SACRAMENTO RENDERING CO.

Sacramento, CA

SOURCE TEST REPORT
Volatile Organic Compounds (VOC) Emission Results
Four (4) Wet Scrubbers
Scrubber #1/APC Scrubber [Permit #21356]
Scrubber #2/APC Counter Flow Tower Scrubber [Permit #21357]
Scrubber #3/Cross-Flow Scrubber [Permit #17221]
Scrubber #4/Spray Tower Scrubber [Permit #18423]

Test Date(s): April 26 & May 3, 2017
Report Date: June 13, 2017

Performed and Reported by:
BEST ENVIRONMENTAL (BE)
339 Stealth Ct.
Livermore, CA 94551
Phone: (925) 455-9474
Fax: (925) 455-9479
Email: bestair@sbcglobal.net
http://www.bestenvironmentalonline.com/

Prepared For:
Sacramento Rendering Co.
11350 Kiefer Blvd.
Sacramento, CA 95830
Attn: Mr. Scott Navlyt

For Submittal To:
Sacramento Metropolitan AQMD
777 12th Street, 3rd Floor
Sacramento, CA 95814
Attn: Mr. Don Dumaine

REVIEW AND CERTIFICATION

Team Leader:

The work performed herein was conducted under my supervision, and I certify that the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program. If this report is submitted for compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please call the Team Leader or Reviewer at (925) 455-9474.

Suhail Asfour

Project Manager

Reviewer:

I have reviewed this report for presentation and accuracy of content, and hereby certify that to the best of my knowledge the information is complete and correct.

Regan Best

Source Test Manager

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SECTION 1. INTRODUCTION

1.1. Test Purpose

Best Environmental was contracted by Sacramento Rendering Company to perform Volatile Organic Compounds (VOC) testing using EPA Method TO-15. Stack velocity measurements were used to determine the stack gas flow rate during each run at each scrubber. Testing was performed to comply with Sacramento Metropolitan Air Quality Management District (SMAQMD) Permit to Operate (PTO) #21356, 21357, 17221 and 18423. The PTOs are located in Appendix H.

1.2. Test Location

The testing was conducted at each scrubber exhaust outlet located at Sacramento Rendering Company, 11350 Kiefer Blvd, Sacramento, CA.

1.3. Test Date(s)

Testing was conducted on April 26, 2017 for scrubbers #2 & 4.
Testing was conducted on May 3, 2017 for scrubbers #1 & 3

1.4. Pollutants Tested

The following emission parameters were measured on each scrubber outlet:

Parameter	Test Methods
VOC	EPA Methods TO-15
Stack Gas Volumetric Flow Rate	EPA Method 1-4

1.5. Sampling and Observing Personnel

Sampling was performed by Suhail Asfour, Burt Kusich and Jim McCormack of BEST ENVIRONMENTAL (BE).

Don Dumaine from the SMAQMD was present to witness the testing on April 26 and May 3, 2017.

SECTION 2. SUMMARY OF RESULTS

2.1. Emission Results

Table 2.1: Scrubbers #1, 2 & 3
PTO #21356, 21357 & 17221
Operating Condition: Maximum

Parameter	Scrubbers #1 Run 1	Scrubbers #2 Run 1	Scrubbers #3 Run 1	Allowable Emissions
VOC, Total Emission Rate (lbs/hr)	0.245	0.371	0.106	**N.A**

Table 2.2: Scrubber #4
PTO #18423
Operating Condition: Maximum

Parameter	3 Runs Average	Allowable Emissions
VOC, Total Emission Rate (lbs/hr)	0.070	**N.A**

A more extensive summary of the emissions is presented in Tables 1 and 2 following the text.

2.2. Allowable Emissions

See Tables 2.1 and 2.2 above. VOC total emission rate lbs/hr are based on TO-15 detected compounds only.

2.3. Comments: Discussion of Quality Assurance and Errors

Quality assurance / quality control (QA/QC) procedures were performed and documented as described in Section 4.3 of this report. Documentation of the QA/QC is provided in Appendices A, B & D. Calculations, laboratory reports, field data sheets, equipment calibration records, stack diagram, sampling system diagrams, source test plan, and permit to operate are appended to this report.

Only one of two ports was available for **Scrubber #2** as the other was clogged. Sampling was performed through one port and was approved by Don Dumaine from the SMAQMD.

Two set of flow were performed with each Summa Canister test run.

SECTION 3. SOURCE OPERATION

3.1. Process Description

Sacramento Rendering Company operates four (4) wet scrubbers at there facility.

For more information on each source, please refer to the Permit section located in Appendix H of this report.

3.2. Process and Control Operating Parameters during Testing

All scrubbers were operating at maximum achievable load during the testing

3.3. Testing or Process Interruptions and Changes

No delays or process upsets occurred during the tests.

SECTION 4. SAMPLING AND ANALYSIS PROCEDURES

4.1. Port Location

Scrubber #1

Emissions from the stack outlet were sampled through two 1.5-inch ports on the circular stack 90^{o} apart, the ports are located 3 stack diameters downstream and 1 stack diameters upstream from the nearest disturbance.

The dimensional cross section of the Scrubber #1 stack is 60-inches (Area SQFT =19.635)

Scrubber #2

Emissions from the stack outlet were sampled through one 3.25-inch port on the circular stack the port are located 2 stack diameters downstream and >0.5 stack diameters upstream from the nearest disturbance.

The dimensional cross section of the Scrubber #2 stack is 84-inches (Area SQFT =38.485)

Scrubber #3

Emissions from the stack outlet were sampled through two 1.5-inch ports on the circular stack 90^{o} apart, the ports are located 1.5 stack diameters downstream and 0.5 stack diameters upstream from the nearest disturbance.

The dimensional cross section of the Scrubber #3 stack is 70-inches (Area SQFT =26.725)

Scrubber #4

Emissions from the stack outlet were sampled through two $1^{3}/_{8}$-inch ports on the circular stack 90^{o} apart, the ports are located 2 stack diameters downstream and >0.5 stack diameters upstream from the nearest disturbance.

The dimensional cross section of the Scrubber #4 stack is 81-inches (Area SQFT =35.785)

4.2. Point Description/Labeling – Ports/Stack

The Stacks ports were not labeled, but were designated as 1 & 2. A total of 16-points were selected in accordance to EPA Method 1, 8 per port for the Manual velocity measurements.

4.3. Method Description, Equipment, Sampling, Analysis and QA/QC

Sampling and analytical procedures of the methods were followed as published in CARB Stationary Source Test Methods Volume I and the EPA "Quality Assurance Handbook for Air Pollution Measurement Systems" Volume III, US EPA 600/4-77-027b.

The Following is an Overview of the Testing Performed

Parameter	Location	Method(s)	Duration	# of Runs
VOC	Exhaust	EPA Methods TO-15	30 mins	6
Volumetric Flow Rate	Exhaust	EPA Method 1-4	15 mins	12

EPA Method 1. This method is used to determine the duct or stack area and appropriate traverse points that represent equal areas of the duct for sampling and velocity measurements. The

point selection is made based on the type of test (particulate or velocity), the stack diameter and port location distance from flow disturbance.

EPA Method 2 is used to determine stack gas velocity using a standard or S-type pitot tube and inclined manometer or magnahelic. Temperature is monitored using a K-type thermocouple and calibrated Omega temperature meter. Leak checks are performed before and after each traverse to validate the results. Thermometer calibrations are performed using an Omega Model CL-300 calibrator. Geometric calibrations of S-type pitots are performed and records are submitted with the report.

Equipment: The following Velocity determination equipment was used:

Inlet & Outlet
Calibrated S-Type pitot w/ temperature thermometer
Calibrated Magnahelic gauges
Calibrated Pyrometer

EPA Method 3 is used to determine the molecular weight of the stack gas for the velocity determination. The $\%O_2$ and $\%CO_2$ concentrations are used and are measured by fyrite apparatus, continuous emissions monitoring analyzers or can be assumed for ambient conditions when applicable.

EPA Method 4 (alternate) was used to determine stack moisture at the outlet by temperature saturation calculations for moisture determination. This can be used where ambient conditions exist. The stack temperature is recorded and entered into the spreadsheet as well as barometric pressure and stack static pressure. This data is used to calculate the Saturated Vapor Pressure and stack moisture content. Calculations can be found in Appendix A.

EPA Method TO-15 Volatile Organics by SUMMA® Canister. Sampling consists of collecting gases in pre-evacuated 6-Liter SUMMA canisters with pre-set flow controllers set to integrate over the desired test duration. The SUMMA® passivated canisters allow holding times up to 14 days for the TO-15 Method list of volatile organics. The sample gas is drawn by the canister vacuum through a micro-filter, pre-set orifice flow controller and on/off valve into the canister. The canister vacuum is monitored with a vacuum gauge to verify sample collection. In this case, the flow controller consisted of capillary orifice tubing designed to sample for a pre-set duration of 30-mins. The samples were analyzed for volatile organics by EPA Method TO-15 using GC/MS (gas chromatography/mass spectroscopy), and for naphthalene, not included in the TO-15 list. Analysis was performed by Atmospheric Analysis & Consulting, Inc. laboratory in Ventura, California.

TABLE #1
Sacramento Rendering Co.
Scrubbers # 1, 2 & 3
Maximum Operation

Permit #	**21356**	**21357**	**17221**	
Scrubber #	**1**	**2**	**3**	**LIMIT**
Test Location	Outlet	Outlet	Outlet	
Test Date	5/3/17	4/26/17	5/3/17	
Test Time	1217-1247	1339-1409	1031-1101	
Standard Temp., °F	68	68	68	
Outlet Flow Rate, DSCFM	37,287	57,312	76,681	
Propene, ppm	0.00503	N.A	N.A.	
Propene, lbs/hr	0.001	NA	N.A.	
Chloromethane, ppm	0.00307	0.00264	N.A.	
Chloromethane, lbs/hr	0.001	0.0012	N.A.	
Methanol, ppm	0.09930	0.31500	N.A.	
Methanol, lbs/hr	0.018	0.090	N.A.	
Ethanol, ppm	0.64300	0.58000	0.12400	
Ethanol, lbs/hr	0.172	0.2385	0.0682	
Acetone, ppm	0.13100	0.05170	0.03570	
Acetone, lbs/hr	0.044	0.0268	0.0248	
Carbon Disulfide, ppm	0.00434	N.A	N.A	
Carbon Disulfide, lbs/hr	0.0019	N.A	N.A	
2-Butanone (MEK), ppm	0.01930	0.01880	0.00800	
2-Butanone (MEK), lbs/hr	0.008	0.0121	0.0069	
Hexane, ppm	N.A	N.A	0.00238	
Hexane, lbs/hr	N.A	N.A	0.002	
Ethyl Acetate, ppm	N.A	0.00261	N.A	
Ethyl Acetate, lbs/hr	N.A	0.002	N.A	
Heptane, ppm	N.A	N.A	0.00296	
Heptane, lbs/hr	N.A	N.A	0.004	
Total Emission Rate (lbs/hr)	**0.245**	**0.371**	**0.106**	**N.A**

WHERE:

MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
ppm = Parts Per Million Concentration
lbs/hr = Pound Per Hour Emission Rate
N.A. = Not detected

CALCULATIONS:

lbs/hr = ppm * MW * DSCFM * 60 / 385E6 (Tstd 60^{o}F)

Chloromethane (MW = 50.49)
Methanol (MW = 32.00)
Ethanol (MW = 46.07)
Ethyl Acetate (MW = 88.11)
Propene (MW = 42.08)
Acetone (MW = 58.08)
2-Butanone MEK (MW = 72.10)
Hexane (MW = 86.18)
Heptane (MW = 100.2)
Carbon Disulfide (MW = 76.13)

TABLE #2
Sacramento Rendering Co.
Scrubber #4 (Permit #18423)
Maximum Operation

TEST	1	2	3	AVERAGE	LIMIT
Test Location	Outlet	Outlet	Outlet		
Test Date	4/26/17	4/26/17	4/26/17		
Test Time	1046-1116	1124-1154	1202-1332		
Standard Temp., °F	68	68	68		
Outlet Flow Rate, DSCFM	60,236	58,961	59,901		
Propene, ppm	0.00424	N.A	N.A.	0.00424	
Propene, lbs/hr	0.002	NA	N.A.	0.002	
Chloromethane, ppm	0.00744	0.00351	0.00410	0.00502	
Chloromethane, lbs/hr	0.004	0.002	0.002	0.002	
Ethanol, ppm	0.05160	0.08740	0.09570	0.07823	
Ethanol, lbs/hr	0.022	0.037	0.041	0.033	
Acetone, ppm	0.04450	0.02780	0.02490	0.03240	
Acetone, lbs/hr	0.024	0.015	0.013	0.018	
2-Butanone (MEK), ppm	0.02690	0.01650	0.01310	0.01883	
2-Butanone (MEK), lbs/hr	0.018	0.011	0.009	0.0126	
Hexane, ppm	0.00209	N.A	N.A	0.00209	
Hexane, lbs/hr	0.002	N.A	N.A	0.002	
Ethyl Acetate, ppm	0.00251	N.A	N.A	0.00251	
Ethyl Acetate, lbs/hr	0.002	N.A	N.A	0.002	
Heptane, ppm	0.00386	N.A	N.A	0.00386	
Heptane, lbs/hr	0.004	N.A	N.A	0.004	
Toluene, ppm	0.00186	N.A	N.A	0.00186	
Toluene, lbs/hr	0.002	N.A	N.A	0.002	
Total Emission Rate (lbs/hr)	**0.079**	**0.064**	**0.065**	**0.070**	**N.A**

WHERE:

MW = Molecular Weight
DSCFM = Dry Standard Cubic Feet Per Minute
ppm = Parts Per Million Concentration
lbs/hr = Pound Per Hour Emission Rate
N.A. = Not detected

CALCULATIONS:

lbs/hr = ppm * MW * DSCFM * 60 / 385E6 (Tstd 60^{o}F)

Chloromethane (MW = 50.49)
Ethanol (MW = 46.07)
Ethyl Acetate (MW = 88.11)
Propene (MW = 42.08)
Acetone (MW = 58.08)
2-Butanone MEK (MW = 72.10)
Hexane (MW = 86.18)
Heptane (MW = 100.2)
Toluene (MW = 92.14)

APPENDICES

APPENDIX A – CALCULATIONS & NOMENCLATURE

APPENDIX B - LABORATORY REPORTS

APPENDIX C - FIELD DATA SHEETS

APPENDIX D- EQUIPMENT CALIBRATION RECORDS

APPENDIX E - STACK DIAGRAMS

APPENDIX F – SAMPLING SYSTEM DIAGRAMS

APPENDIX G – SOURCE TEST PLAN

APPENDIX H – AUTHORITY TO CONSTRUCT
OR
PERMIT TO OPERATE

APPENDIX A
CALCULATIONS & NOMENCLATURE

Standard Abbreviations for Reports

Unit	Abbreviation	Unit	Abbreviation
billion	G	microgram	µg
Brake horsepower	bhp	milligram	mg
Brake horsepower hour	bhp-hr	milliliter	ml
British Thermal Unit	Btu	million	MM
capture efficiency	CE	minute	min
destruction efficiency	DE	Molecular Weight	M
Dry Standard Cubic Feet	DSCF	nanogram	ng
Dry Standard Cubic Feet per Minute	DSCFM	Parts per Billion	ppb
Dry Standard Cubic Meter	DSCM	Parts per Million	ppm
Dry Standard Cubic Meter per Minute	DSCMM	pennyweight per firkin	pw/fkn
grains per dry standard cubic foot	gr/DSCF	pound	lb
gram	g	pounds per hour	lbs/hr
grams per Brake horsepower hour	g/bhp-hr	pounds per million Btu	lbs/MMBtu
kilowatt	kW	second	sec
liter	l	Specific Volume, ft^3/lb-mole	SV
Megawatts	MW	Thousand	k
meter	m	watt	W

Common Conversions / Calculations / Constants

1 gram = 15.432 grains

1 pound = 7000 grains

grams per pound = 453.6

bhp = 1.411 * Engine kW, (where Engine kW = Generator kW output / 0.95) @ 95% efficiency

g/bhp-hr = 453*ppm*(MW / (385E6))* 0.00848 * f-factor * (20.9 / (20.9-O_2)); **CARB**

g/bhp-hr = lbs/hr * 453.6 / bhp

2.59E-9 = Conversion factor for ppm to lbs/scf; **EPA 40CFR60.45**

Correction Multiplier for Standard Temperature = (460 + $T_{std.}$ °F) / 528

dscf / MMBTU = 8710 for Natural gas; **EPA Method 19**

Btu/ft^3 = 1040 for Natural Gas; **EPA Method 19**

lb/hr Part. Emission Rate = 0.00857 * gr/dscf * dscfm; **EPA Method 5**

lbs/hr = ppm / SV x dscfm x M * 60; **CARB Method 100; where SV ≈ $385E^6$ @ 68°F or ≈ $379E^6$ @ 60°F or ≈ $386E^6$ @ 70°F.**

Correction to 12% CO_2 = gr/dscf * 12% / stack CO_2%; **EPA Method 5**

Correction to 3% O_2 = ppm * 17.9 / (20.9 - stack O_2 %); **CARB Method 100**

Correction to 15% O_2 = ppm * 5.9 / (20.9 - stack O_2 %); **CARB Method 100**

dscfm = Gas Fd * MMBtu/min * 20.9 / (20.9 - stack O_2 %); **EPA Method 19**

lb/MMBtu = Fd * M * ppm * 2.59E-9 * 20.9 / (20.9 - stack O_2 %); **EPA Method 19**

Standard Temperatures by District

EPA	68 °F	NSAPCD - Northern Sonoma	68 °F
CARB	68 °F	PCAPCD - Placer	68 °F
BAAQMD - Bay Area	70 °F	SLOCAPCD - San Luis Obispo	60 °F
SJVUAPCD - San Joaquin	60 °F	SMAQMD - Sacramento	68°F de facto
SCAQMD - South Coast	60 °F	SCAQMD - Shasta County	68 °F
MBUAPCD - Monterey Bay	68 °F	YSAPCD - Yolo-Solano	68 °F
FRAQMD – Feather River	68 °F	AADBAPC – Amador County	68 °F

STACK GAS FLOW RATE DETERMINATION -- PITOT TRAVERSE

Facility: Sacramento Rendering Co.
Unit: Scrubbers # 1, 2 & 3
Condition: Maximum Operation

Date:		5/3/2017	4/26/2017	5/3/2017
Time:		12:27	13:40	10:40
	Scrubbers #	1	2	3
1. Temperature of Stack (Ts)		97.30	69.70	91.60 °F
2. Std Temperature (Tstd)		68	68	68 °F
3. Square Root of ΔP (√ ΔP)		0.605	0.451	0.904 "H_2O
4. Barometric Pressure (Pb)		29.90	29.90	29.90 "Hg
5. Static Pressure (Pstatic)		-0.30	-0.12	-0.55 "H_2O
6. Stack Pressure (Ps)		29.88	29.89	29.86 "H_2O
7. Stack Gas:				
Moisture (H_2O)	M.W.= 18	5.19	2.23	4.46 %
Oxygen (O_2)	M.W.= 32	20.90	20.90	20.90 %
Carbon Dioxide (CO_2)	M.W.= 44	0.04	0.04	0.04 %
Carbon Monoxide (CO)	M.W.= 28	0.00	0.00	0.00 %
Other:	M.W.=	0.00	0.00	0.00 %
Nitrogen (N_2)	M.W.= 28	79.06	79.06	79.06 %
8. Mol. Weight of Stack Gas (MWs)		28.28	28.60	28.36 g/g-mol
9. Stack Dimention Diameter or Width		60.0	84.0	70.0 in
Length		#N/A	#N/A	#N/A in
10. Area of Stack (As)		19.635	38.485	26.725 ft^2
11. Pitot Tube Factor (Cp)		0.84	0.84	0.84
Stack Gas Velocity		**35.28**	**25.49**	**52.39** ft/s
Actual Flow Rate		**41,568**	**58,866**	**84,016** ACFM
Standard Flow Rate		**37,287**	**57,312**	**76,681** DSCFM

WHERE:

Bws = % Moisture / 100
MWs = Molecular Weight of Stack Gas (wet-basis)
THC, ppm as methane (Wet)-M25A
ΔP = Pitot Differential Pressure

CALCULATIONS:

MWs = MWd * (1-Bws) + 18 (Bws)

MWd = .44(%CO_2) + .32(%O_2) + .28(%CO+%N_2) + (%Other*M.W./100)

Ps = (Pstatic / 13.6) + Pb

As = (Diameter / 24)^2 * Π - for Round Stacks; Length * Width / 144 - for Rectangular Stacks

Vs = 85.49 * Cp * √ ΔP * √((Ts + 460) / (Ps x MWs))

ACFM = 60 * Vs * As

DSCFM = 60 (1-Bwo) * Vs * As * (Tstd + 460)/(Ts + 460) * (Ps/29.92)

STACK MOISTURE DETERMINATION

using wet bulb / dry bulb - OUTLET

Facility: Sacramento Rendering Co.
Unit: Scrubbers # 1, 2 & 3
Condition: Maximum Operation
Date: 5/3/2017 4/26/2017 5/3/2017

	Scrubbers #	1	2	3	
	Time:	1217	1339	1031	
1. Dry Bulb Stack Temperature, (t)		97.30	69.70	91.60	°F
2. Wet Bulb Temperature, (tw)		75.0	64.0	76.0	°F
3. Barometric Pressure (Pb)		29.90	29.90	29.90	" Hg
4. Static Pressure (Pstatic)		-0.30	-0.12	-0.55	" H_2O
5. Stack Absolute Pressure (Ps)		29.88	29.89	29.86	" Hg
6. Saturated Vapor Pressure, (SVP @tw)		0.874	0.599	0.904	" Hg
7. Saturated Vapor Pressure, (SVP @t)		1.798	0.730	1.504	" Hg
Percent of H_2O in Stack Gas @ Saturation (% H_2Osat)		**5.19**	**2.23**	**4.46**	%
Percent of H_2O in Stack Gas (% H_2O)		**2.1**	**1.8**	**2.4**	%
Relative Humidity		**40.4**	**80.4**	**54.9**	%
Dewpoint		**75.0**	**64.0**	**76.0**	°F

WHERE

H_2O = Inches of water
Hg = Inches of Mercury
°F = Fahrenheit

CALCULATIONS

Ps = Pb + (Pstatic/13.6)

SVP @tw = EXP(-0.0000573tw^2 + 0.042232tw - 2.97986)

% H_2Osat = 100 * {SVP @t - (3.667E-04 * Ps * (t-tw) * (1 + (0.000639(t-tw))))}/Ps

% H_2O = 100 * {SVP @tw - (3.667E-04 * Ps * (t-tw) * (1 + (0.000639(t-tw))))}/Ps

% R.H. = 100 * % H2O / % H2Osat

Dewpoint = wet bulb temperature

STACK GAS FLOW RATE DETERMINATION -- PITOT TRAVERSE

Facility: Sacramento Rendering Co.
Unit: Scrubber #4 (Permit #18423)
Condition: Maximum Operation
Date: 4/26/2017
Time:

			10:50 **Run 1**	11:25 **Run 2**	12:03 **Run 3**	
1. Temperature of Stack (Ts)			60.80	62.15	64.90	°F
2. Std Temperature (Tstd)			68	68	68	°F
3. Square Root of ΔP (√ ΔP)			0.503	0.493	0.503	"H_2O
4. Barometric Pressure (Pb)			29.90	29.90	29.90	"Hg
5. Static Pressure (Pstatic)			-0.30	-0.30	-0.30	"H_2O
6. Stack Pressure (Ps)			29.88	29.88	29.88	"H_2O
7. Stack Gas:						
Moisture (H_2O)		M.W.= 18	1.62	1.62	1.82	%
Oxygen (O_2)		M.W.= 32	20.90	20.90	20.90	%
Carbon Dioxide (CO_2)		M.W.= 44	0.04	0.04	0.04	%
Carbon Monoxide (CO)		M.W.= 28	0.00	0.00	0.00	%
Other:		M.W.=	0.00	0.00	0.00	%
Nitrogen (N_2)		M.W.= 28	79.06	79.06	79.06	%
8. Mol. Weight of Stack Gas (MWs)			28.67	28.67	28.65	g/g-mol
9. Stack Dimention	Diameter or Width		81.0	81.0	81.0	in
	Length		#N/A	#N/A	#N/A	in
10. Area of Stack (As)			35.785	35.785	35.785	ft^2
11. Pitot Tube Factor (Cp)			0.84	0.84	0.84	
Stack Gas Velocity			**28.17**	**27.64**	**28.29**	ft/s
Actual Flow Rate			**60,476**	**59,350**	**60,736**	ACFM
Standard Flow Rate			**60,236**	**58,961**	**59,901**	DSCFM

WHERE:

Bws = % Moisture / 100
MWs = Molecular Weight of Stack Gas (wet-basis)
THC, ppm as methane (Wet)-M25A
ΔP = Pitot Differential Pressure

CALCULATIONS:

MWs = MWd * (1-Bws) + 18 (Bws)
MWd = .44(%CO_2) + .32(%O_2) + .28(%CO+%N_2) + (%Other*M.W./100)
Ps = (Pstatic / 13.6) + Pb
As = (Diameter / 24)^2 * Π - for Round Stacks; Length * Width / 144 - for Rectangular Stacks
Vs = 85.49 * Cp * √ ΔP * √((Ts + 460) / (Ps x MWs))
ACFM = 60 * Vs * As
DSCFM = 60 (1-Bwo) * Vs * As * (Tstd + 460)/(Ts + 460) * (Ps/29.92)

STACK MOISTURE DETERMINATION

using wet bulb / dry bulb - OUTLET

Facility: Sacramento Rendering Co.
Unit: Scrubber #4 (Permit #18423)
Condition: Maximum Operation
Date: 4/26/2017

	Run:	1 - Outlet	2 - Outlet	3 - Outlet	
	Time:	1050	1125	1203	
1. Dry Bulb Stack Temperature, (t)		60.80	62.15	64.90	°F
2. Wet Bulb Temperature, (tw)		56.0	55.0	58.0	°F
3. Barometric Pressure (Pb)		29.90	29.90	29.90	" Hg
4. Static Pressure (Pstatic)		-0.30	-0.30	-0.30	" H_2O
5. Stack Absolute Pressure (Ps)		29.88	29.88	29.88	" Hg
6. Saturated Vapor Pressure, (SVP @tw)		0.452	0.436	0.485	" Hg
7. Saturated Vapor Pressure, (SVP @t)		0.536	0.562	0.619	" Hg
Percent of H_2O in Stack Gas @ Saturation (% H_2Osat)		**1.62**	**1.62**	**1.82**	%
Percent of H_2O in Stack Gas (% H_2O)		**1.3**	**1.2**	**1.4**	%
Relative Humidity		**82.6**	**73.9**	**75.4**	%
Dewpoint		**56.0**	**55.0**	**58.0**	°F

WHERE

H_2O = Inches of water
Hg = Inches of Mercury
°F = Fahrenheit

CALCULATIONS

Ps = Pb + (Pstatic/13.6)

SVP @tw = EXP(-0.0000573tw^2 + 0.042232tw - 2.97986)

% H_2Osat = 100 * {SVP @t - (3.667E-04 * Ps * (t-tw) * (1 + (0.000639(t-tw))))}/Ps

% H_2O = 100 * {SVP @tw - (3.667E-04 * Ps * (t-tw) * (1 + (0.000639(t-tw))))}/Ps

% R.H. = 100 * % H2O / % H2Osat

Dewpoint = wet bulb temperature

APPENDIX B
LAB REPORTS

Atmospheric Analysis & Consulting, Inc.

CLIENT : Best Environmental
PROJECT NAME : Sacramento Rendering Co.
AAC PROJECT NO. : 170590
REPORT DATE : 05/10/2017

On May 8, 2017, Atmospheric Analysis & Consulting, Inc. received two (2) Six-Liter Summa Canisters for Volatile Organic Compounds analysis by EPA method TO-15. Upon receipt each sample was assigned a unique Laboratory ID number as follows:

Client ID	Lab ID	Return Pressure (mmHga)
Run 1, Scrubber #3	170590-98594	482.3
Run 1, Scrubber #1	170590-98595	463.5

All of the analyses mentioned above were performed in accordance with AAC's ISO/IEC 17025:2005 and NELAP approved Quality Assurance Plan. For detailed information pertaining to specific EPA, NCASI, ASTM and SCAQMD accreditations (Methods & Analytes), please visit our website at www.aaclab.com.

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. No problems were encountered during receiving, preparation, and/or analysis of these samples. The Laboratory Director or his/her designee, as verified by the following signature, has authorized release of the data contained in this hardcopy report.

If you have any questions or require further explanation of data results, please contact the undersigned.

Marcus Hueppe
Laboratory Director

This report consists of 11 pages.

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Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Best Environmental
PROJECT NO : 170590
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 05/08/2017
DATE REPORTED : 05/10/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	Run 1, Scrubber #3			Sample Reporting Limit (SRL) (MRLxDF's)	Run 1, Scrubber #1			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
AAC ID	170590-98594				170590-98595				
Date Sampled	05/03/2017				05/03/2017				
Date Analyzed	05/10/2017				05/10/2017				
Can Dilution Factor	2.13				2.19				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Chlorodifluoromethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Propene 49.10 C3	<SRL	U	2.0	4.3	5.03		2.0	4.4	1.0
Dichlorodifluoromethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Chloromethane 50.49 C1	<SRL	U	2.0	2.1	3.07		2.0	2.2	0.5
Dichlorotetrafluoroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Vinyl Chloride	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Methanol 32.0 C1	<SRL	U	2.0	21.3	99.3		2.0	21.9	5.0
1,3-Butadiene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Bromomethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Chloroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Dichlorofluoromethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Ethanol 46.07 C2	124		2.0	8.5	643		20.0	87.8	2.0
Vinyl Bromide	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Acetone 58.08 C3	35.7		2.0	8.5	131		20.0	87.8	2.0
Trichlorofluoromethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
2-Propanol (IPA)	<SRL	U	2.0	8.5	<SRL	U	2.0	8.8	2.0
Acrylonitrile	<SRL	U	2.0	4.3	<SRL	U	2.0	4.4	1.0
1,1-Dichloroethene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Methylene Chloride (DCM)	<SRL	U	2.0	4.3	<SRL	U	2.0	4.4	1.0
Allyl Chloride	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Carbon Disulfide 76.13 C1*	<SRL	U	2.0	2.1	4.34		2.0	2.2	0.5
Trichlorotrifluoroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
trans-1,2-Dichloroethene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,1-Dichloroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Methyl Tert Butyl Ether (MTBE)	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Vinyl Acetate	<SRL	U	2.0	4.3	<SRL	U	2.0	4.4	1.0
2-Butanone (MEK) 72.1 C4	8.00		2.0	4.3	19.3		2.0	4.4	1.0
cis-1,2-Dichloroethene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Hexane 86.18 C6	2.38		2.0	2.1	<SRL	U	2.0	2.2	0.5
Chloroform	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Ethyl Acetate 88.11 C2	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Tetrahydrofuran	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,2-Dichloroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,1,1-Trichloroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5

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Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Best Environmental
PROJECT NO : 170590
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 05/08/2017
DATE REPORTED : 05/10/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	Run 1, Scrubber #3			Sample Reporting Limit (SRL) (MRLxDF's)	Run 1, Scrubber #1			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
AAC ID	170590-98594				170590-98595				
Date Sampled	05/03/2017				05/03/2017				
Date Analyzed	05/10/2017				05/10/2017				
Can Dilution Factor	2.13				2.19				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Benzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Carbon Tetrachloride	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Cyclohexane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,2-Dichloropropane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Bromodichloromethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,4-Dioxane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Trichloroethene (TCE)	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
2,2,4-Trimethylpentane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Heptane (402 C6)	2.96		2.0	2.1	<SRL	U	2.0	2.2	0.5
cis-1,3-Dichloropropene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
4-Methyl-2-pentanone (MiBK)	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
trans-1,3-Dichloropropene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,1,2-Trichloroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Toluene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
2-Hexanone (MBK)	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Dibromochloromethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,2-Dibromoethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Tetrachloroethene (PCE)	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Chlorobenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Ethylbenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
m & p-Xylenes	<SRL	U	2.0	4.3	<SRL	U	2.0	4.4	1.0
Bromoform	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Styrene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,1,2,2-Tetrachloroethane	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
o-Xylene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
4-Ethyltoluene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,3,5-Trimethylbenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,2,4-Trimethylbenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Benzyl Chloride (a-Chlorotoluene)	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,3-Dichlorobenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,4-Dichlorobenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,2-Dichlorobenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
1,2,4-Trichlorobenzene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
Hexachlorobutadiene	<SRL	U	2.0	2.1	<SRL	U	2.0	2.2	0.5
BFB-Surrogate Std. % Recovery	99%				107%				70-130%

U - Compound was analyzed for, but was not detected at or above the SRL.

Marcus Hueppe
Laboratory Director

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B-4

ANALYSIS DATE : 05/10/2017
ANALYST : JJG
INSTRUMENT ID : GC/MS-02
CALIBRATION STD ID : PS030917-05

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Continuing Calibration Verification of the 04/11/2017 Calibration

Compounds	Conc	Daily Conc	%REC*
4-BFB (surrogate standard)	10.00	10.30	103
Chlorodifluoromethane	10.40	10.95	105
Propene	10.90	10.81	99
Dichlorodifluoromethane	10.60	11.42	108
Chloromethane	10.30	11.13	108
Dichlorotetrafluoroethane	10.00	10.52	105
Vinyl Chloride	10.10	10.94	108
Methanol	19.00	20.09	106
1,3-Butadiene	10.50	12.17	116
Bromomethane	10.00	10.81	108
Chloroethane	9.70	10.72	111
Dichlorofluoromethane	10.60	11.70	110
Ethanol	9.10	9.56	105
Vinyl Bromide	10.10	11.37	113
Acetone	10.60	12.33	116
Trichlorofluoromethane	10.40	12.46	120
2-Propanol (IPA)	10.80	12.28	114
Acrylonitrile	11.50	13.02	113
1,1-Dichloroethene	10.80	11.02	102
Methylene Chloride (DCM)	10.50	10.44	99
Allyl Chloride	11.00	12.13	110
Carbon Disulfide	10.00	10.57	106
Trichlorotrifluoroethane	10.70	11.67	109
trans-1,2-Dichloroethene	10.10	10.62	105
1,1-Dichloroethane	10.50	10.75	102
Methyl Tert Butyl Ether (MTBE)	10.60	11.79	111
Vinyl Acetate	10.80	10.80	100
2-Butanone (MEK)	10.60	10.65	100
cis-1,2-Dichloroethene	10.60	10.70	101
Hexane	10.50	10.73	102
Chloroform	10.90	12.00	110
Ethyl Acetate	10.90	10.96	101
Tetrahydrofuran	10.50	10.54	100
1,2-Dichloroethane	10.60	11.57	109
1,1,1-Trichloroethane	10.60	11.46	108

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ANALYSIS DATE : 05/10/2017
ANALYST : JJG
INSTRUMENT ID : GC/MS-02
CALIBRATION STD ID : PS030917-05

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Continuing Calibration Verification of the 04/11/2017 Calibration

Compounds	Conc	Daily Conc	%REC*
Benzene	10.40	11.28	108
Carbon Tetrachloride	10.80	11.97	111
Cyclohexane	10.50	10.54	100
1,2-Dichloropropane	10.50	10.67	102
Bromodichloromethane	10.40	11.42	110
1,4-Dioxane	10.40	11.01	106
Trichloroethene (TCE)	10.40	11.40	110
2,2,4-Trimethylpentane	10.30	11.54	112
Heptane	10.40	11.23	108
cis-1,3-Dichloropropene	10.70	11.47	107
4-Methyl-2-pentanone (MiBK)	10.00	10.25	103
trans-1,3-Dichloropropene	10.00	11.21	112
1,1,2-Trichloroethane	10.40	11.20	108
Toluene	10.60	11.67	110
2-Hexanone (MBK)	10.80	10.69	99
Dibromochloromethane	9.90	11.11	112
1,2-Dibromoethane	10.40	11.69	112
Tetrachloroethene (PCE)	10.30	11.78	114
Chlorobenzene	10.50	11.13	106
Ethylbenzene	10.50	11.52	110
m & p-Xylenes	20.00	21.09	105
Bromoform	10.40	11.05	106
Styrene	10.30	10.45	101
1,1,2,2-Tetrachloroethane	10.40	11.22	108
o-Xylene	10.40	10.92	105
4-Ethyltoluene	10.00	10.85	109
1,3,5-Trimethylbenzene	10.00	11.06	111
1,2,4-Trimethylbenzene	9.90	10.21	103
Benzyl Chloride (a-Chlorotoluene)	9.60	9.85	103
1,3-Dichlorobenzene	9.60	9.99	104
1,4-Dichlorobenzene	9.80	10.58	108
1,2-Dichlorobenzene	9.70	10.53	109
1,2,4-Trichlorobenzene	8.80	9.26	105
Hexachlorobutadiene	9.30	9.31	100

* - %REC should be 70-130%

Marcus Hueppe
Laboratory Director

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Quality Control/Quality Assurance Report

CLIENT ID	: Laboratory Control Spike	DATE ANALYZED	: 05/10/2017
AAC ID	: LCS/LCSD	DATE REPORTED	: 05/10/2017
MEDIA	: Air	UNITS	: ppbv

TO-15 Laboratory Control Spike Recovery

Compound	Sample Conc.	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
1,1-Dichloroethene	0.0	10.80	11.02	11.67	102	108	5.7
Methylene Chloride (DCM)	0.0	10.50	10.44	11.25	99	107	7.5
Benzene	0.0	10.40	11.28	11.39	108	110	1.0
Trichloroethene (TCE)	0.0	10.40	11.40	10.88	110	105	4.7
Toluene	0.0	10.60	11.67	12.11	110	114	3.7
Tetrachloroethene (PCE)	0.0	10.30	11.78	11.04	114	107	6.5
Chlorobenzene	0.0	10.50	11.13	12.13	106	116	8.6
Ethylbenzene	0.0	10.50	11.52	11.42	110	109	0.9
m & p-Xylenes	0.0	20.00	21.09	21.38	105	107	1.4
o-Xylene	0.0	10.40	10.92	10.63	105	102	2.7

* Must be 70-130%

** Must be < 25%

Marcus Hueppe
Laboratory Director

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Method Blank Analysis Report

MATRIX	**: AIR**	**ANALYSIS DATE**	**: 05/10/2017**
UNITS	**: ppbv**	**REPORT DATE**	**: 05/10/2017**

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID / *AAC ID*	Method Blank MB 051017	RL
Chlorodifluoromethane	<RL	0.5
Propene	<RL	1.0
Dichlorodifluoromethane	<RL	0.5
Chloromethane	<RL	0.5
Dichlorotetrafluoroethane	<RL	0.5
Vinyl Chloride	<RL	0.5
Methanol	<RL	5.0
1,3-Butadiene	<RL	0.5
Bromomethane	<RL	0.5
Chloroethane	<RL	0.5
Dichlorofluoromethane	<RL	0.5
Ethanol	<RL	2.0
Vinyl Bromide	<RL	0.5
Acetone	<RL	2.0
Trichlorofluoromethane	<RL	0.5
2-Propanol (IPA)	<RL	2.0
Acrylonitrile	<RL	1.0
1,1-Dichloroethene	<RL	0.5
Methylene Chloride (DCM)	<RL	1.0
Allyl Chloride	<RL	0.5
Carbon Disulfide	<RL	0.5
Trichlorotrifluoroethane	<RL	0.5
trans-1,2-Dichloroethene	<RL	0.5
1,1-Dichloroethane	<RL	0.5
Methyl Tert Butyl Ether (MTBE)	<RL	0.5
Vinyl Acetate	<RL	1.0
2-Butanone (MEK)	<RL	1.0
cis-1,2-Dichloroethene	<RL	0.5
Hexane	<RL	0.5
Chloroform	<RL	0.5
Ethyl Acetate	<RL	0.5
Tetrahydrofuran	<RL	0.5
1,2-Dichloroethane	<RL	0.5
1,1,1-Trichloroethane	<RL	0.5
Benzene	<RL	0.5
Carbon Tetrachloride	<RL	0.5
Cyclohexane	<RL	0.5
1,2-Dichloropropane	<RL	0.5
Bromodichloromethane	<RL	0.5
1,4-Dioxane	<RL	0.5
Trichloroethene (TCE)	<RL	0.5
2,2,4-Trimethylpentane	<RL	0.5
Heptane	<RL	0.5

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Method Blank Analysis Report

MATRIX	**: AIR**	**ANALYSIS DATE**	**: 05/10/2017**
UNITS	**: ppbv**	**REPORT DATE**	**: 05/10/2017**

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID / *AAC ID*	Method Blank MB 051017	RL
cis-1,3-Dichloropropene	<RL	0.5
4-Methyl-2-pentanone (MiBK)	<RL	0.5
trans-1,3-Dichloropropene	<RL	0.5
1,1,2-Trichloroethane	<RL	0.5
Toluene	<RL	0.5
2-Hexanone (MBK)	<RL	0.5
Dibromochloromethane	<RL	0.5
1,2-Dibromoethane	<RL	0.5
Tetrachloroethene (PCE)	<RL	0.5
Chlorobenzene	<RL	0.5
Ethylbenzene	<RL	0.5
m & p-Xylenes	<RL	1.0
Bromoform	<RL	0.5
Styrene	<RL	0.5
1,1,2,2-Tetrachloroethane	<RL	0.5
o-Xylene	<RL	0.5
4-Ethyltoluene	<RL	0.5
1,3,5-Trimethylbenzene	<RL	0.5
1,2,4-Trimethylbenzene	<RL	0.5
Benzyl Chloride (a-Chlorotoluene)	<RL	0.5
1,3-Dichlorobenzene	<RL	0.5
1,4-Dichlorobenzene	<RL	0.5
1,2-Dichlorobenzene	<RL	0.5
1,2,4-Trichlorobenzene	<RL	0.5
Hexachlorobutadiene	<RL	0.5
System Monitoring Compounds		
BFB-Surrogate Std. % Recovery	97%	--

RL - Reporting Limit

Marcus Hueppe
Laboratory Director

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Quality Control/Quality Assurance Report

AAC ID	**: 170590-98595**	**DATE ANALYZED**	**: 05/10/2017**
MATRIX	**: Air**	**DATE REPORTED**	**: 05/10/2017**
		UNITS	**: ppbv**

TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc	% RPD
Chlorodifluoromethane	<SRL	<SRL	0.0
Propene	<SRL	<SRL	0.0
Dichlorodifluoromethane	<SRL	<SRL	0.0
Chloromethane	<SRL	<SRL	0.0
Dichlorotetrafluoroethane	<SRL	<SRL	0.0
Vinyl Chloride	<SRL	<SRL	0.0
Methanol	<SRL	<SRL	0.0
1,3-Butadiene	<SRL	<SRL	0.0
Bromomethane	<SRL	<SRL	0.0
Chloroethane	<SRL	<SRL	0.0
Dichlorofluoromethane	<SRL	<SRL	0.0
Ethanol	643	611	5.1
Vinyl Bromide	<SRL	<SRL	0.0
Acetone	131	138	5.2
Trichlorofluoromethane	<SRL	<SRL	0.0
2-Propanol (IPA)	<SRL	<SRL	0.0
Acrylonitrile	<SRL	<SRL	0.0
1,1-Dichloroethene	<SRL	<SRL	0.0
Methylene Chloride (DCM)	<SRL	<SRL	0.0
Allyl Chloride	<SRL	<SRL	0.0
Carbon Disulfide	<SRL	<SRL	0.0
Trichlorotrifluoroethane	<SRL	<SRL	0.0
trans-1,2-Dichloroethene	<SRL	<SRL	0.0
1,1-Dichloroethane	<SRL	<SRL	0.0
Methyl Tert Butyl Ether (MTBE)	<SRL	<SRL	0.0
Vinyl Acetate	<SRL	<SRL	0.0
2-Butanone (MEK)	<SRL	<SRL	0.0
cis-1,2-Dichloroethene	<SRL	<SRL	0.0
Hexane	<SRL	<SRL	0.0
Chloroform	<SRL	<SRL	0.0
Ethyl Acetate	<SRL	<SRL	0.0
Tetrahydrofuran	<SRL	<SRL	0.0
1,2-Dichloroethane	<SRL	<SRL	0.0
1,1,1-Trichloroethane	<SRL	<SRL	0.0
Benzene	<SRL	<SRL	0.0
Carbon Tetrachloride	<SRL	<SRL	0.0

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Quality Control/Quality Assurance Report

AAC ID	**: 170590-98595**	**DATE ANALYZED**	**: 05/10/2017**
MATRIX	**: Air**	**DATE REPORTED**	**: 05/10/2017**
		UNITS	**: ppbv**

TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc	% RPD
Cyclohexane	<SRL	<SRL	0.0
1,2-Dichloropropane	<SRL	<SRL	0.0
Bromodichloromethane	<SRL	<SRL	0.0
1,4-Dioxane	<SRL	<SRL	0.0
Trichloroethene (TCE)	<SRL	<SRL	0.0
2,2,4-Trimethylpentane	<SRL	<SRL	0.0
Heptane	<SRL	<SRL	0.0
cis-1,3-Dichloropropene	<SRL	<SRL	0.0
4-Methyl-2-pentanone (MiBK)	<SRL	<SRL	0.0
trans-1,3-Dichloropropene	<SRL	<SRL	0.0
1,1,2-Trichloroethane	<SRL	<SRL	0.0
Toluene	<SRL	<SRL	0.0
2-Hexanone (MBK)	<SRL	<SRL	0.0
Dibromochloromethane	<SRL	<SRL	0.0
1,2-Dibromoethane	<SRL	<SRL	0.0
Tetrachloroethene (PCE)	<SRL	<SRL	0.0
Chlorobenzene	<SRL	<SRL	0.0
Ethylbenzene	<SRL	<SRL	0.0
m & p-Xylenes	<SRL	<SRL	0.0
Bromoform	<SRL	<SRL	0.0
Styrene	<SRL	<SRL	0.0
1,1,2,2-Tetrachloroethane	<SRL	<SRL	0.0
o-Xylene	<SRL	<SRL	0.0
4-Ethyltoluene	<SRL	<SRL	0.0
1,3,5-Trimethylbenzene	<SRL	<SRL	0.0
1,2,4-Trimethylbenzene	<SRL	<SRL	0.0
Benzyl Chloride (a-Chlorotoluene)	<SRL	<SRL	0.0
1,3-Dichlorobenzene	<SRL	<SRL	0.0
1,4-Dichlorobenzene	<SRL	<SRL	0.0
1,2-Dichlorobenzene	<SRL	<SRL	0.0
1,2,4-Trichlorobenzene	<SRL	<SRL	0.0
Hexachlorobutadiene	<SRL	<SRL	0.0
System Monitoring Compounds			
BFB-Surrogate Std. % Recovery	100%	100%	0.2

SRL - Sample Reporting Limit

Marcus Hueppe
Laboratory Director

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Best Environmental — Ph (925) 455-9474; Fx (925) 455-9479

Project ID: 170590 — Sacramento Rendering Co. — **SAMPLE CHAIN OF CUSTODY** — **BE PROJECT MANAGER:** Jim McCormack

Analyical Lab: AAC

#	DATE	TIME Start/Stop	SAMPLE ID Run#/Source/Canister #	CONTAINER size / type	Vacuum Final	Storage Temp °F	SAMPLE DESCRIPTION	ANALYSIS	TAT
1	05/03/17	1031/1201	Run 1,Scrubber #3, 000505 98594	6L/SUMMA	10 Hg	Ambient	Exhaust Gas	TO-15	NORMAL
2	05/03/17	1217/1247	Run 1,Scrubber #1, 000393 98595	6L/SUMMA	10 Hg	Ambient	Exhaust Gas	TO-15	NORMAL
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									

SPECIAL INSTRUCTIONS: Record & Report all liquid sample volumes.

Submit Results to: Attn: Jim McCormack — **BEST ENVIRONMENTAL 339 Stealth Court, Livermore, CA. 94551**

Relinquished by: Jim McCormack 05/4/17 @ 1330 Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Received by: _____ Date: 5/8/17 Time: 1024

SAMPLE CONDITION AS RECEIVED: OK or not OK

UPS

B12

Atmospheric Analysis & Consulting, Inc.

CLIENT : Best Environmental
PROJECT NAME : Sacramento Rendering Co.
AAC PROJECT NO. : 170560
REPORT DATE : 05/02/2017

On May 1, 2017, Atmospheric Analysis & Consulting, Inc. received four (4) Six-Liter Summa Canisters for Volatile Organic Compounds analysis by EPA method TO-15. Upon receipt each sample was assigned a unique Laboratory ID number as follows:

Client ID	Lab ID	Return Pressure (mmHga)
Run 1, Scrubber #4	170560-98489	617.3
Run 2, Scrubber #4	170560-98490	591.8
Run 3, Scrubber #4	170560-98491	557.6
Run 1, Scrubber #2	170560-98492	537.2

All of the analyses mentioned above were performed in accordance with AAC's ISO/IEC 17025:2005 and NELAP approved Quality Assurance Plan. For detailed information pertaining to specific EPA, NCASI, ASTM and SCAQMD accreditations (Methods & Analytes), please visit our website at www.aaclab.com.

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. No problems were encountered during receiving, preparation, and/or analysis of these samples. The Laboratory Director or his/her designee, as verified by the following signature, has authorized release of the data contained in this hardcopy report.

If you have any questions or require further explanation of data results, please contact the undersigned.

Marcus Hueppe
Laboratory Director

This report consists of 13 pages.

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Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Best Environmental
PROJECT NO : 170560
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 05/01/2017
DATE REPORTED : 05/02/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	Run 1, Scrubber #4			Sample Reporting Limit (SRL) (MRLxDF's)	Run 2, Scrubber #4			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
AAC ID	170560-98489				170560-98490				
Date Sampled	04/26/2017				04/26/2017				
Date Analyzed	05/02/2017				05/02/2017				
Can Dilution Factor	1.65				1.75				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Chlorodifluoromethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Propene 42.08 44 to C3	4.24		2.0	3.3	<SRL	U	2.0	3.5	1.0
Dichlorodifluoromethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Chloromethane 50.49 C1	7.44		2.0	1.7	3.51		2.0	1.8	0.5
Dichlorotetrafluoroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Vinyl Chloride	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Methanol	<SRL	U	2.0	16.5	<SRL	U	2.0	17.5	5.0
1,3-Butadiene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Bromomethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Chloroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Dichlorofluoromethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Ethanol 46.07 C2	51.6		2.0	6.6	87.4		2.0	7.0	2.0
Vinyl Bromide	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Acetone 58.08 C3	44.5		2.0	6.6	27.8		2.0	7.0	2.0
Trichlorofluoromethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
2-Propanol (IPA)	<SRL	U	2.0	6.6	<SRL	U	2.0	7.0	2.0
Acrylonitrile	<SRL	U	2.0	3.3	<SRL	U	2.0	3.5	1.0
1,1-Dichloroethene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Methylene Chloride (DCM)	<SRL	U	2.0	3.3	<SRL	U	2.0	3.5	1.0
Allyl Chloride	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Carbon Disulfide	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Trichlorotrifluoroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
trans-1,2-Dichloroethene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,1-Dichloroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Methyl Tert Butyl Ether (MTBE)	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Vinyl Acetate	<SRL	U	2.0	3.3	<SRL	U	2.0	3.5	1.0
2-Butanone (MEK) 72.10 C4	26.9		2.0	3.3	16.5		2.0	3.5	1.0
cis-1,2-Dichloroethene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Hexane 86.18 C6	2.09		2.0	1.7	<SRL	U	2.0	1.8	0.5
Chloroform	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Ethyl Acetate 88.11 C4	2.51		2.0	1.7	<SRL	U	2.0	1.8	0.5
Tetrahydrofuran	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,2-Dichloroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,1,1-Trichloroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5

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Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Best Environmental
PROJECT NO : 170560
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 05/01/2017
DATE REPORTED : 05/02/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	Run 1, Scrubber #4			Sample Reporting Limit (SRL) (MRLxDF's)	Run 2, Scrubber #4			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
AAC ID	170560-98489				170560-98490				
Date Sampled	04/26/2017				04/26/2017				
Date Analyzed	05/02/2017				05/02/2017				
Can Dilution Factor	1.65				1.75				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Benzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Carbon Tetrachloride	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Cyclohexane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,2-Dichloropropane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Bromodichloromethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,4-Dioxane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Trichloroethene (TCE)	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
2,2,4-Trimethylpentane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Heptane 100.2 C7	3.86		2.0	1.7	<SRL	U	2.0	1.8	0.5
cis-1,3-Dichloropropene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
4-Methyl-2-pentanone (MiBK)	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
trans-1,3-Dichloropropene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,1,2-Trichloroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Toluene 92.14 C6	1.86		2.0	1.7	<SRL	U	2.0	1.8	0.5
2-Hexanone (MBK)	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Dibromochloromethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,2-Dibromoethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Tetrachloroethene (PCE)	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Chlorobenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Ethylbenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
m & p-Xylenes	<SRL	U	2.0	3.3	<SRL	U	2.0	3.5	1.0
Bromoform	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Styrene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,1,2,2-Tetrachloroethane	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
o-Xylene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
4-Ethyltoluene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,3,5-Trimethylbenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,2,4-Trimethylbenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Benzyl Chloride (a-Chlorotoluene)	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,3-Dichlorobenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,4-Dichlorobenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,2-Dichlorobenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
1,2,4-Trichlorobenzene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
Hexachlorobutadiene	<SRL	U	2.0	1.7	<SRL	U	2.0	1.8	0.5
BFB-Surrogate Std. % Recovery	102%				104%				70-130%

U - Compound was analyzed for, but was not detected at or above the SRL.

Marcus Hueppe
Laboratory Director

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Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Best Environmental
PROJECT NO : 170560
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 05/01/2017
DATE REPORTED : 05/02/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	Run 3, Scrubber #4			Sample Reporting Limit (SRL) (MRLxDF's)	Run 1, Scrubber #2			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
AAC ID	170560-98491				170560-98492				
Date Sampled	04/26/2017				04/26/2017				
Date Analyzed	05/02/2017				05/02/2017				
Can Dilution Factor	1.87				1.89				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Chlorodifluoromethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Propene	<SRL	U	2.0	3.7	<SRL	U	2.0	3.8	1.0
Dichlorodifluoromethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Chloromethane 50.49 C1	4.10		2.0	1.9	2.64		2.0	1.9	0.5
Dichlorotetrafluoroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Vinyl Chloride	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Methanol 32 C1	<SRL	U	2.0	18.7	315		10.0	94.4	5.0
1,3-Butadiene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Bromomethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Chloroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Dichlorofluoromethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Ethanol 416.07 C2	95.7		2.0	7.5	580		10.0	37.8	2.0
Vinyl Bromide	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Acetone 58.08 C3	24.9		2.0	7.5	51.7		10.0	37.8	2.0
Trichlorofluoromethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
2-Propanol (IPA)	<SRL	U	2.0	7.5	<SRL	U	2.0	7.6	2.0
Acrylonitrile	<SRL	U	2.0	3.7	<SRL	U	2.0	3.8	1.0
1,1-Dichloroethene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Methylene Chloride (DCM)	<SRL	U	2.0	3.7	<SRL	U	2.0	3.8	1.0
Allyl Chloride	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Carbon Disulfide	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Trichlorotrifluoroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
trans-1,2-Dichloroethene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,1-Dichloroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Methyl Tert Butyl Ether (MTBE)	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Vinyl Acetate	<SRL	U	2.0	3.7	<SRL	U	2.0	3.8	1.0
2-Butanone (MEK) 72.10 C4	13.1		2.0	3.7	18.8		2.0	3.8	1.0
cis-1,2-Dichloroethene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Hexane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Chloroform	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Ethyl Acetate 88.11 C2	<SRL	U	2.0	1.9	2.61		2.0	1.9	0.5
Tetrahydrofuran	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,2-Dichloroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,1,1-Trichloroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5

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Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

CLIENT : Best Environmental
PROJECT NO : 170560
MATRIX : AIR
UNITS : PPB (v/v)

DATE RECEIVED : 05/01/2017
DATE REPORTED : 05/02/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID	Run 3, Scrubber #4			Sample Reporting Limit (SRL) (MRLxDF's)	Run 1, Scrubber #2			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
AAC ID	170560-98491				170560-98492				
Date Sampled	04/26/2017				04/26/2017				
Date Analyzed	05/02/2017				05/02/2017				
Can Dilution Factor	1.87				1.89				
	Result	Qualifier	Analysis DF		Result	Qualifier	Analysis DF		
Benzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Carbon Tetrachloride	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Cyclohexane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,2-Dichloropropane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Bromodichloromethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,4-Dioxane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Trichloroethene (TCE)	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
2,2,4-Trimethylpentane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Heptane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
cis-1,3-Dichloropropene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
4-Methyl-2-pentanone (MiBK)	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
trans-1,3-Dichloropropene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,1,2-Trichloroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Toluene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
2-Hexanone (MBK)	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Dibromochloromethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,2-Dibromoethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Tetrachloroethene (PCE)	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Chlorobenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Ethylbenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
m & p-Xylenes	<SRL	U	2.0	3.7	<SRL	U	2.0	3.8	1.0
Bromoform	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Styrene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,1,2,2-Tetrachloroethane	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
o-Xylene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
4-Ethyltoluene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,3,5-Trimethylbenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,2,4-Trimethylbenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Benzyl Chloride (a-Chlorotoluene)	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,3-Dichlorobenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,4-Dichlorobenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,2-Dichlorobenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
1,2,4-Trichlorobenzene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
Hexachlorobutadiene	<SRL	U	2.0	1.9	<SRL	U	2.0	1.9	0.5
BFB-Surrogate Std. % Recovery	94%				90%				70-130%

U - Compound was analyzed for, but was not detected at or above the SRL.

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

ANALYSIS DATE : 05/02/2017
ANALYST : JJG
INSTRUMENT ID : GC/MS-02
CALIBRATION STD ID : PS030917-05

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Continuing Calibration Verification of the 04/11/2017 Calibration

Compounds	Conc	Daily Conc	%REC*
4-BFB (surrogate standard)	10.00	9.81	98
Chlorodifluoromethane	10.40	10.28	99
Propene	10.90	10.98	101
Dichlorodifluoromethane	10.60	10.52	99
Chloromethane	10.30	10.47	102
Dichlorotetrafluoroethane	10.00	10.00	100
Vinyl Chloride	10.10	10.20	101
Methanol	19.00	18.44	97
1,3-Butadiene	10.50	11.11	106
Bromomethane	10.00	9.87	99
Chloroethane	9.70	9.95	103
Dichlorofluoromethane	10.60	10.94	103
Ethanol	9.10	9.24	102
Vinyl Bromide	10.10	10.83	107
Acetone	10.60	10.11	95
Trichlorofluoromethane	10.40	10.61	102
2-Propanol (IPA)	10.80	10.97	102
Acrylonitrile	11.50	12.07	105
1,1-Dichloroethene	10.80	11.52	107
Methylene Chloride (DCM)	10.50	9.46	90
Allyl Chloride	11.00	10.04	91
Carbon Disulfide	10.00	8.97	90
Trichlorotrifluoroethane	10.70	10.49	98
trans-1,2-Dichloroethene	10.10	10.75	106
1,1-Dichloroethane	10.50	10.51	100
Methyl Tert Butyl Ether (MTBE)	10.60	10.33	97
Vinyl Acetate	10.80	10.85	100
2-Butanone (MEK)	10.60	10.13	96
cis-1,2-Dichloroethene	10.60	11.12	105
Hexane	10.50	9.95	95
Chloroform	10.90	10.49	96
Ethyl Acetate	10.90	10.36	95
Tetrahydrofuran	10.50	10.22	97
1,2-Dichloroethane	10.60	10.25	97
1,1,1-Trichloroethane	10.60	10.42	98

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ANALYSIS DATE : 05/02/2017
ANALYST : JJG
INSTRUMENT ID : GC/MS-02
CALIBRATION STD ID : PS030917-05

VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Continuing Calibration Verification of the 04/11/2017 Calibration

Compounds	Conc	Daily Conc	%REC*
Benzene	10.40	10.38	100
Carbon Tetrachloride	10.80	11.25	104
Cyclohexane	10.50	10.93	104
1,2-Dichloropropane	10.50	9.67	92
Bromodichloromethane	10.40	9.92	95
1,4-Dioxane	10.40	9.64	93
Trichloroethene (TCE)	10.40	10.25	99
2,2,4-Trimethylpentane	10.30	9.45	92
Heptane	10.40	10.06	97
cis-1,3-Dichloropropene	10.70	10.77	101
4-Methyl-2-pentanone (MiBK)	10.00	9.47	95
trans-1,3-Dichloropropene	10.00	10.43	104
1,1,2-Trichloroethane	10.40	11.04	106
Toluene	10.60	11.48	108
2-Hexanone (MBK)	10.80	10.24	95
Dibromochloromethane	9.90	9.78	99
1,2-Dibromoethane	10.40	11.17	107
Tetrachloroethene (PCE)	10.30	10.40	101
Chlorobenzene	10.50	10.21	97
Ethylbenzene	10.50	10.59	101
m & p-Xylenes	20.00	20.29	101
Bromoform	10.40	10.52	101
Styrene	10.30	10.67	104
1,1,2,2-Tetrachloroethane	10.40	10.06	97
o-Xylene	10.40	9.88	95
4-Ethyltoluene	10.00	10.17	102
1,3,5-Trimethylbenzene	10.00	9.86	99
1,2,4-Trimethylbenzene	9.90	9.46	96
Benzyl Chloride (a-Chlorotoluene)	9.60	10.03	104
1,3-Dichlorobenzene	9.60	10.26	107
1,4-Dichlorobenzene	9.80	10.02	102
1,2-Dichlorobenzene	9.70	9.52	98
1,2,4-Trichlorobenzene	8.80	8.73	99
Hexachlorobutadiene	9.30	8.55	92

* - %REC should be 70-130%

Marcus Hueppe
Laboratory Director

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Quality Control/Quality Assurance Report

CLIENT ID	**: Laboratory Control Spike**	**DATE ANALYZED**	**: 05/02/2017**
AAC ID	**: LCS/LCSD**	**DATE REPORTED**	**: 05/02/2017**
MEDIA	**: Air**	**UNITS**	**: ppbv**

TO-15 Laboratory Control Spike Recovery

Compound	Sample Conc.	Spike Added	Spike Res	Dup Spike Res	Spike % Rec *	Spike Dup % Rec *	RPD** %
1,1-Dichloroethene	0.0	10.80	11.52	10.91	107	101	5.4
Methylene Chloride (DCM)	0.0	10.50	9.46	9.31	90	89	1.6
Benzene	0.0	10.40	10.38	8.94	100	86	14.9
Trichloroethene (TCE)	0.0	10.40	10.25	10.34	99	99	0.9
Toluene	0.0	10.60	11.48	10.59	108	100	8.1
Tetrachloroethene (PCE)	0.0	10.30	10.40	10.48	101	102	0.8
Chlorobenzene	0.0	10.50	10.21	10.64	97	101	4.1
Ethylbenzene	0.0	10.50	10.59	9.97	101	95	6.0
m & p-Xylenes	0.0	20.00	20.29	17.93	101	90	12.3
o-Xylene	0.0	10.40	9.88	10.12	95	97	2.4

* Must be 70-130%

** Must be < 25%

Marcus Hueppe
Laboratory Director

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Method Blank Analysis Report

MATRIX	: AIR	ANALYSIS DATE	: 05/02/2017
UNITS	: ppbv	REPORT DATE	: 05/02/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID / AAC ID	Method Blank MB 050217	RL
Chlorodifluoromethane	<RL	0.5
Propene	<RL	1.0
Dichlorodifluoromethane	<RL	0.5
Chloromethane	<RL	0.5
Dichlorotetrafluoroethane	<RL	0.5
Vinyl Chloride	<RL	0.5
Methanol	<RL	5.0
1,3-Butadiene	<RL	0.5
Bromomethane	<RL	0.5
Chloroethane	<RL	0.5
Dichlorofluoromethane	<RL	0.5
Ethanol	<RL	2.0
Vinyl Bromide	<RL	0.5
Acetone	<RL	2.0
Trichlorofluoromethane	<RL	0.5
2-Propanol (IPA)	<RL	2.0
Acrylonitrile	<RL	1.0
1,1-Dichloroethene	<RL	0.5
Methylene Chloride (DCM)	<RL	1.0
Allyl Chloride	<RL	0.5
Carbon Disulfide	<RL	0.5
Trichlorotrifluoroethane	<RL	0.5
trans-1,2-Dichloroethene	<RL	0.5
1,1-Dichloroethane	<RL	0.5
Methyl Tert Butyl Ether (MTBE)	<RL	0.5
Vinyl Acetate	<RL	1.0
2-Butanone (MEK)	<RL	1.0
cis-1,2-Dichloroethene	<RL	0.5
Hexane	<RL	0.5
Chloroform	<RL	0.5
Ethyl Acetate	<RL	0.5
Tetrahydrofuran	<RL	0.5
1,2-Dichloroethane	<RL	0.5
1,1,1-Trichloroethane	<RL	0.5
Benzene	<RL	0.5
Carbon Tetrachloride	<RL	0.5
Cyclohexane	<RL	0.5
1,2-Dichloropropane	<RL	0.5
Bromodichloromethane	<RL	0.5
1,4-Dioxane	<RL	0.5
Trichloroethene (TCE)	<RL	0.5
2,2,4-Trimethylpentane	<RL	0.5
Heptane	<RL	0.5

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Method Blank Analysis Report

MATRIX	: AIR	ANALYSIS DATE	: 05/02/2017
UNITS	: ppbv	REPORT DATE	: 05/02/2017

VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

Client ID / *AAC ID*	Method Blank MB 050217	RL
cis-1,3-Dichloropropene	<RL	0.5
4-Methyl-2-pentanone (MiBK)	<RL	0.5
trans-1,3-Dichloropropene	<RL	0.5
1,1,2-Trichloroethane	<RL	0.5
Toluene	<RL	0.5
2-Hexanone (MBK)	<RL	0.5
Dibromochloromethane	<RL	0.5
1,2-Dibromoethane	<RL	0.5
Tetrachloroethene (PCE)	<RL	0.5
Chlorobenzene	<RL	0.5
Ethylbenzene	<RL	0.5
m & p-Xylenes	<RL	1.0
Bromoform	<RL	0.5
Styrene	<RL	0.5
1,1,2,2-Tetrachloroethane	<RL	0.5
o-Xylene	<RL	0.5
4-Ethyltoluene	<RL	0.5
1,3,5-Trimethylbenzene	<RL	0.5
1,2,4-Trimethylbenzene	<RL	0.5
Benzyl Chloride (a-Chlorotoluene)	<RL	0.5
1,3-Dichlorobenzene	<RL	0.5
1,4-Dichlorobenzene	<RL	0.5
1,2-Dichlorobenzene	<RL	0.5
1,2,4-Trichlorobenzene	<RL	0.5
Hexachlorobutadiene	<RL	0.5
System Monitoring Compounds		
BFB-Surrogate Std. % Recovery	99%	--

RL - Reporting Limit

Marcus Hueppe
Laboratory Director

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Quality Control/Quality Assurance Report

AAC ID	: 170560-98492	DATE ANALYZED	: 05/02/2017
MATRIX	: Air	DATE REPORTED	: 05/02/2017
		UNITS	: ppbv

TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc	% RPD
Chlorodifluoromethane	<SRL	<SRL	0.0
Propene	<SRL	<SRL	0.0
Dichlorodifluoromethane	<SRL	<SRL	0.0
Chloromethane	<SRL	<SRL	0.0
Dichlorotetrafluoroethane	<SRL	<SRL	0.0
Vinyl Chloride	<SRL	<SRL	0.0
Methanol	315	322	2.2
1,3-Butadiene	<SRL	<SRL	0.0
Bromomethane	<SRL	<SRL	0.0
Chloroethane	<SRL	<SRL	0.0
Dichlorofluoromethane	<SRL	<SRL	0.0
Ethanol	580	621	6.8
Vinyl Bromide	<SRL	<SRL	0.0
Acetone	51.7	52.7	1.9
Trichlorofluoromethane	<SRL	<SRL	0.0
2-Propanol (IPA)	<SRL	<SRL	0.0
Acrylonitrile	<SRL	<SRL	0.0
1,1-Dichloroethene	<SRL	<SRL	0.0
Methylene Chloride (DCM)	<SRL	<SRL	0.0
Allyl Chloride	<SRL	<SRL	0.0
Carbon Disulfide	<SRL	<SRL	0.0
Trichlorotrifluoroethane	<SRL	<SRL	0.0
trans-1,2-Dichloroethene	<SRL	<SRL	0.0
1,1-Dichloroethane	<SRL	<SRL	0.0
Methyl Tert Butyl Ether (MTBE)	<SRL	<SRL	0.0
Vinyl Acetate	<SRL	<SRL	0.0
2-Butanone (MEK)	<SRL	<SRL	0.0
cis-1,2-Dichloroethene	<SRL	<SRL	0.0
Hexane	<SRL	<SRL	0.0
Chloroform	<SRL	<SRL	0.0
Ethyl Acetate	<SRL	<SRL	0.0
Tetrahydrofuran	<SRL	<SRL	0.0
1,2-Dichloroethane	<SRL	<SRL	0.0
1,1,1-Trichloroethane	<SRL	<SRL	0.0
Benzene	<SRL	<SRL	0.0
Carbon Tetrachloride	<SRL	<SRL	0.0

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Quality Control/Quality Assurance Report

AAC ID	: 170560-98492	DATE ANALYZED	: 05/02/2017
MATRIX	: Air	DATE REPORTED	: 05/02/2017
		UNITS	: ppbv

TO-15 Duplicate Analysis

Compound	Sample Conc	Duplicate Conc.	% RPD
Cyclohexane	<SRL	<SRL	0.0
1,2-Dichloropropane	<SRL	<SRL	0.0
Bromodichloromethane	<SRL	<SRL	0.0
1,4-Dioxane	<SRL	<SRL	0.0
Trichloroethene (TCE)	<SRL	<SRL	0.0
2,2,4-Trimethylpentane	<SRL	<SRL	0.0
Heptane	<SRL	<SRL	0.0
cis-1,3-Dichloropropene	<SRL	<SRL	0.0
4-Methyl-2-pentanone (MiBK)	<SRL	<SRL	0.0
trans-1,3-Dichloropropene	<SRL	<SRL	0.0
1,1,2-Trichloroethane	<SRL	<SRL	0.0
Toluene	<SRL	<SRL	0.0
2-Hexanone (MBK)	<SRL	<SRL	0.0
Dibromochloromethane	<SRL	<SRL	0.0
1,2-Dibromoethane	<SRL	<SRL	0.0
Tetrachloroethene (PCE)	<SRL	<SRL	0.0
Chlorobenzene	<SRL	<SRL	0.0
Ethylbenzene	<SRL	<SRL	0.0
m & p-Xylenes	<SRL	<SRL	0.0
Bromoform	<SRL	<SRL	0.0
Styrene	<SRL	<SRL	0.0
1,1,2,2-Tetrachloroethane	<SRL	<SRL	0.0
o-Xylene	<SRL	<SRL	0.0
4-Ethyltoluene	<SRL	<SRL	0.0
1,3,5-Trimethylbenzene	<SRL	<SRL	0.0
1,2,4-Trimethylbenzene	<SRL	<SRL	0.0
Benzyl Chloride (a-Chlorotoluene)	<SRL	<SRL	0.0
1,3-Dichlorobenzene	<SRL	<SRL	0.0
1,4-Dichlorobenzene	<SRL	<SRL	0.0
1,2-Dichlorobenzene	<SRL	<SRL	0.0
1,2,4-Trichlorobenzene	<SRL	<SRL	0.0
Hexachlorobutadiene	<SRL	<SRL	0.0
System Monitoring Compounds			
BFB-Surrogate Std. % Recovery	100%	101%	1.1

SRL - Sample Reporting Limit

Marcus Hueppe
Laboratory Director

1534 Eastman Ave., Ste. A • Ventura, • CA 93003 www.aaclab.com • (805) 650-1642 • FAX (805) 650-1644

Best Environmental

Ph (925) 455-9474; Fx (925) 455-9479

Project ID: 170560 Sacramento Rendering Co.

Analyical Lab: AAC

SAMPLE CHAIN OF CUSTODY

BE PROJECT MANAGER: Jim McCormack

#	DATE	TIME Start/Stop	SAMPLE ID Run#/Source/Canister #	CONTAINER size / type	Vacuum Final	Storage Temp °F	SAMPLE DESCRIPTION	ANALYSIS	TAT
1	04/26/17	1046/1116	Run 1,Scrubber #4, 000499 98489	6L/SUMMA	5 Hg	Ambient	Exhaust Gas	TO-15	NORMAL
2	04/26/17	1124/1154	Run 2,Scrubber #4, 000514 98490	6L/SUMMA	5 Hg	Ambient	Exhaust Gas	TO-15	NORMAL
3	04/26/17	1202/1232	Run 3,Scrubber #4, 000445 98491	6L/SUMMA	6 Hg	Ambient	Exhaust Gas	TO-15	NORMAL
4	04/26/17	1339/1409	Run 1,Scrubber #2, 000390 98492	6L/SUMMA	6 Hg	Ambient	Exhaust Gas	TO-15	NORMAL
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									

SPECIAL INSTRUCTIONS: **Record & Report all liquid sample volumes.**

Submit Results to: Attn: Jim McCormack

BEST ENVIRONMENTAL 339 Stealth Court, LivermoreCA. 94551

Relinquished by: Jim McCormack @ 4/27/17 Received by: _____ Date: _____ Time: _____

Relinquished by: _____ @ 1145 Received by: _____ Date: _____ Time: _____

Relinquished by: _____ Received by: _____ Date: 5/1/17 Time: 1250

SAMPLE CONDITION AS RECEIVED: OK or not OK 4x CANS, NO FLOWS UPS

325

APPENDIX C
FIELD DATA SHEETS

Method 2 - Stack Gas Volumetric Flow Rate Determination

Facility: SRC		Location: Scrubber #1	
Date: 5-3-17	Personnel: DK JML	Barometric (P_{bar}), "Hg: 29.9	
Pitot Factor (C_p): .84	Pitot #: DT 92	Stack Dia. (D_s), ": 60"	
Thermocouple #: PT 92	Mag / Incline #: DT 2	Stack Area ft² (A_s):	
Assumed $\%O_2$:	Actual $\%O_2$:	Port Diameter ": 1½"	
Assumed $\%CO_2$:	Actual $\%CO_2$:	Port Depth ": —	Port Ht.
Assumed %CO:	Actual %CO:	Downstream Distance from disturbance: 3	
Assumed $\%H_2O$:	Actual $\%H_2O$:	Upstream Distance from disturbance: 1	
Pitot Leak Check (15sec @ >3"H_2O) : ✓		Cyclonic Flow Check: ✓	

			Run 1			Run 2			Run 3		
			Time: 1247 Static: -.3			Time: 1237 Static: -.3			Time: Static:		
Port ID & Point #	Point Location Inches		Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O
1	1.9		98	.38	.616	94	.34	.583			
2	6.3		97	.32	.566	94	.36	.600			
3	11.6		97	.28	.529	96	.38	.616			
4	19.4		96	.30	.548	95	.34	.583			
5	40.6		96	.40	.637	96	.30	.548			
6	48.4		95	.45	.671	99	.36	.600			
7	53.7		95	.52	.721	101	.38	.616			
8	58.1		95	.48	.693	103	.44	.663			
1			97	.32	.566	98	.35	.592			
2			97	.38	.616	98	.38	.616			
3			97	.35	.592	98	.32	.566			
4			96	.38	.616	99	.28	.529			
5			96	.32	.566	100	.38	.616			
6			97	.30	.548	100	.45	.671			
7			97	.32	.566	100	.48	.693			
8			98	.30	.548	100	.42	.648			
AVERAGES			96.3	0.600	.607	98.2	0.609	.609			
			ACFM			ACFM			ACFM		
			DSCFM			DSCFM			DSCFM		

Comments: (i.e.: diag. or process info.) TANK 000393

02 20

CO2 0

~~TIME~~ 12:17 START TIME 730=

1247 FINISH 10 "Hg

W 25

~~D 80~~

1

Method 2 - Stack Gas Volumetric Flow Rate Determination

Facility: SRC		Location: scrubber # 2	
Date: 4-26-17	Personnel: SA / JMC	Barometric (P_{bar}), "Hg: 29.90	
Pitot Factor (C_p): 0.84	Pitot #: 92	Stack Dia. (D_s), ": 84"	
Thermocouple #: 92	Map / Incline #: Box #2	Stack Area ft^2 (A_s): 38.485	
Assumed $\%O_2$:	Actual $\%O_2$:	Port Diameter ": ~~3.25"~~	
Assumed $\%CO_2$:	Actual $\%CO_2$:	Port Depth ": 9" Port Ht.	
Assumed %CO:	Actual %CO:	Downstream Distance from disturbance: 2	
Assumed $\%H_2O$:	Actual $\%H_2O$:	Upstream Distance from disturbance: 80.5"	
Pitot Leak Check (15sec @ >3"H_2O) : ✓		Cyclonic Flow Check: ✓	

	Run 1			Run 1			Run 3		
	Time: 13:10 Static: -0.12			Time: 13:35 Static: -0.12			Time: Static:		
Port ID & Point #	Point Location Inches	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O
1		67	0.18	0.424	71	0.447	0.20			
2		67	0.20	0.474	71	0.447	0.20			
3		68	0.22	0.469	71	0.500	0.25			
4		68	0.24	0.490	71	0.500	0.25			
5		68	0.20	0.447	71	0.469	0.22			
6		68	0.20	0.447	71	0.447	0.20			
7		70	0.18	0.429	71	0.424	0.18			
8		70	0.18	0.424	71	0.400	0.16			
1										
2										
3										
4										
5										
6										
7										
8										
							NAP			
AVERAGES		68.3		0.447	71.0		(0.454)			
		ACFM			ACFM			ACFM		
		DSCFM			DSCFM			DSCFM		

Comments: (i.e.: diag. or process info.)

Wet 64

~~Dry 70~~

C-3

Method 2 - Stack Gas Volumetric Flow Rate Determination

CMCC Flow

Facility: SRC			Location: Scrubber # 3
Date: 5-3-17 ~~5-6-17~~	Personnel: SA, JMc		Barometric (P_{bar}), "Hg: 29.90
Pitot Factor (C_p): 0.84	Pitot #: 92		Stack Dia. (D_s), ": 70
Thermocouple #: 92	Mag / ~~Incline~~ #: #2		Stack Area ft^2 (A_s):
Assumed %O_2:	Actual %O_2:		Port Diameter ": 1 1/2"
Assumed %CO_2:	Actual %CO_2:		Port Depth ": — Port Ht.
Assumed %CO:	Actual %CO:		Downstream Distance from disturbance: 1.5
Assumed %H_2O:	Actual %H_2O:		Upstream Distance from disturbance: .5
Pitot Leak Check (15sec @ >3"H_2O) :			Cyclonic Flow Check:

			Run 1			Run 2			Run 3		
			Time: 10:40 Static: -.6			Time: 10:55 Static: -.5			Time: Static:		
Port ID & Point #	Point Location Inches		Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O
1			90	.70	.837	93	.68	.825			
2			93	.74	.860	~~94~~	.72	.849			
3			92	.85	.922	94	.50	.707			
4			94	.90	.949	91	.89	.943			
5			93	.88	.938	91	1.0	1.000			
6			93	.95	.975	92	.85	.922			
7			95	1.0	1.000	91	.92	.959			
8			95	.80	.894	90	.82	.906			
1			89	.52	.721	90	.72	.849			
2			~~88~~	.68	.825	91	.80	.894			
3			89	.70	.837	92	.92	.959			
4			90	.85	.922	92	.95	.975			
5			90	1.0	1.000	92	.88	.938			
6			90	.92	.959	92	.95	.975			
7			90	.90	.949	93	1.0	1.000			
8			90	.84	.917	94	.80	.894			
AVERAGES			91.3		0.896	91.9	~~.924~~	.912			
			ACFM		.906	ACFM			ACFM		
			DSCFM			DSCFM			DSCFM		

Comments: (i.e.: diag. or process info.)

2002 10:31 START 000505 Can #

0 cov W 76

~~D 80~~

START 30" Hg.

Full 0 "Hg

C-4

Method 2 - Stack Gas Volumetric Flow Rate Determination

Facility: SRC		Location: Scrubber #4	
Date: 4-26-17	Personnel: SA/MC	Barometric (P_{bar}), "Hg: 29.90	
Pitot Factor (C_p): 0.84	Pitot #: 92	Stack Dia. (D_s), ": R1"	
Thermocouple #: 92	Mag / Incline #: 2 Box	Stack Area ft² (A_s): 3.785	
Assumed %O_2:	Actual %O_2:	Port Diameter ": 1.3/8"	
Assumed %CO_2:	Actual %CO_2:	Port Depth ": 4.5" Port Ht.	
Assumed %CO:	Actual %CO:	Downstream Distance from disturbance: 2	
Assumed %H_2O:	Actual %H_2O:	Upstream Distance from disturbance: >0.5	
Pitot Leak Check (15sec @ >3"H_2O) : ✓		Cyclonic Flow Check: ✓	

		Run 1			Run 1			Run 2		
		Time: 10:50 Static: -0.3			Time: 11:05 Static: -0.3			Time: 11:25 Static: -0.3		
Port ID & Point #	Point Location Inches	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O
1		59	0.18	0.424	62	0.20	0.447	63	0.20	0.447
2		59	0.12	0.424	62	0.20	0.447	63	0.22	0.469
3		59	0.20	0.447	62	0.20	0.447	63	0.28	0.529
4		59	0.30	0.548	62	0.25	0.500	63	0.30	0.548
5		59	0.30	0.548	62	0.30	0.548	63	0.24	0.490
6		59	0.35	0.592	62	0.32	0.566	63	0.22	0.469
7		59	0.30	0.548	62	0.30	0.548	63	0.20	0.447
8		59	0.32	0.566	62	0.30	0.490	63	0.20	0.447
1		60	0.22	0.469	62	0.24	0.490	62	0.20	0.447
2		60	0.28	0.529	62	0.25	0.500	62	0.24	0.490
3		60	0.24	0.583	62	0.25	0.500	62	0.24	0.490
4		60	0.30	0.548	62	0.28	0.529	62	0.28	0.529
5		60	0.30	0.548	62	0.30	0.548	62	0.30	0.548
6		60	0.24	0.490	62	0.30	0.548	62	0.30	0.548
7		60	0.18	0.424	62	0.20	0.447	62	0.24	0.490
8		60	0.18	0.424	62	0.20	0.447	62	0.24	0.490
AVERAGES		59.5	~~0.501~~ (0.501)		(62.0)		~~0.504~~	62.5		0.492
		ACFM			ACFM			ACFM		
		DSCFM			DSCFM			DSCFM		

Comments: (i.e.: diag. or process info.)

wet ~~56~~ 55
Dry 59
R1

wet 55
~~Dry 61~~
R2

Method 2 - Stack Gas Volumetric Flow Rate Determination

Facility: SRC		Location: scrubber # 4	
Date: 4-26-17	Personnel: SA, JMc	Barometric (P_{bar}), "Hg:	29.90
Pitot Factor (C_p): 0.84	Pitot #: 92	Stack Dia. (D_s), ":	81"
Thermocouple #:	Mag / Incline #: 2 B&K	Stack Area ft² (A_s):	35.785
Assumed %O_2:	Actual %O_2:	Port Diameter ":	1.3/8"
Assumed %CO_2:	Actual %CO_2:	Port Depth ": 4.5"	Port Ht.
Assumed %CO:	Actual %CO:	Downstream Distance from disturbance:	2
Assumed %H_2O:	Actual %H_2O:	Upstream Distance from disturbance:	>0.5
Pitot Leak Check (15sec @ >3"H_2O) : ✓		Cyclonic Flow Check: ✓	

	Run 2			Run 3			Run 3		
	Time: 11:40 Static: -0.3			Time: 12:03 Static: -0.3			Time: 12:18 Static: -0.3		
Port ID & Point #	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O	Stack Temp °F, (ts)	ΔP "H_2O	√ΔP "H_2O
1	61	0.20	0.447	63	0.20	0.447	66	0.22	0.469
2	61	0.22	0.447	63	0.22	0.469	66	0.24	0.490
3	62	0.20	0.447	63	0.26	0.510	66	0.24	0.490
4	62	0.26	0.510	62	0.30	0.548	66	0.28	0.529
5	62	0.26	0.510	64	0.32	0.566	66	0.30	0.548
6	62	0.28	0.529	64	0.30	0.548	66	0.30	0.548
7	62	0.30	0.548	64	0.24	0.490	66	0.20	0.447
8	62	0.24	0.490	64	0.24	0.490	66	0.20	0.447
1	62	0.22	0.469	64	0.22	0.469	66	0.20	0.447
2	62	0.22	0.469	64	0.22	0.469	66	0.18	0.424
3	62	0.24	0.490	64	0.28	0.529	66	0.25	0.500
4	62	0.28	0.529	64	0.28	0.529	66	0.28	0.529
5	62	0.26	0.510	64	0.30	0.548	66	0.28	0.529
6	62	0.30	0.548	64	0.35	0.592	66	0.32	0.566
7	61	0.24	0.490	64	0.26	0.510	66	0.24	0.490
8	61	0.22	0.469	64	0.20	0.447	66	0.22	0.469
AVERAGES	61.8		0.494	63.8		0.510	66.0		0.495
	ACFM			ACFM			ACFM		
	DSCFM			DSCFM			DSCFM		

Comments: (i.e.: diag. or process info.)

R3 wet 58

~~Dry 65~~

C-6

BEST ENVIRONMENTAL

Livermore, CA 925-455-9474

SUMMA Canister Data Sheet

Project ID: SACRAMENTO RENDERING CO. Tested by: Jim McCONNELL / Bob Cousins Date: 5-3-17

	Canister			Time		Vacuum Hg		Sample		
	ID	Size/Vol.	Controller	Start	Stop	Initial	Final	ID	Location	Analyte(s)
1	000505	6 LT	000241	1031	1101	730	10	RUN 1	SCRUBBER #3	TO-15
2	000393	"	"	1217	1247	730	10	RUN 1	SCRUBBER #1	TO-15
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

Comments:

BEST ENVIRONMENTAL

Livermore, CA 925-455-9474

SUMMA Canister Data Sheet

Project ID: SACRAMENTO RENDERING CO

Tested by: JIM McCONNACK SOMAIL ASFOUN

Date: 4-26-17

	Canister			Time		Vacuum Hg		Sample		
	ID	Size/Vol.	Controller	Start	Stop	Initial	Final	ID	Location	Analyte(s)
1	000499	6 LT	000241	1046	1116	730	5	RUN 1	SCRUBBER #4	TO-15
2	000514	"	"	1124	1154	730	5	RUN 2	"	"
3	000445	"	"	1202	1232	730	6	RUN 3	"	"
4	000390	"	"	1339	1409	730	6	RUN 1	SCRUBBER #2	"
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

Comments:

APPENDIX D
EQUIPMENT CALIBRATION RECORDS

Best Environmental

Type-S Pitot Tube Geometric Calibration Data Sheet

Probe # :

Pitot # : PT92

Length : 92"

Calib. Date : 1-12-17

Calib. Due : 7-12-17

Technician : BoBGallagher

Level Pitot Assembly

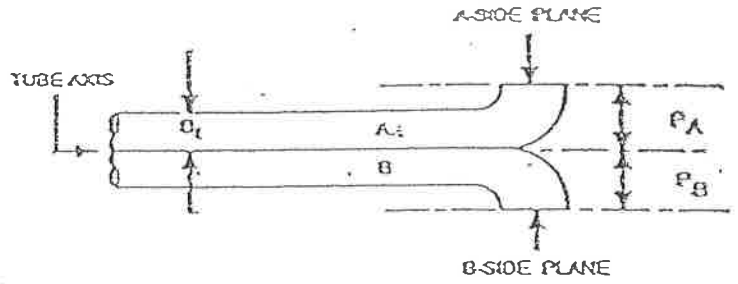
D_t .371 (in.)

P_A .459 (in.)

P_B .459 (in.)

$P = (P_A + P_B)/2$

P/D_t = 1.23 (in.) ($1.05 \le P/D_t \le 1.50$)



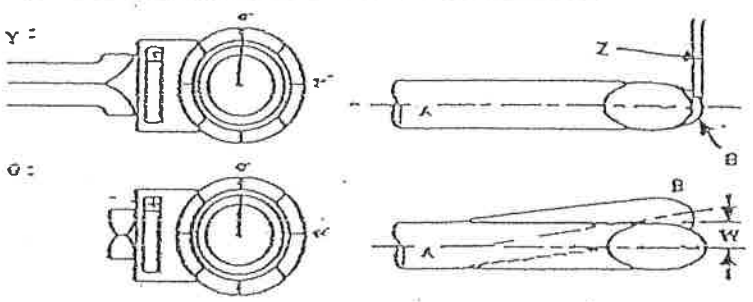
$A = P_A + P_B$ = .918 (in.)

Y = 2 °

$Z = A \sin Y$ = .32 (in.) (< 0.125 in.)

Θ = 1 °

$W = A \sin \Theta$ = .016 (in.) (< 0.031 in.)

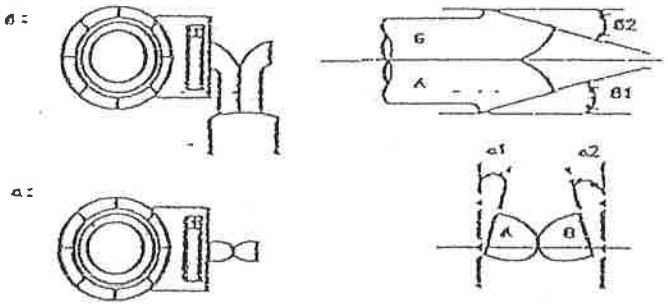


β1 = 3 °(<5°)

β2 = 3 °(<5°)

α1 = 2 °(<10°)

α2 = 3 °(<10°)



Pitot Condition. Good ✓, Fair ___, Poor ___, Repaired ___.

Cal. Frequency = 6 months.

Pitot tube meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube certification factor of 0.84. As per CFR PT. 60,App.A, EPA Method 2.

a1 and a2 (≤10°), b1 and b2 (≤5°). Z ≤.125in and w ≤ 0.031.

Type K Thermocouple Calibration

ID# PT92

Pitot #: PT92 Meter #: _____

Probe #: _____ Heater Box #: _____

Probe Type: _____ Length: 92"

Calibration Date: 1-12-17 Other: STACK TEMP T/C

Source Point #	Thermocouple ID	Test T/C Temp. (°F)	Reference Temp. (°F)	Temp. Difference < 400 °F	% Difference > 400 °F	Notes Pass / Fail
	STACK TEMP					
		35.1	35.3	-.2		PASS
		54.6	54.6	0		PASS
		355.0	353.4	+1.6		PASS

NIST Pyrometer: T223406 Calibrated By: BoB Barn

NIST Thermocouple: OM121120934 Calibration Frequency: *6 Months*

ASTM Mercury in Glass Thermometer #: 3304 &M

Comments: _____

Method Reference: Code of Federal Regulations, 40 CFR 60, Appendix A, Method 2, Revised as of July 1, 1992.
Tolerance Limits: +/-4.0 °F For Temp <400°F.
Tolerance Limits: +/-1.5% For Temp >400°F.

D-3

Electronic Thermometer Calibration Sheet

Manufacturer: HyElec
Model #: MS6501
Reference Inst. I.D. H11G-E01341
Operator: Jim McCormack

Instrument I.D.:
Calibration Date: 4-12-17
Cal. Due Date: 10-12-17
Location: Jim McCormack

Reference Temp., °F	Instrument Temp., °F	Δ Temperature, °F	% Diff.	Temp. Diff.	Comments
100	100	0		0	PASS
200	202	+2		+2	
300	300	0		0	
400	400	0		0	
500	501		.2		
600	603		.5		
700	701		.14		
800	804		.5		
900	902		.22		
1000	1003		.3		
1100	1102		.18		
1200	1202		.16		
1300	1303		.23		
1400	1404		.28		
1500	1504		.26		
1600	1605		.31		
1700	1704		.23		
1800	1805		.27		
1900	1904		.21		
2000	2006		.30		
2100	N/A		N/A		

STD - NIST Pyrometer # : _____

Calibration frequency = 6 months

COMMENTS: _____

± 4°F for temperatures <400 °F

± 1.5% for temperatures >400 °F

Method Reference: 40CFR60

Differential Pressure Gauge Calibration

ID# W52VDR

Calibrated By: BobGallagher

Gauge Type: MAGNEHELIC

Date Calibrated: 12-5-16

Scale: 0-.25"

Calibration Due: 6-5-17

Gauge Location: MAG Box #2

Gauge ID	Pressure Gauge Delta P	Gauge-Oil Manometer Delta P	Difference Delta P	Difference %	Notes
+	.075	.075	0	0	PASS
+	.15	.15	0	0	PASS
+	.215	.21	.005	2%	PASS
-	.105	.105	0	0	PASS
-	.16	.16	0	0	PASS
-	.205	.205	0	0	PASS

Initial Calibration: ✓

STD Used 0-1" manometer

Posttest Calibration: _____

Comments: _____

Differential Pressure Gauge Calibration

ID# R080916JT41

Calibrated By: BoB Gallagher

Gauge Type: Magnehelic

Date Calibrated: 12-5-16

Scale: 0-1"

Calibration Due: 6-5-17

Gauge Location: MAG Box #2

Gauge ID	Pressure Gauge Delta P	Gauge-Oil Manometer Delta P	Difference Delta P	Difference %	Notes
+	.27	.27	0	0	Pass
+	.50	.50	0	0	Pass
+	.83	.84	.01	1%	Pass
-	.37	.37	0	0	Pass
-	.51	.52	.01	1%	Pass
-	.88	.90	.02	2%	Pass

Initial Calibration: ✓

STD Used 0-1" manometer

Posttest Calibration:

Comments:

Differential Pressure Gauge Calibration

ID# R080912CRIK

Calibrated By: BoB Gallagher

Gauge Type: Magnehelic

Date Calibrated: 12-5-16

Scale: 0-3"

Calibration Due: 6-5-17

Gauge Location: Mag Box #2

Gauge ID	Pressure Gauge Delta P	Gauge-Oil Manometer Delta P	Difference Delta P	Difference %	Notes
+	.4	.35	.05	1.66%	PASS
+	1.2	1.11	.09	3%	PASS
+	2.45	2.35	.1	3.33%	Pass
-	.6	.55	.05	1.66%	PASS
-	1.45	1.38	.07	2.33	PASS
-	2.85	2.75	.1	3.33%	Pass

Initial Calibration: ✓

STD Used 0-10" Manometer

Posttest Calibration: _____

Comments: _____

D-7

Differential Pressure Gauge Calibration

ID# W24VMG

Calibrated By: BoB Gallagher

Gauge Type: Magnehelic

Date Calibrated: 12-5-16

Scale: 0-10"

Calibration Due: 6-5-17

Gauge Location: Mag Box #2

Gauge ID	Pressure Gauge Delta P	Gauge-Oil Manometer Delta P	Difference Delta P	Difference %	Notes
+	1.7	1.72	.02	.2	PASS
+	4.8	5.0	.2	2%	PASS
+	9.4	9.6	.2	2%	PASS
-	3.3	3.3	0	0	PASS
-	6.0	6.2	.2	2%	PASS
-	9.2	9.4	.2	2%	PASS

Initial Calibration: ✓

STD Used 0-10" Manometer

Posttest Calibration: _____

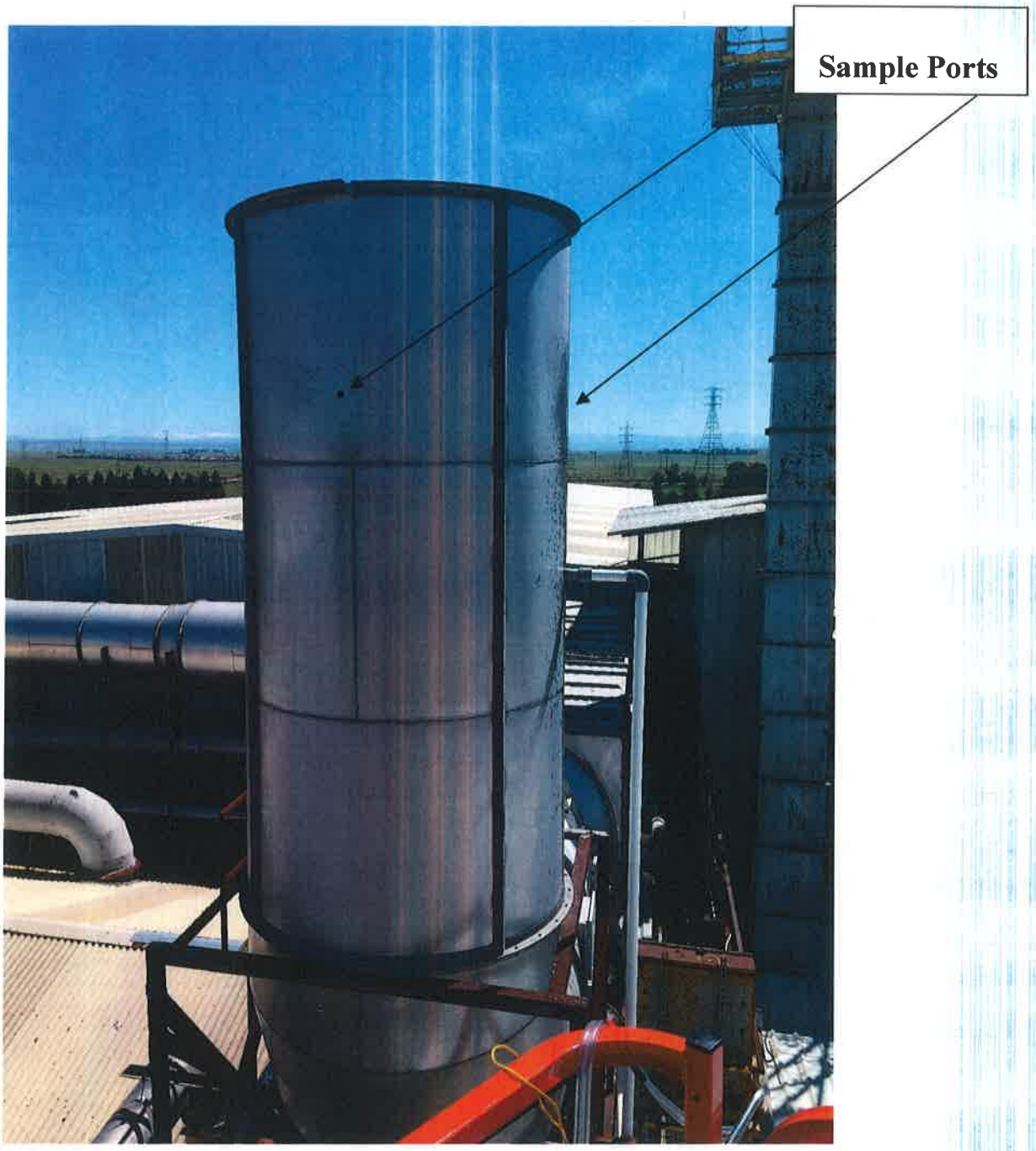
Comments: _____

D-8

APPENDIX E
STACK DIAGRAMS

SACRAMENTO RENDERING CO.
Sacramento, CA

Scrubber #1/APC Scrubber [Permit #21356]
Test Date: May 3, 2017

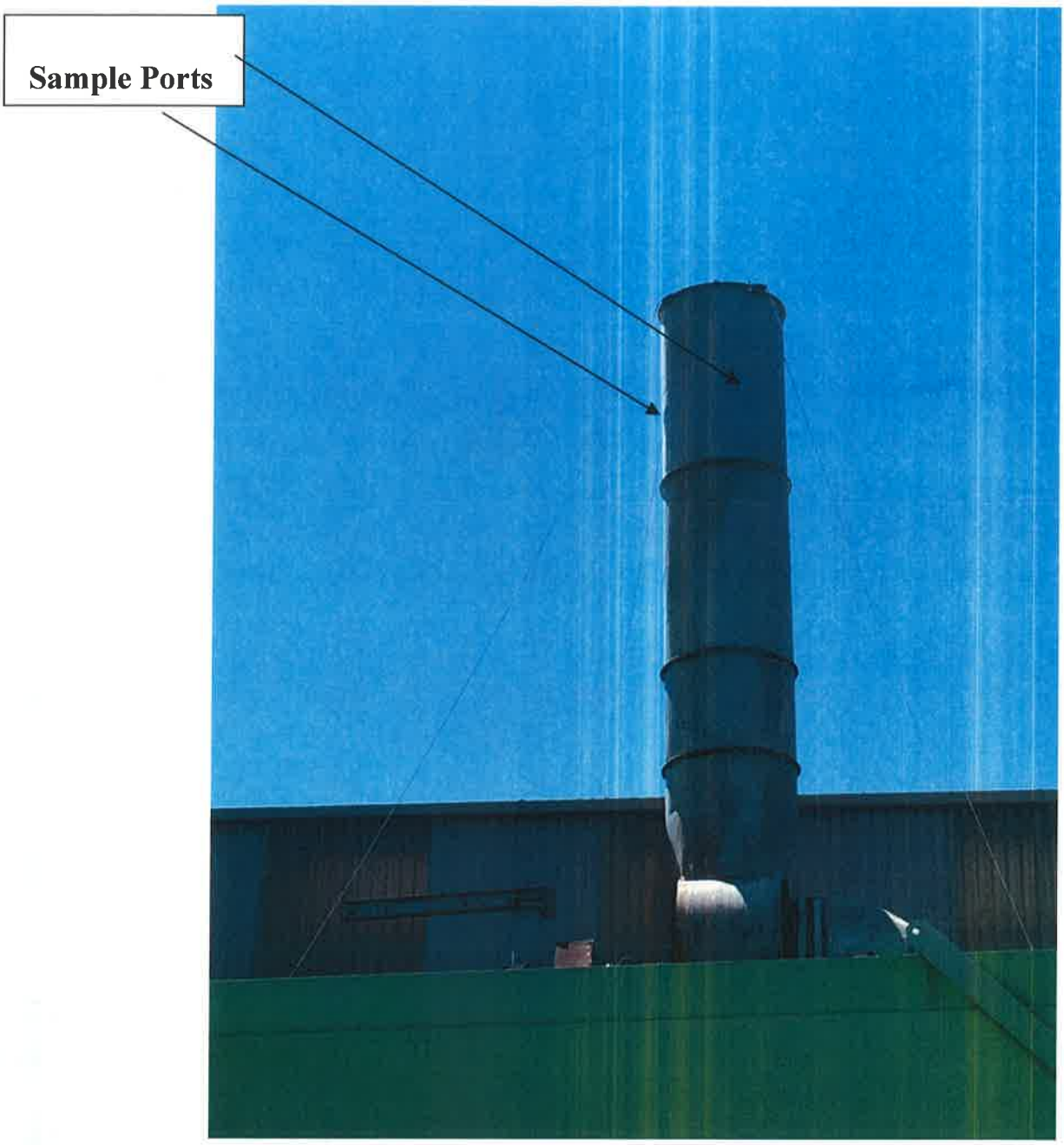


SACRAMENTO RENDERING CO.
Sacramento, CA

Scrubber #2/APC Counter Flow Tower Scrubber [Permit #21357]
Test Date: April 26, 2017

SACRAMENTO RENDERING CO.
Sacramento, CA

Scrubber #3/Cross-flow Scrubber [Permit #17221]
Test Date: May 3, 2017



SACRAMENTO RENDERING CO.
Sacramento, CA

Scrubber #4/Spray Tower Scrubber [Permit #18423]
Test Date: April 26, 2017

APPENDIX F
SAMPLING SYSTEM DIAGRAMS

EPA Method 1

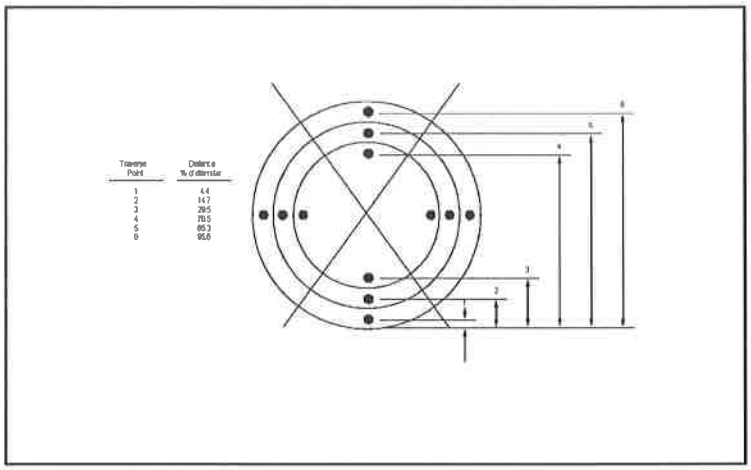


Figure 1-3. Example showing circular stack cross section divided into 12 equal areas, with location of traverse points.

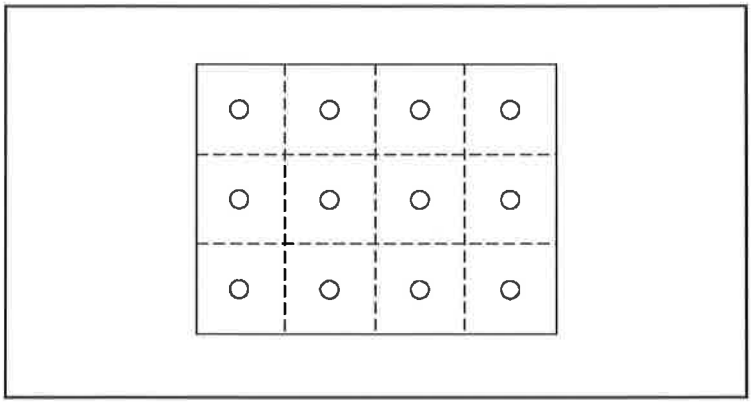


Figure 1-4. Example showing rectangular stack cross section divided into 12 equal areas, with traverse points at centroid of each area.

EPA Method 1

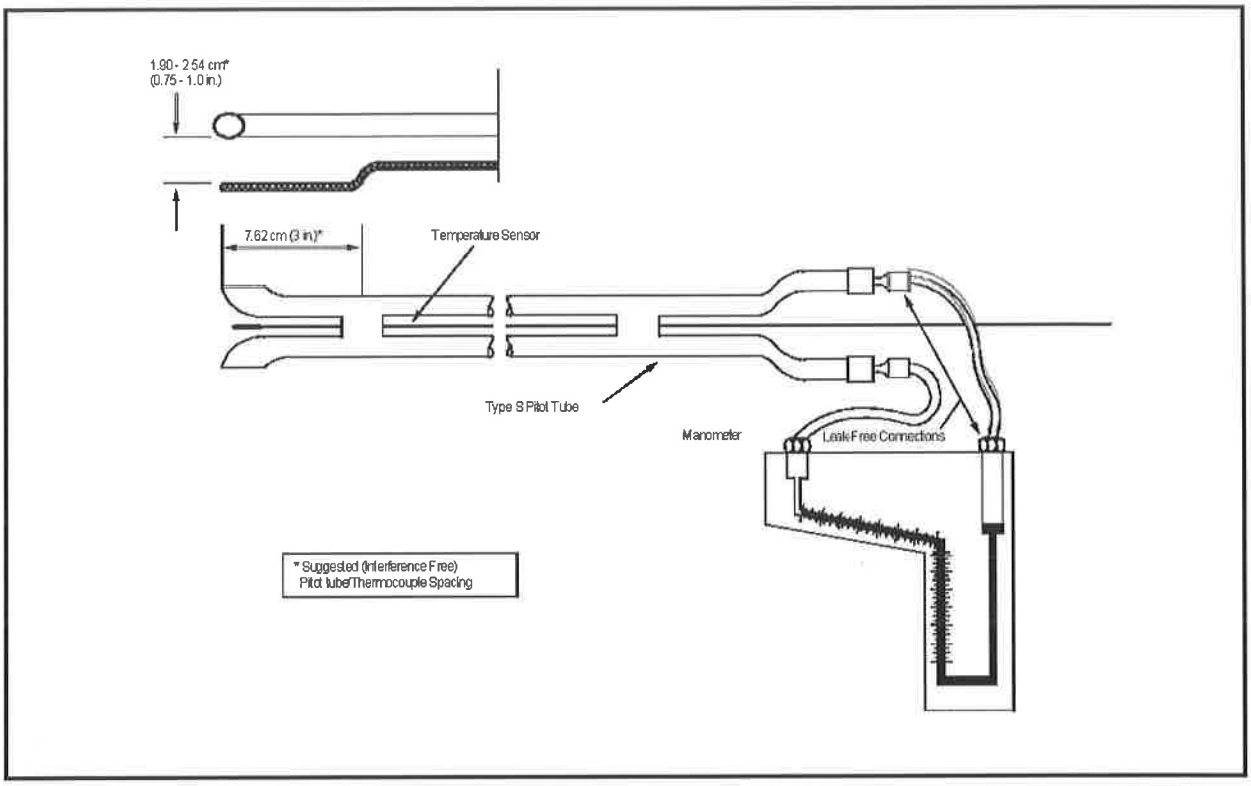
LOCATION OF TRAVERSE POINTS IN CIRCULAR STACKS

(Percent of stack diameter from inside wall

to traverse point)

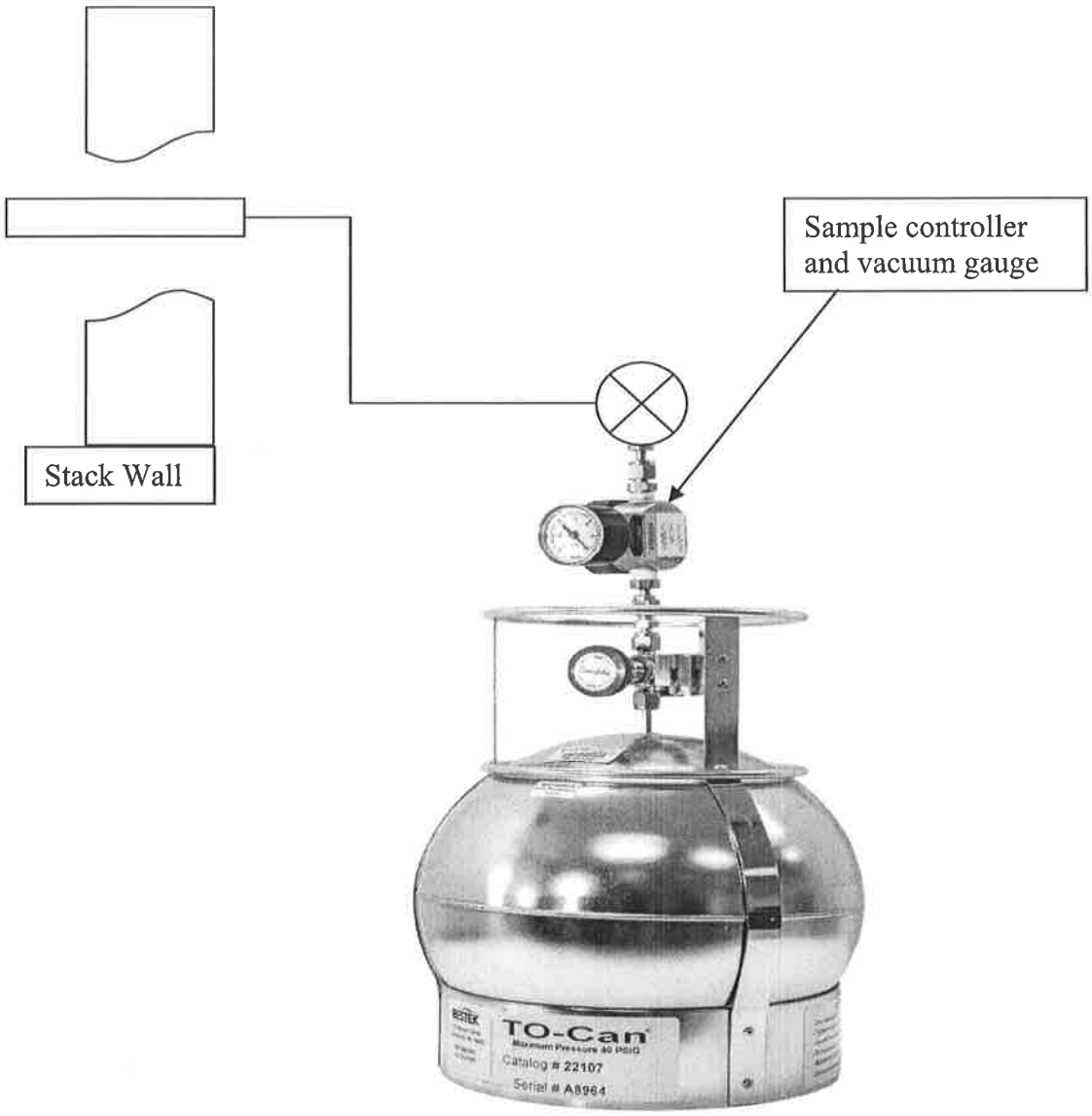
Traverse Point Number on a Diameter	Number of traverse points on a diameter											
	2	4	6	8	10	12	14	16	18	20	22	24
1	14.6	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	85.4	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3		75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4		93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5			85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6			95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7				89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8				96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9					91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10 . . .					97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11 . . .						93.3	85.4	78.0	70.4	61.2	39.3	32.3
12 . . .						97.9	90.1	83.1	76.4	69.4	60.7	39.8
13 . . .							94.3	87.5	81.2	75.0	68.5	60.2
14 . . .							98.2	91.5	85.4	79.6	73.8	67.7
15 . . .								95.1	89.1	83.5	78.2	72.8
16 . . .								98.4	92.5	87.1	82.0	77.0
17 . . .									95.6	90.3	85.4	80.6
18 . . .									98.6	93.3	88.4	83.9
19 . . .										96.1	91.3	86.8
20 . . .										98.7	94.0	89.5
21 . . .											96.5	92.1
22 . . .											98.9	94.5
23 . . .												96.8
24 . . .												99.9

EPA Method 2



Type S Pitot Tube Manometer Assembly

EPA METHOD TO-15



Summa Canister Sampling Train

APPENDIX G
SOURCE TEST PLAN

BEST ENVIRONMENTAL
339 Stealth Court
Livermore, California 94551
(925) 455-9474 FAX (925) 455-9479
email: bestair@sbcglobal.net

April 18, 2017

Ms. Angela Thompson
Sacramento Metropolitan AQMD
777 12th Street, 3rd Floor
Sacramento, CA 95814

Re: Source Test Plan for compliance emissions testing of for wet scrubbers located at Sacramento Rendering Co. (SRC), 11360 Kiefer Blvd., Sacramento, California.

Permit No.	Description	# of Samples
21356	Scrubber #1/APC Scrubber	1
21357	Scrubber #2/APC Counter Flow Tower Scrubber	1
17221	Scrubber #3/Cross-flow Scrubber	1
18423	Scrubber #4/Spray Tower Scrubber	3

Dear Angela,

BEST ENVIRONMENTAL (BE) proposes the following methodology for the above referenced sampling project. The methods we propose for performing the test work follow:

- Thirty-minute samples will be collected on each scrubber for TO-15 VOC analysis using EPA Method TO-15. The Scrubber(s) will be operated at maximum achievable load during the testing. Analysis will be performed by Atmospheric Analysis and Consulting.
- Moisture, volumetric flow rate and molecular weight will be determined using CARB Methods 1, 2, 3 and 4. Ambient conditions will be assumed for molecular weight. Temperature saturation calculations will be used for moisture determinations.
- Load will be determined during the test series using fuel consumption, steam flow or a gas valve indicator.
- The complete technical report will be submitted to SRC within four - six weeks of the test program completion. The report will include a test program description and tables presenting concentrations, emission factors and emission rates for all relevant compliance parameters. All supporting documentation will be included in the appendix (field data sheets, strip charts, calibrations, calculations, etc.).

The test program has been scheduled for April 26, 2017 with testing to begin at ~9:30 A.M. Scott Navlyt from SRC is coordinating the testing and he can be reached at (916) 753-6880. If you have any questions, please contact me at (925) 455-9474 X 103.

Best regards,

Bobby Asfour
Project Manager

cc: Scott Navlyt, SRC

G-2

From: Angela Thompson
Sent: Thursday, April 27, 2017 12:41 PM
To: bestair@sbcglobal.net; Don Dumaine; Genesis Rivas
Cc: Scott Navlyt
Subject: RE: STP-Sacramento Rendering PTO 21356 & 17221 Test Date: 5/3/17

No I do not think that is necessary.

Thanks,

Angela Thompson
Program Coordinator
Field Operations Section | *SMAQMD*
777 12th Street, 3rd Floor
Sacramento, CA 95814
(916) 874-4836 Office
(916) 825-8247 Cell
(916) 874-4899 Fax
athompson@airquality.org
www.airquality.org

From: bestair@sbcglobal.net [mailto:bestair@sbcglobal.net]
Sent: Thursday, April 27, 2017 11:44 AM
To: Angela Thompson
Cc: Scott Navlyt
Subject: STP-Sacramento Rendering PTO 21356 & 17221 Test Date: 5/3/17

Hi Angela,

Best is scheduled to finish up testing Scrubber #1 and #3 on May 3, 2017. Do you need me submit to you another test plan?

If you have any questions please feel free to call.

With Regards,

Jessica Ortiz
Best Environmental
925/455-9474 x 100
http://www.bestenvironmentalonline.com/

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Larry Greene
AIR POLLUTION CONTROL OFFICER

April 19, 2017

Scott Navlyt
SRC Companies
11350 Kiefer Blvd.
Sacramento, CA 95830

Subject: **SOURCE TEST PLAN, PERMIT NO(S).: 17221, 18423, 21356, 21357 – APPROVAL**

Dear Mr. Navlyt:

The Sacramento Metropolitan Air Quality Management District (SMAQMD) is in receipt of the source test plan prepared by BEST ENVIRONMENTAL dated April 18, 2017. The testing plan hereby is approved, subject to the following conditions:

1. The emissions testing must be conducted in accordance with the following test method specified in the source test plan: EPA Method TO-15.

2. During the course of emission testing, the scrubbers shall be operated as close as possible to the maximum rated capacity. Information to substantiate this must be recorded during the test and submitted with your test results. This includes the facility feedstock input and the cooker operating rates.

3. The testing is scheduled for April 26, 2017 at 9:30 AM. As per normal practice, representatives from the SMAQMD may be present to observe system operating conditions and test procedures. If there is any change to the specific **start time** of the test, one-week advance notice to SMAQMD staff is required.

4. As per SMAQMD Rule 301, section 311 a source test evaluation fee of $1,740.00 will be charged against the owner or operator of a source whenever the Air Pollution Control Officer finds that a source test is required. When multiple source tests are performed and the result submitted in one consolidated report, the source test fee of $1,740.00 shall apply to the first 10 hours of District work. Each additional hour or portion thereof required for reviewing the source test shall be charged the time and materials labor rate established in Section 308.12. Please attach the enclosed *Source Test Invoice* to your check, made out to the SMAQMD.

5. A scheduled source test may not be discontinued due solely to the failure of one or more runs to meet applicable standards.

6. The source test report shall include a summary sheet including but not limited to the following information:

   a. Measured emissions corrected to the appropriate standards.
   b. A statement indicating that all error analyses (drift, bias, etc.) required by the test method(s) were performed per the method, and that the tests were conducted within the allowed limits.

Please be advised the SMAQMD may reject any source test that is not conducted in accordance with the current test methods specified in condition 1, does not follow the conditions specified in your source test plan, or is not conducted in accordance with SMAQMD rules or permit conditions.

If you have any questions concerning this matter, please contact me at (916) 874-2693.

Sincerely,

Don Dumaine
Air Quality Specialist

cc: BEST Environmental, 339 Stealth Court, Livermore, CA 94551

Include this invoice with your check

For SMAQMD Use Only

SOURCE TEST INVOICE

Invoice # DGD-17221

Due date: submitted with final report

Permit # 17221, 18423, 21356, 21357

Amount Due: $1,740.00

APPENDIX H
AUTHORITY TO CONSTRUCT
OR
PERMIT TO OPERATE

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Larry Greene
AIR POLLUTION CONTROL OFFICER

December 12, 2016

Michael Koewler
Sacramento Rendering Companies
11350 Kiefer Boulevard
Sacramento, CA 95830

ATTN: JESSICA.

Subject: **SOURCE TEST PLAN PROPOSAL**

Dear Mr. Koewler:

The Sacramento Metropolitan Air Quality Management District (SMAQMD) and the Sacramento Rendering Company (SRC) have met and discussed the request for SRC to perform emission testing of toxics from the rendering process. There is currently no regulatory requirement for SRC to conduct a test and any test is considered voluntary. SRC has requested guidance from SMAQMD as to what test to perform and the specific testing requirements. As a result of this request SMAQMD submits the following suggested test method and guidelines:

TO-15.

1. A minimum of one effluent exhaust sample should be obtained from each of the following locations:
   a. Scrubber 1/APC Scrubber (Permit No. 21356)
   b. Scrubber 2/APC Counterflow Tower Scrubber (Permit No. 21357)
   c. Cross-flow Scrubber (Permit No. 17221)

2. A minimum of three effluent exhaust samples should be obtained from the Spray Tower Scrubber (Permit No. 18423).

3. For each effluent exhaust sample, a summa canister used in conjunction with a thirty-minute regulator is recommended.

4. The sample port locations, velocity traverses, and exhaust gas characteristics (velocity, flow rate, temperature, etc.) for each of the sampling points identified above should be determined in accordance with CARB test methods 1-4.

5. Analysis of all samples should occur at an NELAP or ELAP certified laboratory. All samples should be analyzed following EPA method Toxic Organics 15 (TO-15).

6. During the course of emission testing, the rendering process should be operated at the highest throughput possible. It is highly recommended that both lines be in operation at the time of the testing. While the samples are being drawn, process indicators such as flow, temperature and production rate should be measured every 15 minutes.

20D sample

7. When a source testing company is identified and selected, please submit a protocol to SMAQMD 30 days prior to commencing testing. SMAQMD staff will be present during testing.

If you have any questions concerning this matter, please contact Brian Krebs of my staff at (916) 874-4856.

Sincerely,

David R. Grose
Manager, Stationary Source Division

TRIPLICATE FLOW.

777 12th Street, 3rd Floor ▮ Sacramento, CA 95814-1908
916/874-4800 ▮ 916/874-4899 fax
www.airquality.org