



---

2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

## LABORATORY REPORT

April 19, 2016

Rob Nieman  
ALS Environmental  
4388 Glendale Milford Road  
Cincinnati, OH 45242

**RE: Keystone Landfill/PADOH/PADEP / 1604124**

Dear Rob:

Enclosed are the results of the sample submitted to our laboratory on April 5, 2016. For your reference, these analyses have been assigned our service request number P1601775.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at [www.alsglobal.com](http://www.alsglobal.com). Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

**ALS | Environmental**

By Sue Anderson at 7:47 am, Apr 19, 2016

For Kate Aguilera  
Project Manager



2655 Park Center Dr., Suite A  
Simi Valley, CA 93065  
T: +1 805 526 7161  
F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

Client: ALS Environmental  
Project: Keystone Landfill/PADOH/PADEP / 1604124

Service Request No: P1601775

---

## CASE NARRATIVE

The sample was received intact under chain of custody on April 5, 2016 and was stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the sample at the time of sample receipt.

### Sulfur Analysis

The sample was analyzed for twenty sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP or AIHA-LAP accreditation.

### Volatile Organic Compound Analysis

The sample was also analyzed for volatile organic compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation, however it is not part of the AIHA-LAP accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The container was cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

---

*The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.*

*Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.*



2655 Park Center Dr., Suite A  
 Simi Valley, CA 93065  
 T: +1 805 526 7161  
 F: +1 805 526 7270  
[www.alsglobal.com](http://www.alsglobal.com)

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>	101661
Arizona DHS	<a href="http://www.azdhs.gov/lab/license/env.htm">http://www.azdhs.gov/lab/license/env.htm</a>	AZ0694
DoD ELAP	<a href="http://www.pjlabs.com/search-accredited-labs">http://www.pjlabs.com/search-accredited-labs</a>	L15-398
Florida DOH (NELAP)	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E871020
Maine DHHS	<a href="http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm">http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm</a>	2014025
Minnesota DOH (NELAP)	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	977273
New Jersey DEP (NELAP)	<a href="http://www.nj.gov/dep/oqa/">http://www.nj.gov/dep/oqa/</a>	CA009
New York DOH (NELAP)	<a href="http://www.wadsworth.org/labcert/elap/elap.html">http://www.wadsworth.org/labcert/elap/elap.html</a>	11221
Oregon PHD (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	4068-003
Pennsylvania DEP	<a href="http://www.depweb.state.pa.us/labs">http://www.depweb.state.pa.us/labs</a>	68-03307 (Registration)
Texas CEQ (NELAP)	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704413-15-6
Utah DOH (NELAP)	<a href="http://www.health.utah.gov/lab/labimp/certification/index.html">http://www.health.utah.gov/lab/labimp/certification/index.html</a>	CA01627201 5-5
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at [www.alsglobal.com](http://www.alsglobal.com), or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

**ALS ENVIRONMENTAL**

DETAIL SUMMARY REPORT

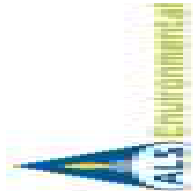
Client: ALS Environmental  
 Project ID: Keystone Landfill/PADOH/PADEP / 1604124

Service Request: P1601775

Date Received: 4/5/2016  
 Time Received: 10:30

ASTM D 5504-12 - Sulfur Can
TO-15 - VOC Cans

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	ASTM D 5504-12 - Sulfur Can	TO-15 - VOC Cans
1604124-06A (KSL040416-Summa)	P1601775-001	Air	4/4/2016	10:20	AS00727	-1.65	3.22	X	X



Subcontractor:  
 ALS Simi Valley  
 2655 Park Center Drive  
 Suite A  
 Simi Valley, CA

TEL: (805) 526-7161  
 FAX: (805) 526-7270  
 Acct #:

# CHAIN-OF-CUSTODY RECORD

Date: 06-Apr-16  
 COC ID: 3892  
 Due Date: 19-Apr-16

Page 1 of 1

P1601775

Salesperson

Customer Information		Project Information		Parameter/Method Request for Analysis																			
Purchase Order	31-2029	Project Name	1604124	A		Sulfur gases by ASTM 5504 Mod. (A5504)																	
Work Order		Project Number		B		TO-15 by GC/MS (ETO-15)																	
Company Name	ALS Group USA, Corp	Bill To Company	ALS Group USA, Corp	C																			
Send Report To	Rob Nieman	Inv Attn	Accounts Payable	D																			
Address	4388 Glendale Milford Rd	Address	4388 Glendale Milford Rd	E																			
City/State/Zip	Cincinnati, Ohio 45242-	City/State/Zip	Cincinnati, Ohio 45242-	F																			
Phone	(513) 733-5336	Phone	(513) 733-5336	G																			
Fax	(513) 733-5347	Fax	(513) 733-5347	H																			
eMail Address	alsen.reporting@alsglobal.com	eMail CC		I																			
<b>Sample ID</b>				A		B		C		D		E		F		G		H		I		J	
1604124-06A (KSL040416-Summa)				X		X																	

Matrix	Collection Date	24hr	Bottle
Air	4/Apr/2016	(1)	SUMMA

**Comments:**

Sub CoC received for P1601775 via email on 4/6/16-Kate

Relinquished by:

Date/Time

Received by:

Date/Time

Cooler IDs

Report/QC Level  
Std

Relinquished by:

Date/Time

Received by:  
AI David

Date/Time  
04/05/16 @ 10:30

# SUMMA

## Air - Chain of Custody Record & Analytical Service Request

Page \_\_\_\_\_ of \_\_\_\_\_



2655 Park Center Drive, Suite A  
 Simi Valley, California 93065  
 Phone (805) 526-7161  
 Fax (805) 526-7270

Company Name & Address (Reporting Information)  
 Pennsylvania Dept. of Environmental Protection  
 2 Public Square  
 Wilkes-Barre, PA 18701-1915  
 Project Manager Roger Bellas  
 Phone (570) 826-2511 Fax (570) 826-5448  
 Email Address for Result Reporting RBELLAS@PA.GOV

Requested Turnaround Time in Business Days (Surcharges) please circle  
 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10-Day-Standard

ALS Project No. **1601775**

ALS Contact:

Project Name **Keystone Landfill/PADOH/PADEP**

Project Number

P.O. # Billing Information

Sampler (Print & Sign) **Ralph Policchio, Ralph Policchio**

Flow Controller ID (Bar code # - FC #) **SFC00006**

Canister Start Pressure "Hg **-29**

Canister End Pressure "Hg/psig **-5**

Sample Volume

Legal Seal # **1106984**

Client Sample ID **KS204042016**

Date Collected **04/04/2016**

Time Collected **10:30AM**

Laboratory ID Number **D**

Report Tier Levels - please select  
 Tier I - Results (Default in not specified)  
 Tier II (Results + QC Summaries)  
 Tier III (Results + QC & Calibration Summaries)  
 Tier IV (Date Validation Package) 10% Surcharge

Relinquished by: (Signature) **Ralph Policchio**

Relinquished by: (Signature) **R Bellas**

Date: **04/04/2016**

Time: **2:30PM**

Date: **04/04/2016**

Time: **10:30**

Chain of Custody Seal: (Circle) **INTACT** BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Cooler / Blank Temperature \_\_\_\_\_ °C

**ALS Environmental  
Sample Acceptance Check Form**

Client: ALS Environmental Work order: P1601775  
 Project: Keystone Landfill/PADOH/PADEP  
 Sample(s) received on: 4/5/16 Date opened: 4/5/16 by: ADAVID

**Note:** This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

- |   | <u>Yes</u>                          | <u>No</u>                           | <u>N/A</u>                          |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were <b>sample containers</b> properly marked with client sample ID?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 2 Did <b>sample containers</b> arrive in good condition?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 3 Were <b>chain-of-custody</b> papers used and filled out?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 4 Did <b>sample container labels</b> and/or tags agree with custody papers?                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 5 Was <b>sample volume</b> received adequate for analysis?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 6 Are samples within specified holding times?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 7 Was proper <b>temperature</b> (thermal preservation) of cooler at receipt adhered to?                         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8 Were <b>custody seals</b> on outside of cooler/Box/Container?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Location of seal(s)? _____ Sealing Lid?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Were signature and date included?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Were seals intact?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 9 Do containers have appropriate <b>preservation</b> , according to method/SOP or Client specified information? | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Is there a client indication that the submitted samples are <b>pH</b> preserved?                                | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were <b>VOA vials</b> checked for presence/absence of air bubbles?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it?       | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 10 <b>Tubes:</b> Are the tubes capped and intact?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 11 <b>Badges:</b> Are the badges properly capped and intact?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Are dual bed badges separated and individually capped and intact?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1601775-001.01	6.0 L Silonite Can					

Explain any discrepancies: (include lab sample ID numbers): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** ALS Environmental  
**Client Sample ID:** 1604124-06A (KSL040416-Summa)  
**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775  
 ALS Sample ID: P1601775-001

Test Code: ASTM D 5504-12  
 Instrument ID: Agilent 7890A/GC22/SCD  
 Analyst: Mike Conejo  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:  
 Container ID: AS00727

Date Collected: 4/4/16  
 Time Collected: 10:20  
 Date Received: 4/5/16  
 Date Analyzed: 4/6/16  
 Time Analyzed: 11:44  
 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.65      Final Pressure (psig): 3.22

Canister Dilution Factor: 1.37

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.5	ND	6.9	
463-58-1	Carbonyl Sulfide	ND	17	ND	6.9	
74-93-1	Methyl Mercaptan	ND	13	ND	6.9	
75-08-1	Ethyl Mercaptan	ND	17	ND	6.9	
75-18-3	Dimethyl Sulfide	ND	17	ND	6.9	
75-15-0	Carbon Disulfide	ND	11	ND	3.4	
75-33-2	Isopropyl Mercaptan	ND	21	ND	6.9	
75-66-1	tert-Butyl Mercaptan	ND	25	ND	6.9	
107-03-9	n-Propyl Mercaptan	ND	21	ND	6.9	
624-89-5	Ethyl Methyl Sulfide	ND	21	ND	6.9	
110-02-1	Thiophene	ND	24	ND	6.9	
513-44-0	Isobutyl Mercaptan	ND	25	ND	6.9	
352-93-2	Diethyl Sulfide	ND	25	ND	6.9	
109-79-5	n-Butyl Mercaptan	ND	25	ND	6.9	
624-92-0	Dimethyl Disulfide	ND	13	ND	3.4	
616-44-4	3-Methylthiophene	ND	27	ND	6.9	
110-01-0	Tetrahydrothiophene	ND	25	ND	6.9	
638-02-8	2,5-Dimethylthiophene	ND	31	ND	6.9	
872-55-9	2-Ethylthiophene	ND	31	ND	6.9	
110-81-6	Diethyl Disulfide	ND	17	ND	3.4	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.



# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** ALS Environmental  
**Client Sample ID:** Method Blank  
**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775  
 ALS Sample ID: P160406-MB

Test Code: ASTM D 5504-12  
 Instrument ID: Agilent 7890A/GC22/SCD  
 Analyst: Mike Conejo  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:

Date Collected: NA  
 Time Collected: NA  
 Date Received: NA  
 Date Analyzed: 4/06/16  
 Time Analyzed: 07:44  
 Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

**Client:** ALS Environmental  
**Client Sample ID:** Lab Control Sample  
**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775  
ALS Sample ID: P160406-LCS

Test Code: ASTM D 5504-12  
Instrument ID: Agilent 7890A/GC22/SCD  
Analyst: Mike Conejo  
Sample Type: 6.0 L Silonite Canister  
Test Notes:

Date Collected: NA  
Date Received: NA  
Date Analyzed: 4/06/16  
Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
7783-06-4	Hydrogen Sulfide	1,000	<b>1,190</b>	<b>119</b>	65-138	
463-58-1	Carbonyl Sulfide	1,000	<b>1,240</b>	<b>124</b>	60-135	
74-93-1	Methyl Mercaptan	1,000	<b>1,190</b>	<b>119</b>	57-140	

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 3

**Client:** ALS Environmental

**Client Sample ID:** 1604124-06A (KSL040416-Summa)

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P1601775-001

Test Code: EPA TO-15

Date Collected: 4/4/16

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 4/5/16

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AS00727

Initial Pressure (psig): -1.65      Final Pressure (psig): 3.22

Canister Dilution Factor: 1.37

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	
115-07-1	Propene	ND	0.69	ND	0.40	
75-71-8	Dichlorodifluoromethane (CFC 12)	<b>1.9</b>	0.69	<b>0.39</b>	0.14	
74-87-3	Chloromethane	ND	0.69	ND	0.33	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.69	ND	0.098	
75-01-4	Vinyl Chloride	ND	0.69	ND	0.27	
106-99-0	1,3-Butadiene	ND	0.69	ND	0.31	
74-83-9	Bromomethane	ND	0.69	ND	0.18	
75-00-3	Chloroethane	ND	0.69	ND	0.26	
64-17-5	Ethanol	ND	6.9	ND	3.6	
75-05-8	Acetonitrile	ND	0.69	ND	0.41	
107-02-8	Acrolein	ND	2.7	ND	1.2	
67-64-1	Acetone	ND	6.9	ND	2.9	
75-69-4	Trichlorofluoromethane	<b>1.0</b>	0.69	<b>0.18</b>	0.12	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	6.9	ND	2.8	
107-13-1	Acrylonitrile	ND	0.69	ND	0.32	
75-35-4	1,1-Dichloroethene	ND	0.69	ND	0.17	
75-09-2	Methylene Chloride	ND	0.69	ND	0.20	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.69	ND	0.22	
76-13-1	Trichlorotrifluoroethane	ND	0.69	ND	0.089	
75-15-0	Carbon Disulfide	ND	6.9	ND	2.2	
156-60-5	trans-1,2-Dichloroethene	ND	0.69	ND	0.17	
75-34-3	1,1-Dichloroethane	ND	0.69	ND	0.17	
1634-04-4	Methyl tert-Butyl Ether	ND	0.69	ND	0.19	
108-05-4	Vinyl Acetate	ND	6.9	ND	1.9	
78-93-3	2-Butanone (MEK)	ND	6.9	ND	2.3	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 2 of 3

**Client:** ALS Environmental  
**Client Sample ID:** 1604124-06A (KSL040416-Summa)  
**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775  
 ALS Sample ID: P1601775-001

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister  
 Test Notes:  
 Container ID: AS00727

Date Collected: 4/4/16  
 Date Received: 4/5/16  
 Date Analyzed: 4/7/16  
 Volume(s) Analyzed: 1.00 Liter(s)

Initial Pressure (psig): -1.65      Final Pressure (psig): 3.22

Canister Dilution Factor: 1.37

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.69	ND	0.17	
141-78-6	Ethyl Acetate	ND	1.4	ND	0.38	
110-54-3	n-Hexane	ND	0.69	ND	0.19	
67-66-3	Chloroform	ND	0.69	ND	0.14	
109-99-9	Tetrahydrofuran (THF)	ND	0.69	ND	0.23	
107-06-2	1,2-Dichloroethane	ND	0.69	ND	0.17	
71-55-6	1,1,1-Trichloroethane	ND	0.69	ND	0.13	
71-43-2	Benzene	ND	0.69	ND	0.21	
56-23-5	Carbon Tetrachloride	ND	0.69	ND	0.11	
110-82-7	Cyclohexane	ND	1.4	ND	0.40	
78-87-5	1,2-Dichloropropane	ND	0.69	ND	0.15	
75-27-4	Bromodichloromethane	ND	0.69	ND	0.10	
79-01-6	Trichloroethene	ND	0.69	ND	0.13	
123-91-1	1,4-Dioxane	ND	0.69	ND	0.19	
80-62-6	Methyl Methacrylate	ND	1.4	ND	0.33	
142-82-5	n-Heptane	ND	0.69	ND	0.17	
10061-01-5	cis-1,3-Dichloropropene	ND	0.69	ND	0.15	
108-10-1	4-Methyl-2-pentanone	ND	0.69	ND	0.17	
10061-02-6	trans-1,3-Dichloropropene	ND	0.69	ND	0.15	
79-00-5	1,1,2-Trichloroethane	ND	0.69	ND	0.13	
108-88-3	Toluene	ND	0.69	ND	0.18	
591-78-6	2-Hexanone	ND	0.69	ND	0.17	
124-48-1	Dibromochloromethane	ND	0.69	ND	0.080	
106-93-4	1,2-Dibromoethane	ND	0.69	ND	0.089	
123-86-4	n-Butyl Acetate	ND	0.69	ND	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 3 of 3

**Client:** ALS Environmental

**Client Sample ID:** 1604124-06A (KSL040416-Summa)

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P1601775-001

Test Code: EPA TO-15

Date Collected: 4/4/16

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 4/5/16

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AS00727

Initial Pressure (psig): -1.65      Final Pressure (psig): 3.22

Canister Dilution Factor: 1.37

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.69	ND	0.15	
127-18-4	Tetrachloroethene	ND	0.69	ND	0.10	
108-90-7	Chlorobenzene	ND	0.69	ND	0.15	
100-41-4	Ethylbenzene	ND	0.69	ND	0.16	
179601-23-1	m,p-Xylenes	ND	1.4	ND	0.32	
75-25-2	Bromoform	ND	0.69	ND	0.066	
100-42-5	Styrene	ND	0.69	ND	0.16	
95-47-6	o-Xylene	ND	0.69	ND	0.16	
111-84-2	n-Nonane	ND	0.69	ND	0.13	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.69	ND	0.10	
98-82-8	Cumene	ND	0.69	ND	0.14	
80-56-8	alpha-Pinene	ND	0.69	ND	0.12	
103-65-1	n-Propylbenzene	ND	0.69	ND	0.14	
622-96-8	4-Ethyltoluene	ND	0.69	ND	0.14	
108-67-8	1,3,5-Trimethylbenzene	ND	0.69	ND	0.14	
95-63-6	1,2,4-Trimethylbenzene	ND	0.69	ND	0.14	
100-44-7	Benzyl Chloride	ND	0.69	ND	0.13	
541-73-1	1,3-Dichlorobenzene	ND	0.69	ND	0.11	
106-46-7	1,4-Dichlorobenzene	ND	0.69	ND	0.11	
95-50-1	1,2-Dichlorobenzene	ND	0.69	ND	0.11	
5989-27-5	d-Limonene	ND	0.69	ND	0.12	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.69	ND	0.071	
120-82-1	1,2,4-Trichlorobenzene	ND	0.69	ND	0.092	
91-20-3	Naphthalene	ND	0.69	ND	0.13	
87-68-3	Hexachlorobutadiene	ND	0.69	ND	0.064	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 3

**Client:** ALS Environmental

**Client Sample ID:** Method Blank

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P160407-MB

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 4/7/16

Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result	MRL	Result	MRL	Data Qualifier
		µg/m <sup>3</sup>	µg/m <sup>3</sup>	ppbV	ppbV	
115-07-1	Propene	ND	0.50	ND	0.29	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.50	ND	0.10	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.50	ND	0.072	
75-01-4	Vinyl Chloride	ND	0.50	ND	0.20	
106-99-0	1,3-Butadiene	ND	0.50	ND	0.23	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.50	ND	0.19	
64-17-5	Ethanol	ND	5.0	ND	2.7	
75-05-8	Acetonitrile	ND	0.50	ND	0.30	
107-02-8	Acrolein	ND	2.0	ND	0.87	
67-64-1	Acetone	ND	5.0	ND	2.1	
75-69-4	Trichlorofluoromethane	ND	0.50	ND	0.089	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	5.0	ND	2.0	
107-13-1	Acrylonitrile	ND	0.50	ND	0.23	
75-35-4	1,1-Dichloroethene	ND	0.50	ND	0.13	
75-09-2	Methylene Chloride	ND	0.50	ND	0.14	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.50	ND	0.16	
76-13-1	Trichlorotrifluoroethane	ND	0.50	ND	0.065	
75-15-0	Carbon Disulfide	ND	5.0	ND	1.6	
156-60-5	trans-1,2-Dichloroethene	ND	0.50	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.50	ND	0.12	
1634-04-4	Methyl tert-Butyl Ether	ND	0.50	ND	0.14	
108-05-4	Vinyl Acetate	ND	5.0	ND	1.4	
78-93-3	2-Butanone (MEK)	ND	5.0	ND	1.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 2 of 3

**Client:** ALS Environmental

**Client Sample ID:** Method Blank

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P160407-MB

Test Code: EPA TO-15

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Analyst: Simon Cao

Sample Type: 6.0 L Silonite Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 4/7/16

Volume(s) Analyzed: 1.00 Liter(s)

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.50	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.0	ND	0.28	
110-54-3	n-Hexane	ND	0.50	ND	0.14	
67-66-3	Chloroform	ND	0.50	ND	0.10	
109-99-9	Tetrahydrofuran (THF)	ND	0.50	ND	0.17	
107-06-2	1,2-Dichloroethane	ND	0.50	ND	0.12	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ND	0.092	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.50	ND	0.11	
75-27-4	Bromodichloromethane	ND	0.50	ND	0.075	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
123-91-1	1,4-Dioxane	ND	0.50	ND	0.14	
80-62-6	Methyl Methacrylate	ND	1.0	ND	0.24	
142-82-5	n-Heptane	ND	0.50	ND	0.12	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	ND	0.11	
108-10-1	4-Methyl-2-pentanone	ND	0.50	ND	0.12	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	ND	0.11	
79-00-5	1,1,2-Trichloroethane	ND	0.50	ND	0.092	
108-88-3	Toluene	ND	0.50	ND	0.13	
591-78-6	2-Hexanone	ND	0.50	ND	0.12	
124-48-1	Dibromochloromethane	ND	0.50	ND	0.059	
106-93-4	1,2-Dibromoethane	ND	0.50	ND	0.065	
123-86-4	n-Butyl Acetate	ND	0.50	ND	0.11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 3 of 3

**Client:** ALS Environmental

**Client Sample ID:** Method Blank

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P160407-MB

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: NA

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Canister Dilution Factor: 1.00

CAS #	Compound	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.50	ND	0.11	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	
108-90-7	Chlorobenzene	ND	0.50	ND	0.11	
100-41-4	Ethylbenzene	ND	0.50	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.0	ND	0.23	
75-25-2	Bromoform	ND	0.50	ND	0.048	
100-42-5	Styrene	ND	0.50	ND	0.12	
95-47-6	o-Xylene	ND	0.50	ND	0.12	
111-84-2	n-Nonane	ND	0.50	ND	0.095	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	ND	0.073	
98-82-8	Cumene	ND	0.50	ND	0.10	
80-56-8	alpha-Pinene	ND	0.50	ND	0.090	
103-65-1	n-Propylbenzene	ND	0.50	ND	0.10	
622-96-8	4-Ethyltoluene	ND	0.50	ND	0.10	
108-67-8	1,3,5-Trimethylbenzene	ND	0.50	ND	0.10	
95-63-6	1,2,4-Trimethylbenzene	ND	0.50	ND	0.10	
100-44-7	Benzyl Chloride	ND	0.50	ND	0.097	
541-73-1	1,3-Dichlorobenzene	ND	0.50	ND	0.083	
106-46-7	1,4-Dichlorobenzene	ND	0.50	ND	0.083	
95-50-1	1,2-Dichlorobenzene	ND	0.50	ND	0.083	
5989-27-5	d-Limonene	ND	0.50	ND	0.090	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.50	ND	0.052	
120-82-1	1,2,4-Trichlorobenzene	ND	0.50	ND	0.067	
91-20-3	Naphthalene	ND	0.50	ND	0.095	
87-68-3	Hexachlorobutadiene	ND	0.50	ND	0.047	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.



# ALS ENVIRONMENTAL

## SURROGATE SPIKE RECOVERY RESULTS

Page 1 of 1

**Client:** ALS Environmental  
**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

Test Code: EPA TO-15  
 Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9  
 Analyst: Simon Cao  
 Sample Type: 6.0 L Silonite Canister(s)  
 Test Notes:

Date(s) Collected: 4/4/16  
 Date(s) Received: 4/5/16  
 Date(s) Analyzed: 4/7/16

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4	Toluene-d8	Bromofluorobenzene	Acceptance Limits	Data Qualifier
		Percent Recovered	Percent Recovered	Percent Recovered		
Method Blank	P160407-MB	<b>90</b>	<b>104</b>	<b>105</b>	70-130	
Lab Control Sample	P160407-LCS	<b>84</b>	<b>102</b>	<b>108</b>	70-130	
1604124-06A (KSL040416-Summa)	P1601775-001	<b>85</b>	<b>101</b>	<b>104</b>	70-130	
1604124-06A (KSL040416-Summa)	P1601775-001DUP	<b>85</b>	<b>102</b>	<b>105</b>	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.

Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 3

**Client:** ALS Environmental

**Client Sample ID:** Lab Control Sample

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P160407-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: NA

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
115-07-1	Propene	196	180	92	49-131	
75-71-8	Dichlorodifluoromethane (CFC 12)	188	154	82	65-117	
74-87-3	Chloromethane	200	175	88	48-132	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	204	151	74	65-122	
75-01-4	Vinyl Chloride	200	141	71	65-128	
106-99-0	1,3-Butadiene	206	168	82	62-143	
74-83-9	Bromomethane	202	189	94	65-130	
75-00-3	Chloroethane	200	191	96	69-126	
64-17-5	Ethanol	998	923	92	57-126	
75-05-8	Acetonitrile	212	184	87	51-134	
107-02-8	Acrolein	214	217	101	55-146	
67-64-1	Acetone	1,080	944	87	57-120	
75-69-4	Trichlorofluoromethane	216	163	75	59-139	
67-63-0	2-Propanol (Isopropyl Alcohol)	418	380	91	59-129	
107-13-1	Acrylonitrile	212	215	101	64-136	
75-35-4	1,1-Dichloroethene	216	212	98	72-123	
75-09-2	Methylene Chloride	222	198	89	63-117	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	218	213	98	50-141	
76-13-1	Trichlorotrifluoroethane	220	206	94	68-118	
75-15-0	Carbon Disulfide	210	188	90	55-143	
156-60-5	trans-1,2-Dichloroethene	210	216	103	69-129	
75-34-3	1,1-Dichloroethane	212	194	92	66-122	
1634-04-4	Methyl tert-Butyl Ether	216	200	93	55-128	
108-05-4	Vinyl Acetate	1,040	1070	103	66-140	
78-93-3	2-Butanone (MEK)	220	222	101	62-127	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 2 of 3

**Client:** ALS Environmental

**Client Sample ID:** Lab Control Sample

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P160407-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: NA

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
156-59-2	cis-1,2-Dichloroethene	218	206	94	65-125	
141-78-6	Ethyl Acetate	428	415	97	64-132	
110-54-3	n-Hexane	212	187	88	58-126	
67-66-3	Chloroform	224	195	87	68-117	
109-99-9	Tetrahydrofuran (THF)	220	218	99	64-123	
107-06-2	1,2-Dichloroethane	214	180	84	63-124	
71-55-6	1,1,1-Trichloroethane	210	194	92	68-120	
71-43-2	Benzene	226	183	81	61-110	
56-23-5	Carbon Tetrachloride	230	209	91	65-137	
110-82-7	Cyclohexane	424	400	94	68-122	
78-87-5	1,2-Dichloropropane	216	209	97	67-122	
75-27-4	Bromodichloromethane	218	207	95	71-124	
79-01-6	Trichloroethene	216	193	89	71-121	
123-91-1	1,4-Dioxane	210	234	111	67-122	
80-62-6	Methyl Methacrylate	422	458	109	76-130	
142-82-5	n-Heptane	216	209	97	67-125	
10061-01-5	cis-1,3-Dichloropropene	208	222	107	73-131	
108-10-1	4-Methyl-2-pentanone	220	230	105	66-132	
10061-02-6	trans-1,3-Dichloropropene	210	228	109	76-135	
79-00-5	1,1,2-Trichloroethane	216	219	101	73-121	
108-88-3	Toluene	218	208	95	67-117	
591-78-6	2-Hexanone	220	240	109	59-128	
124-48-1	Dibromochloromethane	220	244	111	73-132	
106-93-4	1,2-Dibromoethane	218	243	111	73-128	
123-86-4	n-Butyl Acetate	226	249	110	61-136	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 3 of 3

**Client:** ALS Environmental

**Client Sample ID:** Lab Control Sample

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P160407-LCS

Test Code: EPA TO-15

Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: NA

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 0.125 Liter(s)

Test Notes:

CAS #	Compound	Spike Amount µg/m <sup>3</sup>	Result µg/m <sup>3</sup>	% Recovery	ALS	Data Qualifier
					Acceptance Limits	
111-65-9	n-Octane	210	216	103	67-124	
127-18-4	Tetrachloroethene	202	215	106	65-126	
108-90-7	Chlorobenzene	220	219	100	68-120	
100-41-4	Ethylbenzene	218	222	102	69-123	
179601-23-1	m,p-Xylenes	428	429	100	67-125	
75-25-2	Bromoform	228	244	107	68-153	
100-42-5	Styrene	222	248	112	68-132	
95-47-6	o-Xylene	210	209	100	67-124	
111-84-2	n-Nonane	204	202	99	60-130	
79-34-5	1,1,2,2-Tetrachloroethane	210	234	111	72-128	
98-82-8	Cumene	208	208	100	67-124	
80-56-8	alpha-Pinene	212	221	104	67-129	
103-65-1	n-Propylbenzene	204	204	100	67-125	
622-96-8	4-Ethyltoluene	214	212	99	66-128	
108-67-8	1,3,5-Trimethylbenzene	214	216	101	65-125	
95-63-6	1,2,4-Trimethylbenzene	218	221	101	62-134	
100-44-7	Benzyl Chloride	220	257	117	74-145	
541-73-1	1,3-Dichlorobenzene	228	236	104	63-133	
106-46-7	1,4-Dichlorobenzene	208	224	108	62-129	
95-50-1	1,2-Dichlorobenzene	220	233	106	62-134	
5989-27-5	d-Limonene	210	215	102	66-137	
96-12-8	1,2-Dibromo-3-chloropropane	218	258	118	71-147	
120-82-1	1,2,4-Trichlorobenzene	230	255	111	60-145	
91-20-3	Naphthalene	218	240	110	56-158	
87-68-3	Hexachlorobutadiene	230	246	107	56-139	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result. Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

# ALS ENVIRONMENTAL

## LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 3

**Client:** ALS Environmental

**Client Sample ID:** 1604124-06A (KSL040416-Summa)

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P1601775-001DUP

Test Code: EPA TO-15

Date Collected: 4/4/16

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 4/5/16

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AS00727

Initial Pressure (psig): -1.65

Final Pressure (psig): 3.22

Canister Dilution Factor: 1.37

Compound	Sample Result		Duplicate Sample Result		Average µg/m <sup>3</sup>	% RPD	RPD Limit	Data Qualifier
	µg/m <sup>3</sup>	ppbV	µg/m <sup>3</sup>	ppbV				
Propene	ND	ND	ND	ND	-	-	25	
Dichlorodifluoromethane (CFC 12)	1.93	0.390	1.99	0.403	1.96	<b>3</b>	25	
Chloromethane	ND	ND	ND	ND	-	-	25	
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	ND	ND	ND	-	-	25	
Vinyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Butadiene	ND	ND	ND	ND	-	-	25	
Bromomethane	ND	ND	ND	ND	-	-	25	
Chloroethane	ND	ND	ND	ND	-	-	25	
Ethanol	ND	ND	ND	ND	-	-	25	
Acetonitrile	ND	ND	ND	ND	-	-	25	
Acrolein	ND	ND	ND	ND	-	-	25	
Acetone	ND	ND	ND	ND	-	-	25	
Trichlorofluoromethane	1.02	0.182	1.06	0.189	1.04	<b>4</b>	25	
2-Propanol (Isopropyl Alcohol)	ND	ND	ND	ND	-	-	25	
Acrylonitrile	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethene	ND	ND	ND	ND	-	-	25	
Methylene Chloride	ND	ND	ND	ND	-	-	25	
3-Chloro-1-propene (Allyl Chloride)	ND	ND	ND	ND	-	-	25	
Trichlorotrifluoroethane	ND	ND	ND	ND	-	-	25	
Carbon Disulfide	ND	ND	ND	ND	-	-	25	
trans-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
1,1-Dichloroethane	ND	ND	ND	ND	-	-	25	
Methyl tert-Butyl Ether	ND	ND	ND	ND	-	-	25	
Vinyl Acetate	ND	ND	ND	ND	-	-	25	
2-Butanone (MEK)	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# ALS ENVIRONMENTAL

## LABORATORY DUPLICATE SUMMARY RESULTS

Page 2 of 3

**Client:** ALS Environmental

**Client Sample ID:** 1604124-06A (KSL040416-Summa)

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P1601775-001DUP

Test Code: EPA TO-15

Date Collected: 4/4/16

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 4/5/16

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AS00727

Initial Pressure (psig): -1.65

Final Pressure (psig): 3.22

Canister Dilution Factor: 1.37

Compound	Sample Result		Duplicate Sample Result		Average µg/m <sup>3</sup>	% RPD	RPD Limit	Data Qualifier
	µg/m <sup>3</sup>	ppbV	µg/m <sup>3</sup>	ppbV				
cis-1,2-Dichloroethene	ND	ND	ND	ND	-	-	25	
Ethyl Acetate	ND	ND	ND	ND	-	-	25	
n-Hexane	ND	ND	ND	ND	-	-	25	
Chloroform	ND	ND	ND	ND	-	-	25	
Tetrahydrofuran (THF)	ND	ND	ND	ND	-	-	25	
1,2-Dichloroethane	ND	ND	ND	ND	-	-	25	
1,1,1-Trichloroethane	ND	ND	ND	ND	-	-	25	
Benzene	ND	ND	ND	ND	-	-	25	
Carbon Tetrachloride	ND	ND	ND	ND	-	-	25	
Cyclohexane	ND	ND	ND	ND	-	-	25	
1,2-Dichloropropane	ND	ND	ND	ND	-	-	25	
Bromodichloromethane	ND	ND	ND	ND	-	-	25	
Trichloroethene	ND	ND	ND	ND	-	-	25	
1,4-Dioxane	ND	ND	ND	ND	-	-	25	
Methyl Methacrylate	ND	ND	ND	ND	-	-	25	
n-Heptane	ND	ND	ND	ND	-	-	25	
cis-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
4-Methyl-2-pentanone	ND	ND	ND	ND	-	-	25	
trans-1,3-Dichloropropene	ND	ND	ND	ND	-	-	25	
1,1,2-Trichloroethane	ND	ND	ND	ND	-	-	25	
Toluene	ND	ND	ND	ND	-	-	25	
2-Hexanone	ND	ND	ND	ND	-	-	25	
Dibromochloromethane	ND	ND	ND	ND	-	-	25	
1,2-Dibromoethane	ND	ND	ND	ND	-	-	25	
n-Butyl Acetate	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

# ALS ENVIRONMENTAL

## LABORATORY DUPLICATE SUMMARY RESULTS

Page 3 of 3

**Client:** ALS Environmental

**Client Sample ID:** 1604124-06A (KSL040416-Summa)

**Client Project ID:** Keystone Landfill/PADOH/PADEP / 1604124

ALS Project ID: P1601775

ALS Sample ID: P1601775-001DUP

Test Code: EPA TO-15

Date Collected: 4/4/16

Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS9

Date Received: 4/5/16

Analyst: Simon Cao

Date Analyzed: 4/7/16

Sample Type: 6.0 L Silonite Canister

Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container ID: AS00727

Initial Pressure (psig): -1.65

Final Pressure (psig): 3.22

Canister Dilution Factor: 1.37

Compound	Sample Result		Duplicate Sample Result		Average µg/m <sup>3</sup>	% RPD	RPD Limit	Data Qualifier
	µg/m <sup>3</sup>	ppbV	µg/m <sup>3</sup>	ppbV				
n-Octane	ND	ND	ND	ND	-	-	25	
Tetrachloroethene	ND	ND	ND	ND	-	-	25	
Chlorobenzene	ND	ND	ND	ND	-	-	25	
Ethylbenzene	ND	ND	ND	ND	-	-	25	
m,p-Xylenes	ND	ND	ND	ND	-	-	25	
Bromoform	ND	ND	ND	ND	-	-	25	
Styrene	ND	ND	ND	ND	-	-	25	
o-Xylene	ND	ND	ND	ND	-	-	25	
n-Nonane	ND	ND	ND	ND	-	-	25	
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	-	-	25	
Cumene	ND	ND	ND	ND	-	-	25	
alpha-Pinene	ND	ND	ND	ND	-	-	25	
n-Propylbenzene	ND	ND	ND	ND	-	-	25	
4-Ethyltoluene	ND	ND	ND	ND	-	-	25	
1,3,5-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
1,2,4-Trimethylbenzene	ND	ND	ND	ND	-	-	25	
Benzyl Chloride	ND	ND	ND	ND	-	-	25	
1,3-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,4-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
1,2-Dichlorobenzene	ND	ND	ND	ND	-	-	25	
d-Limonene	ND	ND	ND	ND	-	-	25	
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND	-	-	25	
1,2,4-Trichlorobenzene	ND	ND	ND	ND	-	-	25	
Naphthalene	ND	ND	ND	ND	-	-	25	
Hexachlorobutadiene	ND	ND	ND	ND	-	-	25	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.