AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250
environmental consultants
laboratory services

September 3, 2013 LTR/278/13

Scott Messier
SCS Field Services
11260 Roger Bacon Drive
Suite 300
Reston, VA 20190

re: Gude Landfill

Dear Scott:

Please find enclosed the laboratory analysis reports, quality assurance summaries, and the original chain of custody form for one Tedlar bag sample and one backup received August 20, 2013.

The Tedlar bag sample was analyzed for TO-15 components and permanent gases as requested on the chain of custody form.

Sincerely,

AtmAA, Inc.

Michael L. Porter
Laboratory Director

Encl.
MLP/krm

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LABORATORY ANALYSIS REPORT

Permanent Gases Analysis in Tedlar Bag Sample

Report Date: September 3, 2013
Client: SCS Field Services
Project Location: Gude Landfill
Date Received: August 20, 2013
Date Analyzed: August 20, 2013

ANALYSIS DESCRIPTION

Permanent gases were measured by thermal conductivity detection/gas chromatography (TCD/GC).

AtmAA Lab No.:	12323-1
Sample I.D.:	Probe 26S

Components	*(Concentration in %,v)*
Nitrogen	70.6
Oxygen	5.04
Methane	10.0
Carbon dioxide	12.8

The reported oxygen concentration includes any argon present in the sample. Calibration is based on a standard atmosphere containing 20.95% oxygen and 0.93% argon.
The accuracy of permanent gas analysis by TCD/GC is +/- 2%, actual results are reported.

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Project Location: Gude Landfill
Date Received: August 20, 2013
Date Analyzed: August 20, 2013

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in %,v)			
Nitrogen	Probe 26S	71.0	70.3	70.6	0.50
Oxygen	Probe 26S	5.06	5.03	5.04	0.30
Methane	Probe 26S	9.98	10.1	10.0	0.60
Carbon dioxide	Probe 26S	12.8	12.8	12.8	0.0

One Tedlar bag sample, laboratory number 12323-1, was analyzed for permanent gases. Agreement between repeat analyses is a measure of precision and is shown above in the column "% Difference from Mean". The average % difference from mean for 4 repeat measurements from one Tedlar bag sample is 0.35%.

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LABORATORY ANALYSIS REPORT

TO-15 Component Analysis in Tedlar Bag Sample, by GC/MS

Report Date: September 3, 2013
Client: SCS Field Services
Project Location: Gude Landfill
Date Received: August 20, 2013
Date Analyzed: August 22, 2013

Components	AtmAA Lab No.: 12323-1 Sample ID: Probe 26S *(Concentations in ppbv)*
Freon 12	4.69
Chloromethane	<2
Freon 114	7.06
Vinyl Chloride	8.52
1,3-Butadiene	<2
Bromomethane	<2
Chloroethane	2.40
Bromoethene	<2
Acetone	433
Freon 11	<1.5
Isopropyl Alcohol	<3
1,1-Dichloroethene	4.32
Methylene Chloride	18.4
3-Chloro-1-Propene	<2
Carbon Disulfide	6.81
Freon 113	<1.5
trans-1,2-Dichloroethene	18.3
1,1-Dichloroethane	20.2
MTBE	<2
Vinyl Acetate	<2
2-Butanone	250
cis-1,2-Dichloroethene	374
n-Hexane	160
Chloroform	<1.5
Ethyl Acetate	134
Tetrahydrofuran	306
1,2-Dichloroethane	2.66
1,1,1-Trichloroethane	<1.5
Benzene	366
Carbon Tetrachloride	<1.5
Cyclohexane	124
1,2-Dichloropropane	<2
Bromodichloromethane	<2
Trichloroethene	96.6
1,4-Dioxane	10.2
2,2,4-Trimethyl Pentane	236
n-Heptane	<2
cis-1,3-Dichloropropene	<2
4-Methyl-2-pentanone	74.4
trans-1,3-Dichloropropene	<2
1,1-2-Trichloroethane	<2
Toluene	2300
2-Hexanone	<2
Dibromochloromethane	<2
1,2-Dibromomethane	<2
Tetrachloroethene	128
Chlorobenzene	5.43
Ethylbenzene	302
m,p-Xylene	110
Bromoform	<1.5
Styrene	<2
1,1,2,2-Tetrachloroethane	<2
o-Xylene	6.08
Benzyl Chloride	<2
4-Ethyl Toluene	<2
1,3,5-Trimethyl Benzene	<2
1,2,4-Trimethyl Benzene	<2
1,3-Dichlorobenzene	<1.5
1,4-Dichlorobenzene	<1.5
1,2-Dichlorobenzene	<1.5
1,2,4-Trichlorobenzene	<2
Hexachlorobutadiene	<2

Michael L. Porter
Laboratory Director

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)

Project Location: Gude Landfill
Date Received: August 20, 2013
Date Analyzed: August 22, 2013

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppbv)			
Freon-12	Probe 26S	4.65	4.73	4.69	0.85
Chloromethane	Probe 26S	<2	<2	---	---
Freon 114	Probe 26S	6.55	7.56	7.06	7.2
Vinyl Chloride	Probe 26S	7.91	9.12	8.52	7.1
1,3-Butadiene	Probe 26S	<2	<2	---	---
Bromomethane	Probe 26S	<2	<2	---	---
Chloroethane	Probe 26S	2.54	2.27	2.40	5.6
Bromoethene	Probe 26S	<2	<2	---	---
Acetone	Probe 26S	437	429	433	0.92
Freon 11	Probe 26S	<1.5	<1.5	---	---
Isopropyl Alcohol	Probe 26S	<3	<3	---	---
1,1-Dichloroethene	Probe 26S	4.44	4.19	4.32	2.9
Methylene Chloride	Probe 26S	18.7	18.1	18.4	1.6
3-Chloro-1-Propene	Probe 26S	<2	<2	---	---
Carbon Disulfide	Probe 26S	7.07	6.55	6.81	3.8
Freon 113	Probe 26S	<1.5	<1.5	---	---
trans-1,2-Dichloroethene	Probe 26S	18.7	17.9	18.3	2.2
1,1-Dichloroethane	Probe 26S	20.9	19.5	20.2	3.5
MTBE	Probe 26S	<2	<2	---	---
Vinyl Acetate	Probe 26S	<2	<2	---	---
2-Butanone	Probe 26S	255	246	250	1.8

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)
(continued)

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppbv)			
cis-1,2-Dichloroethene	Probe 26S	380	369	374	1.5
n-Hexane	Probe 26S	156	165	160	2.8
Chloroform	Probe 26S	<1.5	<1.5	---	---
Ethyl Acetate	Probe 26S	134	134	134	0.0
Tetrahydrofuran	Probe 26S	305	308	306	0.49
1,2-Dichloroethane	Probe 26S	2.72	2.60	2.66	2.2
1,1,1-Trichloroethane	Probe 26S	<1.5	<1.5	---	---
Benzene	Probe 26S	369	364	366	0.68
Carbon Tetrachloride	Probe 26S	<1.5	<1.5	---	---
Cyclohexane	Probe 26S	128	120	124	3.2
1,2-Dichloropropane	Probe 26S	<2	<2	---	---
Bromodichloromethane	Probe 26S	<2	<2	---	---
Trichloroethene	Probe 26S	103	90.2	96.6	6.6
1,4-Dioxane	Probe 26S	11.0	9.47	10.2	7.5
2,2,4-Trimethyl Pentane	Probe 26S	254	218	236	7.6
n-Heptane	Probe 26S	<2	<2	---	---
cis-1,3-Dichloropropene	Probe 26S	<2	<2	---	---
4-Methyl-2-pentanone	Probe 26S	79.8	69.1	74.4	7.2
trans-1,3-Dichloropropene	Probe 26S	<2	<2	---	---
1,1-2-Trichloroethane	Probe 26S	<2	<2	---	---
Toluene	Probe 26S	2470	2130	2300	7.4
2-Hexanone	Probe 26S	<2	<2	---	---

QUALITY ASSURANCE SUMMARY
(Repeat Analyses)
(continued)

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppbv)			
Dibromochloromethane	Probe 26S	<2	<2	---	---
1,2-Dibromomethane	Probe 26S	<2	<2	---	---
Tetrachloroethene	Probe 26S	136	120	128	6.2
Chlorobenzene	Probe 26S	5.56	5.30	5.43	2.4
Ethylbenzene	Probe 26S	302	303	302	0.16
m,p-Xylene	Probe 26S	110	111	110	0.45
Bromoform	Probe 26S	<1.5	<1.5	---	---
Styrene	Probe 26S	<2	<2	---	---
1,1,2,2-Tetrachloroethane	Probe 26S	<2	<2	---	---
o-Xylene	Probe 26S	5.99	6.17	6.08	1.5
Benzyl Chloride	Probe 26S	<2	<2	---	---
4-Ethyl Toluene	Probe 26S	<2	<2	---	---
1,3,5-Trimethyl Benzene	Probe 26S	<2	<2	---	---
1,2,4-Trimethyl Benzene	Probe 26S	<2	<2	---	---
1,3-Dichlorobenzene	Probe 26S	<1.5	<1.5	---	---
1,4-Dichlorobenzene	Probe 26S	<1.5	<1.5	---	---
1,2-Dichlorobenzene	Probe 26S	<1.5	<1.5	---	---
1,2,4-Trichlorobenzene	Probe 26S	<2	<2	---	---
Hexachlorobutadiene	Probe 26S	<2	<2	---	---

One Tedlar bag sample, laboratory number 12323-1, was analyzed for TO-15 components by GC/MS. Agreement between repeat analyses is a measure of precision and is shown above in the column "% Difference from Mean". The average % difference from mean for 28 repeat measurements from one Tedlar bag sample is 3.4%.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location
Gude Landfill	Montgomery County
Project No.	**Field Logbook No.**
Sampler: *(Signature)*	**Chain of Custody Tape No.**

ANALYSES REQUESTED

Sample No./ Identification	Type of Sample	AtmAA Lab Number	Sampling Date	Sampling Time	TO-15	Dinert 3C Permanent Gas					Special Remarks
Probe 26S	Grab	12323-1	8/19/13	12:45pm	✓	✓					
Probe 26S	Grab		8/19/13	12:45pm	✓	✓					Backup only - do not analyze

Relinquished by: *(Signature)*	Date	Time	Received by: *(Signature)*	Date	Time
	8/19/13	2:22pm			
Relinquished by: *(Signature)*	**Date**	**Time**	**Received by: *(Signature)***	**Date**	**Time**
Relinquished by: *(Signature)*	**Date**	**Time**	**Received for Laboratory by: *(Signature)***	**Date**	**Time**
				8-20-13	10:05

Sample Collector Info

Company: SCS Field Services
Street Address 11260 Roger Bacon Drive
City/State/Zip: Reston, VA 20190
Telephone No.: 703-709-0404
Fax No.: SMessier@SCSEngineers.com

Analytical Laboratory

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