

The following purchase order is agency specific. For piggy-backing opportunities you must contact the buyer.



KingCounty

Finance and Business Operations Division
Procurement and Contracts Services Section
Department of Executive Services

CNK-ES-0340
3rd Floor
401 5th Avenue
SEATTLE, WA 98104

206-263-9400 Ph
206-296-7676 Fax
TTY Relay: 771
www.kingcounty.gov

CONTRACTOR:
COLUMBIA ANALYTICAL SERVICES
1317 S 13TH AVE
PO BOX 479
KELSO, WA 98626 United States
Fax: (360) 4259096

BILL TO:
KC DES FBOD ACCOUNTS PAYABLES
401 5TH AVE, CNK-ES-0320
SEATTLE, WA 98104

SHIP TO:
KC DES FBOD PCSS GOODS AND SERVICES
401 5TH AVE, CNK-ES-0340
SEATTLE, WA 98104

CONTRACT		
CONTRACT NO. 512028	REVISION 1	PAGE 1 of 1
CREATION DATE 01-JAN-2012	BUYER JANET HARJO	
DATE OF REVISION 03-AUG-2012	BUYER JANET HARJO	

CONTRACTOR NO	PAYMENT TERMS	FREIGHT TERMS	FOB	SHIP VIA	CONFIRM TO
4281	NET30DAYS	Paid	DESTINATION	UPS	Telephone: (360) 577-7222

DESCRIPTION

CONTRACT PURCHASE AGREEMENT

FURNISH ANALYSIS SERVICES TO KING COUNTY PERSONNEL AS REQUESTED, DURING THE PERIOD JUNE 1, 2010 THROUGH MAY 31, 2014, IN ACCORDANCE WITH ITB #1152-11 AND RESPONDING OFFER OF COLUMBIA ANALYTICAL SERVICES, INC., BOTH INCORPORATED BY REFERENCE AS IF FULLY SET FORTH HEREIN.

INDIVIDUAL STANDARD PURCHASE ORDERS WITH UNIQUE PURCHASE ORDER NUMBERS REFERENCING THIS CONTRACT PURCHASE AGREEMENT WILL BE ISSUED BY KING COUNTY TO AUTHORIZE THE PURCHASE AND PAYMENT OF GOODS AND SERVICES.

ALL INVOICES MUST REFERENCE THE INDIVIDUAL STANDARD PURCHASE ORDER NUMBER TO AVOID DELAY IN PAYMENTS.


Authorized Signature

Invitation to Bid



Department of Executive Services
Finance and Business Operations Division
Procurement and Contract Services Section
206-263-9400 TTY Relay: 711

ADVERTISED DATE: APRIL 19, 2011

Invitation to Bid (ITB) Title: Lab Analysis, Air Monitoring-Brightwater Treatment Plant

ITB Number: 1152-11-JDH

Due Date: May 3, 2011 – 2:00 p.m.

Buyer: Janet Harjo, janet.harjo@kingcounty.gov, 206-263-9286

Term Supply Requirement

Furnish laboratory analysis as requested by King County Environmental Lab personnel in accordance with the attached instructions, requirements and specifications.

TOTAL BID PRICE: \$ 128,560.00

NO PRE-BID CONFERENCE

Sealed Bids are hereby solicited and will **only** be received by:
King County Procurement Services Section
Chinook Building, 3rd Floor
401 Fifth Avenue
Seattle, WA 98104
Office Hours: 8:00 a.m. – 5:00 p.m.
Monday - Friday

BIDDERS SHALL COMPLETE AND SIGN THE FORM BELOW.

We acknowledge that **Addenda** numbered 1 to 2 have been examined as part of the Contract documents. The submittal is signed by an authorized representative of the Bidder accepting all terms and conditions contained in the bid and any addenda. We acknowledge that attaching our terms and conditions or modifying the ITB terms and conditions may result in our bid being rejected.

Company Name

Columbia Analytical Services, Inc.

Address

2655 Park Center Drive, Suite A

City/State /Postal Code

Simi Valley, CA 93065

Signature

Print name and title

Nicole Pannone, Client Service Associate

Email

npannone@caslab.com

Phone

805-526-7161

Fax

805-526-7270

SCS/DBE Certification Number

Upon request, this Invitation to Bid will be provided in alternative formats such as Braille, large print, audiocassette or computer disk for individuals with disabilities.

6.5 Pricing

In the event of a discrepancy between the unit price and the extended price, the unit price will prevail.

Note: The quantities in below table approximate total samples over the 3 year period for this contract.

Item #	Est. Qty	Description	Unit Price	Extended Price
1		Analysis by ASTM, OSHA, EPA or other Method, as listed below A. Collection device (e.g., sorbent tube) preparation B. Sample preparation C. Analysis D. Quality Control E. Routine storage F. Disposal G. Shipping <ul style="list-style-type: none"> • Delivery of empty or pre-loaded Shipping Containers to the KC Lab H. Reports <ul style="list-style-type: none"> • Electronic report package (PDF) - per SDG • Electronic Data Deliverables (EDD), Excel format - per SDG Note: Unit Price means one sample (i.e. one ambient air sample - any size)		
1a	250	ASTM Method D5504 for Hydrogen Sulfide and Sulfur Compounds Analysis (air)	147	\$ 36,750
1b	250	OSHA Method ID-188 sorbent Analysis (air)		\$ 18,750
1c	250	Sorbent tube Method Analysis (air)		\$ 39,500
2		Expedited Turnaround % increase in price for escalated 5.4.E.1., completed in less than item times percent increase)		
2a	20	7 days to complete all deliveries		
2b	20	4 days to complete all deliverables		\$ 10260
2c	20	2 days to complete all deliverables	5%	\$ 13300
			Items 1 & 2	\$128,060

Withdrawal of cover letter and pages 13, 16-18 in schedule of services!

Pricing schedule is continued on Page 30.

Item #	Est. Qty	Description	Unit Price	Extended Price
3	Optional Services and Equipment			
3a	5	Sample Container (rental) Summa canister	\$ 55 /canister	\$ 275
3b	250	Ammonia Analysis sorbent tubes	\$ 0 /tube	\$ 0
3c	250	Amines Analysis sorbent tubes	\$ 0 /tube	\$ 0
3d	250	Discount off catalog or equipment list for other equipment/supplies. Extension = 250 times % of equipment (i.e. 25% discount would be 250*.75 = \$187.50)	% <u>10</u>	\$ 225
3e	10	Lab Charge per Hour (technician, use of lab and/or lab equipment)	\$ n/a /hour	
Total Item 3				\$500

Total Items 1 & 2		128060
Total Item 3		500
Subtotal		128560
Total (Insert this number on Page 1 of Bid Submittal)		\$128,560

6.6 References

List the names and addresses of three (3) customers, for whom the bidder has performed or provided similar goods and/or services, preferably in Washington State, for a period not less than three (3) years. Include dates, contact persons and telephone numbers. Should any reference submitted by a bidder be found unsatisfactory, King County, at its sole option, may reject that bidder's bid. King County shall be the sole judge in determining a satisfactory/unsatisfactory reference response. **References must be submitted with bid.**

For each reference, provide Type of Analysis and Date performed. If you performed more than one type analysis, fill in Analysis I for the first one and Analysis II for the second one.

Company Name: Brown and Caldwell
Company Address: 701 Pike Street, Ste. 1200, Seattle WA 98101
Company Phone: 206-624-0100
Contact Person: Philip Wolstenholme, VP, Odor Control Practice Lead
Type of Analysis I VOCs by TO-17
Date: March 2010
Type of Analysis II Carboxylic Acids
Date March 2010

Company Name: Arcadis/Malcolm Pimie
Company Address: 1900 Polaris Parkway, Ste. 200, Columbus OH
Company Phone: 614-888-4953
Contact Person: Ebenezer Sada
Type of Analysis I Amines
Date July 2008
Type of Analysis II Ammonia
Date December 2009

Company Name: Barr Engineering
Company Address: 4700 West 77th Street, Minneapolis, MN 55435
Company Phone: 952-832-2698
Contact Person: Michael Dupay
Type of Analysis I: Sulfur ASTM D5504-08
Date: November 2009
Type of Analysis II: VOCs by EPA TO-15
Date: November 2009

MDL DETERMINATION SUMMARY

Analytical Method: SCAQMD 307(Mod.) & ASTM D5504-01 **Instrument:** GC22 (Sievers SCD)
Extraction/Digestion Method: N/A
Matrix: Air **Units:** ppb **Column:** RTx-1 60m 0.53mm 5um
Analyst(s): ZW **Standard #** S23-10151001

Effective 10/21/10

ZW
10/15/10

Approved By: Way Viny Date: 10/20/10

Date Analyzed			10/15/10	10/15/10	10/15/10	10/15/10	10/15/10	10/15/10	10/15/10												
Instrument Identification			GC22																		
Analyte	Low Std	Spike Level	1	2	3	4	5	6	7					%R	Mean	Std Dev	% RSD	MDL _C	MDL _R	Notes	
Hydrogen Sulfide	5.010	5.010	4.675	4.909	4.01	3.782	4.761	4.458	4.989					90.1%	4.51	0.459	10.163	1.441	1.5		
Cabonyl Sulfide	4.990	4.990	5.284	4.396	4.572	5.007	5.18	5.504	5.23					100.7%	5.02	0.401	7.976	1.260	1.3		
Methyl Mercaptan	5.325	5.325	4.779	4.619	4.178	3.744	5.124	4.832	4.71					85.8%	4.57	0.461	10.097	1.450	1.5		

Comments: _____

MDL DETERMINATION SUMMARY

zw
10/15/10

Analytical Method: SCAQMD 307(Mod.) & ASTM D5504-01 **Instrument:** GC13 (Sievers SCD)
Extraction/Digestion Method: N/A
Matrix: Air **Units:** ppb **Column:** RTx-1 60m 0.53mm 5um
Analyst(s): ZW **Standard #** S23-15101003

Effective 10/21/10

Approved By: *[Signature]* **Date:** 10/20/10

Date Analyzed		10/15/10	10/15/10	10/15/10	10/15/10	10/15/10	10/15/10	10/15/10	10/15/10												
Instrument Identification		GC13	GC13	GC13	GC13	GC13	GC13	GC13	GC13												
Analyte	Low Std	Spike Level	1	2	3	4	5	6	7				%R	Mean	Std Dev	% RSD	MDL _C	MDL _R	Notes		
Hydrogen Sulfide	5.010	5.010	4.612	5.163	4.754	5.143	5.278	4.849	5.271				100.0%	5.01	0.268	5.349	0.842	0.9			
Cabonyl Sulfide	4.990	4.990	4.744	5.299	4.806	4.919	5.307	4.509	4.737				98.3%	4.90	0.299	6.106	0.941	1.0			
Methyl Mercaptan	5.325	5.325	5.032	4.918	5.021	4.989	5.136	4.909	4.377				92.2%	4.91	0.248	5.047	0.779	0.8			

Comments: _____

METHOD DETECTION LIMIT STUDY

Analytical Method: Amines **Instrument:** GC14
Extraction/Digestion Method: Amines
Matrix: Air **Units:** ug/ml **Column:** CP-Volamine 60m x 0.32mm x10um
Analyst(s): HC **Standard #** S26-01131111

Approved By: Chang Shyng **Date:** 4/27/11

		ug / m ³			ug / m ³	ug / m ³													
		GC14																	
												LOD	LOD	%					
												SPIKE	RESULT	Recov.	Mean	Dev	% RSD	MDLC	MDLR
MRL		1	2	3	4	5	6	7	8										
Final vol (mL)	2																		
Sample Vol (L)	100																		
Dimethylamine	5.000	4.140	5.000	4.820	4.560	4.760	4.640	4.520	4.740	3.200	3.040	93.0%	4.648	0.25544	5.496	0.765812	0.77		
Ethylamine	5.000	3.960	3.280	3.300	3.260	3.680	3.340	2.920	3.760	3.200	3.180	68.8%	3.438	0.33559	9.763	1.006102	1.1		
Trimethylamine	5.000	5.580	5.320	5.320	5.380	5.760	4.820	4.440	4.840	3.200	3.160	103.7%	5.183	0.44213	8.531	1.325505	1.4		
Isopropylamine	5.000	5.860	6.500	6.940	6.560	5.960	5.960	6.760	5.920	3.200	4.300	126.2%	6.308	0.43054	6.826	1.290758	1.3		
t-Butylamine	5.000	4.320	5.200	5.080	4.520	5.260	5.680	5.060	5.460	4.000	4.680	101.5%	5.073	0.45393	8.949	1.360874	1.4		
Propylamine	5.000	4.640	5.680	4.520	4.880	5.200	3.980	4.800	4.740	3.200	4.500	96.1%	4.805	0.49578	10.318	1.486355	1.5		
Diethylamine	5.000	5.760	5.940	6.140	6.380	5.400	5.460	5.540	5.120	3.200	3.820	114.4%	5.718	0.41822	7.315	1.253821	1.3		
s-Butylamine	5.000	5.640	6.100	5.560	4.500	5.280	5.580	5.420	5.440	3.200	3.680	108.8%	5.440	0.45027	8.277	1.349909	1.4		
Isobutylamine	5.000	5.300	4.840	4.320	5.360	5.080	4.740	4.620	4.380	3.200	3.220	96.6%	4.830	0.39265	8.129	1.177155	1.2		
Butylamine	5.000	5.420	4.800	5.280	5.280	4.740	4.800	4.520	4.940	3.200	4.040	99.5%	4.973	0.31820	6.399	0.953958	0.96		
Diisopropylamine	5.000	6.120	6.760	7.020	5.900	7.000	5.900	6.260	7.000	3.200	5.020	129.9%	6.495	0.50140	7.720	1.503191	1.6		
Triethylamine	5.000	5.500	5.140	5.000	5.140	5.700	5.580	5.220	5.720	3.200	3.200	107.5%	5.375	0.28219	5.250	0.845992	0.85		
Pyridine	5.000	5.960	7.040	6.180	5.020	6.000	5.500	6.320	5.980	3.200	3.700	120.0%	6.000	0.58904	9.817	1.765950	1.8		
Dipropylamine	5.000	5.240	4.260	4.940	5.820	5.000	5.800	5.280	5.180	3.200	4.700	103.8%	5.190	0.49903	9.615	1.496085	1.5		

Comments: ug/m³ values are calculated based on 2mL desorption volume and 100L sample volume. This MDL Study is meant to be project specific only.

Typically MDL Study is not performed for this analysis as annual DE Studies are done.

The bid for this project for the King County Brightwater Treatment Plant required MDLs at 2ug/m³ assuming 100L air sample volumes

METHOD DETECTION LIMIT STUDY

Analytical Method: Amines
Extraction/Digestion Method: Amines
Matrix: Air **Units:** ug/ml
Analyst(s): HC **Standard #** S26-01131111

Instrument: GC14
Column: CP-Volamine 60m x 0.32mm x10um

Approved By: Chang Shyly **Date:** 4/26/11 4/27/11
LA 4/27/11

Date Analyzed		4/25/11	4/25/11	4/25/11	4/25/11	4/25/11	4/25/11	4/25/11	4/25/11	4/25/11									
Instrument Identification		GC14	GC14	GC14	GC14	GC14	GC14	GC14	GC14	GC14	GC14	GC14							
	MRL	Spike Level	ug/ml	ug/ml	LOD SPIKE	LOD RESULT	% Recov.	Mean	Std Dev	% RSD	MDLC	MDLR							
Dimethylamine	0.250	0.25	0.207	0.25	0.241	0.228	0.238	0.232	0.226	0.237	0.160	0.152	93.0%	0.232	0.01277	5.496	0.038291	0.039	
Ethylamine	0.250	0.25	0.198	0.164	0.165	0.163	0.184	0.167	0.146	0.188	0.160	0.159	68.8%	0.172	0.01678	9.763	0.050305	0.051	
Trimethylamine	0.250	0.25	0.279	0.266	0.266	0.269	0.288	0.241	0.222	0.242	0.160	0.158	103.7%	0.259	0.02211	8.531	0.066275	0.067	
Isopropylamine	0.250	0.25	0.293	0.325	0.347	0.328	0.298	0.298	0.338	0.296	0.160	0.215	126.2%	0.315	0.02153	6.826	0.064538	0.065	
t-Butylamine	0.250	0.25	0.216	0.26	0.254	0.226	0.263	0.284	0.253	0.273	0.200	0.234	101.5%	0.254	0.02270	8.949	0.068044	0.069	
Propylamine	0.250	0.25	0.232	0.284	0.226	0.244	0.26	0.199	0.24	0.237	0.160	0.225	96.1%	0.240	0.02479	10.318	0.074318	0.075	
Diethylamine	0.250	0.25	0.288	0.297	0.307	0.319	0.27	0.273	0.277	0.256	0.160	0.191	114.4%	0.286	0.02091	7.315	0.062691	0.063	
s-Butylamine	0.250	0.25	0.282	0.305	0.278	0.225	0.264	0.279	0.271	0.272	0.160	0.184	108.8%	0.272	0.02251	8.277	0.067495	0.068	
Isobutylamine	0.250	0.25	0.265	0.242	0.216	0.268	0.254	0.237	0.231	0.219	0.160	0.161	96.6%	0.242	0.01963	8.129	0.058858	0.059	
Butylamine	0.250	0.25	0.271	0.24	0.264	0.264	0.237	0.24	0.226	0.247	0.160	0.202	99.5%	0.249	0.01591	6.399	0.047698	0.048	
Diisopropylamine	0.250	0.25	0.306	0.338	0.351	0.295	0.35	0.295	0.313	0.35	0.160	0.251	129.9%	0.325	0.02507	7.720	0.075160	0.076	
Triethylamine	0.250	0.25	0.275	0.257	0.25	0.257	0.285	0.279	0.261	0.286	0.160	0.160	107.5%	0.269	0.01411	5.250	0.042300	0.043	
Pyridine	0.250	0.25	0.298	0.352	0.309	0.251	0.3	0.275	0.316	0.299	0.160	0.185	120.0%	0.300	0.02945	9.817	0.088298	0.089	
Dipropylamine	0.250	0.25	0.262	0.213	0.247	0.291	0.25	0.29	0.264	0.259	0.160	0.235	103.8%	0.260	0.02495	9.615	0.074804	0.075	

Comments: 5uL of the 100ug/ml standard was spiked onto treated alumina, and desorbed with 0.05N NaOH/MeOH S26-04251110
 32ul and 40ul respectively for 0.16ug/ml and 0.200ug/ml LOD Spike from 5ug/ml Amine Std S26-04251104

JLC
 4/27/11
 SM
 4/27/11

COLUMBIA ANALYTICAL SERVICES - METHOD DETECTION LIMIT STUDY

Analytical

Method: OSHA ID-188 / ID-164

Extraction/

Digestion Method: Method

Instrument: pH-02

Matrix: Air

Units: mg / tube

Analyst(s): SA

Standard(s)#: S24-04261101

Reviewed By: SA Date: 04/29/11

Approved By: *Chang Huong* Date: 4/29/11

Effective Date: 5/2/11

Date Analyzed		4/29/11	4/29/11	4/29/11	4/29/11	4/29/11	4/29/11	4/29/11	4/29/11	4/29/11	4/29/11	4/29/11									
		Instrument Identification																			
		IC-03																			
	Low Std	Spike Level	1	2	3	4	5	6	7	8	9	10	LOD Spike	P/F	Mean	Avg. %R	Std Dev	% RSD	MDL _C	MDL _R	
	Ammonia in Air	0.010	0.010	0.0101	0.0116	0.0106	0.0107	0.0103	0.0100	0.0101	0.0103	0.0105	0.00975	0.004	P	0.01	103.95	0.00051	4.929	0.00145	0.002

COMMENTS: Assuming collection volume of 24L then the RLs/MDLS would be 0.011 /0.002 mg/tube; 0.43 mg/m3 / 0.084 mg/m3: 0.61 / 0.12 ppmV

Example Reports



LABORATORY REPORT

March 29, 2011

[REDACTED]

RE: Blue Plains DSLF Odor Study / 1011001.000

Dear [REDACTED]

Enclosed are the results of the samples submitted to our laboratory on March 22, 2011. For your reference, these analyses have been assigned our service request number P1101022.

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.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.

Digitally signed by Kate Aguilera
Date: 2011.03.29 12:13:49 -07'00'

Kate Aguilera
Project Manager

Client: [REDACTED]
Project: Blue Plains DSLF Odor Study / 1011001.000

CAS Project No: P1101022

CASE NARRATIVE

✦
The samples were received intact under chain of custody on March 22, 2011 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.

Amine Analysis

The alumina tube samples were analyzed for amines using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD).

Sulfur Analysis

The tedlar bag samples were analyzed for twenty sulfur compounds per ASTM D 5504-08 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.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

DETAIL SUMMARY REPORT

Service Request: P1101022

Client: [REDACTED]
 Project ID: Blue Plains DSLF Odor Study / 1011001.000

Date Received: 3/22/2011
 Time Received: 09:35

Amines - Amines	ASTM D5504-01 - Sulfur Bag
-----------------	----------------------------

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Amines - Amines	ASTM D5504-01 - Sulfur Bag
SE Stack	P1101022-001	Air	3/21/2011	09:35	X	
SW Stack	P1101022-002	Air	3/21/2011	10:10	X	
SE Stack	P1101022-003	Air	3/21/2011	00:00		X
SW Stack	P1101022-004	Air	3/21/2011	00:00		X



Sample Acceptance Check Form

Client: [Redacted] Work order: P1101022

Project: Blue Plains DSLF Odor Study / 1011001.000

Sample(s) received on: 3/22/11 Date opened: 3/22/11 by: MZAMORA

Note: This form is used for all samples received by CAS. 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.

- 1 Were sample containers properly marked with client sample ID?
2 Container(s) supplied by CAS?
3 Did sample containers arrive in good condition?
4 Were chain-of-custody papers used and filled out?
5 Did sample container labels and/or tags agree with custody papers?
6 Was sample volume received adequate for analysis?
7 Are samples within specified holding times?
8 Was proper temperature (thermal preservation) of cooler at receipt adhered to?
9 Was a trip blank received?
10 Were custody seals on outside of cooler/Box?
11 Do containers have appropriate preservation, according to method/SOP or Client specified information?
12 Tubes: Are the tubes capped and intact?
13 Badges: Are the badges properly capped and intact?

Table with 7 columns: Lab Sample ID, Container Description, Required pH, Received pH, Adjusted pH, VOA Headspace (Presence/Absence), Receipt / Preservation Comments. Rows include sample IDs like P1101022-001.01 and descriptions like Treated Alumina Tube.

Explain any discrepancies: (include lab sample ID numbers): Chain of Custody is missing time collected

RESULTS OF ANALYSIS

Page 1 of 1

Client: XXXXXXXXXX
Client Sample ID: SE Stack
Client Project ID: Blue Plains DSLF Odor Study / 1011001.000

CAS Project ID: P1101022
CAS Sample ID: P1101022-001

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Hani Cherazaie
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: 3/21/11
Date Received: 3/22/11
Date Analyzed: 3/24/11
Desorption Volume: 2.0 ml
Volume Sampled: 100 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.51	ND	5.1	ND	2.8	
75-04-7	Ethylamine	< 0.54	ND	5.4	ND	2.9	
75-50-3	Trimethylamine	7.8	78	5.2	32	2.1	
75-31-0	Isopropylamine	< 0.47	ND	4.7	ND	1.9	
75-64-9	tert-Butylamine	< 0.92	ND	9.2	ND	3.1	
107-10-8	n-Propylamine	< 0.49	ND	4.9	ND	2.0	
109-89-7	Diethylamine	< 0.45	ND	4.5	ND	1.5	
13952-84-6	sec-Butylamine	< 0.45	ND	4.5	ND	1.5	
78-81-9	Isobutylamine	< 0.49	ND	4.9	ND	1.6	
109-73-9	n-Butylamine	< 0.48	ND	4.8	ND	1.6	
108-18-9	Diisopropylamine	< 0.45	ND	4.5	ND	1.1	
121-44-8	Triethylamine	< 0.45	ND	4.5	ND	1.1	
142-84-7	Di-n-Dipropylamine	< 0.46	ND	4.6	ND	1.1	

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.
 BC = Results reported are not blank corrected.
 DE = Results reported are corrected for desorption efficiency.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: SE Stack
Client Project ID: Blue Plains DSLF Odor Study / 1011001.000

CAS Project ID: P1101022
CAS Sample ID: P1101022-003

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Zheng Wang
Sampling Media: 1 L Zefon Bag
Test Notes:

Date Collected: 3/21/11
Time Collected: NA
Date Received: 3/22/11
Date Analyzed: 3/22/11
Time Analyzed: 10:47
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	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.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: Stack
Client Project ID: Blue Plains DSLF Odor Study / 1011001.000

CAS Project ID: P1101022
CAS Sample ID: P1101022-004

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Zheng Wang
Sampling Media: 1 L Zefon Bag
Test Notes:

Date Collected: 3/21/11
Time Collected: NA
Date Received: 3/22/11
Date Analyzed: 3/22/11
Time Analyzed: 11:07
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	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.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: Method Blank
Client Project ID: Blue Plains DSLF Odor Study / 1011001.000

CAS Project ID: P1101022
CAS Sample ID: P110322-MB

Test Code: ASTM D 5504-08
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Zheng Wang
Sampling Media: 1 L Zefon Bag
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 3/22/11
Time Analyzed: 08:25
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result μg/m ³	MRL μg/m ³	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.

LABORATORY REPORT

March 8, 2011

[REDACTED]

RE: Protein Resources

Dear [REDACTED]

Enclosed are the results of the samples submitted to our laboratory on February 22, 2011. For your reference, these analyses have been assigned our service request number P1100673.

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.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.

Kate Aguilera

Digitally signed by Kate Aguilera
Date: 2011.03.08 12:44:03 -08'00'

Kate Aguilera
Project Manager

Client: [REDACTED]
Project: Protein Resources

CAS Project No: P1100673

CASE NARRATIVE

The samples were received intact under chain of custody on February 22, 2011 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.

Amine Analysis

Sample "137-AM-01" was analyzed for amines using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD).

Ammonia Analysis

Sample "201-Ammonia-01" was prepared in accordance with OSHA ID-188 and analyzed for ammonia in air by Ion Selective Electrode per OSHA ID-164.

Aldehyde Analysis

Sample "703-FO-01" was analyzed for aldehydes according to EPA Method TO-11A using high performance liquid chromatography (HPLC).

Sample "703-FO-01" was collected on an SKC 226-119 DNPH-treated silica gel tube. Because this particular tube is not carried in-house, an SKC 226-120 DNPH-treated silica gel tube was used as a method blank.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

DETAIL SUMMARY REPORT

Service Request: P1100673

Client: [REDACTED]
 Project ID: Protein Resources
 Date Received: 2/22/2011
 Time Received: 11:05

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Amines - Amines	TO-11A - Carbonyls	OSHA ID-16+ Modified - Ammonia
137-AM-01	P1100673-001	Air	2/15/2011	00:00	X		
703-FO-01	P1100673-002	Air	2/15/2011	00:00		X	
201-Ammonia-01	P1100673-003	Air	2/15/2011	00:00			X

Sample Acceptance Check Form

 Client: XXXXXXXXXX Work order: P1100673

 Project: Protein Resources

 Sample(s) received on: 2/22/11 Date opened: 2/22/11 by: MZAMORA

Note: This form is used for all samples received by CAS. 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.

- | | Yes | No | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Container(s) supplied by CAS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Was sample volume 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 temperature (thermal preservation) of cooler at receipt adhered to? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Cooler Temperature <u>11</u> °C Blank Temperature _____ °C | | | |
| 9 Was a trip blank received? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10 Were custody seals on outside of cooler/Box? | <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"/> |
| 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 preservation , 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 pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials 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 Tubes: Are the tubes capped and intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do they contain moisture? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 13 Badges: 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
P1100673-001.01	Treated Alumina Tube					
P1100673-002.01	Silica Gel DNPH Tube					
P1100673-003.01	Anasorb 747 Tube					

Explain any discrepancies: (include lab sample ID numbers): _____

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: 137-AM-01
Client Project ID: Protein Resources

CAS Project ID: P1100673
CAS Sample ID: P1100673-001

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Hani Cherazaie
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: 2/15/11
Date Received: 2/22/11
Date Analyzed: 2/23/11
Desorption Volume: 2.0 ml
Volume Sampled: 35.7 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	3.7	100	14	57	7.7	
75-04-7	Ethylamine	1.2	35	15	19	8.2	
75-50-3	Trimethylamine	7.7	220	14	89	6.0	
75-31-0	Isopropylamine	2.3	64	13	26	5.4	
75-64-9	tert-Butylamine	< 0.92	ND	26	ND	8.6	
107-10-8	n-Propylamine	< 0.49	ND	14	ND	5.7	
109-89-7	Diethylamine	< 0.45	ND	13	ND	4.3	
13952-84-6	sec-Butylamine	< 0.45	ND	13	ND	4.3	
78-81-9	Isobutylamine	2.6	72	14	24	4.5	
109-73-9	n-Butylamine	< 0.48	ND	13	ND	4.5	
108-18-9	Diisopropylamine	< 0.45	ND	13	ND	3.1	
121-44-8	Triethylamine	< 0.45	ND	13	ND	3.0	
142-84-7	Di-n-Dipropylamine	< 0.46	ND	13	ND	3.1	

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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: Method Blank
Client Project ID: Protein Resources

CAS Project ID: P1100673
CAS Sample ID: P110223-MB

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Hani Cherazaie
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: NA
Date Received: NA
Date Analyzed: 2/23/11
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.51	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.54	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.52	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.47	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 0.92	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 0.49	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.45	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 0.45	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.49	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 0.48	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.45	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.45	NA	NA	NA	NA	
142-84-7	Di-n-Dipropylamine	< 0.46	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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

RESULTS OF ANALYSIS

Page 1 of 1

Client: XXXXXXXXXX
Client Sample ID: Method Blank
Client Project ID: Protein Resources

CAS Project ID: P1100673
CAS Sample ID: P110224-MB

Test Code: EPA Method TO-11A
Instrument ID: Waters LC Module I Plus/UV_Vis 360/LC1
Analyst: Sheena Martenies
Sampling Media: Silica Gel DNPH Tube
Test Notes: BC

Date Collected: NA
Date Received: NA
Date Analyzed: 02/24/11
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	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.

BC = Results reported are not blank corrected.

NA = Not applicable.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Project ID: Protein Resources

CAS Project ID: P1100673

Ammonia

Test Code: OSHA ID-188/ID-164
Instrument ID: PH02/Orion 720A/Ammonia ISE
Analyst: Sue Anderson
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated)
Test Notes: BC, DE

Date(s) Collected: 2/15/11
Date Received: 2/22/11
Date Analyzed: 3/1/11
Desorption Volume: 0.10 Liter(s)

Client Sample ID	CAS Sample ID	Sample		Result mg/Tube	Result mg/m ³	MRL mg/m ³	Result ppmV	MRL ppmV	Data Qualifier
		Volume Liter(s)	Dilution Factor						
201-Ammonia-01	P1100673-003	8.4	1.0	1.2	140	1.2	200	1.8	
Method Blank	P110301-MB	NA	1.0	< 0.010	NA	NA	NA	NA	

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

NA = Not applicable.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

LABORATORY REPORT

December 1, 2009

[REDACTED]

RE: EBDS - Ammonia

Dear [REDACTED]

Enclosed are the results of the samples submitted to our laboratory on November 25, 2009. For your reference, these analyses have been assigned our service request number P0904066.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 6 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.

Kelly Horiuchi FOR

Kelly Horiuchi
Project Manager

Client: [REDACTED]
Project: EBDS - Ammonia

CAS Project No: P0904066

CASE NARRATIVE

The samples were received intact under chain of custody on November 25, 2009 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.

Ammonia Analysis

The samples were prepared in accordance with OSHA ID-188 and analyzed for ammonia in air by Ion Selective Electrode per OSHA ID-164.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: [REDACTED]
Project: EBDS - Ammonia

Service Request: P0904066

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
P0904066-001	FE2-L	11/24/09	15:00
P0904066-002	FE2-S	11/24/09	15:45

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: [REDACTED]

Work order: P0904066

Project: EBDS - Ammonia

Sample(s) received on: 11/25/09

Date opened: 11/25/09

by: MZAMORA

Note: This form is used for all samples received by CAS. 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.

- | | Yes | No | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Container(s) supplied by CAS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Was a chain-of-custody provided? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was the chain-of-custody properly completed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 Was proper temperature (thermal preservation) of cooler at receipt adhered to? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cooler Temperature _____ °C Blank Temperature _____ °C | | | |
| 10 Was a trip blank received? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Trip blank supplied by CAS: _____ | | | |
| 11 Were custody seals on outside of cooler/Box? | <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"/> |
| 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"/> |
| 12 Do containers have appropriate preservation , 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 pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials 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"/> |
| 13 Tubes: Are the tubes capped and intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do they contain moisture? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 14 Badges: 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
P0904066-001.01	Anasorb 747 Tube					
P0904066-002.01	Anasorb 747 Tube					

Explain any discrepancies: (include lab sample ID numbers): _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);

LABORATORY REPORT

March 9, 2009

[REDACTED]

RE: 3247

Dear [REDACTED]

Enclosed are the results of the sample submitted to our laboratory on February 26, 2009. For your reference, these analyses have been assigned our service request number P0900660.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 74 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-08-TX. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Page
1 of 74

Client:
Project:

[REDACTED]
3247

CAS Project No:

P0900660

CASE NARRATIVE

The sample was received intact under chain of custody on February 26, 2009 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 and total reduced sulfur as hydrogen sulfide (TRS as H₂S) in accordance with ASTM D 5504-01 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. The results for TRS as H₂S were determine by obtaining the total response for all chromatographic peaks and quantitating the value against the initial calibration curve for hydrogen sulfide thus generating a result specified as "Total Reduced Sulfur as Hydrogen Sulfide".

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client:
Project:

[REDACTED]
3247

Service Request: P0900660

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
P0900660-001	BOFL0225TD001	2/25/09	00:00

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: [REDACTED] Work order: P0900660

Project: 3247

Sample(s) received on: 02/26/09 Date opened: 02/26/09 by: LKUKITA

Note: This form is used for all samples received by CAS. 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.

- | | Yes | No | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Container(s) supplied by CAS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Was a chain-of-custody provided? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was the chain-of-custody properly completed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 Was proper temperature (thermal preservation) of cooler at receipt adhered to? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cooler Temperature _____ °C Blank Temperature _____ °C | | | |
| 10 Was a trip blank received? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Trip blank supplied by CAS: _____ | | | |
| 11 Were custody seals on outside of cooler/Box? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Location of seal(s)? <u>Across lid of cooler</u> 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"/> |
| 12 Do containers have appropriate preservation , 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 pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials 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"/> |
| 13 Tubes: 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"/> |
| 14 Badges: 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
P0900660-001.01	1 L Zefon Bag					Bag ID: 90675-06568

Explain any discrepancies: (include lab sample ID numbers): _____

No project name or number noted on chain. Confirmed what to reference with client. _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12); Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12).
P0900660_Center for Toxicology and Environmental Health, LLC_3247 - Page 1 of 1

RESULTS OF ANALYSIS

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
 Client Project ID: 3247

CAS Project ID: P0900660

Total Reduced Sulfur as Hydrogen Sulfide

Test Code: ASTM D 5504-01
 Instrument ID: HP5890 II/GC5/SCD
 Analyst: Chris Cornett
 Sampling Media: 1.0 L Zefon Bag(s)
 Test Notes:

Date(s) Collected: 2/25/09
 Date Received: 2/26/09
 Date Analyzed: 2/26/09

Client Sample ID	CAS Sample ID	Injection		Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
		Volume ml(s)	Time Analyzed					
BOFL0225TD001	P0900660-001	1.0	08:25	ND	7.0	ND	5.0	
Method Blank	P090226-MB	1.0	07:28	ND	7.0	ND	5.0	

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.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]

Client Sample ID: BOFL0225TD001

Client Project ID: 3247

CAS Project ID: P0900660

CAS Sample ID: P0900660-001

Test Code: ASTM D 5504-01
 Instrument ID: HP5890 II/GC5/SCD
 Analyst: Chris Cornett
 Sampling Media: 1.0 L Zefon Bag
 Test Notes:

Date Collected: 2/25/09
 Time Collected: NA
 Date Received: 2/26/09
 Date Analyzed: 2/26/09
 Time Analyzed: 08:25
 Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	MDL µg/m ³	Result ppbV	MRL ppbV	MDL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	4.2	ND	5.0	3.0	
463-58-1	Carbonyl Sulfide	ND	12	3.2	ND	5.0	1.3	
74-93-1	Methyl Mercaptan	ND	9.8	4.9	ND	5.0	2.5	
75-08-1	Ethyl Mercaptan	ND	13	6.4	ND	5.0	2.5	
75-18-3	Dimethyl Sulfide	ND	13	6.4	ND	5.0	2.5	
75-15-0	Carbon Disulfide	ND	7.8	4.0	ND	2.5	1.3	
75-33-2	Isopropyl Mercaptan	ND	16	7.8	ND	5.0	2.5	
75-66-1	tert-Butyl Mercaptan	ND	18	9.2	ND	5.0	2.5	
107-03-9	n-Propyl Mercaptan	ND	16	7.8	ND	5.0	2.5	
624-89-5	Ethyl Methyl Sulfide	ND	16	7.8	ND	5.0	2.5	
110-02-1	Thiophene	ND	17	8.6	ND	5.0	2.5	
513-44-0	Isobutyl Mercaptan	ND	18	9.2	ND	5.0	2.5	
352-93-2	Diethyl Sulfide	ND	18	9.2	ND	5.0	2.5	
109-79-5	n-Butyl Mercaptan	ND	18	9.2	ND	5.0	2.5	
624-92-0	Dimethyl Disulfide	ND	9.6	5.0	ND	2.5	1.3	
616-44-4	3-Methylthiophene	ND	20	10.0	ND	5.0	2.5	
110-01-0	Tetrahydrothiophene	ND	18	9.0	ND	5.0	2.5	
638-02-8	2,5-Dimethylthiophene	ND	23	11.5	ND	5.0	2.5	
872-55-9	2-Ethylthiophene	ND	23	11.5	ND	5.0	2.5	
110-81-6	Diethyl Disulfide	ND	12	6.5	ND	2.5	1.3	

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

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

LABORATORY REPORT

November 4, 2009

[REDACTED]

RE: 0910-19213

Dear [REDACTED]

Enclosed are the results of the samples submitted to our laboratory on October 20, 2009. For your reference, these analyses have been assigned our service request number P0903616.

All analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 10 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-09-TX; Minnesota Department of Health, Certificate No. 11495AA. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.



Kate Aguilera
Project Manager

Client: [REDACTED]
Project: 0910-19213

CAS Project No: P0903616

CASE NARRATIVE

The samples were received intact under chain of custody on October 20, 2009 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.

Amine Analysis

The samples were analyzed for amines using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD).

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: [REDACTED]
Project: 0910-19213

Service Request: P0903616

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
P0903616-001	0910-19213-001	10/19/09	12:30
P0903616-002	0910-19213-002	10/19/09	14:30
P0903616-003	0910-19213-003	10/19/09	14:30

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: [REDACTED]

Work order: P0903616

Project: 0910-19213

Sample(s) received on: 10/20/2009

Date opened: 10/20/2009

by: ADAVID

Note: This form is used for all samples received by CAS. 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.

- | | Yes | No | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Container(s) supplied by CAS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Was a chain-of-custody provided? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 Was the chain-of-custody properly completed? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 Was sample volume received adequate for analysis? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 Are samples within specified holding times? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 Was proper temperature (thermal preservation) of cooler at receipt adhered to? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cooler Temperature _____ °C Blank Temperature _____ °C | | | |
| 10 Was a trip blank received? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Trip blank supplied by CAS: _____ | | | |
| 11 Were custody seals on outside of cooler/Box? | <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"/> |
| 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"/> |
| 12 Do containers have appropriate preservation , 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 pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials 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"/> |
| 13 Tubes: Are the tubes capped and intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do they contain moisture? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 14 Badges: 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
P0903616-001.01	Treated Alumina Tube					
P0903616-002.01	Treated Alumina Tube					
P0903616-003.01	Treated Alumina Tube					

Explain any discrepancies: (include lab sample ID numbers): _____
 Samples received in ambient temp. _____

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: 0910-19213-001
Client Project ID: 0910-19213

CAS Project ID: P0903616
CAS Sample ID: P0903616-001

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Madeleine Dangazyan
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: 10/19/09
Date Received: 10/20/09
Date Analyzed: 10/23/09
Desorption Volume: 2.0 ml
Volume Sampled: 100 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.55	ND	5.5	ND	3.0	
75-04-7	Ethylamine	< 0.55	ND	5.5	ND	3.0	
75-50-3	Trimethylamine	< 0.58	ND	5.8	ND	2.4	
75-31-0	Isopropylamine	< 0.54	ND	5.4	ND	2.2	
75-64-9	t-Butylamine	< 1.1	ND	11	ND	3.6	
107-10-8	Propylamine	< 0.57	ND	5.7	ND	2.3	
109-89-7	Diethylamine	< 0.54	ND	5.4	ND	1.8	
13952-84-6	s-Butylamine	< 0.55	ND	5.5	ND	1.8	
78-81-9	Isobutylamine	< 0.57	ND	5.7	ND	1.9	
109-73-9	Butylamine	< 0.54	ND	5.4	ND	1.8	
108-18-9	Diisopropylamine	< 0.54	ND	5.4	ND	1.3	
121-44-8	Triethylamine	< 0.54	ND	5.4	ND	1.3	
142-84-7	Dipropylamine	< 0.55	ND	5.5	ND	1.3	

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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

Verified By: _____

Date: _____

10/30/09

6

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: 0910-19213-002
Client Project ID: 0910-19213

CAS Project ID: P0903616
CAS Sample ID: P0903616-002

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Madeleine Dangazyan
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: 10/19/09
Date Received: 10/20/09
Date Analyzed: 10/23/09
Desorption Volume: 2.0 ml
Volume Sampled: 100 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.55	ND	5.5	ND	3.0	
75-04-7	Ethylamine	< 0.55	ND	5.5	ND	3.0	
75-50-3	Trimethylamine	< 0.58	ND	5.8	ND	2.4	
75-31-0	Isopropylamine	< 0.54	ND	5.4	ND	2.2	
75-64-9	t-Butylamine	< 1.1	ND	11	ND	3.6	
107-10-8	Propylamine	< 0.57	ND	5.7	ND	2.3	
109-89-7	Diethylamine	< 0.54	ND	5.4	ND	1.8	
13952-84-6	s-Butylamine	< 0.55	ND	5.5	ND	1.8	
78-81-9	Isobutylamine	< 0.57	ND	5.7	ND	1.9	
109-73-9	Butylamine	< 0.54	ND	5.4	ND	1.8	
108-18-9	Diisopropylamine	< 0.54	ND	5.4	ND	1.3	
121-44-8	Triethylamine	< 0.54	ND	5.4	ND	1.3	
142-84-7	Dipropylamine	< 0.55	ND	5.5	ND	1.3	

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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

Verified By: _____

f

Date: _____

10/30/09

7

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: Method Blank
Client Project ID: 0910-19213

CAS Project ID: P0903616
 CAS Sample ID: P091023-MB

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Madeleine Dangazyan
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: NA
Date Received: NA
Date Analyzed: 10/23/09
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.55	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.55	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.58	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.54	NA	NA	NA	NA	
75-64-9	t-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	Propylamine	< 0.57	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.54	NA	NA	NA	NA	
13952-84-6	s-Butylamine	< 0.55	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.57	NA	NA	NA	NA	
109-73-9	Butylamine	< 0.54	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.54	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.54	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 0.55	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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

Verified By: _____

f

Date: _____

10/30/09



LABORATORY REPORT

April 9, 2008

[Redacted]

RE: South Utah Valley / BASP102

Dear [Redacted]:

Enclosed are the results of the samples submitted to our laboratory on March 25, 2008. For your reference, these analyses have been assigned our service request number P0800790.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 21 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.

Kelly M Horiuchi

Kelly Horiuchi
Project Manager

Client: [REDACTED]
Project: South Utah Valley / BASP102

CAS Project No: P0800790

CASE NARRATIVE

The samples were received intact under chain of custody on March 25, 2008 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.

The sample labeled Tube 14 on the chain of custody was not received by the laboratory.

The canister labeled Sample 12 was received with the valve cap on and canister valve open; please take this into consideration when evaluating the final results.

Ammonia Analysis

The Treated Alumina tube samples were analyzed for ammonia per OSHA ID-188/ID-164 using a PH02/Orion 720A/Ammonia ISE.

Volatile Organic Compound Analysis

The canister samples were analyzed for total volatile organic compounds (TVOC) as toluene 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. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: [REDACTED]

Folder: P0800790

Project: South Utah Valley BASP102

Detailed Sample Information

<u>CAS Sample ID</u>	<u>Client Sample ID</u>	<u>Container Type</u>	<u>Pi1 (Hg)</u>	<u>Pi1 (psig)</u>	<u>Pf1</u>	<u>Pi2 (Hg)</u>	<u>Pi2 (psig)</u>	<u>Pf2</u>	<u>Cont ID</u>	<u>Bottle Order</u>	<u>FC ID</u>	<u>Bottle Order</u>
P0800790-001.01	Sample 1	3.0 L-Silco Canister	-3.0	-1.5	10.0				SL00096	8070		
P0800790-002.01	Sample 2	3.0 L-Silco Canister	-3.4	-1.7	10.0				SL00078	8070		
P0800790-003.01	Sample 3	3.0 L-Silco Canister	-3.3	-1.6	10.0				SL00095	8070		
P0800790-004.01	Sample 4	3.0 L-Silco Canister	-3.2	-1.6	10.0				SL00109	8070		
P0800790-005.01	Sample 5	3.0 L-Silco Canister	-2.7	-1.3	10.0				SL00072	8070		
P0800790-006.01	Sample 6	3.0 L-Silco Canister	-2.5	-1.2	10.0				SL00085	8070		
P0800790-007.01	Sample 7	3.0 L-Silco Canister	-2.1	-1.0	10.0				SL00070	8070		
P0800790-008.01	Sample 8	3.0 L-Silco Canister	-3.4	-1.7	10.0				SL00099	8070		
P0800790-009.01	Sample 9	3.0 L-Silco Canister	-2.2	-1.1	10.0				SL00087	8070		
P0800790-010.01	Sample 10	3.0 L-Silco Canister	-2.3	-1.1	10.0				SL00092	8070		
P0800790-011.01	Sample 11	3.0 L-Silco Canister	-3.1	-1.5	10.0				SL00102	8070		
P0800790-012.01	Sample 12	3.0 L-Silco Canister	-0.4	-0.2	10.0				SL00082	8070		
P0800790-013.01	Sample 13	3.0 L-Silco Canister	-3.5	-1.7	10.0				SL00091	8070		
P0800790-014.01	Sample 14	3.0 L-Silco Canister	-4.0	-2.0	10.0				SL00083	8070		
P0800790-015.01	Sample 15	3.0 L-Silco Canister	-4.0	-2.0	10.0				SL00104	8070		
P0800790-016.01	Sample 16	3.0 L-Silco Canister	-3.5	-1.7	10.0				SL00089	8070		
P0800790-017.01	Tube 1	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-018.01	Tube 2	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-019.01	Tube 3	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-020.01	Tube 4	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-021.01	Tube 5	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-022.01	Tube 6	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-023.01	Tube 7	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-024.01	Tube 8	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-025.01	Tube 9	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-026.01	Tube 10	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-027.01	Tube 11	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-028.01	Tube 12	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-029.01	Tube 13	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-030.01	Tube 14	N/A N/A										
P0800790-031.01	Tube 15	1 each-Tube Anasorb747 (H2SO4)250/500										
P0800790-032.01	Tube 16	1 each-Tube Anasorb747 (H2SO4)250/500										

Client:



Folder: P0800790

Project: South Utah Valley BASP102

Detailed Sample Information

<u>CAS Sample ID</u>	<u>Client Sample ID</u>	<u>Container Type</u>	<u>Pi1</u> (Hg)	<u>Pi1</u> (psig)	<u>Pf1</u>	<u>Pi2</u> (Hg)	<u>Pi2</u> (psig)	<u>Pf2</u>	<u>Cont ID</u>	<u>Bottle</u> <u>Order</u>	<u>FC ID</u>	<u>Bottle</u> <u>Order</u>
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Miscellaneous Items - received

SL00071

SL00084

SL00107

SL00073

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: [REDACTED]

Work order: P0800790

Project: South Utah Valley / BASP102

Sample(s) received on: 03/25/08

Date opened: 03/25/08

by: MZAMORA

Note: This form is used for all samples received by CAS. 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.

- | | | Yes | No | N/A |
|----|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 | Were sample containers properly marked with client sample ID? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2 | Container(s) supplied by CAS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | Were chain-of-custody papers used and filled out? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | Did sample container labels and/or tags agree with custody papers? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6 | Was sample volume 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 temperature (thermal preservation) of cooler at receipt adhered to?
Cooler Temperature _____ °C Blank Temperature _____ °C | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9 | Was a trip blank received?
Trip blank supplied by CAS: Serial # _____ -TB _____ | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 10 | Were custody seals on outside of cooler/Box?
Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input 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"/> |
| | Were custody seals on outside of sample container?
Location of seal(s)? _____ Sealing Lid? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input 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 preservation , according to method/SOP or Client specified information?
Is there a client indication that the submitted samples are pH preserved?
Were VOA vials checked for presence/absence of air bubbles?
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"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 12 | Tubes: Are the tubes capped and intact?
Do they contain moisture? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 13 | Badges: Are the badges properly capped and intact?
Are dual bed badges separated and individually capped and intact? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| | | <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
P0800790-001.01	3.0 L Silco Can					
P0800790-002.01	3.0 L Silco Can					
P0800790-003.01	3.0 L Silco Can					
P0800790-004.01	3.0 L Silco Can					
P0800790-005.01	3.0 L Silco Can					
P0800790-006.01	3.0 L Silco Can					
P0800790-007.01	3.0 L Silco Can					

Explain any discrepancies: (include lab sample ID numbers): _____

Canister sample IDs were listed differently on the COC, sample IDs were issued by canister SNs listed on COC.

Tubes have no ID tags, and IDs were issued by the tube serial numbers listed on the COC.

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);

Diss. Sulfide, NaOH (pH>12); T. Sulfide, NaOH/ZnAc (pH>12)
P0800790_Bay Area Soil Products, Inc., South Utah Valley_BASP102 - Page 1 of 2

RSK - MBEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
 Client Project ID: South Utah Valley / BASP102

CAS Project ID: P0800790

Ammonia

Test Code: OSHA ID-188/ID-164
 Instrument ID: PH02/Orion 720A/Ammonia ISE
 Analyst: Sue Anderson
 Sampling Media: Anasorb747 Tube(s) (Sulfuric Treated)
 Test Notes: BC, DE

Date(s) Collected: 3/18 - 3/20/08
 Date Received: 3/25/08
 Date Analyzed: 3/27 - 3/28/08
 Desorption Volume: 0.10 Liter(s)

Client Sample ID	CAS Sample ID	Sample		Result mg/Tube	Result mg/m ³	MRL mg/m ³	Result ppmV	MRL ppmV	Data Qualifier
		Volume Liter(s)	Dilution Factor						
Tube 1	P0800790-017	6.0	1.0	0.55	92	1.6	130	2.3	
Tube 2	P0800790-018	6.0	1.0	0.51	85	1.6	120	2.3	
Tube 3	P0800790-019	6.0	1.0	0.010	1.7	1.6	2.4	2.3	
Tube 4	P0800790-020	6.0	1.0	< 0.0097	ND	1.6	ND	2.3	
Tube 5	P0800790-021	6.0	1.0	< 0.0097	ND	1.6	ND	2.3	
Tube 6	P0800790-022	6.0	1.0	< 0.0097	ND	1.6	ND	2.3	
Tube 7	P0800790-023	6.0	1.0	0.31	52	1.6	74	2.3	
Tube 8	P0800790-024	6.0	1.0	0.078	13	1.6	19	2.3	
Tube 9	P0800790-025	6.0	1.0	< 0.0097	ND	1.6	ND	2.3	
Tube 10	P0800790-026	6.0	1.0	< 0.0097	ND	1.6	ND	2.3	
Tube 11	P0800790-027	6.0	1.0	0.21	35	1.6	51	2.3	
Tube 12	P0800790-028	6.0	1.0	0.36	60	1.6	86	2.3	
Tube 13	P0800790-029	6.0	1.0	0.14	24	1.6	34	2.3	
Tube 15	P0800790-031	6.0	1.0	0.025	4.2	1.6	6.0	2.3	
Tube 16	P0800790-032	6.0	1.0	< 0.0097	ND	1.6	ND	2.3	
Reagent Blank	P080327-RB	NA	1.0	< 0.0097	NA	NA	NA	NA	
Method Blank	P080328-MB	NA	1.0	< 0.0097	NA	NA	NA	NA	

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

NA = Not applicable.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

Verified By: CA Date: 4/8/08

LABORATORY REPORT

May 1, 2008

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

RE: JRIFAS ODOR

Dear [REDACTED]

Enclosed are the results of the samples submitted to our laboratory on April 16, 2008. For your reference, these analyses have been assigned our service request number P0801052.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 15 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.

Kelly M Horiuchi

Kelly Horiuchi
Project Manager

Client:
Project:

[REDACTED]
JRIFAS ODOR

CAS Project No: P0801052

CASE NARRATIVE

The samples were received intact under chain of custody on April 16, 2008 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.

Sulfur Analysis

The samples were analyzed for twenty sulfur compounds per ASTM D 5504-01 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.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client:
Project:

[REDACTED]
JRIFAS ODOR

Service Request: P0801052

♦. **SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
P0801052-001	1-1	04/15/08	00:00
P0801052-002	1-2	04/15/08	00:00
P0801052-003	1-3	04/15/08	00:00
P0801052-004	1-4	04/15/08	00:00
P0801052-005	2-1	04/15/08	00:00
P0801052-006	2-2	04/15/08	00:00
P0801052-007	2-3	04/15/08	00:00
P0801052-008	2-4	04/15/08	00:00

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: XXXXXXXXXX Work order: P0801052

Project: JRIFAS ODOR

Sample(s) received on: 4/16/08 Date opened: 4/16/08 by: LKUKITA

Note: This form is used for all samples received by CAS. 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 sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2 | Container(s) supplied by CAS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | Were chain-of-custody papers used and filled out? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5 | Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | Was sample volume 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 temperature (thermal preservation) of cooler at receipt adhered to?
Cooler Temperature _____ °C Blank Temperature _____ °C | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9 | Was a trip blank received?
Trip blank supplied by CAS: Serial # _____ -TB _____ | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10 | Were custody seals on outside of cooler/Box?
Location of seal(s)? _____ Sealing Lid?
Were signature and date included?
Were seals intact? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| | Were custody seals on outside of sample container?
Location of seal(s)? _____ Sealing Lid?
Were signature and date included?
Were seals intact? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 11 | Do containers have appropriate preservation , according to method/SOP or Client specified information?
Is there a client indication that the submitted samples are pH preserved?
Were VOA vials checked for presence/absence of air bubbles?
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 | Tubes: Are the tubes capped and intact?
Do they contain moisture? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 13 | Badges: Are the badges properly capped and intact?
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
P0801052-001.01	1.0 L Tedlar Bag					
P0801052-002.01	1.0 L Tedlar Bag					
P0801052-003.01	1.0 L Tedlar Bag					
P0801052-004.01	1.0 L Tedlar Bag					
P0801052-005.01	1.0 L Tedlar Bag					
P0801052-006.01	1.0 L Tedlar Bag					
P0801052-007.01	1.0 L Tedlar Bag					

Explain any discrepancies: (include lab sample ID numbers): _____

Chain of Custody is missing time collected _____

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: 1-1
Client Project ID: JRIFAS ODOR

CAS Project ID: P0801052
CAS Sample ID: P0801052-001

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Zheng Wang/Wade Henton/Chris Cornett
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 4/15/08
Time Collected: NA
Date Received: 4/16/08
Date Analyzed: 4/16/08
Time Analyzed: 11:10
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	140	7.0	97	5.0	
463-58-1	Carbonyl Sulfide	230	12	94	5.0	
74-93-1	Methyl Mercaptan	130	9.8	67	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	15	13	5.9	5.0	
75-15-0	Carbon Disulfide	22	7.8	7.2	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	9.2	9.6	2.4	2.5	J
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 detection limit.

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

J = The analyte was positively identified below the laboratory method reporting limit; the associated numerical value is considered estimated.

Verified By: Re

Date: 4/29/08

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COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: 1-4
Client Project ID: JRIFAS ODOR

CAS Project ID: P0801052
 CAS Sample ID: P0801052-004

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Zheng Wang/Wade Henton/Chris Cornett
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 4/15/08
 Time Collected: NA
 Date Received: 4/16/08
 Date Analyzed: 4/16/08
 Time Analyzed: 12:02
 Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	110	12	47	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	10	7.8	3.2	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 detection limit.
 MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Verified By: Ru

Date: 4/29/08

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COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: 2-1
Client Project ID: JRIFAS ODOR

CAS Project ID: P0801052
CAS Sample ID: P0801052-005

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Zheng Wang/Wade Henton/Chris Cornett
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 4/15/08
Time Collected: NA
Date Received: 4/16/08
Date Analyzed: 4/16/08
Time Analyzed: 13:09
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	160	7.0	110	5.0	
463-58-1	Carbonyl Sulfide	21	12	8.6	5.0	
74-93-1	Methyl Mercaptan	110	9.8	58	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	21	13	8.4	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	9.1	9.6	2.4	2.5	J
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 detection limit.

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

J = The analyte was positively identified below the laboratory method reporting limit; the associated numerical value is considered estimated.

Verified By: Lu

Date: 4/21/08

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COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: Hampton Roads Sanitation District

Client Sample ID: 2-2

Client Project ID: [REDACTED]

CAS Project ID: P0801052

CAS Sample ID: P0801052-006

Test Code: ASTM D 5504-01
 Instrument ID: HP5890 II/GC5/SCD
 Analyst: Zheng Wang/Wade Henton/Chris Cornett
 Sampling Media: 1.0 L Tedlar Bag
 Test Notes:

Date Collected: 4/15/08
 Time Collected: NA
 Date Received: 4/16/08
 Date Analyzed: 4/16/08
 Time Analyzed: 13:31
 Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	4.9	7.0	3.6	5.0	J
463-58-1	Carbonyl Sulfide	14	12	5.7	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	43	13	17	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	18	9.6	4.8	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 detection limit.

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

J = The analyte was positively identified below the laboratory method reporting limit; the associated numerical value is considered estimated.

Verified By: RC

Date: 4/29/08

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COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [REDACTED]
Client Sample ID: 2-3
Client Project ID: JRIFAS ODOR

CAS Project ID: P0801052
 CAS Sample ID: P0801052-007

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Zheng Wang/Wade Henton/Chris Cornett
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 4/15/08
Time Collected: NA
Date Received: 4/16/08
Date Analyzed: 4/16/08
Time Analyzed: 14:07
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	14	12	5.5	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	36	13	14	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	9.2	9.6	2.4	2.5	J
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 detection limit.
 MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
 J = The analyte was positively identified below the laboratory method reporting limit; the associated numerical value is considered estimated.

Verified By: RW

Date: 4/21/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: [Redacted]
Client Sample ID: 2-4
Client Project ID: JRIFAS ODOR

CAS Project ID: P0801052
 CAS Sample ID: P0801052-008

Test Code: ASTM D 5504-01
Instrument ID: HP5890 II/GC5/SCD
Analyst: Zheng Wang/Wade Henton/Chris Cornett
Sampling Media: 1.0 L Tedlar Bag
Test Notes:

Date Collected: 4/15/08
Time Collected: NA
Date Received: 4/16/08
Date Analyzed: 4/16/08
Time Analyzed: 14:29
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	7.4	7.0	5.3	5.0	
463-58-1	Carbonyl Sulfide	13	12	5.3	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	18	13	6.9	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	6.8	9.6	1.8	2.5	J
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 detection limit.

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

J = The analyte was positively identified below the laboratory method reporting limit; the associated numerical value is considered estimated.

Verified By: RC Date: 4/29/08 **14**

LABORATORY REPORT

April 11, 2008

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

RE: SG - Bldg 8 Odor Study / 22080062

Dear Dick:

Enclosed are the results of the samples submitted to our laboratory on April 4, 2008. For your reference, these analyses have been assigned our service request number P0800913.

All analyses were performed in accordance with our laboratory's quality assurance program. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein. Your report contains 18 pages.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; Department of the Navy (NFESC); Pennsylvania Registration No. 68-03307. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

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

Respectfully submitted,

Columbia Analytical Services, Inc.

Kelly M Horiuchi

Kelly Horiuchi
Project Manager

Page
1 of 18

Client: [REDACTED]
Project: SG - Bldg 8 Odor Study / 22080062

CAS Project No: P0800913

CASE NARRATIVE

The samples were received intact under chain of custody on April 4, 2008 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.

Amine Analysis

The Treated alumina tube samples were analyzed for amines using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD).

Carboxylic Acids Analysis

The Silica gel tubes samples were analyzed for carboxylic acids using combined gas chromatography/mass spectrometry (GC/MS). The analyses were performed using a Hewlett Packard Model 5890 Series II gas chromatograph/Model 5970 mass selective detector.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Client: [REDACTED]
Project: SG - Bldg 8 Odor Study/22080062

Service Request: P0800913

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
P0800913-001	403-07	04/03/08	09:17
P0800913-002	403-08	04/03/08	09:18
P0800913-003	403-17	04/03/08	11:26
P0800913-004	403-18	04/03/08	11:27
P0800913-005	403-21	04/03/08	13:45
P0800913-006	403-22	04/03/08	13:45
P0800913-007	403-24	04/03/08	00:00
P0800913-008	403-25	04/03/08	00:00

Columbia Analytical Services, Inc.
Sample Acceptance Check Form

Client: XXXXXXXXXX Work order: P0800913

Project: SG - Bldg 8 Odor Study / 22080062

Sample(s) received on: 4/4/08 Date opened: 4/4/08 by: LKUKITA

Note: This form is used for all samples received by CAS. 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.

- | | Yes | No | N/A |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were sample containers properly marked with client sample ID? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 Container(s) supplied by CAS ? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 Did sample containers arrive in good condition? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 Were chain-of-custody papers used and filled out? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5 Did sample container labels and/or tags agree with custody papers? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 Was sample volume 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 temperature (thermal preservation) of cooler at receipt adhered to? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cooler Temperature <u>5</u> °C Blank Temperature _____ °C | | | |
| 9 Was a trip blank received? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Trip blank supplied by CAS: Serial # _____ -TB _____ | | | |
| 10 Were custody seals on outside of cooler/Box? | <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"/> |
| 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 preservation , according to method/SOP or Client specified information? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there a client indication that the submitted samples are pH preserved? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Were VOA vials 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 Tubes: Are the tubes capped and intact? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do they contain moisture? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 13 Badges: 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
P0800913-001.01	Silica Gel DNPH Tube					
P0800913-002.01	1 each Tube					
P0800913-003.01	Silica Gel DNPH Tube					
P0800913-004.01	1 each Tube					
P0800913-005.01	Silica Gel DNPH Tube					
P0800913-006.01	1 each Tube					
P0800913-007.01	Silica Gel DNPH Tube					

Explain any discrepancies: (include lab sample ID numbers): _____

No sampling times noted on the COC. Per Dick Aichelmann on 4/4/08 @ 1036 entered time info on the COC. SMA

*Required pH: Phenols/COD/NH3/TOC/TOX/NO3+NO2/TKN/T.PHOS, H2SO4 (pH<2); Metals, HNO3 (pH<2); CN (NaOH or NaOH/Asc Acid) (pH>12);

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: XXXXXXXXXX
Client Sample ID: 403-07
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
 CAS Sample ID: P0800913-001

Test Code: EPA Method TO-11A
Instrument ID: Waters LC Module I Plus/UV_Vis 360/LC1
Analyst: Hani Cherazaie
Sampling Media: Silica Gel DNPH Tube
Test Notes: BC

Date Collected: 4/3/08
Date Received: 4/4/08
Date Analyzed: 4/8 - 4/9/08
Desorption Volume: 1.0 ml
Volume Sampled: 135.5 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	4,300	32	0.74	26	0.60	
75-07-0	Acetaldehyde	870	6.4	0.74	3.6	0.41	
123-38-6	Propionaldehyde	35,000	260	0.74	110	0.31	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.74	ND	0.26	
123-72-8	Butyraldehyde	< 100	ND	0.74	ND	0.25	
100-52-7	Benzaldehyde	320	2.4	0.74	0.55	0.17	
590-86-3	Isovaleraldehyde	< 100	ND	0.74	ND	0.21	
110-62-3	Valeraldehyde	390	2.9	0.74	0.82	0.21	
529-20-4	o-Tolualdehyde	< 100	ND	0.74	ND	0.15	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	1.5	ND	0.30	
66-25-1	n-Hexaldehyde	110	0.79	0.74	0.19	0.18	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.74	ND	0.13	

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.

BC = Results reported are not blank corrected.

Verified By: RC Date: 4/14/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

Page 1 of 1

Client: XXXXXXXXXX
Client Sample ID: 403-17
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
 CAS Sample ID: P0800913-003

Test Code: EPA Method TO-11A
Instrument ID: Waters LC Module I Plus/UV_Vis 360/LC1
Analyst: Hani Cherazaic
Sampling Media: Silica Gel DNPH Tube
Test Notes: BC

Date Collected: 4/3/08
Date Received: 4/4/08
Date Analyzed: 4/8 - 4/9/08
Desorption Volume: 1.0 ml
Volume Sampled: 133.4 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	4,000	30	0.75	24	0.61	
75-07-0	Acetaldehyde	880	6.6	0.75	3.6	0.42	
123-38-6	Propionaldehyde	29,000	210	0.75	90	0.32	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.75	ND	0.26	
123-72-8	Butyraldehyde	< 100	ND	0.75	ND	0.25	
100-52-7	Benzaldehyde	260	2.0	0.75	0.46	0.17	
590-86-3	Isovaleraldehyde	< 100	ND	0.75	ND	0.21	
110-62-3	Valeraldehyde	280	2.1	0.75	0.60	0.21	
529-20-4	o-Tolualdehyde	< 100	ND	0.75	ND	0.15	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	1.5	ND	0.31	
66-25-1	n-Hexaldehyde	140	1.0	0.75	0.25	0.18	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.75	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.

BC = Results reported are not blank corrected.

Verified By: RC Date: 4/11/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

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Client: [REDACTED]
Client Sample ID: 403-24
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
CAS Sample ID: P0800913-007

Test Code: EPA Method TO-11A
Instrument ID: Waters LC Module I Plus/UV_Vis 360/LC1
Analyst: Hani Cherazaia
Sampling Media: Silica Gel DNPH Tube
Test Notes: BC

Date Collected: 4/3/08
Date Received: 4/4/08
Date Analyzed: 4/8/08
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	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.

BC = Results reported are not blank corrected.

Verified By: Ric Date: 4/11/08

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COLUMBIA ANALYTICAL SERVICES, INC.

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Client: XXXXXXXXXX
Client Sample ID: Reagent Blank
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
 CAS Sample ID: P080408-RB

Test Code: EPA Method TO-11A
Instrument ID: Waters LC Module I Plus/UV_Vis 360/LC1
Analyst: Hani Cherazaie
Sampling Media: Acetonitrile
Test Notes: BC

Date Collected: NA
Date Received: NA
Date Analyzed: 4/08/08
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	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.
 BC = Results reported are not blank corrected.
 NA = Not applicable.

Verified By: Re Date: 4/11/08 **11**

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

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Client: ██████████
Client Sample ID: Method Blank
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
 CAS Sample ID: P080408-MB

Test Code: EPA Method TO-11A
Instrument ID: Waters LC Module I Plus/UV_Vis 360/LC1
Analyst: Hani Cherazaie
Sampling Media: Silica Gel DNPH Tube
Test Notes: BC

Date Collected: NA
Date Received: NA
Date Analyzed: 4/08/08
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	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.

BC = Results reported are not blank corrected.

NA = Not applicable.

Verified By: RC Date: 4/10/08

COLUMBIA ANALYTICAL SERVICES, INC.

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Client: XXXXXXXXXX
Client Sample ID: Reagent Blank
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
 CAS Sample ID: P080409-RB

Test Code: EPA Method TO-11A
Instrument ID: Waters LC Module I Plus/UV_Vis 360/LC1
Analyst: Hani Cherazaie
Sampling Media: Acetonitrile
Test Notes: BC

Date Collected: NA
Date Received: NA
Date Analyzed: 4/09/08
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	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.

BC = Results reported are not blank corrected.

NA = Not applicable.

Verified By: *RC* Date: 4/10/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

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Client: XXXXXXXXXX
Client Sample ID: 403-08
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
CAS Sample ID: P0800913-002

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Hani Cherazaie
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: 4/3/08
Date Received: 4/4/08
Date Analyzed: 4/9/08
Desorption Volume: 2.0 ml
Volume Sampled: 129.3 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.52	ND	4.0	ND	2.2	
75-04-7	Ethylamine	< 0.58	ND	4.5	ND	2.4	
75-50-3	Trimethylamine	< 0.46	ND	3.5	ND	1.5	
75-31-0	Isopropylamine	< 0.49	ND	3.8	ND	1.6	
75-64-9	t-Butylamine	< 0.48	ND	3.7	ND	1.2	
107-10-8	Propylamine	< 0.72	ND	5.6	ND	2.3	
109-89-7	Diethylamine	< 0.51	ND	4.0	ND	1.3	
13952-84-6	s-Butylamine	< 0.50	ND	3.9	ND	1.3	
78-81-9	Isobutylamine	< 0.51	ND	4.0	ND	1.3	
109-73-9	Butylamine	< 0.50	ND	3.9	ND	1.3	
108-18-9	Diisopropylamine	< 0.48	ND	3.8	ND	0.91	
121-44-8	Triethylamine	< 0.50	ND	3.9	ND	0.93	
142-84-7	Dipropylamine	< 0.47	ND	3.7	ND	0.89	

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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

Verified By: Re Date: 4/10/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

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Client: XXXXXXXXXX
Client Sample ID: 403-22
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
CAS Sample ID: P0800913-006

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Hani Cherazaie
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: 4/3/08
Date Received: 4/4/08
Date Analyzed: 4/9/08
Desorption Volume: 2.0 ml
Volume Sampled: 136.4 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.52	ND	3.8	ND	2.1	
75-04-7	Ethylamine	< 0.58	ND	4.3	ND	2.3	
75-50-3	Trimethylamine	< 0.46	ND	3.3	ND	1.4	
75-31-0	Isopropylamine	< 0.49	ND	3.6	ND	1.5	
75-64-9	t-Butylamine	< 0.48	ND	3.5	ND	1.2	
107-10-8	Propylamine	< 0.72	ND	5.3	ND	2.2	
109-89-7	Diethylamine	< 0.51	ND	3.8	ND	1.3	
13952-84-6	s-Butylamine	< 0.50	ND	3.7	ND	1.2	
78-81-9	Isobutylamine	< 0.51	ND	3.8	ND	1.3	
109-73-9	Butylamine	< 0.50	ND	3.7	ND	1.2	
108-18-9	Diisopropylamine	< 0.48	ND	3.6	ND	0.86	
121-44-8	Triethylamine	< 0.50	ND	3.7	ND	0.89	
142-84-7	Dipropylamine	< 0.47	ND	3.5	ND	0.84	

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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

Verified By: Rw

Date: 4/11/08

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

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Client: XXXXXXXXXX
Client Sample ID: 403-25
Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
CAS Sample ID: P0800913-008

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC14/NPD
Analyst: Hani Cherazaie
Sampling Media: Treated Alumina Tube
Test Notes: BC, DE

Date Collected: 4/3/08
Date Received: 4/4/08
Date Analyzed: 4/9/08
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.52	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.58	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.46	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.49	NA	NA	NA	NA	
75-64-9	t-Butylamine	< 0.48	NA	NA	NA	NA	
107-10-8	Propylamine	< 0.72	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.51	NA	NA	NA	NA	
13952-84-6	s-Butylamine	< 0.50	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.51	NA	NA	NA	NA	
109-73-9	Butylamine	< 0.50	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.48	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.50	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 0.47	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.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.
NA = Not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

RESULTS OF ANALYSIS

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Client: XXXXXXXXXX
 Client Sample ID: Method Blank
 Client Project ID: SG - Bldg 8 Odor Study / 22080062

CAS Project ID: P0800913
 CAS Sample ID: P080409-MB

Test Code: GC/NPD
 Instrument ID: Agilent 6890N/GC14/NPD
 Analyst: Hani Cherazaie
 Sampling Media: Treated Alumina Tube
 Test Notes: BC, DE

Date Collected: NA
 Date Received: NA
 Date Analyzed: 4/9/08
 Desorption Volume: 2.0 ml
 Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m ³	MRL µg/m ³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 0.52	NA	NA	NA	NA	
75-04-7	Ethylamine	< 0.58	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 0.46	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 0.49	NA	NA	NA	NA	
75-64-9	t-Butylamine	< 0.48	NA	NA	NA	NA	
107-10-8	Propylamine	< 0.72	NA	NA	NA	NA	
109-89-7	Diethylamine	< 0.51	NA	NA	NA	NA	
13952-84-6	s-Butylamine	< 0.50	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 0.51	NA	NA	NA	NA	
109-73-9	Butylamine	< 0.50	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 0.48	NA	NA	NA	NA	
121-44-8	Triethylamine	< 0.50	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 0.47	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.

BC = Results reported are not blank corrected.

DE = Results reported are corrected for desorption efficiency.

Verified By: RC Date: 4/9/08

Example EDD

Dilution Factor	Target Analytes	MDL	RL	Final Concentrations	Data Qualification		Method References
					Units	Flags	
1	Ammonia	NA	0.73		0 ppmV	U, BC, DE	OSHA ID-164 Modified
1	Ammonia	NA	NA		0 ppmV	U, BC, DE	OSHA ID-164 Modified
1	Hydrogen Sulfide	4.2	7		0 ug/m3	U	ASTM D5504-01
1	Carbonyl Sulfide	3.2	12		0 ug/m3	U	ASTM D5504-01
1	Methyl Mercaptan	4.9	9.8		0 ug/m3	U	ASTM D5504-01
1	Ethyl Mercaptan	6.4	13		0 ug/m3	U	ASTM D5504-01
1	Dimethyl Sulfide	6.4	13		0 ug/m3	U	ASTM D5504-01
1	Carbon Disulfide	4	7.8		0 ug/m3	U	ASTM D5504-01
1	Isopropyl Mercaptan	7.8	16		0 ug/m3	U	ASTM D5504-01
1	tert-Butyl Mercaptan	9.2	18		0 ug/m3	U	ASTM D5504-01
1	n-Propyl Mercaptan	7.8	16		0 ug/m3	U	ASTM D5504-01
1	Ethyl Methyl Sulfide	7.8	16		0 ug/m3	U	ASTM D5504-01
1	Thiophene	8.6	17		0 ug/m3	U	ASTM D5504-01
1	Isobutyl Mercaptan	9.2	18		0 ug/m3	U	ASTM D5504-01
1	Diethyl Sulfide	9.2	18		0 ug/m3	U	ASTM D5504-01
1	n-Butyl Mercaptan	9.2	18		0 ug/m3	U	ASTM D5504-01
1	Dimethyl Disulfide	5	9.6		0 ug/m3	U	ASTM D5504-01
1	3-Methylthiophene	10	20		0 ug/m3	U	ASTM D5504-01
1	Tetrahydrothiophene	9	18		0 ug/m3	U	ASTM D5504-01
1	2,5-Dimethylthiophene	12	23		0 ug/m3	U	ASTM D5504-01
1	2-Ethylthiophene	12	23		0 ug/m3	U	ASTM D5504-01
1	Diethyl Disulfide	6.5	12		0 ug/m3	U	ASTM D5504-01
1	Hydrogen Sulfide	4.2	7		0 ug/m3	U	ASTM D5504-01
1	Carbonyl Sulfide	3.2	12		0 ug/m3	U	ASTM D5504-01
1	Methyl Mercaptan	4.9	9.8		0 ug/m3	U	ASTM D5504-01
1	Ethyl Mercaptan	6.4	13		0 ug/m3	U	ASTM D5504-01
1	Dimethyl Sulfide	6.4	13		0 ug/m3	U	ASTM D5504-01
1	Carbon Disulfide	4	7.8		0 ug/m3	U	ASTM D5504-01

1	Isopropyl Mercaptan	7.8	16	0 ug/m3 U	ASTM D5504-01
1	tert-Butyl Mercaptan	9.2	18	0 ug/m3 U	ASTM D5504-01
1	n-Propyl Mercaptan	7.8	16	0 ug/m3 U	ASTM D5504-01
1	Ethyl Methyl Sulfide	7.8	16	0 ug/m3 U	ASTM D5504-01
1	Thiophene	8.6	17	0 ug/m3 U	ASTM D5504-01
1	Isobutyl Mercaptan	9.2	18	0 ug/m3 U	ASTM D5504-01
1	Diethyl Sulfide	9.2	18	0 ug/m3 U	ASTM D5504-01
1	n-Butyl Mercaptan	9.2	18	0 ug/m3 U	ASTM D5504-01
1	Dimethyl Disulfide	5	9.6	0 ug/m3 U	ASTM D5504-01
1	3-Methylthiophene	10	20	0 ug/m3 U	ASTM D5504-01
1	Tetrahydrothiophene	9	18	0 ug/m3 U	ASTM D5504-01
1	2,5-Dimethylthiophene	11	23	0 ug/m3 U	ASTM D5504-01
1	2-Ethylthiophene	11	23	0 ug/m3 U	ASTM D5504-01
1	Diethyl Disulfide	6.5	12	0 ug/m3 U	ASTM D5504-01
1	Hydrogen Sulfide	3	5	1960 ppbV	ASTM D5504-01
1	Carbonyl Sulfide	1.3	5	1730 ppbV	ASTM D5504-01
1	Methyl Mercaptan	2.5	5	2110 ppbV	ASTM D5504-01
0.01	Dimethylamine	0.022	5.5	0 ug/m3 U,BC, DE	GC/NPD
0.01	Ethylamine	0.044	5.5	0 ug/m3 U,BC, DE	GC/NPD
0.01	Trimethylamine	0.046	5.8	0 ug/m3 U,BC, DE	GC/NPD
0.01	Isopropylamine	0.054	5.4	0 ug/m3 U,BC, DE	GC/NPD
0.01	tert-Butylamine	0.053	11	0 ug/m3 U,BC, DE	GC/NPD
0.01	n-Propylamine	0.045	5.7	0 ug/m3 U,BC, DE	GC/NPD
0.01	Diethylamine	0.054	5.4	0 ug/m3 U,BC, DE	GC/NPD
0.01	sec-Butylamine	0.044	5.5	0 ug/m3 U,BC, DE	GC/NPD
0.01	Isobutylamine	0.079	5.7	0 ug/m3 U,BC, DE	GC/NPD
0.01	n-Butylamine	0.075	5.4	0 ug/m3 U,BC, DE	GC/NPD
0.01	Diisopropylamine	0.043	5.4	0 ug/m3 U,BC, DE	GC/NPD
0.01	Triethylamine	0.043	5.4	0 ug/m3 U,BC, DE	GC/NPD
0.01	Di-n-propylamine	0.044	5.5	0 ug/m3 U,BC, DE	GC/NPD

1	Dimethylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Ethylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Trimethylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Isopropylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	tert-Butylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	n-Propylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Diethylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	sec-Butylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Isobutylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	n-Butylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Diisopropylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Triethylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Di-n-propylamine	NA	NA	0 ug/m3 U,BC, DE	GC/NPD
1	Dimethylamine	0.002	0	8.07 ug/mL	GC/NPD
1	Ethylamine	0.004	0	8.58 ug/mL	GC/NPD
1	Trimethylamine	0.004	0	8.28 ug/mL	GC/NPD
1	Isopropylamine	0.005	0	11.4 ug/mL	GC/NPD
1	tert-Butylamine	0.005	0	9.49 ug/mL	GC/NPD
1	n-Propylamine	0.004	0	11.2 ug/mL	GC/NPD
1	Diethylamine	0.005	0	8.29 ug/mL	GC/NPD
1	sec-Butylamine	0.004	0	8.71 ug/mL	GC/NPD
1	Isobutylamine	0.007	0	8.22 ug/mL	GC/NPD
1	n-Butylamine	0.007	0	8.76 ug/mL	GC/NPD
1	Diisopropylamine	0.004	0	8.73 ug/mL	GC/NPD
1	Triethylamine	0.004	0	7.9 ug/mL	GC/NPD
1	Di-n-propylamine	0.004	0	8.43 ug/mL	GC/NPD
1	Dimethylamine	0.002	0	8.98 ug/mL	GC/NPD
1	Ethylamine	0.004	0	10.4 ug/mL	GC/NPD
1	Trimethylamine	0.004	0	8.05 ug/mL	GC/NPD
1	Isopropylamine	0.005	0	12.3 ug/mL	GC/NPD

1	tert-Butylamine	0.005	0	10.1 ug/mL	GC/NPD
1	n-Propylamine	0.004	0	11.8 ug/mL	GC/NPD
1	Diethylamine	0.005	0	8.79 ug/mL	GC/NPD
1	sec-Butylamine	0.004	0	9.2 ug/mL	GC/NPD
1	Isobutylamine	0.007	0	8.73 ug/mL	GC/NPD
1	n-Butylamine	0.007	0	9.37 ug/mL	GC/NPD
1	Diisopropylamine	0.004	0	9.43 ug/mL	GC/NPD
1	Triethylamine	0.004	0	9.04 ug/mL	GC/NPD
1	Di-n-propylamine	0.004	0	8.04 ug/mL	GC/NPD

Proof of Accreditation

WASHINGTON STATE DEPARTMENT OF ECOLOGY

ENVIRONMENTAL LABORATORY ACCREDITATION PROGRAM

SCOPE OF ACCREDITATION

Columbia Analytical Services, Inc. - Simi Valley

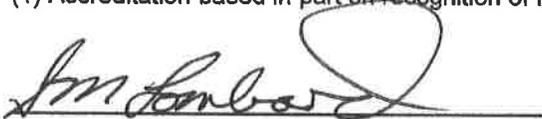
Simi Valley, CA

is accredited for the analytes listed below using the methods indicated. Full accreditation is granted unless stated otherwise in a note. Accreditation for U.S. Environmental Protection Agency (EPA) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) is for the latest version of the method. SM refers to "Standard Methods for the Examination of Water and Wastewater," 18th through 21st Editions and the Online Edition, unless otherwise indicated. ASTM is the American Society for Testing and Materials. Other references are described in notes.

Matrix/Analyte	Method	Notes
Air		
Volatile Organic Compounds	EPA TO-15	1

Accredited Parameter Note Detail

(1) Accreditation based in part on recognition of Florida NELAP accreditation.



Authentication Signature



Date

Stewart M. Lombard, Lab Accreditation Unit Supervisor

The State of
Department



Washington
of Ecology

Columbia Analytical Services, Inc. - Simi Valley
Simi Valley, CA

has complied with provisions set forth in Chapter 173-50 WAC and is hereby recognized by the Department of Ecology as an ACCREDITED LABORATORY for the analytical parameters listed on the accompanying Scope of Accreditation. This certificate is effective May 13, 2010 and shall expire May 12, 2011.

Witnessed under my hand on May 13, 2010

Stewart M. Lombard
Lab Accreditation Unit Supervisor

Laboratory ID
C946

Schedule of Services

Air Testing



2011 Schedule of Services



2655 Park Center Drive, Suite A, Simi Valley, CA 93065

805.526.7161

www.caslab.com

Highlights

VOC Analysis – full range of reporting limits

- For most compounds standard MRLs down to 0.5 µg/m³
- For selected compounds low level MRLs down to 0.1 µg/m³
- Ultra low-level MRLs, down to 0.025 µg/m³ by Selective Ion Monitoring (SIM)

See Page 9 for analysis and Page 13 for sampling media

LEED Testing

- Indoor air testing for green buildings (formaldehyde, TVOC, and 4-PCH)

See page 10 for details

1L Summa Canisters

- Functioning just like the more standard 6L Summa canister, these canisters are convenient for collection of soil gas samples, and can be used for other applications as well

See page 13 for details

Amines and Carboxylic Acids

- Amines target compound list features 13 amines

See Page 2 for details

- Carboxylic acids target compound list features 17 carboxylic acids

See Page 3 for details

Chinese Drywall Testing

- Elemental sulfur test – screening analysis to positively identify corrosive drywall
- Hydrogen sulfide emission test – an innovative chamber test to measure gaseous sulfur compounds
- Copper corrosion confirmation test – visual confirmation of corrosion in the presence of drywall

See page 4 for details

Chamber Testing

- Measurement of chemicals off-gassed from a wide range of products using environmental chambers to determine VOCs and/or other airborne chemicals

See page 3 for details

Passive Air Sampling

- Applications include monitoring of ambient air, indoor air, workplace, remediation fence lines, landfill perimeter, sub-slab air and soil gas

See page 11 for details

2011 Columbia Analytical Air Testing Fee Schedule

Alphabetical List of Services by Compound of Interest

Analysis		Method	Media/ Container
Acetaldehyde <i>Must submit field blank with cartridge or tube samples</i>		EPA TO-5	DNPH impinger*
		EPA TO-11A	DNPH cartridge or tube Blank
Aldehydes, speciated; carbonyl scan <i>Must submit field blank with cartridge or tube samples</i>		EPA TO-5	DNPH impinger*
		EPA TO-11A	DNPH cartridge or tube Blank
Amines <i>Sorbent tube included with cost of analysis A field blank is recommended</i>		In-house Method 101	Columbia Analytical amine tube
			Blank
Ammonia <i>Sorbent tube included with cost of analysis A field blank is recommended Minimum three samples including blank</i>		OSHA ID 188/164	Treated anasorb tube
			Blank
BTEX (benzene, toluene, ethylbenzene, xylenes) + MTBE (methyl tertiary-butyl ether)		EPA TO-15	Tedlar or canister
BTEX + MTBE plus total petroleum hydrocarbons (TPH) as gasoline		EPA TO-3 M TO-15	Tedlar or canister
BTEX		NIOSH 1501	Coconut shell charcoal tube
BTU heat content / CHONS		ASTM D3588	Tedlar
Carbon dioxide	% Level	EPA 3C M	Tedlar or canister
	ppmV	EPA 25C M	Tedlar or canister

* Minimum 3 days lead time required to prepare and QC impinger solutions/media

M = modification of method

2011 Columbia Analytical Air Testing Fee Schedule

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Alphabetical List of Services by Compound of Interest

Analysis		Method	Media/ Container
Carbon dioxide and carbon monoxide	% Level	EPA 3C M	Tedlar or canister
	ppmV	EPA 25C M	Tedlar or canister
Carbon monoxide	% Level	EPA 3C M	Tedlar or canister
	ppmV	EPA 25C M	Tedlar or canister
Carboxylic acids <i>Sorbent tube included with cost of analysis A field blank is recommended</i>		In-house Method 102	Treated silica gel tube
			Blank
Chamber testing <i>Measurement of chemicals off-gassed from client-supplied material Costs will include a one-time chamber setup fee per project of \$100 to \$150 Costs for analysis and sampling media billed separately A fee for a custom report may also apply</i>		California specification 01350 modified	Environmental chamber
Diesel <i>A field blank is recommended Minimum three samples including blank</i>		NIOSH 1550	Charcoal tube
			Blank

M = modification of method

2011 Columbia Analytical Air Testing Fee Schedule

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Alphabetical List of Services by Compound of Interest

Analysis		Method	Media/ Container
Dissolved gases <i>A minimum of two 40mL VOA vials must be submitted per sample</i>	Methane, ethane, ethene (MEE)	RSK 175 GC/FID	<i>Vials must be acid preserved with HCl or H₂SO₄</i>
	Methane, ethane, ethene propane, propene (MEEPP)		
	Carbon dioxide (CO ₂)	RSK 175 GC/TCD	<i>Vials must not contain any preservatives</i>
	MEE and CO ₂	RSK 175 GC/FID/TCD	<i>At least two vials must be acid preserved</i>
Drywall testing			
Elemental sulfur test <i>Screening analysis to positively identify corrosive drywall</i>		CAS AQL 103A GC/ECD	N/A
Hydrogen sulfide emission test <i>Chamber test to measure H₂S</i>		CAS AQL 104 GC/SCD	Environmental chamber
Reduced sulfur compounds emission test <i>Chamber test to measure H₂S, COS, CS₂ and 17 other gaseous sulfur compounds</i>		CAS AQL 104 GC/SCD	Environmental chamber
Copper corrosion confirmation test <i>Visual confirmation of corrosion in the presence of drywall</i>		CAS AQL 105	Environmental chamber
Ethanol		EPA TO-3 M	Canister
Fixed gases H ₂ , O ₂ , N ₂ , CH ₄ , CO, CO ₂	One or two compounds only (e.g. CH ₄ only, CH ₄ and CO ₂)	ASTM D1946 EPA 3C M	Tedlar or canister
	Three or more compounds		
Formaldehyde		EPA TO-11A M	radiello® passive/diffusive sampler

* Minimum 3 days lead time required to prepare and QC impinger solutions/media

M = modification of method

2011 Columbia Analytical Air Testing Fee Schedule

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Alphabetical List of Services by Compound of Interest

Analysis		Method	Media/ Container
Formaldehyde <i>Must submit field blank with cartridge or tube samples</i>		EPA TO-5	DNPH impinger*
		EPA TO-11A	DNPH cartridge or tube Blank
Formaldehyde <i>Field blank built into badge</i>		EPA TO-11A M	Passive dosimeter (badge) Blank
Formaldehyde and acetaldehyde <i>Must submit field blank with cartridge or tube samples</i>		EPA TO-5	DNPH impinger*
		EPA TO-11A	DNPH cartridge or tube Blank
Helium		EPA 3C M	Mylar or canister
Hydrocarbon speciation (C ₁ – C ₆ & >C ₆)		EPA TO-3 M	Tedlar or canister
Hydrogen	% Level	EPA 3C M	Mylar or canister
	ppmV	EPA 3C M	Mylar or canister
Hydrogen fluoride (HF)		CAS AQL 106	radiello® passive/diffusive sampler
Hydrogen sulfide (H ₂ S)		ASTM D5504 SCAQMD 307.91M	Tedlar
Hydrogen sulfide		CAS AQL 110	radiello® passive/diffusive sampler
Methane	% Level	EPA 3C M	Tedlar or canister
	ppmV	EPA TO-3 M	
		EPA 25C M	

M = modification of method

2011 Columbia Analytical Air Testing Fee Schedule

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Alphabetical List of Services by Compound of Interest

Analysis		Method	Media/ Container
Methanol		EPA TO-3 M	Canister
Methanol <i>A field blank is recommended</i> <i>Minimum three samples including blank</i>		NIOSH 2000	Silica gel tube
			Blank
Naphthas (ex., kerosene, mineral spirits, Stoddard solvent, diesel #2, fuel oil or VMP naphtha) <i>A field blank is recommended</i> <i>Minimum three samples including blank</i>		NIOSH 1550	Charcoal tube
			Blank
Nicotine <i>Minimum three samples including blank</i> <i>Minimum 5-7 days lead time required for project setup</i>		ASTM D5075-01	XAD-4
Nicotine and 3-ethenylpyridine (3-EP) <i>Minimum three samples including blank</i> <i>Minimum 5-7 days lead time required for project setup</i>		ASTM D5075-01	XAD-4
Nitrogen (N ₂)	Single injection	EPA 3C M ASTM D1946	Tedlar or canister
	Duplicate injections	EPA 3C ASTM D1946	Tedlar or canister
Nitrogen dioxide (NO ₂)		CAS AQL 108	radiello® passive/diffusive sampler
N-Nitrosodimethylamine (NDMA) <i>Sorbent tube included with cost of analysis</i> <i>A field blank is recommended</i>		EPA TO-7 M	Columbia Analytical amine tube
			Blank
Nitrous oxide (N ₂ O)		EPA 3C M	Tedlar or canister
Ozone (O ₃)		CAS AQL 107	radiello® passive/diffusive sampler
PAHs <i>16 Polynuclear aromatic hydrocarbons</i> <i>Low-volume or high-volume</i>		EPA TO-13A (SIM)	PUF/XAD-2*

* Minimum 3 days lead time required to prepare and QC impinger solutions/media

M = modification of method

2011 Columbia Analytical Air Testing Fee Schedule

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Alphabetical List of Services by Compound of Interest

Analysis		Method	Media/ Container
PAHs 16 Polynuclear aromatic hydrocarbons A field blank is recommended Minimum three samples including blank		NIOSH 5515 M (GC/MS)	PTFE filter/ XAD-2 tube
			Blank
PCBs A field blank is recommended Minimum three samples including blank Minimum 5-7 days lead time required for project setup Setup fee may apply		NIOSH 5503	Glass fiber filter and florisil tube
			Blank
PCBs	High-volume sampler	EPA TO-4A	PUF*
	Low-volume sampler	EPA TO-10A	
	Wipes	EPA TO-10A M	Wipe
Pentachlorophenol Minimum three samples including blank		OSHA 39	XAD-7
Pesticides List of 20 organochlorine pesticides	High-volume sampler	EPA TO-4A	PUF*
	Low-volume sampler	EPA TO-10A	
	Wipes	EPA TO-10A M	Wipe
Pesticides (organochlorine) and PCBs	High-volume sampler	EPA TO-4A	PUF*
	Low-volume sampler	EPA TO-10A	
	Wipes	EPA TO-10A M	Wipe
Phenol A field blank is recommended Minimum three samples including blank		OSHA 32	XAD-7
			Blank
Phenol and cresols A field blank is recommended Minimum three samples including blank		EPA TO-8	NaOH impinger*

* Minimum 3 days lead time required to prepare and QC impinger solutions/media

M = modification of method

2011 Columbia Analytical Air Testing Fee Schedule

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Alphabetical List of Services by Compound of Interest

Analysis		Method	Media/ Container
4-Phenylcyclohexene (4-PCH) <i>A field blank is recommended</i>		EPA TO-17	Thermal desorption tube
Solanesol (environmental tobacco smoke) <i>A field blank is recommended</i> <i>Minimum three samples including blank</i>		ASTM D6271	Teflon filter
Sulfur compounds	Hydrogen sulfide only	ASTM D5504 SCAQMD 307.91 M	Tedlar
	Hydrogen sulfide, methyl mercaptan, dimethyl sulfide and dimethyl disulfide		
	Natural gas odorants		
	20 Speciated reduced compounds		
	Total reduced sulfur (TRS) as H ₂ S		
Sulfur dioxide (SO ₂)		CAS AQL 109	radiello® passive/diffusive sampler
Sulfur hexafluoride (SF ₆)		NIOSH 6602	Tedlar or canister
Total gaseous non-methane organics (TGNMO)	Single injection	EPA 25C M	Tedlar or canister
	Triplicate injection	EPA 25C	Canister
Total petroleum hydrocarbons (TPH) as diesel <i>A field blank is recommended</i> <i>Minimum three samples including blank</i>		NIOSH 1550	Charcoal tube
			Blank
TPH as gasoline <i>TPH as other fuels (e.g. JP-4) may be available; please call for more information</i>		EPA TO-3 M	Tedlar or canister
TPH as gasoline plus BTEX + MTBE		EPA TO-3 M TO-15	Tedlar or canister
Total volatile petroleum hydrocarbons (TVPH) as hexane		EPA TO-3 M	Tedlar or canister

M = modification of method

2011 Columbia Analytical Air Testing Fee Schedule

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Volatile Organic Compounds (VOCs)

Analysis	Method	Media/ Container
Standard target compound list <i>MRLs down to 0.5 µg/m³ for most compounds*</i>	EPA TO-15	Canister**
Low-level analysis <i>MRLs down to 0.1 µg/m³ for selected compounds call for details*</i>		
Ultra low-level analysis by SIM <i>Up to 10 target compounds from SIM list MRLs down to 0.025 µg/m³ for most compounds MRL down to 0.010 µg/m³ for TCE*</i>		
Ultra low-level analysis by SIM Expanded target compound list		
Single compound analysis		
Less than 5 compounds		
6 to 10 compounds		
Plus 15 tentatively identified compounds (TICs)		
Only 15 TICs		
Plus C ₃ - C ₁₁₊ speciation		
Only C ₃ - C ₁₁₊ speciation		
Total volatile organic compounds (TVOC) as toluene	EPA TO-15	Canister**
TVOC as toluene via thermal desorption <i>A field blank is recommended</i>	EPA TO-17	Thermal desorption tube
VOCs, landfill gas <i>(19 compounds) SCAQMD Rule 1150.1 Does not include hydrogen sulfide</i>	EPA TO-15	Tedlar or canister
VOCs, MA DEP APH list	MA DEP APH	Canister**
MA DEP APH & EPA TO-15 combined	MA DEP APH & EPA TO-15	Canister**
VOCs via thermal desorption <i>Target compound list is project specific or TICs Must submit field blank with samples</i>	EPA TO-17	Multi-sorbent tube
		Blank

* MRLs do not take into account canister pressurization dilution factors. Actual MRLs will be slightly higher. Please call for details.

** Tedlar bags may be used instead of canisters; methods will be noted as "modified" in case narrative

2011 Columbia Analytical Air Testing Fee Schedule

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VOCs

Analysis	Method	Media/ Container
VOCs <i>Minimum three samples including blank A field blank is recommended</i>	Applicable NIOSH / OSHA methods	Various sorbents
VOCs by passive sampling		
Project-specific list of VOCs	Thermal or solvent desorption	radiello® passive/diffusive sampler
Project-specific list of VOCs	EPA TO-17 Thermal desorption	SKC ULTRA® passive sampler

LEED (Green Building) Methods

Formaldehyde	EPA TO-11A	DNPH silica gel tube
TVOC as toluene	EPA TO-17	Thermal desorption tube
4-Phenylcyclohexene (4-PCH) only	EPA TO-17	Thermal desorption tube
Combined TVOC as toluene + 4-PCH	EPA TO-17	Thermal desorption tube
Top 15 TICs (added on to TVOC analysis)	EPA TO-17	Thermal desorption tube

Passive Air Sampling

Analysis	Method	Media/ Container
Formaldehyde	EPA TO-11A modified	radiello® passive/diffusive sampler
Hydrogen fluoride (HF)	CAS AQL 106	radiello® passive/diffusive sampler
Hydrogen sulfide	CAS AQL 110	radiello® passive/diffusive sampler
Nitrogen dioxide (NO ₂)	CAS AQL 108	radiello® passive/diffusive sampler
Ozone (O ₃)	CAS AQL 107	radiello® passive/diffusive sampler
Sulfur dioxide (SO ₂)	CAS AQL 109	radiello® passive/diffusive sampler
Project-specific list of VOCs	Thermal or solvent desorption	radiello® passive/diffusive sampler
Project-specific list of VOCs	EPA TO-17 Thermal desorption	SKC ULTRA® passive sampler

2011 Columbia Analytical Air Testing Fee Schedule

NCASI Methods

Analysis	Method	Media/ Container
Methanol	NCASI 94.03*	40 mL VOA
Hazardous air pollutants (HAPs) in condensate	NCASI 99.01**	40 mL VOA
Methanol, acetaldehyde, propionaldehyde, acrolein, phenol, formaldehyde <i>Includes impinger solution, spiking solutions, and two separate analytical runs</i> <i>Minimum 5-7 days lead time required for project setup</i>	NCASI A105.01***	Canister

* Method CI/SG/PULP-94.03: Chilled Impinger Test Method for Use on Pulp Mill Sources to Quantify Methanol Emissions (February 2005)

** Method DI/AHAPS-99.01: Selected HAP's in Condensates by GC/FID (February 2000)

*** Method ISS-FP-A105.01: Impinger Source Sampling Method for Selected Aldehydes, Ketones, and Polar Compounds

Specialty Liquid Sample Analysis

A minimum of two 40 mL VOA vials are required for each sample for each analysis

Alcohols in water	Single/first compound	In-house method (modification of EPA TO-3)	40 mL Vials
	Each additional compound		
Dissolved gases	Methane, ethane, ethene (MEE)	RSK 175 GC/FID	Vials must be acid preserved with HCl or H ₂ SO ₄
	Methane, ethane, ethene propane, propene (MEEPP)		
	Carbon dioxide (CO ₂)	RSK 175 GC/TCD	Vials must not contain any acid preservatives
	MEE and CO ₂	RSK 175 GC/FID/TCD	At least two vials must be acid preserved
Hydrogen sulfide (H ₂ S)	In-house method (modification of ASTM D5504)	40 mL Vials	
Hydrogen sulfide, methyl mercaptan, dimethyl sulfide and dimethyl disulfide			
20 Speciated reduced sulfur compounds			

2011 Columbia Analytical Air Testing Fee Schedule

Air Sampling Equipment, Media and Supplies

Canisters

Summa canisters	
Batch certification (prices include one-way shipping)	
6 L	\$55
1 L	\$35
Individual certification* (prices include one-way shipping)	
6 L	\$95
1 L	\$95
Cleaning of client-owned canisters (does not include return shipping)	\$45
MiniCans	
400 mL	\$35

Rental period is 10 business days

Rental fees will be assessed on canisters returned unused to the laboratory in order to cover the costs of cleaning and recertification for the next use.

Please do not write directly on the summa canister, or affix any labels, stickers, or tape to the summa canister. Use only the tag provided. There will be a \$25 per canister fee assessed for any cans received with inappropriate writing or stickers affixed.

*If multiple canister certifications are required, additional charges may apply.

Tedlar Bags

1 L	\$15
3 L	\$18
5 L	\$21
10 L	\$28

Zefon EconoGrab™ sampling bags

Suitable for collection of gaseous sulfur compounds. Not recommended for collection of VOCs

1 L	\$12
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Flow Controllers and Critical Orifice Assemblies

Flow controllers <i>Laboratory will calibrate for client-specified sampling interval, from 30 minutes to 24 hours</i>	\$20
Critical orifice assembly <i>Laboratory will calibrate for client-specified sampling interval, from 30 minutes to 24 hours</i>	\$20
Flow controllers for MiniCans Includes sampling belt, holder and Teflon sampling line <i>Can be set for 4-hour to 10-hour sampling periods</i>	\$45

Air Sampling Equipment, Media and Supplies

Miscellaneous Equipment

Additional equipment is available upon request from the laboratory:

- Pressure/vacuum gauges
- Teflon tubing: \$3.50/ft
- Duplicate sampling Ts
- Swagelok nuts/ferrules
- Soil vapor purge manifold: \$60
- Tedlar bag lung sampler: \$75
- Exemption shippers: \$30 (NOTE: Columbia Analytical is NOT responsible for compliance with DOT shipping regulations)

Sampling Tubes, Traps, Cartridges

Amine tube <i>For use with Columbia Analytical Method 101 for amines</i>	No charge <i>Included with cost of analysis</i>
DNPH coated silica gel tubes (with ozone scrubber) <i>For use with EPA TO-11A for aldehydes</i>	\$9
Formaldehyde badge by SKC	\$22
Organic vapor monitors 3M OVM (3500)	\$17
Organic vapor monitors 3M OVM (3520)	\$22
radiello® passive/diffusive samplers <i>Includes sorbent cartridge, diffusive body, and support plate</i>	\$50 RAD-165 Aldehydes
	\$30 RAD-166 Hydrogen fluoride, nitrogen dioxide, and/or sulfur dioxide
	\$30 RAD-170 Hydrogen sulfide
	\$35 RAD-172 Ozone
	\$30 RAD-130 VOCs (solvent desorption)
	\$75 RAD-145 VOCs (thermal desorption)

2011 Columbia Analytical Air Testing Fee Schedule

Air Sampling Equipment, Media and Supplies

SKC ULTRA® passive sampler <i>For use with EPA TO-17 for VOC analysis</i>	Call for quote
Thermal desorption tube / multi-bed sorbent tube <i>For use with EPA TO-17 for VOC analysis</i>	\$20
Treated silica gel tube <i>For use with Columbia Analytical Method 102 for carboxylic acids</i>	No charge <i>Included with cost of analysis</i>
Polyurethane foam (PUF) cartridges for pesticides and PCBs*	
Method TO-4A, high-volume	\$40
Method TO-10A, low-volume	\$25
PUF/XAD cartridges for SVOCs (PAHs)*	
Method TO-13A, high-volume	\$55
Method TO-13A, low-volume	\$35
Impinger solutions*	
DNPH solution per 100mL volume for method TO-5	\$100
NaOH solution for method TO-8	\$25

* PUF, PUF/XAD, and impinger solutions: Minimum 3-day lead time needed to prepare and QC media

2011 Columbia Analytical Air Testing Fee Schedule

Important Notes and Information Regarding Equipment and Media

Rental Information

Rental period is 10 business days.

An **additional rental fee may be charged** for Summa and Silco canisters, MiniCans, and flow controllers not returned within the standard ten business day rental period, unless specified in a price quote provided by Columbia Analytical .

Rental fee of canisters does not include flow controller or vacuum gauge rental charges.

Shipping

Canisters

Shipping one-way via standard overnight delivery (FedEx or UPS) is included in the rental costs of the canisters.

Client will be billed for any expedited shipping costs, other than those incurred due to laboratory scheduling or capacity issues.

Summa canisters should be returned in the container or box in which they were shipped.

Do not apply any labels, stickers or tape directly to the Summa canister.

Use the tags provided with the shipment, and attach with accompanying ties.

Client may be billed for costs associated with the cleaning and removal of labels, tape or stickers applied to Summa canisters.

Client is responsible for compliance with any applicable DOT shipping regulations (ex. Shipping flammable gases, such as landfill gases).

Tedlar Bags

Tedlar bags should be shipped in a puncture-proof, rigid container, such as a sturdy cardboard box or a cooler.

Tedlar bags should be filled no more than two-thirds full to prevent popping during air shipment.

Receiving Samples

Regular laboratory hours are Monday through Friday, 8 am to 5 pm Pacific time.

Weekend delivery/receipt of samples is not available without prior authorization by the lab.

Please avoid sampling with Tedlar bags on Fridays unless arrangements have been made in advance with the laboratory to assure sample analysis within the specified holding times.

Holding Times

Samples collected in tedlar bags have a holding time of 72 hours, except for samples to be analyzed for sulfur compounds, which have a holding time of 24 hours.

There is no specified holding time for samples collected in Summa canisters. However, Columbia Analytical follows the EPA Method TO-15 guideline of 30 days.

Set-up Fees

For non-validated methods, the compound response must be verified and a desorption study conducted. Set-up fees may apply for non-validated methods.

Sorbent Tubes

When requesting analysis of multiple compounds by a method requiring sorbent tubes, the client must confirm with a Columbia Analytical project chemist that multiple compounds can be analyzed from the same sorbent tube and method.

Additional Services and Charges

Standard turn-around time (TAT) for analytical results is 10 business days.
Surcharges for rush TATs are as follows:

Volatile Organics Methods

Same day or next day, including weekends and holidays	Call for Quote
Next business day	100%
2 Business days	75%
3 Business days	50%
4 Business days	35%
5 Business days	25%

All rush TAT work must be **pre-approved** by laboratory prior to sample receipt.

Semi-Volatile Organics Methods

(For analyses such as EPA TO-4A / TO-10A for pesticides or PCBs, TO-13A for PAHs)

5 Business days	50%
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All rush TAT work must be **pre-approved** by laboratory prior to sample receipt.

Rush TATs are adjusted for semi-volatile organics methods due to the length of extraction time required by these methods.

Electronic Data Deliverables (EDD)

Columbia Analytical standard format: Excel® spreadsheet	No charge
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Standard formats available, including ERPIMS, GISKey, GEOTRACKER, EQUIS, HEIM, and others.

Pricing Notes and Standard Terms

- (1) The prices indicated in this price list apply to standard Columbia Analytical compound lists, reporting limits, report format, raw data deliverables and QA/QC level unless otherwise indicated.
- (2) Charges will be assessed for any sample media, container or equipment ordered and not returned to Columbia Analytical for analysis, as well as for sample media or containers returned and analysis placed on hold.
- (3) An additional rental fee will be charged for Summa and Silco canisters not returned within the standard ten business day rental period, unless specified in a price quote provided by Columbia Analytical.
- (4) Charges may also be assessed for lost, damaged and unreturned sampling containers and equipment:

Summa canister (6 Liter)	\$550
Silco canister (3 Liter)	\$550
Silco canister (6 Liter)	\$650
Vacuum flow controller	\$300
Vacuum/pressure gauges	\$100
High-volume sampler PUF glass housing	\$140
Summa canister (1 Liter)	\$550
MiniCans (500 mL)	\$550
Critical orifice assembly	\$50
Low-volume sampler PUF or PUF/XAD	\$75

- (5) Sample media that was delivered by Columbia Analytical, but exceeds shelf life; that was specially ordered; or that must be kept refrigerated will be charged accordingly and cannot be returned to Columbia Analytical. This applies to media such as sorbent tubes, monitoring badges, PUF and/or PUF/XAD-2 cartridges.
- (6) All work initiated by Columbia Analytical's clients constitutes an agreement to do business according to the terms and conditions of Columbia Analytical Services, Inc. Any changes or exceptions to these terms must be expressed and agreed upon.
- (7) Volume discounts may be available. Please contact a laboratory representative for consultation.



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