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[www.alsglobal.com](http://www.alsglobal.com)

## LABORATORY REPORT

September 10, 2014

Deborah Gray  
Stantec Consulting Services, Inc.  
1500 Lake Shore Drive Suite 100  
Columbus, OH 43204

**RE: Bridgeton / 182608020**

Dear Deborah:

Enclosed are the results of the samples submitted to our laboratory on August 1, 2014. For your reference, these analyses have been assigned our service request number P1403091. This report has been revised to include an addendum of calibration summaries, and can be reviewed at the end of this report.

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 Samantha Henningsen at 2:55 pm, Sep 10, 2014

Samantha Henningsen  
Project Manager



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Client: Stantec Consulting Services, Inc.  
Project: Bridgeton / 182608020

Service Request No: P1403091

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## CASE NARRATIVE

The samples were received intact under chain of custody on August 1, 2014 and were 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 samples at the time of sample receipt.

### Polynuclear Aromatic Hydrocarbon Analysis

The high volume PUF/XAD-2 samples were analyzed for polynuclear aromatic hydrocarbons (PAHs). The extracts were analyzed according to the methodology outlined in EPA Method TO-13A using combined gas chromatography/mass spectrometry (GC/MS). The samples were analyzed in SIM mode which is a method modification. This method is not included on the laboratory's DoD-ELAP or AIHA-LAP scope of accreditation. Any analytes flagged with an X are not included on the laboratory's NELAP scope of accreditation.

The spike recovery for Naphthalene in the Duplicate Laboratory Control Sample (DLCS) was outside the upper control criterion. The error associated with high recovery equates to a potential high bias; however, the laboratory control sample (LCS) was analyzed and the recovery for the analyte in question met the acceptance limits. No further corrective action was taken.

The spike recovery for the field surrogate Fluoranthene-d10 in sample 730D1-PAH (P1403091-002) was outside the lower control criterion due to matrix interference.

Sample 731sSQ-PAH (P1403091-006) could not be concentrated to 1.0mL final volume because of the heavy hydrocarbon nature of the matrix. The sample was concentrated to 10mL final volume. Due to the high concentration of Naphthalene present, a cross-contamination of the field blank 729Blank-PAH (P1403091-007) occurred.

NELAC requirements for compliance with EPA TO-13A state a duplicate sample must be analyzed. However, this is dependent upon the client submitting a secondary sample for extraction and analysis. Sample extraction was performed at the laboratory's off-site extraction facility located at 2360 Shasta Way, Suite G, Simi Valley, CA 93065.

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*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.*



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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>	L14-2
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>	2012039
Minnesota DOH (NELAP)	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	643428
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>	CA200007
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>	T104704413-14-5
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 3-3
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: Stantec Consulting Services, Inc.  
Project ID: Bridgeton / 182608020

Service Request: P1403091

Date Received: 8/1/2014  
Time Received: 16:07

TO-13A - PAH Scan Hi Vol

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	
730U1-PAH	P1403091-001	Air	7/30/2014	10:31	X
730D1-PAH	P1403091-002	Air	7/30/2014	09:25	X
730F-PAH	P1403091-003	Air	7/30/2014	08:53	X
731sN-PAH	P1403091-004	Air	7/31/2014	12:07	X
731sNQ-PAH	P1403091-005	Air	7/31/2014	11:48	X
731sSQ-PAH	P1403091-006	Air	7/31/2014	12:11	X
729Blank-PAH	P1403091-007	Air	7/29/2014	00:00	X



# Record & Analytical Service Request

2655 Park Center Drive, Suite A

Simi Valley, California 93065 around Time in Business Days (Surcharges) Please Circle: 10 Day (Standard)

Phone: (805) 528-7161 Fax: (805) 528-7270 3 Day (50%) 4 Day (35%) 5 Day (25%)

ALS Project No. P1003091

Company Name & Address (Reporting Information)

Project Name

ALS Contact: Samantha Henningsen

Stantec

1500 Lake Shore Drive Suite 100

Columbus Ohio 43204

Project Manager

Deb Gray

Phone

614-643-4382

Fax

Email Address for Result Reporting

Deb.gray@stantec.com, Nick.lannaggi@stantec.com

Bridgeton 182608020

Project Number

182608020

P.O. # / Billing Information

Direct Bill - Republic

Sampler (Print & Sign)

Wes Dine

Client Sample ID

Laboratory ID #

Tube ID

Date Collected

Sampling Pump

Sampling Start Time

Sampling End Time

Sample (Liters) Volume

EPA TO9a, Dioxin/Furan

EPA TO-13, PAHs

Comments

e.g. Actual Preservative or specific instructions

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)

Date: 7/31/14

Time: 16:45

Relinquished by: (Signature)

Date: 7/31/14

Time: 8:11 AM

Relinquished by: (Signature)

Date: 7/29/2014

Time: NA

Relinquished by: (Signature)

Date: 7/31/2014

Time: NA

Relinquished by: (Signature)

Date: 7/31/2014

Time: NA

Relinquished by: (Signature)

Date: 7/31/2014

Time: NA

Relinquished by: (Signature)

Date: 7/31/2014

Time: NA

Relinquished by: (Signature)

Date: 7/31/2014

Time: NA

Report Tier Levels - please select

Tier I - (Results/Default; if not specified) X

Tier II (Results + QC)

Tier IV (client specified)

10% Surcharge

please provide J flag

EDD required Yes/No

Type: XIS

Cardy Sam

Interact

Project Requirements (MRLs, QAPP)

Cooler / Blank temperature

Wes Dine

Wes Dine

Wes Dine

Wes Dine

Wes Dine

Wes Dine

Wes Dine

**ALS Environmental  
Sample Acceptance Check Form**

Client: Stantec Consulting Services, Inc.

Work order: P1403091

Project: Bridgeton / 182608020

Sample(s) received on: 8/1/14

Date opened: 8/1/14

by: KKELPE

**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.

- |  | <b>Yes</b>                          | <b>No</b>                           | <b>N/A</b>                          |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were <b>sample containers</b> properly marked with client sample ID?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 2 Container(s) <b>supplied by ALS</b> ?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 3 Did <b>sample containers</b> arrive in good condition?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 4 Were <b>chain-of-custody</b> papers used and filled out?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 5 Did <b>sample container labels</b> and/or tags agree with custody papers?                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 6 Was <b>sample volume</b> received adequate for analysis?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 7 Are samples within specified holding times?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 8 Was proper <b>temperature</b> (thermal preservation) of cooler at receipt adhered to?                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Cooler Temperature: 2° C    Blank Temperature: ° C   |                                     |                                     |                                     |
|  |                                     | <b>Wet Ice</b>                      |                                     |
| 9 Was a <b>trip blank</b> received?  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 10 Were <b>custody seals</b> on outside of cooler/Box?   | <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 checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Were seals intact?   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| Were custody seals on outside of sample container?   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Location of seal(s)? _____ Sealing Lid?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were signature and date included?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were seals intact?   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 11 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"/> |
| 12 <b>Tubes:</b> Are the tubes capped and intact?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Do they contain moisture?  | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 13 <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
P1403091-001.01	PUF/XAD-2/Filter (High Vol)					
P1403091-002.01	PUF/XAD-2/Filter (High Vol)					
P1403091-003.01	PUF/XAD-2/Filter (High Vol)					
P1403091-004.01	PUF/XAD-2/Filter (High Vol)					
P1403091-005.01	PUF/XAD-2/Filter (High Vol)					
P1403091-006.01	PUF/XAD-2/Filter (High Vol)					
P1403091-007.01	PUF/XAD-2/Filter (High Vol)					

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

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** 730U1-PAH

**Client Project ID:** Bridgeton / 182608020

ALS Project ID: P1403091

ALS Sample ID: P1403091-001

Test Code: EPA TO-13A Modified

Date Collected: 7/30/14

Instrument ID: HP 5890II+/HP5972A/MS15

Date Received: 8/1/14

Analyst: Madeleine Dangazyan

Date Extracted: 8/5/14

Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge

Date Analyzed: 8/8/14

Test Notes:

Final Volume: 1.0 ml

Volume Sampled: 318831 Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	21	<b>0.067</b>	0.0031	<b>0.013</b>	0.00060	
208-96-8	Acenaphthylene	< 0.50	ND	0.0016	ND	0.00025	
83-32-9	Acenaphthene	2.6	<b>0.0080</b>	0.0016	<b>0.0013</b>	0.00025	
86-73-7	Fluorene	2.8	<b>0.0088</b>	0.0016	<b>0.0013</b>	0.00023	
85-01-8	Phenanthrene	7.0	<b>0.022</b>	0.0016	<b>0.0030</b>	0.00022	
120-12-7	Anthracene	< 0.50	ND	0.0016	ND	0.00022	
206-44-0	Fluoranthene	1.0	<b>0.0032</b>	0.0016	<b>0.00039</b>	0.00019	
129-00-0	Pyrene	< 0.50	ND	0.0016	ND	0.00019	
56-55-3	Benzo(a)anthracene	< 0.50	ND	0.0016	ND	0.00017	
218-01-9	Chrysene	< 0.50	ND	0.0016	ND	0.00017	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.0016	ND	0.00015	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0016	ND	0.00015	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0016	ND	0.00015	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0016	ND	0.00014	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0016	ND	0.00014	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0016	ND	0.00014	

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.

**SURROGATE SPIKE RECOVERY RESULTS**

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	4.95	<b>99</b>	60-120	
1718-52-1	Pyrene-d10	5.00	3.58	<b>72</b>	60-120	
93951-69-0	Fluoranthene-d10	10.0	6.18	<b>62</b>	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	7.67	<b>77</b>	60-120	

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** 730D1-PAH

**Client Project ID:** Bridgeton / 182608020

ALS Project ID: P1403091

ALS Sample ID: P1403091-002

Test Code: EPA TO-13A Modified

Date Collected: 7/30/14

Instrument ID: HP 5890II+/HP5972A/MS15

Date Received: 8/1/14

Analyst: Madeleine Dangazyan

Date Extracted: 8/5/14

Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge

Date Analyzed: 8/8/14

Test Notes:

Final Volume: 1.0 ml

Volume Sampled: 321984 Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	18	<b>0.056</b>	0.0031	<b>0.011</b>	0.00059	
208-96-8	Acenaphthylene	< 0.50	ND	0.0016	ND	0.00025	
83-32-9	Acenaphthene	3.1	<b>0.0096</b>	0.0016	<b>0.0015</b>	0.00025	
86-73-7	Fluorene	4.2	<b>0.013</b>	0.0016	<b>0.0019</b>	0.00023	
85-01-8	Phenanthrene	9.5	<b>0.030</b>	0.0016	<b>0.0041</b>	0.00021	
120-12-7	Anthracene	< 0.50	ND	0.0016	ND	0.00021	
206-44-0	Fluoranthene	1.1	<b>0.0036</b>	0.0016	<b>0.00043</b>	0.00019	
129-00-0	Pyrene	0.55	<b>0.0017</b>	0.0016	<b>0.00021</b>	0.00019	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.0016	ND	0.00017	
218-01-9	Chrysene	< 0.50	ND	0.0016	ND	0.00017	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.0016	ND	0.00015	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0016	ND	0.00015	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0016	ND	0.00015	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0016	ND	0.00014	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0016	ND	0.00014	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0016	ND	0.00014	

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.

**SURROGATE SPIKE RECOVERY RESULTS**

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	4.01	<b>80</b>	60-120	
1718-52-1	Pyrene-d10	5.00	3.25	<b>65</b>	60-120	
93951-69-0	Fluoranthene-d10	10.0	5.85	<b>59</b>	60-120	<b>S</b>
63466-71-7	Benzo[a]pyrene-d12	10.0	7.12	<b>71</b>	60-120	

S = Surrogate recovery not within specified limits.



# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** 730F-PAH

**Client Project ID:** Bridgeton / 182608020

Test Code: EPA TO-13A Modified  
 Instrument ID: HP 5890II+/HP5972A/MS15  
 Analyst: Madeleine Dangazyan  
 Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge  
 Test Notes:

ALS Project ID: P1403091  
 ALS Sample ID: P1403091-003

Date Collected: 7/30/14  
 Date Received: 8/1/14  
 Date Extracted: 8/5/14  
 Date Analyzed: 8/8/14  
 Final Volume: 1.0 ml  
 Volume Sampled: 346320 Liter(s)

Dilution Factor: 1.00  
 Dilution Factor: 5.00

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	12	<b>0.035</b>	0.0029	<b>0.0066</b>	0.00055	
208-96-8	Acenaphthylene	< 0.50	ND	0.0014	ND	0.00023	
83-32-9	Acenaphthene	3.5	<b>0.010</b>	0.0014	<b>0.0016</b>	0.00023	
86-73-7	Fluorene	4.6	<b>0.013</b>	0.0014	<b>0.0019</b>	0.00021	
85-01-8	Phenanthrene	11	<b>0.032</b>	0.0014	<b>0.0044</b>	0.00020	
120-12-7	Anthracene	< 0.50	ND	0.0014	ND	0.00020	
206-44-0	Fluoranthene	1.4	<b>0.0042</b>	0.0014	<b>0.00050</b>	0.00017	
129-00-0	Pyrene	0.67	<b>0.0019</b>	0.0014	<b>0.00023</b>	0.00017	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.0014	ND	0.00015	
218-01-9	Chrysene	< 0.50	ND	0.0014	ND	0.00015	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.0014	ND	0.00014	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.0014	ND	0.00014	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.0014	ND	0.00013	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.0014	ND	0.00013	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.0014	ND	0.00013	

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.

### SURROGATE SPIKE RECOVERY RESULTS

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.67	<b>73</b>	60-120	
1718-52-1	Pyrene-d10	5.00	4.21	<b>84</b>	60-120	
93951-69-0	Fluoranthene-d10	10.0	8.03	<b>80</b>	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	6.71	<b>67</b>	60-120	

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** 731sN-PAH

**Client Project ID:** Bridgeton / 182608020

Test Code: EPA TO-13A Modified  
 Instrument ID: HP 5890II+/HP5972A/MS15  
 Analyst: Madeleine Dangazyan  
 Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge  
 Test Notes:

ALS Project ID: P1403091  
 ALS Sample ID: P1403091-004

Date Collected: 7/31/14  
 Date Received: 8/1/14  
 Date Extracted: 8/5/14  
 Date Analyzed: 8/8/14  
 Final Volume: 1.0 ml  
 Volume Sampled: 39220 Liter(s)

Dilution Factor: 5.00  
 Dilution Factor: 10.0

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	200	5.1	0.25	0.98	0.049	D
208-96-8	Acenaphthylene	< 2.5	ND	0.064	ND	0.010	
83-32-9	Acenaphthene	2.9	0.074	0.064	0.012	0.010	
86-73-7	Fluorene	< 2.5	ND	0.064	ND	0.0094	
85-01-8	Phenanthrene	< 2.5	ND	0.064	ND	0.0087	
120-12-7	Anthracene	< 2.5	ND	0.064	ND	0.0087	
206-44-0	Fluoranthene	< 2.5	ND	0.064	ND	0.0077	
129-00-0	Pyrene	< 2.5	ND	0.064	ND	0.0077	
56-55-3	Benz(a)anthracene	< 2.5	ND	0.064	ND	0.0068	
218-01-9	Chrysene	< 2.5	ND	0.064	ND	0.0068	
205-99-2	Benzo(b)fluoranthene	< 2.5	ND	0.064	ND	0.0062	
207-08-9	Benzo(k)fluoranthene	< 2.5	ND	0.064	ND	0.0062	
50-32-8	Benzo(a)pyrene	< 2.5	ND	0.064	ND	0.0062	
193-39-5	Indeno(1,2,3-cd)pyrene	< 2.5	ND	0.064	ND	0.0056	
53-70-3	Dibenz(a,h)anthracene	< 2.5	ND	0.064	ND	0.0056	
191-24-2	Benzo(g,h,i)perylene	< 2.5	ND	0.064	ND	0.0056	

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.

D = The reported result is from a dilution.

**SURROGATE SPIKE RECOVERY RESULTS**

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.53	71	60-120	
1718-52-1	Pyrene-d10	5.00	4.59	92	60-120	
93951-69-0	Fluoranthene-d10	10.0	8.67	87	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	9.71	97	60-120	

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** 731sNQ-PAH

**Client Project ID:** Bridgeton / 182608020

ALS Project ID: P1403091

ALS Sample ID: P1403091-005

Test Code: EPA TO-13A Modified

Date Collected: 7/31/14

Instrument ID: HP 5890II+/HP5972A/MS15

Date Received: 8/1/14

Analyst: Madeleine Dangazyan

Date Extracted: 8/5/14

Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge

Date Analyzed: 8/8/14

Test Notes:

Final Volume: 1.0 ml

Volume Sampled: 39982 Liter(s)

Dilution Factor: 1.00

Dilution Factor: 5.00

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	< 1.0	ND	0.025	ND	0.0048	
208-96-8	Acenaphthylene	< 0.50	ND	0.013	ND	0.0020	
83-32-9	Acenaphthene	< 0.50	ND	0.013	ND	0.0020	
86-73-7	Fluorene	< 0.50	ND	0.013	ND	0.0018	
85-01-8	Phenanthrene	< 0.50	ND	0.013	ND	0.0017	
120-12-7	Anthracene	< 0.50	ND	0.013	ND	0.0017	
206-44-0	Fluoranthene	< 0.50	ND	0.013	ND	0.0015	
129-00-0	Pyrene	< 0.50	ND	0.013	ND	0.0015	
56-55-3	Benz(a)anthracene	< 0.50	ND	0.013	ND	0.0013	
218-01-9	Chrysene	< 0.50	ND	0.013	ND	0.0013	
205-99-2	Benzo(b)fluoranthene	< 0.50	ND	0.013	ND	0.0012	
207-08-9	Benzo(k)fluoranthene	< 0.50	ND	0.013	ND	0.0012	
50-32-8	Benzo(a)pyrene	< 0.50	ND	0.013	ND	0.0012	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	ND	0.013	ND	0.0011	
53-70-3	Dibenz(a,h)anthracene	< 0.50	ND	0.013	ND	0.0011	
191-24-2	Benzo(g,h,i)perylene	< 0.50	ND	0.013	ND	0.0011	

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.

**SURROGATE SPIKE RECOVERY RESULTS**

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.55	<b>71</b>	60-120	
1718-52-1	Pyrene-d10	5.00	5.39	<b>108</b>	60-120	
93951-69-0	Fluoranthene-d10	10.0	8.23	<b>82</b>	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	9.36	<b>94</b>	60-120	

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** 731sSQ-PAH

**Client Project ID:** Bridgeton / 182608020

Test Code: EPA TO-13A Modified  
 Instrument ID: HP 5890II+/HP5972A/MS15  
 Analyst: Madeleine Dangazyan  
 Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge  
 Test Notes:

ALS Project ID: P1403091  
 ALS Sample ID: P1403091-006

Date Collected: 7/31/14  
 Date Received: 8/1/14  
 Date Extracted: 8/5/14  
 Date Analyzed: 8/8/14  
 Final Volume: 10 ml  
 Volume Sampled: 34775 Liter(s)

Dilution Factor: 1.00  
 Dilution Factor: 20.0

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	10,000	<b>300</b>	5.8	<b>57</b>	1.1	<b>D</b>
208-96-8	Acenaphthylene	< 5.0	ND	0.14	ND	0.023	
83-32-9	Acenaphthene	33	<b>0.95</b>	0.14	<b>0.15</b>	0.023	
86-73-7	Fluorene	5.5	<b>0.16</b>	0.14	<b>0.023</b>	0.021	
85-01-8	Phenanthrene	< 5.0	ND	0.14	ND	0.020	
120-12-7	Anthracene	< 5.0	ND	0.14	ND	0.020	
206-44-0	Fluoranthene	< 5.0	ND	0.14	ND	0.017	
129-00-0	Pyrene	< 5.0	ND	0.14	ND	0.017	
56-55-3	Benz(a)anthracene	< 5.0	ND	0.14	ND	0.015	
218-01-9	Chrysene	< 5.0	ND	0.14	ND	0.015	
205-99-2	Benzo(b)fluoranthene	< 5.0	ND	0.14	ND	0.014	
207-08-9	Benzo(k)fluoranthene	< 5.0	ND	0.14	ND	0.014	
50-32-8	Benzo(a)pyrene	< 5.0	ND	0.14	ND	0.014	
193-39-5	Indeno(1,2,3-cd)pyrene	< 5.0	ND	0.14	ND	0.013	
53-70-3	Dibenz(a,h)anthracene	< 5.0	ND	0.14	ND	0.013	
191-24-2	Benzo(g,h,i)perylene	< 5.0	ND	0.14	ND	0.013	

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.

D = The reported result is from a dilution.

**SURROGATE SPIKE RECOVERY RESULTS**

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	4.44	<b>89</b>	60-120	
1718-52-1	Pyrene-d10	5.00	4.76	<b>95</b>	60-120	
93951-69-0	Fluoranthene-d10	10.0	8.56	<b>86</b>	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	10.8	<b>108</b>	60-120	

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** 729Blank-PAH

**Client Project ID:** Bridgeton / 182608020

ALS Project ID: P1403091

ALS Sample ID: P1403091-007

Test Code: EPA TO-13A Modified

Date Collected: 7/29/14

Instrument ID: HP 5890II+/HP5972A/MS15

Date Received: 8/1/14

Analyst: Madeleine Dangazyan

Date Extracted: 8/5/14

Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge

Date Analyzed: 8/8/14

Test Notes:

Final Volume: 1.0 ml

Volume Sampled: NA Liter(s)

Dilution Factor: 1.00

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	8.3	NA	NA	NA	NA	
208-96-8	Acenaphthylene	< 0.50	NA	NA	NA	NA	
83-32-9	Acenaphthene	< 0.50	NA	NA	NA	NA	
86-73-7	Fluorene	< 0.50	NA	NA	NA	NA	
85-01-8	Phenanthrene	< 0.50	NA	NA	NA	NA	
120-12-7	Anthracene	< 0.50	NA	NA	NA	NA	
206-44-0	Fluoranthene	< 0.50	NA	NA	NA	NA	
129-00-0	Pyrene	< 0.50	NA	NA	NA	NA	
56-55-3	Benz(a)anthracene	< 0.50	NA	NA	NA	NA	
218-01-9	Chrysene	< 0.50	NA	NA	NA	NA	
205-99-2	Benzo(b)fluoranthene	< 0.50	NA	NA	NA	NA	
207-08-9	Benzo(k)fluoranthene	< 0.50	NA	NA	NA	NA	
50-32-8	Benzo(a)pyrene	< 0.50	NA	NA	NA	NA	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	NA	NA	NA	NA	
53-70-3	Dibenz(a,h)anthracene	< 0.50	NA	NA	NA	NA	
191-24-2	Benzo(g,h,i)perylene	< 0.50	NA	NA	NA	NA	

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.

NA = Not applicable.

**SURROGATE SPIKE RECOVERY RESULTS**

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	4.00	<b>80</b>	60-120	
1718-52-1	Pyrene-d10	5.00	4.75	<b>95</b>	60-120	
93951-69-0	Fluoranthene-d10	10.0	8.80	<b>88</b>	60-120	
63466-71-7	Benzo[a]pyrene-d12	10.0	9.92	<b>99</b>	60-120	

**ALS ENVIRONMENTAL**

RESULTS OF ANALYSIS

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** Method Blank

**Client Project ID:** Bridgeton / 182608020

ALS Project ID: P1403091

ALS Sample ID: P140805-MB

Test Code: EPA TO-13A Modified

Date Collected: NA

Instrument ID: HP 5890II+/HP5972A/MS15

Date Received: NA

Analyst: Madeleine Dangazyan

Date Extracted: 8/05/14

Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge

Date Analyzed: 8/07/14

Test Notes:

Final Volume: 1.0 ml

Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Cartridge	Result µg/m <sup>3</sup>	MRL µg/m <sup>3</sup>	Result ppbV	MRL ppbV	Data Qualifier
91-20-3	Naphthalene	< 0.50	NA	NA	NA	NA	
208-96-8	Acenaphthylene	< 0.50	NA	NA	NA	NA	
83-32-9	Acenaphthene	< 0.50	NA	NA	NA	NA	
86-73-7	Fluorene	< 0.50	NA	NA	NA	NA	
85-01-8	Phenanthrene	< 0.50	NA	NA	NA	NA	
120-12-7	Anthracene	< 0.50	NA	NA	NA	NA	
206-44-0	Fluoranthene	< 0.50	NA	NA	NA	NA	
129-00-0	Pyrene	< 0.50	NA	NA	NA	NA	
56-55-3	Benz(a)anthracene	< 0.50	NA	NA	NA	NA	
218-01-9	Chrysene	< 0.50	NA	NA	NA	NA	
205-99-2	Benzo(b)fluoranthene	< 0.50	NA	NA	NA	NA	
207-08-9	Benzo(k)fluoranthene	< 0.50	NA	NA	NA	NA	
50-32-8	Benzo(a)pyrene	< 0.50	NA	NA	NA	NA	
193-39-5	Indeno(1,2,3-cd)pyrene	< 0.50	NA	NA	NA	NA	
53-70-3	Dibenz(a,h)anthracene	< 0.50	NA	NA	NA	NA	
191-24-2	Benzo(g,h,i)perylene	< 0.50	NA	NA	NA	NA	

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.

NA = Not applicable.

**SURROGATE SPIKE RECOVERY RESULTS**

CAS #	Compound	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	5.00	3.64	<b>73</b>	60-120	
1718-52-1	Pyrene-d10	5.00	4.40	<b>88</b>	60-120	

## ALS ENVIRONMENTAL

### LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

**Client:** Stantec Consulting Services, Inc.

**Client Sample ID:** Duplicate Lab Control Sample

**Client Project ID:** Bridgeton / 182608020

ALS Project ID: P1403091

ALS Sample ID: P140805-DLCS

Test Code: EPA TO-13A Modified

Date Collected: NA

Instrument ID: HP 5890II+/HP5972A/MS15

Date Received: NA

Analyst: Madeleine Dangazyan

Date Extracted: 8/5/14

Sampling Media: PUF/XAD-2/Filter (Hi\_Vol) Cartridge

Date Analyzed: 8/07/14

Test Notes:

Volume(s) Analyzed: NA Liter(s)

CAS #	Compound	Spike Amount		Result		% Recovery		ALS	RPD	RPD	Data
		LCS / DLCS	µg/ml	LCS	DLCS	LCS	DLCS	Acceptance			
91-20-3	Naphthalene	5.00	4.65	6.24	<b>93</b>	<b>125</b>	60-120	29	33	<b>L</b>	
208-96-8	Acenaphthylene	5.00	3.75	3.52	<b>75</b>	<b>70</b>	60-120	7	22		
83-32-9	Acenaphthene	5.00	3.75	3.56	<b>75</b>	<b>71</b>	60-120	5	20		
86-73-7	Fluorene	5.00	3.84	3.62	<b>77</b>	<b>72</b>	60-120	7	24		
85-01-8	Phenanthrene	5.00	4.44	4.21	<b>89</b>	<b>84</b>	60-120	6	15		
120-12-7	Anthracene	5.00	4.32	3.93	<b>86</b>	<b>79</b>	60-120	8	21		
206-44-0	Fluoranthene	5.00	4.77	4.42	<b>95</b>	<b>88</b>	60-120	8	14		
129-00-0	Pyrene	5.00	4.83	4.55	<b>97</b>	<b>91</b>	60-120	6	11		
56-55-3	Benzo(a)anthracene	5.00	5.09	4.93	<b>102</b>	<b>99</b>	60-120	3	5		
218-01-9	Chrysene	5.00	5.42	5.20	<b>108</b>	<b>104</b>	60-120	4	8		
205-99-2	Benzo(b)fluoranthene	5.00	5.36	5.32	<b>107</b>	<b>106</b>	60-120	0.9	17		
207-08-9	Benzo(k)fluoranthene	5.00	5.47	5.33	<b>109</b>	<b>107</b>	60-120	2	19		
50-32-8	Benzo(a)pyrene	5.00	5.32	5.22	<b>106</b>	<b>104</b>	60-120	2	10		
193-39-5	Indeno(1,2,3-cd)pyrene	5.00	5.21	5.23	<b>104</b>	<b>105</b>	60-120	1	29		
53-70-3	Dibenz(a,h)anthracene	5.00	5.24	5.14	<b>105</b>	<b>103</b>	60-120	2	28		
191-24-2	Benzo(g,h,i)perylene	5.00	5.37	5.28	<b>107</b>	<b>106</b>	60-120	0.9	28		

L = Laboratory control sample recovery outside the specified limits, results may be biased high.

### SURROGATE/FIELD SPIKE RECOVERY RESULTS

CAS #	Compound	QC Sample	Spike Amount µg/Sample	Amount Found µg/Sample	% Recovered	Acceptance Limits	Data Qualifier
81103-79-9	Fluorene-d10	LCS	5.00	3.93	<b>79</b>	60-120	
1718-52-1	Pyrene-d10	LCS	5.00	4.65	<b>93</b>	60-120	
93951-69-0	Fluoranthene-d10	LCS	5.00	4.53	<b>91</b>	60-120	
63466-71-7	Benzo[a]pyrene-d12	LCS	5.00	5.19	<b>104</b>	60-120	
81103-79-9	Fluorene-d10	DLCS	5.00	3.76	<b>75</b>	60-120	
1718-52-1	Pyrene-d10	DLCS	5.00	4.46	<b>89</b>	60-120	
93951-69-0	Fluoranthene-d10	DLCS	5.00	4.23	<b>85</b>	60-120	
63466-71-7	Benzo[a]pyrene-d12	DLCS	5.00	5.07	<b>101</b>	60-120	

Response Factor Report MS15

Method Path : J:\MS15\METHODS\  
 Method File : PS071614E.M  
 Title : TO-13A Modified For PAHs in SIM  
 Last Update : Mon Jul 21 12:00:17 2014  
 Response Via : Initial Calibration

Calibration Files  
 0.5 =07161403.D 1 =07161404.D 5 =07161405.D 10 =07161406.D 20 =07161407.D 40 =07161408.D  
 100 =07161409.D

Compound	0.5	1	5	10	20	40	100	Avg	%RSD
1) I Naphthalene-d8				ISTD					
2) Naphthalene	1.423	1.425	1.399	1.403	1.384	1.384	1.366	1.398	1.54
3) I Acenaphthene-d10				ISTD					
4) Acenaphthylene	1.955	1.987	1.956	1.993	1.888	1.949		1.955	1.90
5) Acenaphthene	1.161	1.109	1.039	1.076	1.105	1.266		1.126	7.07
6) S Fluorene-d10	1.241	1.171	1.104	1.130	1.128	1.107		1.147	4.51
7) Fluorene	1.308	1.293	1.304	1.345	1.252	1.581		1.347	8.78
8) I Phenanthrene-d10				ISTD					
9) Phenanthrene	1.093	1.099	1.065	1.175	1.186	1.130		1.125	4.27
10) Anthracene	1.251	1.274	1.235	1.309	1.185	1.475		1.288	7.79
11) S Fluoranthene-d10	1.182	1.174	1.125	1.186	1.130	1.166		1.161	2.30
12) Fluoranthene	1.291	1.284	1.241	1.322	1.273	1.413		1.304	4.57
13) S Pyrene-d10	1.033	1.036	0.991	1.042	0.997	1.038		1.023	2.21
14) Pyrene	1.317	1.308	1.264	1.340	1.282	1.454		1.327	5.06
15) I Chrysene-d12				ISTD					
16) Benzo[a]anthra...	1.380	1.313	1.251	1.261	1.212	1.200		1.269	5.31
17) Chrysene	1.227	1.223	1.200	1.222	1.196	1.281		1.225	2.48
18) I Perylene-d12				ISTD					
19) Benzo[b]fluora...	1.056	1.066	1.049	1.155	1.102	1.102		1.088	3.64
20) Benzo[k]fluora...	1.236	1.181	1.167	1.233	1.144	1.255		1.203	3.71
21) S Benzo[a]pyrene...	0.848	0.844	0.810	0.824	0.794	0.816		0.823	2.49
22) Benzo[a]pyrene	0.934	0.924	0.937	0.967	0.983	1.070		0.969	5.58
23) Indeno[1,2,3-c...	0.867	0.928	0.938	1.042	0.982	1.096		0.976	8.52
24) Dibenz[a,h]ant...	0.986	0.959	0.964	0.984	0.989	1.132		1.002	6.46
25) Benzo[g,h,i]pe...	1.050	1.047	1.037	1.058	1.020	1.049		1.044	1.25

(#) = Out of Range

Added Page



**ALS Environmental**

**TO-13A Polynuclear Aromatic Hydrocarbons (PAHs) by GC/MS**

Method : TO-13A Modified For PAHs in SIM  
 Client & Job# : Stantec P1403091  
 Analyst : MD  
 Printed : 8/20/2014  
 Instrument : MS15  
 Date Acquired : 8/8/2014  
 Sample Media: HiVol puf/xad + filter

*MD*  
 8/20/14

**SAMPLE RESULT SUMMARIES (ug/ml)**

MDL	%Diff.	ug/ml	% Rec.	ug/ml	% RPD	ug/sample	ug/sample	ug/sample
10ug/ml PAHs CCV S28-05141405		LCS 5ug/ml ext.8/5/14 1mL	% Rec.	LCS 5ug/ml ext.8/5/14 1mL	%RPD	MB ext.8/5/14 1mL	P1403091-001 ext.8/5/14 1mL	P1403091-002 P1403091-003 ext.8/5/14 1mL
Dilution Factor	1.0	1.0		1.0		1.0	1.0	1.0
Final Extract Vol. (ml)	1.0	1.0		1.0		1.0	1.0	1.0
Naphthalene	10.09	6.24	125%	4.65	29%	ND	21.298	17.874
Acenaphthylene	9.98	3.52	70%	3.75	7%	ND	ND	ND
Acenaphthene	9.27	3.56	71%	3.75	5%	ND	2.566	3.510
Fluorene	9.20	3.62	72%	3.84	6%	ND	2.800	4.164
Phenanthrene	10.23	4.21	84%	4.44	5%	ND	6.966	9.518
Anthracene	9.86	3.93	79%	4.32	10%	ND	ND	ND
Fluoranthene	10.06	4.42	88%	4.77	8%	ND	1.017	1.438
Pyrene	9.81	4.55	91%	4.83	6%	ND	ND	0.546
Benzo(a)anthracene	9.79	4.93	99%	5.09	3%	ND	ND	ND
Chrysene	9.83	5.20	104%	5.42	4%	ND	ND	ND
Benzo(b)fluoranthene	9.64	5.32	106%	5.36	1%	ND	ND	ND
Benzo(k)fluoranthene	9.49	5.33	107%	5.47	3%	ND	ND	ND
Benzo(a)pyrene	10.48	5.22	104%	5.32	2%	ND	ND	ND
Indeno[1,2,3-cd]pyrene	10.42	5.23	105%	5.21	0%	ND	ND	ND
Dibenz(a,h)anthracene	9.77	5.14	103%	5.24	2%	ND	ND	ND
Benzo(g,h,i)perylene	9.79	5.28	106%	5.37	2%	ND	ND	ND

**% Surrogate Spike Recoveries Summary**

Sample Information :	LCS 5ug/ml ext.8/5/14 1mL	LCS 5ug/ml ext.8/5/14 1mL	MB ext.8/5/14 1mL	P1403091-001 ext.8/5/14 1mL	P1403091-002 ext.8/5/14 1mL	P1403091-003 ext.8/5/14 1mL	Pass/Fail
Fluorene-d10	3.76	3.93	3.64	4.95	4.01	3.67	Pass
Pyrene-d10	4.46	4.65	4.40	3.58	3.25	2.82	Pass
Fluorene-d10	89%	93%	88%	72%	65%	56%	Pass
Pyrene-d10	Pass	Pass	Pass	Pass	Pass	Pass	Pass

*Report done*

Evaluate Continuing Calibration Report

Data Path : J:\MS15\DATA\TO13\2014\_08\07\  
 Data File : 08071428.D  
 Acq On : 7 Aug 2014 22:26  
 Operator : MD  
 Sample : 10ug/ml PAHs CCV S28-05141405  
 Misc :  
 ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 11 11:38:20 2014  
 Quant Method : J:\MS15\METHODS\PS071614E.M  
 Quant Title : TO-13A Modified For PAHs in SIM  
 QLast Update : Tue Aug 05 15:48:29 2014  
 DataAcq Meth:TO13SIM

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 I	Naphthalene-d8	1.000	1.000	0.0	74	-0.01
2	Naphthalene	1.398	1.407	-0.6	74	-0.01
3 I	Acenaphthene-d10	1.000	1.000	0.0	77	-0.01
4	Acenaphthylene	1.955	1.973	-0.9	76	-0.01
5	Acenaphthene	1.126	1.081	4.0	77	-0.01
6 S	Fluorene-d10	1.147	1.134	1.1	77	-0.03
7	Fluorene	1.347	1.327	1.5	76	-0.02
8 I	Phenanthrene-d10	1.000	1.000	0.0	77	-0.03
9	Phenanthrene	1.125	1.170	-4.0	77	0.00
10	Anthracene	1.288	1.269	1.5	75	0.01
11 S	Fluoranthene-d10	1.161	1.153	0.7	75	-0.04
12	Fluoranthene	1.304	1.295	0.7	75	-0.03
13 S	Pyrene-d10	1.023	1.020	0.3	75	-0.04
14	Pyrene	1.327	1.323	0.3	76	-0.03
15 I	Chrysene-d12	1.000	1.000	0.0	76	-0.02
16	Benzo[a]anthracene	1.269	1.222	3.7	74	0.00
17	Chrysene	1.225	1.228	-0.2	76	0.01
18 I	Perylene-d12	1.000	1.000	0.0	75	-0.02
19	Benzo[b]fluoranthene	1.088	1.065	2.1	69	0.01
20	Benzo[k]fluoranthene	1.203	1.148	4.6	70	0.01
21 S	Benzo[a]pyrene-d12	0.823	0.807	1.9	73	-0.02
22	Benzo[a]pyrene	0.969	1.019	-5.2	79	-0.02
23	Indeno[1,2,3-cd]pyrene	0.976	0.928	4.9	67	-0.02
24	Dibenz[a,h]anthracene	1.002	0.982	2.0	75	-0.01
25	Benzo[g,h,i]perylene	1.044	1.029	1.4	73	-0.01

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : J:\MS15\DATA\TO13\2014\_08\07\  
 Data File : 08081402.D  
 Acq On : 8 Aug 2014 10:33  
 Operator : MD  
 Sample : 10ug/ml PAHs CCV S28-05141405  
 Misc :  
 ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 11 12:15:48 2014  
 Quant Method : J:\MS15\METHODS\PS071614E.M  
 Quant Title : TO-13A Modified For PAHs in SIM  
 QLast Update : Tue Aug 05 15:48:29 2014  
 DataAcq Meth:TO13SIM

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev (min)
1 I	Naphthalene-d8	1.000	1.000	0.0	76	-0.02
2	Naphthalene	1.398	1.419	-1.5	77	-0.02
3 I	Acenaphthene-d10	1.000	1.000	0.0	79	-0.01
4	Acenaphthylene	1.955	1.994	-2.0	79	-0.01
5	Acenaphthene	1.126	1.090	3.2	80	-0.01
6 S	Fluorene-d10	1.147	1.125	1.9	79	-0.02
7	Fluorene	1.347	1.309	2.8	77	-0.04
8 I	Phenanthrene-d10	1.000	1.000	0.0	79	-0.03
9	Phenanthrene	1.125	1.112	1.2	75	0.00
10	Anthracene	1.288	1.256	2.5	76	0.00
11 S	Fluoranthene-d10	1.161	1.205	-3.8	81	-0.04
12	Fluoranthene	1.304	1.335	-2.4	80	-0.03
13 S	Pyrene-d10	1.023	1.050	-2.6	80	-0.05
14	Pyrene	1.327	1.338	-0.8	79	-0.03
15 I	Chrysene-d12	1.000	1.000	0.0	79	-0.02
16	Benzo[a]anthracene	1.269	1.240	2.3	78	0.00
17	Chrysene	1.225	1.249	-2.0	81	0.00
18 I	Perylene-d12	1.000	1.000	0.0	78	-0.02
19	Benzo[b]fluoranthene	1.088	1.069	1.7	72	0.01
20	Benzo[k]fluoranthene	1.203	1.171	2.7	74	0.01
21 S	Benzo[a]pyrene-d12	0.823	0.795	3.4	75	-0.02
22	Benzo[a]pyrene	0.969	1.013	-4.5	82	-0.02
23	Indeno[1,2,3-cd]pyrene	0.976	0.889	8.9	67	-0.02
24	Dibenz[a,h]anthracene	1.002	0.948	5.4	75	0.00
25	Benzo[g,h,i]perylene	1.044	0.997	4.5	74	-0.01

(#) = Out of Range

SPCC's out = 0 CCC's out = 0