

Lab Sample ID: MB 360-95004/30 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95004

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			09/04/12 14:11	1

Lab Sample ID: LCS 360-95004/1 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95004

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	1410	1420		umhos/cm		101	85 - 115

Lab Sample ID: LCS 360-95004/31 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95004

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	1410	1410		umhos/cm		100	85 - 115

Lab Sample ID: 360-42351-1 DU — **Client Sample ID: PZ-25**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 95004

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Specific Conductance	1300		1300		umhos/cm		0.6	20

Method: SM 2510B - Conductivity, Specific Conductance (Continued)

Lab Sample ID: 360-42351-10 DU
Matrix: Water
Analysis Batch: 95004

Client Sample ID: PZ-16RR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Specific Conductance	1800			1800		umhos/cm				0.06	20

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 8/27/12

Analyst Initials	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution				Comments
								Sample Aliquot 2	Units	Final Volume 2	Units	
AMS	300.0	32351A1	10x	1	mL							
		2	10x									
		3	10x									
		3	50x	200	µL							
		4	10x	1	mL							
		5	10x									
		6	10x									
		7	10x									
		8	10x									
		9	20x	500	µL							

AMS 8/27/12

entries completed by day [new page each day]

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 9-5-12

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Units	Final Volume 2	Units	Comments
RWE	9-5-12	NH3	42351 C1A	10X	1	mL	10	mL					
			C2A	10X	1	mL							
			C3A	20X	500	µL							
			C4A	10X	1	mL							
			C5A	10X	1	mL							
			C6A	10X	1	mL							
			C7A	5X	2	mL							
			C8A	10X	1	mL							
			C9A	20X	500	µL							
			C10A	20X	500	µL							
			42352 D2A	10X	1	mL	10	mL					
			MS	10X	1	mL							
			MSD	10X	1	mL							
			D3A	20X	500	µL							
			D4A	20X	500	µL							
			D5A	20X	500	µL							
			D6A	5X	2	mL							
			D7A	5X	2	mL							

entries completed by day [new page each day]

Lab Chronicle

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: PZ-25

Lab Sample ID: 360-42351-1
Date Collected: 08/20/12 09:30
Matrix: Water
Date Received: 08/23/12 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:29	TJS	TAL WFD
Total/NA	Analysis	300.0		1	94757	08/27/12 20:15	AMS	TAL WFD
Total/NA	Analysis	300.0		10	94757	08/27/12 20:33	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 13:52	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	95105	09/05/12 12:58	RWE	TAL WFD

Client Sample ID: OC-GW-202S

Lab Sample ID: 360-42351-2
Date Collected: 08/20/12 10:10
Matrix: Water
Date Received: 08/23/12 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:32	TJS	TAL WFD
Total/NA	Analysis	300.0		10	94757	08/27/12 20:50	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 13:55	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	95105	09/05/12 12:59	RWE	TAL WFD

Client Sample ID: OC-GW-202D

Lab Sample ID: 360-42351-3
Date Collected: 08/20/12 10:50
Matrix: Water
Date Received: 08/23/12 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:35	TJS	TAL WFD
Total/NA	Analysis	300.0		10	94757	08/27/12 21:07	AMS	TAL WFD
Total/NA	Analysis	300.0		50	94757	08/27/12 21:24	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 13:57	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		20	95105	09/05/12 13:00	RWE	TAL WFD

Client Sample ID: OC-GW-25

Lab Sample ID: 360-42351-4
Date Collected: 08/21/12 07:55
Matrix: Water
Date Received: 08/23/12 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:38	TJS	TAL WFD
Total/NA	Analysis	300.0		10	94759	08/27/12 23:41	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 13:58	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD

Lab Chronicle

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-GW-25 — Lab Sample ID: 360-42351-4

Date Collected: 08/21/12 07:55
Date Received: 08/23/12 17:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	L107-06-1B		10	95105	09/05/12 13:00	RWE	TAL WFD

Client Sample ID: OC-PZ-18R — Lab Sample ID: 360-42351-5

Date Collected: 08/21/12 09:00
Date Received: 08/23/12 17:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:41	TJS	TAL WFD
Total/NA	Analysis	300.0		10	94759	08/27/12 23:58	AMS	TAL WFD
Total/NA	Analysis	300.0		1	94969	08/30/12 00:44	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 14:00	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	95105	09/05/12 13:01	RWE	TAL WFD

Client Sample ID: PZ-24 — Lab Sample ID: 360-42351-6

Date Collected: 08/21/12 10:10
Date Received: 08/23/12 17:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:45	TJS	TAL WFD
Total/NA	Analysis	300.0		10	94759	08/28/12 00:15	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 14:01	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	95105	09/05/12 13:02	RWE	TAL WFD

Client Sample ID: OC-PZ-17RR — Lab Sample ID: 360-42351-7

Date Collected: 08/21/12 11:30
Date Received: 08/23/12 17:00
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:53	TJS	TAL WFD
Total/NA	Analysis	300.0		10	94759	08/28/12 00:32	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 14:03	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	95105	09/05/12 13:03	RWE	TAL WFD

Lab Chronicle

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Client Sample ID: OC-GW-78S

Lab Sample ID: 360-42351-8

Date Collected: 08/22/12 10:45
Matrix: Water
Date Received: 08/23/12 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 16:56	TJS	TAL WFD
Total/NA	Analysis	300.0		10	94759	08/28/12 00:49	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 14:04	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	95105	09/05/12 13:04	RWE	TAL WFD

Client Sample ID: OC-GW-79S

Lab Sample ID: 360-42351-9

Date Collected: 08/22/12 11:20
Matrix: Water
Date Received: 08/23/12 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 17:00	TJS	TAL WFD
Total/NA	Analysis	300.0		20	94759	08/28/12 01:06	AMS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 14:05	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		20	95105	09/05/12 13:04	RWE	TAL WFD

Client Sample ID: PZ-16RR

Lab Sample ID: 360-42351-10

Date Collected: 08/22/12 11:40
Matrix: Water
Date Received: 08/23/12 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			94836	08/30/12 08:55	BH	TAL WFD
Dissolved	Analysis	6010C		1	94890	08/30/12 17:03	TJS	TAL WFD
Total/NA	Analysis	SM 2510B		1	95004	09/04/12 14:14	AMS	TAL WFD
Total/NA	Analysis	300.0		10	95082	09/05/12 15:19	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			94991	09/04/12 12:49	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		20	95105	09/05/12 13:07	RWE	TAL WFD

Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

Certification Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-42351-1

Laboratory: TestAmerica Westfield

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0494	09-30-12
Maine	State Program	1	MA00014	05-03-13
Massachusetts	State Program	1	M-MA014	06-30-13
New Hampshire	NELAC	1	2539	08-08-13
Rhode Island	State Program	1	LAO00057	12-30-12
Vermont	State Program	1	VT-10843	11-18-12

State Accreditation Matrix

Method Name	Description	Primary Accreditation	
		New Hampshire (NELAC)	Mass
180.1	Turbidity, Nephelometric	P	P
245.1	Mercury (CVAA)	NP/P	NP
300	Anions, Ion Chromatography	NP/P	NP/P
410.4	COD	NP	NP
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P
524.2	Trihalomethane compounds	P	P
608	Organochlorine Pest/PCBs (list upon request)	NP	NP
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW	
1103.1	E.coli		ambient/source
3546	Microwave Extraction	SW	
5035	Closed System Purge and Trap	SW	
6020	Metals (ICP/MS) (list upon request)	NP	
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P	
3010A	Preparation, Total Metals	NP/P	
3020A	Preparation, Total Metals	NP/P	
3050B	Preparation, Metals	SW	
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP	
5030B	Purge and Trap	NP	
6010C	Metals (ICP)(list upon request)	NP/SW	
7196A	Chromium, Hexavalent	NP/SW	
7470A	Mercury (CVAA)	NP	
7471A	Mercury (CVAA)	SW	
8081B	Organochlorine Pesticides (GC)(list upon request)	NP/SW	
8082A	PCBs by Gas Chromatography(list upon request)	NP/SW	
8260C	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW	
8270D	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW	
9012A	Cyanide, Total and/or Amenable	NP/SW	
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP	
9045C	pH	SW	
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)	NP/SW	
Enterolert	Enterococcus		ambient/source
L107041C	Nitrogen, Nitrate	NP	
L107-06-1B	Nitrogen Ammonia	NP	NP
L204001A CN	Cyanide, Total	P	NP/P
L210-001A	Phenolics, Total Recoverable	NP	NP
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)	NP/SW	
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)	NP/SW	
SM 2320B	Alkalinity	NP/P	NP/P
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P
SM 2540D	Solids, Total Suspended (TSS)	NP	NP
SM 3500 CR D	Chromium, Hexavalent	NP	
SM 4500 Cl F	Chlorine, Residual		NP
SM 4500 H+ B	pH	NP/P	NP/P
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP
SM 4500 P E	Phosphorus, Total	NP	NP
SM 4500 S2 D	Sulfide, Total	NP	
SM 5210B	BOD, 5-Day	NP	NP
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP
SM 9215E	Heterotrophic Plate Count (SimPlate)		P
SM 9222D	Coliforms, Fecal (Membrane Filter)		NP
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P
SM 9223	Coliforms, Total, and E.Coli (Enumeration)		P

Not all organic compounds are accreditied under YNI
For methods with multiple compounds all compounds may not meet TNI criteria, a listing should be obtained from the laboratory

The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 360-42351-1

Login Number: 42351
List Number: 1
Creator: Kolb, Chris M

List Source: TestAmerica Westfield

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Westfield
Westfield Executive Park 53 Southampton Road
Westfield, MA 01085
Phone (413) 572-4000 Fax (413) 572-3707

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

9/7/2012

Client Information	Sampler:	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No:
Client Contact: James Cashwell	Phone:	E-Mail: becky.mason@testamericainc.com		Page: 1 of 1
Company: Olin Corporation				Job #: 360-42351
Address: 51 Eames Street	Due Date Requested:			
City: Wilington	TAT Requested (days):			
State, Zip: MA, 01887				
Phone:	PO #: REWI0013			
Email: beguichard@olin.com	WO #:			
Project Name: Olin Quarterly Groundwater	Project #: 36001816			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2SO3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - ph 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	LACH_107_06_1_B - Ammonia	6010B - Field filtered Al/Cr	2510B Spec. Cond., 300.0_28D SO4/Cl	Total Number of containers	Special Instructions/Note:
			Preservation Code:				S	D	N		
PZ-25	8-20-12	9:30	G	Water	y	n	x	x	x	3	MCP
OC-GW-20DS	8-20-12	10:10	G	Water	y	n	x	x	x	3	
OC-GW-20DD	8-20-12	10:50	G	Water	y	n	x	x	x	3	
OC-GW-25	8-21-12	7:55	G	Water	y	n	x	x	x	3	
OC-PZ-18R	8-21-12	9:00	G	Water	y	n	x	x	x	3	
PZ-24	8-21-12	10:10	G	Water	y	n	x	x	x	3	
OC-PZ-17RR	8-21-12	11:20	G	Water	y	n	x	x	x	3	
~~OC-GW-16R~~	~~8-22-12~~	~~8:30~~	~~G~~	Water	~~y~~	~~n~~					
OC-GW-78S	8-22-12	10:45	G	Water	y	n	x	x	x	3	
OC-GW-79S	8-22-12	11:20	G	Water	y	n	x	x	x	3	
PZ-16RR	8-22-12	11:40	G	Water	y	n	x	x	x	3	

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	8-23-12	Olin	[signature]	8/23/12 2:00	TAC
[signature]	8/23/12 1430	TAC	[signature]	8-23-12 1430	
[signature]	8-23-12 1700	TA	[signature]	8/23/12 1700	TA

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 0.2 3.0 1.2 ICE