South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

SOURCE TEST REPORT

15-321, 15-322, 15-324

Conducted at

Orange County Sanitation District, Los Angeles County Sanitation District, and LA Sanitation (City of Los Angeles)
Street Manhole Locations

Evaluation of VOC Emissions from Vacuum Truck Transfers from Municipal Sewer Systems

TESTED:	February 19, 2015 March 10, 2015 April 8, 2015
ISSUED:	April 14, 2016
REPORTED BY:	William Welch Air Quality Engineer II

REVIEWED BY:

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Supervising Air Quality Engineer

SOURCE TEST ENGINEERING

SCIENCE & TECHNOLOGY ADVANCEMENT DIVISION

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f. Dates of Test ..... February 19, 2015, March 10, 2015, April 8, 2015

g. Source Test Performed by ..... C. Willoughby, R. Lem
M. Garibay, W. Stredwick, E. Padilla,

h. Test Arrangements Made Through ..... OCSD, LACSD, LA Sanitation

EXECUTIVE SUMMARY

South Coast Air Quality Management District (SCAQMD) Proposed Rule 1188 is designed to reduce volatile organic compound (VOC) emissions associated with transfer of materials using vacuum trucks. The Proposed Rule currently applies to vacuum trucks at refineries, bulk plants, bulk and marine terminals, and organic liquid pipeline facilities. SCAQMD Staff were interested in exploring the possibility of expanding the Proposed Rule to include vacuum truck transfers from municipal sewage systems. Working with the Orange County Sanitation District, Los Angeles County Sanitation District, and LA Sanitation (City of Los Angeles), the SCAQMD conducted three sets of tests as listed below:

1. SCAQMD source test #15-321, conducted on February 19, 2015.

2. SCAQMD source test #15-322, conducted on March 10, 2015.

3. SCAQMD source test #15-324, conducted on April 8, 2015.

Results for all of the aforementioned tests are included in this test report for reference. As shown in the following Table, results from all three tests show VOC emissions concentrations far below the Proposed Rule 1188 limit of 500 ppm (Table 1).

Table 1. Summary of Vacuum Truck Testing for Municipal Sewer Transfers

Date	Vacuum Truck ID	VOC Emissions (ppm)	Proposed Rule 1188 Limit (ppm)
2/19/2015	Orange County Sanitation District	5	500
3/10/2015	Los Angeles County Sanitation District	9.5	500
4/8/2015	LA Sanitation	7.0	500

RESULTS

Table 2. VOC Emissions from Vacuum Trucks for Municipal Sewer Transfers

Vacuum Truck ID	Flow Rate (dscfm)	VOC Emissions M25.3 (ppm)	VOC Emissions THC* (ppm)	Proposed Rule 1188 Limit (ppm)	Mass Emissions (lb/hr)	Mass Emissions (lb/event)
Orange County Sanitation District	3140	5	2.25	500	0.036	0.0059
Los Angeles County Sanitation District	2426	9.5	11.6	500	0.057	0.0095
LA Sanitation	3132	7.0	6.0	500	0.054	0.0090

* Portable Total Hydrocarbon Analyzer

Table 3. Reduced Sulfur Compound Emissions from a Vacuum Truck for a Municipal Sewer Transfer

Vacuum Truck ID	Flow Rate (dscfm)	Reduced Sulfur Emissions (ppm)	Reduced Sulfur Emissions (lb/hr)	Reduced Sulfur Emissions (lb/event)
Orange County Sanitation District	3140			
Hydrogen Sulfide		0.022	3.73E-04	6.21E-05
Carbonyl Sulfide		0.011	3.28E-04	5.47E-05
Methyl Mercaptan		0.010	2.39E-04	3.99E-05

INTRODUCTION

Personnel from the South Coast Air Quality Management District (SCAQMD), Source Test Engineering Branch (STE) conducted source testing on vacuum trucks at three street locations in the South Coast Air Basin. The testing was conducted for information purposes to determine the applicability of including municipal sewer vacuum trucks in Proposed Rule 1188.

The Proposed Rule currently applies to Volatile Organic Compound (VOC) emissions from vacuum trucks at refineries, bulk plants, bulk and marine terminals, and organic liquid pipeline facilities. SCAQMD Staff were interested in exploring the possibility of expanding the Proposed Rule to include vacuum truck transfers from municipal sewage systems. Testing was coordinated with the Orange County Sanitation District, Los Angeles County Sanitation District, and LA Sanitation (City of Los Angeles).

Testing of the vacuum trucks was conducted for VOC emissions using SCAQMD Method 25.3 as it applies to stack sources by sampling through chilled vials into specially prepared 6-liter summa canisters. Each test consisted of 10-minute duplicate samples taken from the exhaust of the vacuum truck during a transfer event.

PROCESS OVERVIEW

A vacuum truck is a tank truck with a heavy duty vacuum designed to pneumatically load solids, liquids, sludge or slurry through suction lines typically 2-4" in diameter. The standard pump used in the industry is the rotary vane vacuum pump, but some are equipped with a positive displacement pump (PDP). The three trucks tested in this program were all the rotary vane type.

The truck can be configured to be a direct belt drive, or a hydraulic drive system. There are two different ways to mount the pump; either directly on the truck with the vacuum drive powered by the truck motor, or on the trailer with an independent motor. Each application has different handling characteristics, but all convey the material by producing a vacuum in the tank space without the pump directly contacting the materials.

Vacuum trucks are used by municipal governments and by commercial entities around the world (Figure 1).

Figure 1: Municipal Waste Vacuum Truck

Vacuum trucks are used in the petroleum industry for cleaning of storage tanks and spills. They are also an important part of drilling oil and natural gas wells, as they are located at the drilling site. Vacuum trucks are used to remove drilling mud, drilling cuttings, cement, spills, and for removal of brine water from production tanks. They dispose of this in sump pits or treatment plants.

All forms of sanitary waste disposal are handled by vacuum trucks. They are used to empty septage from cesspits, septic tanks, pit latrines and communal latrines, for street cleanup, for sewer clean out, and for individual septic systems and can also be used for cleanup of

contaminated soil. The trucks are used in the cleaning of sanitary sewer lift stations. Vacuum trucks are used to empty portable toilets. In commercial aviation, vacuum trucks are used to collect waste from airplane toilets. Vacuum trucks discharge these wastes to the sewer network, to a wastewater treatment plant, or in a pit for composting.

Emissions from the process can occur when volatile hydrocarbons are transferred during a vacuum event and subsequently discharged into the atmosphere through the pump or blower exhaust (Figure 2).

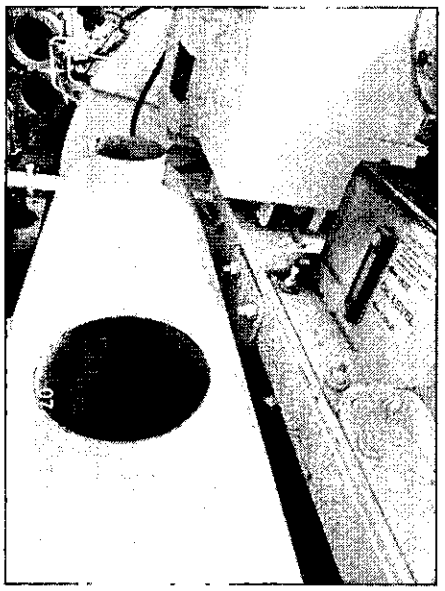


Figure 2: Vacuum Truck Exhaust Vent

Process Operating Conditions

The trucks were positioned with the inlet line fed through a manhole into a section of sewer pipe. The manholes are located in low sections of the sewer pipe where sediments tend to accumulate. Following a cycle of pressure blasting with water (to free up stuck sediments), the vacuum pump was started. The vacuum process was operated at a constant flow rate for a minimum of ten minutes at each site.

SAMPLING AND ANALYTICAL PROCEDURES

The testing of the vacuum trucks was conducted according to the following test matrix:

Unit	Testing Conducted
Vacuum Trucks	VOC & Fixed Gases Total Hydrocarbons Reduced Sulfur Compounds (Orange County site only)

Specially-prepared evacuated 6-liter summa canisters and condensate vials were used to sample for VOC. Fixed gases were sampled into an evacuated 6-liter canister to determine the molecular weight of the stack gases. Total hydrocarbons were monitored over the course of each test period with a total hydrocarbon (THC) analyzer. Reduced sulfur compounds were determined from a Tedlar bag sample taken at the Orange County test site. Flow rate was also determined so that the emissions could be reported on a mass basis as well as concentration. Further details of the methods are given in the following sections.

Stack Gas Velocity and Flow Rate

The velocity of the stack gas was measured at twelve points within the duct cross section of each vacuum truck according to SCAQMD Methods 1.1 and 2.1. This was performed using a calibrated Standard-type Pitot tube with a differential pressure manometer, and a type "K" thermocouple with a potentiometer (see Figure 3). The apparatus was checked for leaks both before and after use by introducing a pressure head and blocking the flow at the Pitot tip. An observation of the resulting stabilization in pressure at the manometer verified the absence of leaks in the system.

The exhaust ducts from the vacuum trucks were circular exhaust stack with diameters of either 6 or 8 inches. The sampling location was approximately one half stack diameters downstream and one half stack diameters upstream of the nearest flow disturbances (see Figure 3).

The volumetric flow rate was calculated for each sampling run using the stack's cross sectional area and average gas velocity. The flow rate was corrected to standard conditions by using the stack temperature and pressure along with the barometric pressure measured with by the nearest SCAQMD monitoring station. The flow rate was also corrected to dry conditions by determining gas stream moisture.

Stack Gas Moisture Content

As the majority of the gaseous exhaust consisted of ambient air, the stack gas moisture content was determined from the nearest SCAQMD monitoring station for the dates and times of each test.

SCAQMD Method 25.3 – Determination of Non-Methane Non-Ethane Hydrocarbons

Testing at the vacuum truck locations was conducted using SCAQMD Method 25.3. The sampling system consists of an in-stack filter, a probe, a Teflon line, a condensate trap, a flow controller, a vacuum gauge, a valve, and a canister (see Figure 5). Upon sampling, the canisters were returned to the lab and pressurized with nitrogen than analyzed within 24 hours of sampling. The traps are analyzed for total organic carbon by liquid injection into an infra-red total organic carbon analyzer. The canisters are analyzed for VOC as non-methane non-ethane organic compounds (NMNEOC) using the Method 25.1 approach. The analysis consists of foreflush and backflush of a gas chromatography (GC) column followed by an oxidizer, methanizer, and a flame ionization detector (FID). The GC separates the VOC component from the sample; the oxidizer converts the VOC to carbon dioxide; the methanizer converts the resulting carbon dioxide to methane. The results are determined by the FID in units of parts per million by volume as carbon (ppmC).

EPA Method 21 – Determination of Volatile Organic Compound Leaks

Continuous total hydrocarbon (THC) emissions were monitored according to EPA Method 21. Following the method, a portable instrument is used to detect VOC leaks from individual sources. The instrument detector type is not specified, but it must meet certain specifications and performance criteria contained in the method. In this case, the SCAQMD used a portable flame ionization detector (FID) that met these criteria.

SCAQMD Method 307-91 – Determination Sulfur in a Gaseous Matrix

SCAQMD Method 307-91 was used to determine reduced sulfur compound emissions at the Orange County site only. A sample was acquired from the truck tank exhaust stream into a clean, 10 liter Tedlar bag. Reduced sulfur compounds and SO_2 are separated by gas chromatography. These compounds are then combusted in a hydrogen-rich flame to yield sulfur monoxide and other products. The sulfur monoxide is reacted with ozone to yield sulfur dioxide, oxygen and light. The light is detected with a photomultiplier and the response is calibrated against previously run standards.

TEST CRITIQUE

The test results are considered to be measured accurately. The measured VOC emissions for the three tests ranged from 5.0 ppm to 9.5 ppm, which is far less than the Proposed Rule 1188 limit of 500 ppm.

The sampling locations for the vacuum truck exhausts were not ideal. The as-found ducting did not provide the minimum 2 diameters of straight run upstream of the sampling location to ensure fully developed uniform flow. In addition, there were no sampling ports. It was necessary to place the Pitot tube in the outlet of the exhaust duct in order to perform the velocity traverses. With this configuration, a standard-type Pitot tube was used to access differential pressure points that were a minimum of ½ the duct diameter inside the duct from the outlet.

The barometric pressure was determined from the SCAQMD monitoring station nearest to each of the test locations.

The static pressure in the exhaust duct could not be recorded during the tests due to the brevity of each test event. Using the exhaust flow rate, velocity, duct dimensions, gas densities, and frictional/dynamic loss coefficients, the static pressures were determined for the tests.

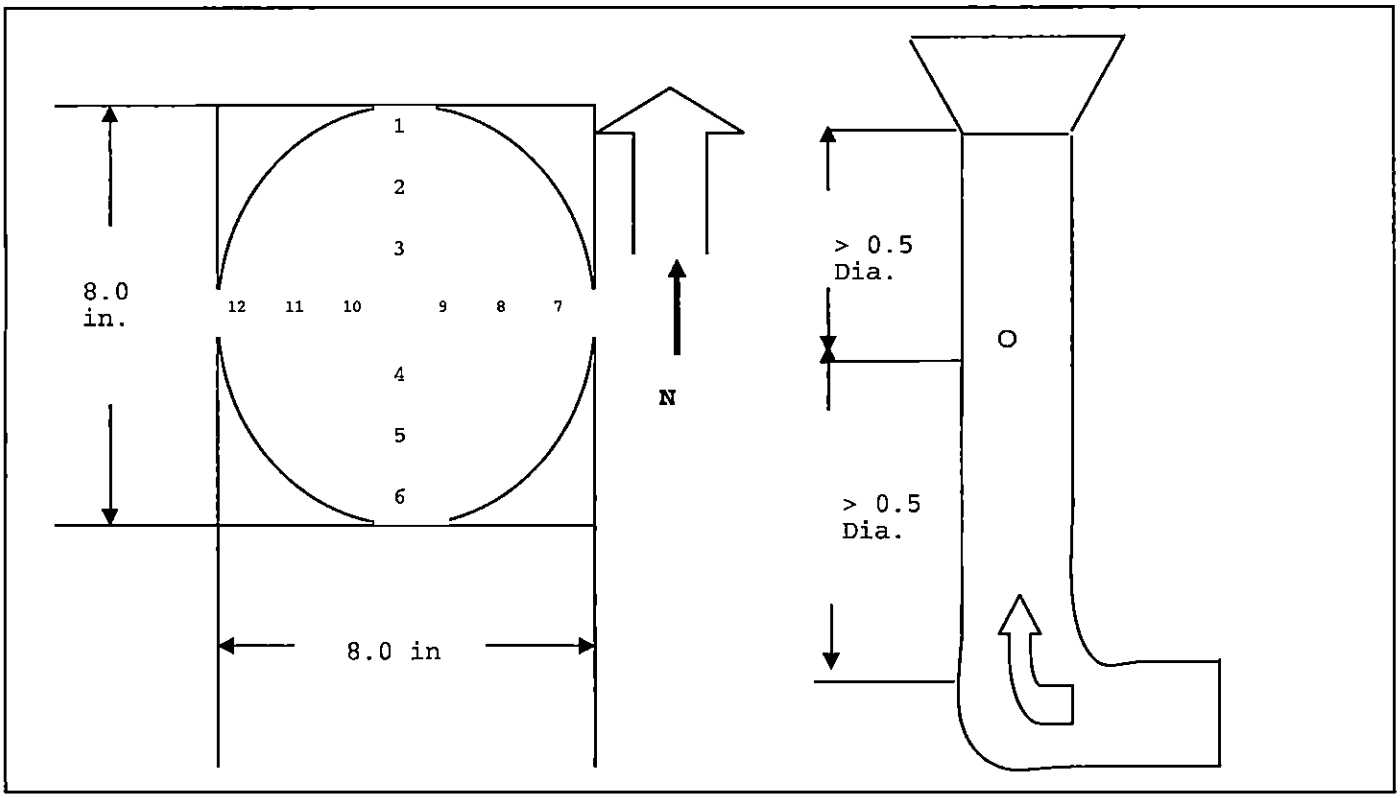
Due to the short duration of each vacuum transfer, there was not enough time to conduct a moisture train. As the majority of the exhaust stream consisted of air, the moisture content was assumed to be ambient. The moisture fraction was determined from relative humidity and temperature acquired from the SCAQMD monitoring station nearest to each of the test locations.

Duplicate sample analyses for the Orange County Sanitation District and Los Angeles City Sanitation District tests showed trap results that were greater than 20% of the duplicate average. In the first instance, the higher of the two results was eliminated due to suspected sample contamination. In addition, the higher value is a statistical outlier (> 3 SD from the mean of all data). For the LA Sanitation sample, the higher of the two results was used in the calculations as a worst case scenario.

The deviations from the reference methods described above are not considered to have a significant effect on the accuracy of the test results. The results are, therefore, considered valid for use in emissions estimates for these sources.

FIGURES

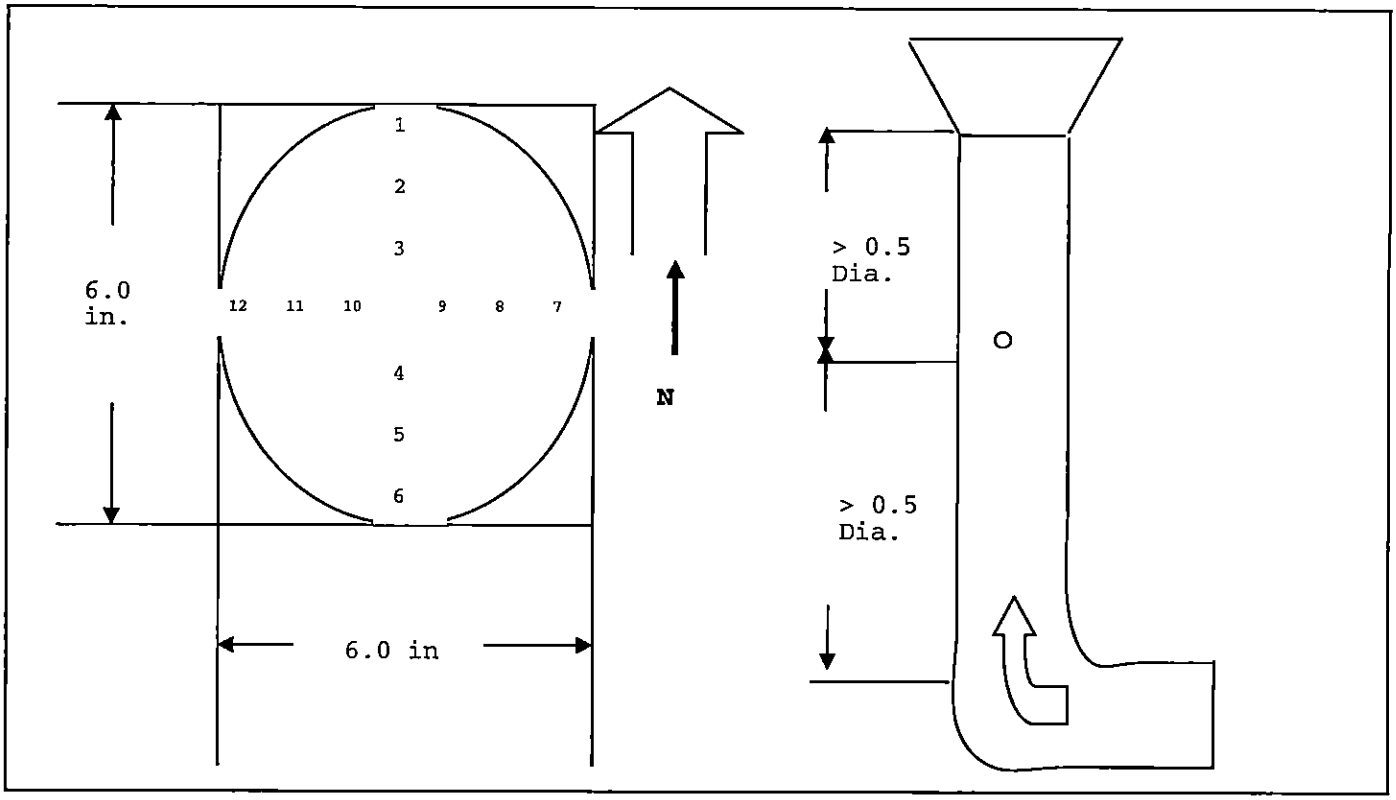
Stack Orientation: Vertical, Circular



Traverse Point Number	Distance from inner stack wall (in.)
1, 7	0.5
2, 8	1.2
3, 9	2.4
4, 10	5.6
5, 11	6.8
6, 12	7.7

Figure 3: Orange County and LA City Sanitation District Vacuum Truck 2-Port Sampling Locations

Stack Orientation: Vertical, Circular



Traverse Point Number	Distance from inner stack wall (in.)
1, 7	0.5
2, 8	0.9
3, 9	1.8
4, 10	4.2
5, 11	5.1
6, 12	5.7

Figure 4: LA County Sanitation District Vacuum Truck 2-Port Sampling Locations

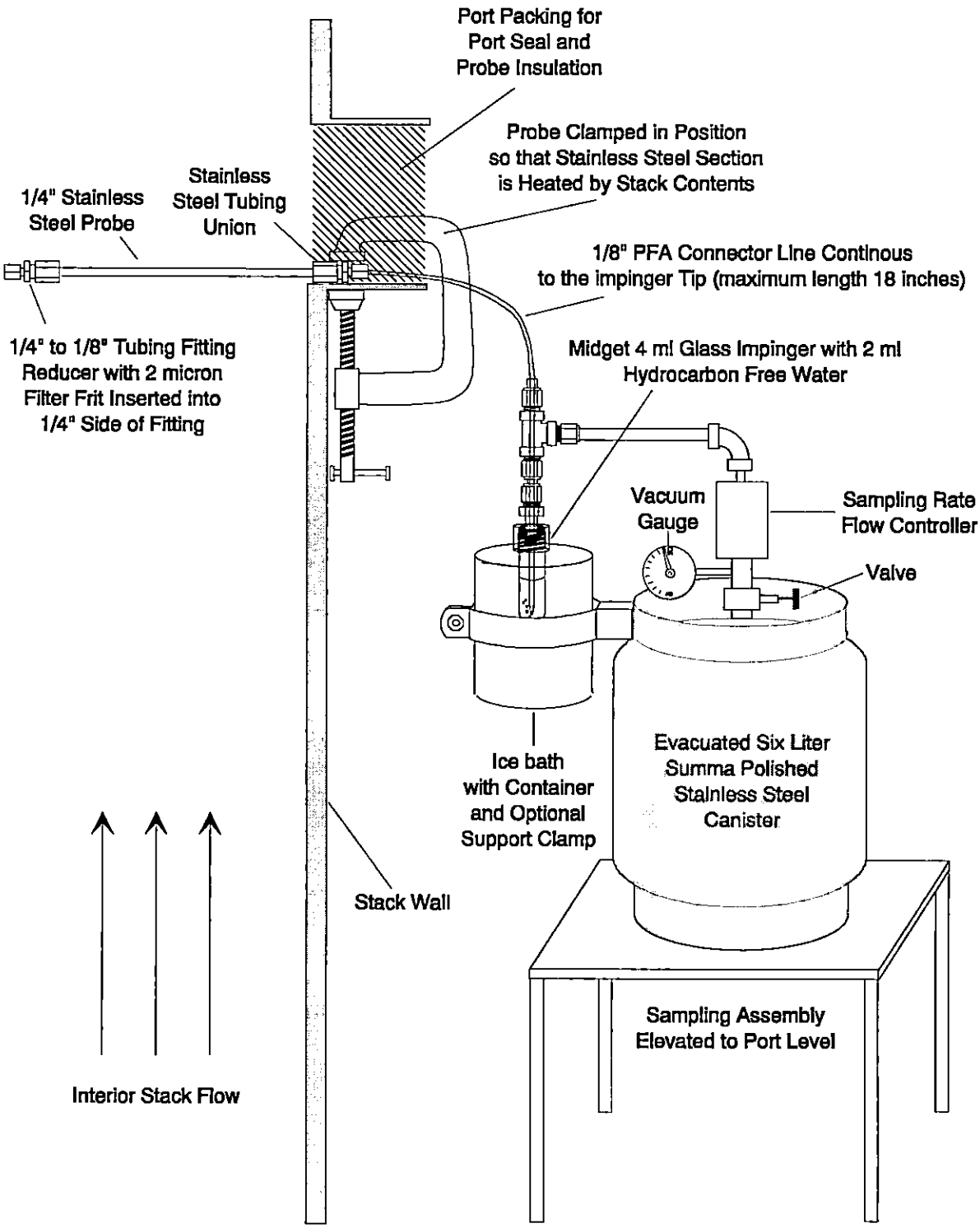


Figure 5: SCAQMD Method 25.3 for NMNEHC Sampling Train

CALCULATIONS

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 15-321 Test Date: 2/19/15

SOURCE TEST CALCULATIONS

Sampling Location: OCSD Manhole Vacuum Truck
Sample Train: Input by: B. Welch

SUMMARY

A. Average Traverse Velocity	160.60	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters)		deg F
C. Gas Meter Correction Factor		
D. Average Orifice Pressure		"H_2O
E. Nozzle Diameter		inch

F1. Stack Diameter or Dimension #1	8	inch	M. Pitot Correction Factor	1.00	
F2. Stack Dim #2 (blank if circular)		inch	N. Sampling Time	10	min
G. Stack Cross Sect. Area	0.349	ft2	O. Nozzle X-Sect. Area	0.00000	ft
H. Average Stack Temp	89.3	deg F	P. Net Sample Collection	0	mg
I. Barometric Pressure	29.90	"HgA	Q. Net Solid Collection	0	mg
J. Gas Meter Pressure (I+(D/13.6))	29.90	"HgA	R. Water Vapor Condensed	12.72	ml
K. Static Pressure	-0.16	"H_2O	S. Gas Volume Metered	35.315	dcf
L. Total Stack Pressure (I+(K/13.6))	29.89	"HgA			

T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C	35.315	dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))	1.64	%

V. Average Molecular Weight (Wet):

Component	Vol. Fract.	x	Moist. Fract.	x	Molecular Wt.	=	Wt./Mole
Water	0.016		1.000		18.0		0.30
Carbon Dioxide	0.001	Dry Basis	0.984		44.0		0.03
Carbon Monoxide	0.000	Dry Basis	0.984		28.0		0.00
Oxygen	0.201	Dry Basis	0.984		32.0		6.31
Nitrogen & Inerts	0.799	Dry Basis	0.984		28.2		22.16
					Sum		28.79

FLOW RATE

W. Gas Density Correction Factor (28.95/V)^.5	1.00	
X. Velocity Pressure Correction Factor (29.92/L)^.5	1.00	
Y. Corrected Velocity (A x M x W x X)	161.12	fps
Z. Flow Rate (Y x G x 60)	3375	cfm
AA. Flow Rate (Standard) {Z x (L/29.92) x [520/(460+H)]}	3191	scfm
BB. Dry Flow Rate (AA x (U/100))	3139	dscfm

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Test Nos. 15-321, 15-322, 15-324 -18- Test Dates: February 19, 2015
March 10, 2015
April 8, 2015

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 15-322 Test Date: 3/10/15

SOURCE TEST CALCULATIONS

Sampling Location: LA County SD Manhole Vacuum Truck
Sample Train: Input by: B. Welch

SUMMARY

A. Average Traverse Velocity	132.95	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters)		deg F
C. Gas Meter Correction Factor		
D. Average Orifice Pressure		"H_2O
E. Nozzle Diameter		inch

F1. Stack Diameter or Dimension #1..	6	inch	M. Pitot Correction Factor	1.00	
F2. Stack Dim #2 (blank if circular)		inch	N. Sampling Time	10	min
G. Stack Cross Sect. Area	0.196	ft2	O. Nozzle X-Sect. Area	0.00000	ft
H. Average Stack Temp	203.1	deg F	P. Net Sample Collection	0	mg
I. Barometric Pressure	29.80	"HgA	Q. Net Solid Collection	0	mg
J. Gas Meter Pressure (I+(D/13.6))	29.80	"HgA	R. Water Vapor Condensed	9.85	ml
K. Static Pressure	-0.16	"H_2O	S. Gas Volume Metered	0.000	dcf
L. Total Stack Pressure (I+(K/13.6))	29.79	"HgA			

T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C	35.315	dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))	1.28	%

V. Average Molecular Weight (Wet):

Component	Vol. Fract.	x	Moist. Fract.	x	Molecular Wt.	=	Wt./Mole
Water	0.013		1.000		18.0		0.23
Carbon Dioxide	0.001	Dry Basis	0.987		44.0		0.04
Carbon Monoxide	0.000	Dry Basis	0.987		28.0		0.00
Oxygen	0.201	Dry Basis	0.987		32.0		6.35
Nitrogen & Inerts	0.798	Dry Basis	0.987		28.2		22.22
					Sum		28.84

FLOW RATE

W. Gas Density Correction Factor (28.95/V)^.5	1.00	
X. Velocity Pressure Correction Factor (29.92/L)^.5	1.00	
Y. Corrected Velocity (A x M x W x X)	133.50	fps
Z. Flow Rate (Y x G x 60)	1573	cfm
AA. Flow Rate (Standard) {Z x (L/29.92) x [520/(460+H)]}	1228	scfm
BB. Dry Flow Rate (AA x (U/100))	1212	dscfm

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Dr. Diamond Bar, California 91765-4182

Test No. 15-324 Test Date: 4/08/15

SOURCE TEST CALCULATIONS

Sampling Location: LA City SD Manhole Vacuum Truck
Sample Train: Input by: B. Welch

SUMMARY

A. Average Traverse Velocity	162.56	fps
B. Gas Meter Temperature (Use 60 deg.F for Temp Comp. Meters)		deg F
C. Gas Meter Correction Factor		
D. Average Orifice Pressure		"H_2O
E. Nozzle Diameter		inch

F1. Stack Diameter or Dimension #1..	8	inch	M. Pitot Correction Factor	1.00	
F2. Stack Dim #2 (blank if circular)		inch	N. Sampling Time	10	min
G. Stack Cross Sect. Area	0.349	ft2	O. Nozzle X-Sect. Area	0.00000	ft
H. Average Stack Temp	99.4	deg F	P. Net Sample Collection	0	mg
I. Barometric Pressure	29.70	"HgA	Q. Net Solid Collection	0	mg
J. Gas Meter Pressure (I+(D/13.6))	29.70	"HgA	R. Water Vapor Condensed	6.22	ml
K. Static Pressure	-0.16	"H_2O	S. Gas Volume Metered	0.000	dcf
L. Total Stack Pressure (I+(K/13.6))	29.69	"HgA			

T. Corrected Gas Volume [(S x J/29.92) x 520/(460+B) x C	35.315	dscf

PERCENT MOISTURE/GAS DENSITY

U. Percent Water Vapor in Gas Sample ((4.64 x R)/((0.0464 x R) + T))	0.81	%

V. Average Molecular Weight (Wet):

Component	Vol. Fract.		x	Moist. Fract.	x	Molecular Wt.		=	Wt./Mole
Water	0.008			1.000		18.0	,		0.15
Carbon Dioxide	0.001	Dry Basis		0.992		44.0	,		0.03
Carbon Monoxide	0.000	Dry Basis		0.992		28.0	,		0.00
Oxygen	0.201	Dry Basis		0.992		32.0	,		6.38
Nitrogen & Inerts	0.798	Dry Basis		0.992		28.2	,		22.33
							,		
							Sum		28.89

FLOW RATE

W. Gas Density Correction Factor (28.95/V)^.5	1.00	
X. Velocity Pressure Correction Factor (29.92/L)^.5	1.00	
Y. Corrected Velocity (A x M x W x X)	163.38	fps
Z. Flow Rate (Y x G x 60)	3422	cfm
AA. Flow Rate (Standard) {Z x (L/29.92) x [520/(460+H)]}	3156	scfm
BB. Dry Flow Rate (AA x (U/100))	3130	dscfm

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Test Nos. 15-321, 15-322, 15-324 Test Dates: February 19, 2015
March 10, 2015
April 8, 2015

OCSD 2/19/15

	Canister	Impinger/Trap	Total	Final	Diff. from mean
Sample 1	0	22	22	23.892	0.00%
Sample 2	0	22	22	23.892	0.00%
Stack Oxygen:	20.05				
Exhaust Flow	3140				

Note: the 1.086 bias factor is only for 25.3, not 25.1

mean 22

Average: 23.892

% O2 to adjust to:

Adjusted Concentration:

Mass emissions: 0.170536564

Note: The mass emission calculation uses the MW of 14.36, as per Method 25.3.

LACOUNTSD 3/10/15

	Canister	Impinger/Trap	Total	Final	Diff. from mean
Sample 1	0	11	11	11.946	15.79%
Sample 2	0	8	8	8.688	-15.79%
Stack Oxygen:	20.1				
Exhaust Flow	2426				

Note: the 1.086 bias factor is only for 25.3, not 25.1

mean 9.5

Average: 10.317

% O2 to adjust to:

Adjusted Concentration:

Mass emissions: 0.056895718

Note: The mass emission calculation uses the MW of 14.36, as per Method 25.3.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Test Nos. 15-321, 15-322, 15-324 -21- Test Dates: February 19, 2015
March 10, 2015
April 8, 2015

LACITSD 4/8/15

	Canister	Impinger/Trap	Total	Final	Diff. from mean
Sample 1	0	7	7	7.602	0.00%
Sample 2	0	7	7	7.602	0.00%
Stack Oxygen:	20.1				
Exhaust Flow	3132				

Note: the 1.086 bias factor is only for 25.3, not 25.1

mean 7

Average: 7.602

% O2 to adjust to:

Adjusted Concentration:

Mass emissions: 0.054123388

Note: The mass emission calculation uses the MW of 14.36, as per Method 25.3.

APPENDICES

Equipment Information, Field Data, Calibration Data, and Laboratory Results

APPENDIX A

Field Data

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

South Coast Air Quality Management District

Test No. 15-321 Company: OCSD Date: 2/19/15
Sampling Location: Vacuum Truck @ sewer manhole Sample Train: ____

Traverse Source Test Data

Pre-Test Leak Check:
Filter: ____ cfm @ ____ "Hg vac
Probe: ____ cfm @ ____ "Hg vac
Pitot Tube Leak Check: (Pass) / Fail

Post-Test Leak Check:
Filter: ____ cfm @ ____ "Hg vac
Probe: ____ cfm @ ____ "Hg vac
Pitot Tube Leak Check: (Pass) / Fail

Time	Sample Point #	Gas Meter Reading (dcf) Start OVA	Stack Velocity Head ("H_2O)	Stack Temp. °F	Velocity (fps)	Calculated Sampling Rate (cfm)	Orifice ΔP ("H_2O)	Probe Temp. °F	Filter Temp °F	Imp. Temp. °F	Meter Temp. °F In	Meter Temp. °F Out	Vacuum "Hg
9:59	1	2.5	5.5	61.4									
	2	2.0	5.5	87									
	3		5.5	88									
	4		5.5	89									
	5		5.5	90									
	6		5.7	91									
	7		5.7	91									
	8		5.5	92									
	9		5.8	94									
	10		5.5	94									
	11		5.8	94									
	12		5.5	94									
(Net Vol. Uncorr.)			Avg										

H_2O 12.72 g/m³

ANAHEIM

Canisters 9:59 → 10:09

sulphur Bag #1

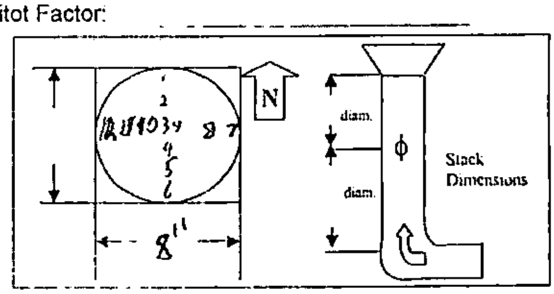
K-Factor: ____ Stack Moisture: ____ Canister #: ____ Start: ____ "Hg vac

Nozzle Diameter:
Barometric Pressure: 29.9 HgA
Static Pressure in Stack: +/- ... = 0.16 "H_2O

Recorded By: ____
Pitot Factor: ____

Calibration Data

Inclined Manometer		(Cal: N/A)
Magnehelic No.		(Cal:)
Pitot Tube No.	20108	(Cal: 2/17/15)
Potentiometer No	N0315	(Cal 2/17/15)
Thermocouple No		(Cal)
Gas Meter No.		(Cal)
Meter Corr. Factor		



Sampling Probe: Stainless Steel / Borosilicate / Quartz

Stack: Horizontal / Vertical

Rectangular / Circular

Revision 01-09

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
METHOD 25.3 TEST DATA SHEET

Date: 2/19/15 Page No.: _____

Test No.: 15-321 Recorded By: _____

Company/Sampling Location: Orange County Sanitation District - Church & Walnut

Basic and Control Equipment: Vacuum truck at sewer manhole

Barometric Pressure: _____ "HgA Static Pressure: +/- _____ "H_2O

SAMPLE A

Tank #: 54774 Vial #: 1 Reg. #: _____

Pre-Test Leak Check: Gauge: 30 (Pass) / Fail

Post-Test Leak Check: Gauge: 2 (Pass) / Fail

Time	Vacuum ("Hg)	Flow (cc/min)	Comments
959 AM	30		
1009	2		

SAMPLE B

Tank #: 54164 Vial #: 2 Reg. #: _____

Pre-Test Leak Check: Gauge: 30 (Pass) / Fail

Post-Test Leak Check: Gauge: 11 (Pass) / Fail

Time	Vacuum ("Hg)	Flow (cc/min)	Comments
959 AM	30		
1009	11		

Approximate Time To Fill Tank (minutes)	20	30	40	50	60	90	120
ΔP Setting	62 (max.)	30	21	14	8	5	2

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

South Coast Air Quality Management District

Test No. 15-322 Company: LA City San. Dist. Date: 3/10/15
Sampling Location: Sewer man hole Vacuum truck exhaust Sample Train: ______

Traverse Source Test Data

Pre-Test Leak Check:
Filter: ______ cfm @ ______ "Hg vac
Probe: ______ cfm @ ______ "Hg vac
Pitot Tube Leak Check: Pass / Fail

Post-Test Leak Check:
Filter: ______ cfm @ ______ "Hg vac
Probe: ______ cfm @ ______ "Hg vac
Pitot Tube Leak Check: Pass / Fail

Time	Sample Point #	~~Gas~~ Meter Reading (dcf) Start: VOC	Stack Velocity Head ("H_2O)	Stack Temp. °F	Calculated Velocity (fps)	Calculated Sampling Rate (cfm)	Calculated Orifice ΔP ("H_2O)	Probe Temp. °F	Filter Temp. °F	Imp. Temp. °F	Meter Temp. °F In	Meter Temp. °F Out	Vacuum "Hg
	1	5	0.5	63.4	13.1	2.7	263						
	2	10	2.2	127	13.9	2.7	267						
	3	8	2.3	166	17.1	2.5	270						
	4		3.9	181	13.2	4.3	271						
	5		4.0	205	12.9	5.2	273						
	6		4.2	217	4.8	4.9	274						
	7		2.2	227						PiCO	RiV		
	8	14	4.0	237									
	9	14.1	4.9	244									
	10	14.1	4.3	252									
	11	13.9	3.9	257									
	12	13.6	2.8	261									
(Net Vol. Uncorr.)			Avg.										

(circled) H_2O 14.81 g/M³

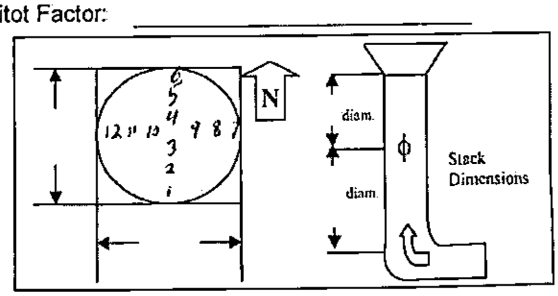
Before After
VOC Background 1.6 & 2.0

K-Factor: ______ Stack Moisture: ______ Canister #: ______ Start: ______ "Hg vac

Nozzle Diameter: ______ Recorded By: [initials]
Barometric Pressure: 29.8 "HgA Pitot Factor: ______
Static Pressure in Stack: (+)/- ~~0.2~~ -0.16 "H_2O GW

Calibration Data

Inclined Manometer		(Cal: N/A)
Magnehelic No.	30625	(Cal:)
Pitot Tube No.	20108	(Cal: 2/17/15)
Potentiometer No.	N0316	(Cal: 2/17/15)
Thermocouple No.		(Cal:)
Gas Meter No.		(Cal:)
Meter Corr. Factor:		



Sampling Probe: Stainless Steel / Borosilicate / Quartz

Stack: Horizontal / Vertical Rectangular / Circular

Revision 01/09

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
METHOD 25.3 TEST DATA SHEET

Date: 3/10/15 Page No.: 3/10/15

Test No.: 15-322 Recorded By: [signature]

Company/Sampling Location LA County Sanitation District

Basic and Control Equipment Sewer manhole - vacuum truck

Barometric Pressure: _____ "HgA Static Pressure: +/- _____ "H_2O

SAMPLE A

Tank #: 54187 Vial #: 15 Reg. #: _____

Pre-Test Leak Check: Gauge: -30

(Pass) / Fail

Post-Test Leak Check: Gauge: _____

Pass / Fail

Time	Vacuum ("Hg)	Flow (cc/min)	Comments
9:30 Am	30		
9:35	22		
9:40	13		

SAMPLE B

Tank #: 54099 Vial #: 14 Reg. #: _____

Pre-Test Leak Check: Gauge: -30

(Pass) / Fail

Post-Test Leak Check: Gauge: _____

Pass / Fail

Time	Vacuum ("Hg)	Flow (cc/min)	Comments
9:30 Am	30		
9:35	12		
9:40	0		

Approximate Time To Fill Tank (minutes)	20	30	40	50	60	90	120
ΔP Setting	62 (max.)	30	21	14	8	5	2

South Coast Air Quality Management District

Test No. 15-324 Company: LA City - Sanitation District Date: 4/8/15
Sampling Location: manhole at Empyrean Way/Century Hill Sample Train: ________

Traverse Source Test Data

Pre-Test Leak Check:
Filter: ______ cfm @ ______ "Hg vac
Probe: ______ cfm @ ______ "Hg vac
Pitot Tube Leak Check: Pass / Fail

Post-Test Leak Check:
Filter: ______ cfm @ ______ "Hg vac
Probe: ______ cfm @ ______ "Hg vac
Pitot Tube Leak Check: Pass / Fail

Time	Sample Point #	Gas Meter Reading (dcf) Start: VOC	Stack Velocity Head ("H_2O)	Stack Temp. °F	Calculated Velocity (fps)	Calculated Sampling Rate (cfm)	Calculated Orifice ΔP ("H_2O)	Probe Temp. °F	Filter Temp. °F	Imp. Temp. °F	Meter Temp. °F In	Meter Temp. °F Out	Vacuum " Hg
1025	1	2.65	8.0	70.7									
	2	2.69	5.0	77.5									
	3	6.29	7.0	85.7									
	4	6.78	5.0	97.9									
	5	7.21	4.7	101.2									
	6	7.68	6.5	102.1									
	7	7.97	6.4	105.7									
	8	1.53	4.7	113.6									
	9	8.31	7.5	114.0									
	10	5.65	4.6	107.2									
	11	5.21	5.5	107.8									
	12	5.58	7.5	110.0									
(Net Vol. Uncorr.)			Avg.										

H_2O 6.22" 8/11 LA

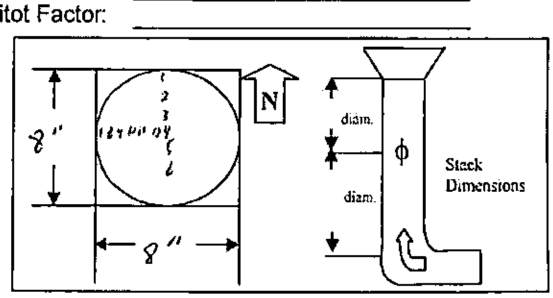
K-Factor: ________ Stack Moisture: ________ Canister #: ________ Start: ________ "Hg vac

Nozzle Diameter: ________ "
Barometric Pressure: 29.7 " HgA
Static Pressure in Stack: +/- ~~0.5~~ -0.16 " H_2O BW

Recorded By: ________
Pitot Factor: ________

Calibration Data

Inclined Manometer		(Cal: N/A)
Magnehelic No.		(Cal:)
Pitot Tube No.	20108	(Cal: 2/17/15)
Potentiometer No.	N0315	(Cal: 3/20/15)
Thermocouple No.	20108	(Cal: 2/17/15)
Gas Meter No.		(Cal:)
Meter Corr. Factor:		



Sampling Probe: Stainless Steel / Borosilicate / Quartz

Stack: Horizontal / Vertical Rectangular / Circular

Revision 01/09

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
METHOD 25.3 TEST DATA SHEET

Date: 4/8/15 Page No.: _____

Test No.: 15-324 Recorded By: BL

Company/Sampling Location LA & City SANITATION DISTRICT

Basic and Control Equipment STREET CITY MANHOLE EMPYREAN WAY / CENTURY HILL

Barometric Pressure: 29.74 "HgA Static Pressure: +/- _____ "H_2O

SAMPLE A

54/055

Tank #: _____ Vial #: 2 Reg. #: _____

Pre-Test Leak Check: Gauge: _____ Pass / Fail

Post-Test Leak Check: Gauge: _____ Pass / Fail

Time	Vacuum ("Hg)	Flow (cc/min)	Comments
10:01			
0	30		
	29		
	25		
	23		
	22		
	21		
	20		
10:09			

SAMPLE B

54110

Tank #: _____ Vial #: 3 Reg. #: _____

Pre-Test Leak Check: Gauge: _____ Pass / Fail

Post-Test Leak Check: Gauge: _____ Pass / Fail

Time	Vacuum ("Hg)	Flow (cc/min)	Comments
10:01			
	30		
	21		
	14		
	11		
	9		
	5		
	4		
10:09			

Approximate Time To Fill Tank (minutes)	20	30	40	50	60	90	120
ΔP Setting	62 (max.)	30	21	14	8	5	2

APPENDIX B

Calibration Records

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
THERMOCOUPLE - POTENTIOMETER CALIBRATION

INDEX

PAGE NO.	STQC# POTENTIOMETER/ 2-LEADWIRES	STQC# THERMOCOUPLES	CAL DATE / CAL DUE	CAL. TYPE *	COMMENTS
26	N0315 20108	20108 50112	2-17-15	M1 M2 SA	
27 28	C0301 N0315	20108 50112	3-30-15	M1 M2 SA	
29	N0113 N0311	N0113	9-2-15	M1 M2 SA	
				M1 M2 SA	
				M1 M2 SA	
				M1 M2 SA	
				M1 M2 SA	
				M1 M2 SA	

* M1 = First Bimonthly, M2 = Second Bimonthly, SA = Semiannual.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
PITOT TUBE CALIBRATION

Date : Sept. 2-2015
Calibrated by : T Nguyen
At : HQ

S-Type STQC# : V0413
OD : 3/8 Length : 6'

Standard S/N : NA
Cp (STD): 0.99
OD : 3/8" Length : 4 ft

A-Side Calibration				
ΔP_{STD} (in.H2O)	ΔP_{S} (in.H2O)	Cp (S)	Dev.	95% CI
Geometrical Check is OK				
Average : $\overline{Cp}$ (A)		0.84		

B-Side Calibration				
ΔP_{STD} (in.H2O)	ΔP_{S} (in.H2O)	Cp (S)	Dev.	95% CI
Average : $\overline{Cp}$ (B)				

$Cp\ (S) = Cp\ (STD)\sqrt{\frac{\Delta P_{STD}}{\Delta P_{S}}}$ Remarks:

Dev. = Cp (S) - $\overline{Cp}$ (must be < 0.01)

$\overline{Cp}$ (A) - $\overline{Cp}$ (B) = _____ (must be < 0.01)

APPENDIX C

Laboratory Results

SOURCE TEST REQUEST FOR EQUIPMENT/ANALYSIS

Company: Orange County Sanitation District
Source Test No.: 15-321
Address: TBD (street manhole location)
Request Date: February 10, 2015
Basic Equipment: Vacuum Truck
Control Device: N/A
Analysis/Equipment Requested By: Eric Padilla
Date Equipment Needed: February 18, 2015
For Compliance, Rule(s): PR 1188
Other (specify):

SAMPLE EQUIPMENT REQUEST

Prep Reference:
Prep Laboratory No.: 1504121
Dry Ice Needed: ☐

Quantity and Description	I.D. Nos. 54164
I { Two pairs of 25.3 setups (4 canisters)	Canister Nos: 54317, ~~54662~~
Two Tedlar bags	54251 ~~54586~~, 54774
	12 Vials (Nos. 1 - To No. 12)
	2 Tedlar bags. Nos. 1, 2
	Reference: Blue Book No 5
	Page No 88.

SAMPLE EQUIPMENT ANALYSIS REQUEST

Source Test No.: 09-290
Analysis Laboratory No.: 1505013

Sample Description	Analysis Requested: Tedlar Bag
25.3 setups	VOC
Tedlar bags Bag #1	H_2S
54774 vial #1	
II 54164 vial #2	

SAMPLE EQUIPMENT CHAIN OF CUSTODY

Sample Equipment #	From	To	For (S/T, Analysis, Cleanup, Not Used)	Date	Time
I	[signature]	[signature]	S T	2-18-15	10:10
II	S&T	[signature]	LAB-Analysis	2-19-15	12:45

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Mike Garibay, Supervising AQ Engineer
Monitoring/Source Testing

LABORATORY NO 1505014

DATE RECEIVED 02/19/2015

SAMPLE DESCRIBED AS
Two 6L Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Orange County Sanitation District
TBD (street manhole location)
NA

ST NO / PROJECT 15-321

Carbon monoxide (CO), methane (CH_4), carbon dioxide (CO_2), ethane (C_2H_6), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

Type	Canister	Canister
Number	54774	54164
Pressure (Torr)	721	494
CO, ppm	< 1	< 1
CH_4, ppm	3	3
CO_2, ppm	652	624
Ethane, ppmvC	< 1	< 1
NM/NEOC, ppmvC	< 1	< 1

Date Approved: 9/30/15

Approved By: Rudy Eden

Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS	**LABORATORY NO**	1505014
Two 6L Canisters	**REQUESTED BY**	Eric Padilla

Carbon monoxide (CO), methane (CH_4), carbon dioxide (CO_2), ethane (C_2H_6), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

QUALITY CONTROL -- End of run control recovery

CC91340	MDL	Theoretical	Measured	Percent Difference	QC Limit ±5% or ± 1
CO, ppmvC	0.3	10.40	10.25	-1.41	PASS
CH_4, ppmvC	0.3	10.17	10.27	1.01	PASS
CO_2, ppmvC	0.4	10.38	10.56	1.73	PASS
C_2H_4, ppmvC	0.4	NA	NA	NA	NA
C_2H_6, ppmvC	0.2	11.00	10.06	-8.55	PASS
NM/NEOC, ppmvC	0.2	10.64	10.38	-2.48	PASS

CC135067	MDL	Theoretical	Measured	Percent Difference	QC Limit ±5% or ± 1
CO, ppmvC	0.3	10100	10075	-0.25	PASS
CH_4, ppmvC	0.3	10000	9972	-0.28	PASS
CO_2, ppmvC	0.4	10100	10111	0.11	PASS
C_2H_4, ppmvC	0.4	NA	NA	NA	NA
C_2H_6, ppmvC	0.2	9900	9858	-0.42	PASS
NM/NEOC, ppmvC	0.2	10000	9943	-0.57	PASS

DATE ANALYZED 02/26/2015
REFERENCE NO: 15QM2AA
QM2-101-49

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Mike Garibay, Supervising AQ Engine
Monitoring/Source Testing

LABORATORY NO 1505014

DATE RECEIVED 02/19/2015

SAMPLE DESCRIBED AS
Two 6L Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Orange County Sanitation District
TBD (street manhole location)
NA

ST NO / PROJECT 15-321

VOC by Total Organic Carbon

Type	Canister	Canister
Number	54774	54164
Pressure (Torr)	721	494
Type	Vial	Vial
Number	1	2
TOC, ppmC	5	22

Date Approved: 9/25/15 Approved By:

Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS Two 6L Canisters

LABORATORY NO 1505014

REQUESTED BY Eric Padilla

VOC by Total Organic Carbon.

QUALITY CONTROL: Pre and post recovery

QC check must bracket sample concentration

	MDL	Theoretical	Measured	Percent Difference	QC Limit ±10%
TC, ppmC	1	10.00	11.28	-12.75	FAIL
IC, ppmC	1	10.00	10.65	-6.50	PASS
TC, ppmC	1	10.00	9.40	6.05	PASS
IC, ppmC	1	10.00	11.55	-15.45	FAIL

DATE ANALYZED 02/25/2015
REFERENCE NO 15TO20225B
TO2-26-71

1505014

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Mike Garibay, Supervising AQ Engineer
Monitoring/Source Testing

LABORATORY NO 1505014

DATE RECEIVED 02/19/2015

SAMPLE DESCRIBED AS
Two 6l. Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Orange County Sanitation District
TBD (street manhole location)
NA

ST NO / PROJECT 15-321

Percent hydrogen (H_2), nitrogen (N_2), oxygen (O_2) and methane (CH_4) by SCAQMD Method 10.1 (GC TCD).

Type	Canister	Canister
Number	54774	54164
Pressure (Torr)	721	494 [1]
H_2, percent	<0.2	<0.2
O_2, percent	20.3	19.8
N_2, percent	76.5	76.2
CH_4, percent	<0.2	<0.2

NOTE (1) Gas concentration total appears low. Sample was re-analyzed with the same results. Error was postulated to be either in the sample pressurization manifold or connector fitting.

Date Approved: 9/30/15

Approved By: Rudy Eden

Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS	LABORATORY NO	1505014
Two 6L Canisters	REQUESTED BY	Eric Padilla

Percent hydrogen (H_2), nitrogen (N_2), oxygen (O_2) and methane (CH_4) by SCAQMD Method 10.1 (GC TCD).

QUALITY CONTROL -- End of run control recovery

CC12089	MDL	Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
H_2, percent	0.2% abs	1.04	1.01	-0.03	PASS
O_2, percent	0.2% abs	1.01	1.02	0.02	PASS
N_2, percent	0.2% abs	0.99	1.15	0.2	PASS
CH_4, percent	0.2% abs	1.05	1.03	-0.02	PASS

CC73109	MDL	Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
H_2, percent	0.2% abs	0.00	0.00	NA	NA
O_2, percent	0.2% abs	24.63	24.47	-0.16	PASS
N_2, percent	0.2% abs	4.94	4.92	0.0	PASS
CH_4, percent	0.2% abs	0.00	0.00	NA	NA

DATE ANALYZED 2/26/2015
REFERENCE NO: 15TC3AA
TC3-18-107

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 4

TO Mike Garibay, Supervising AQ Engineer
Monitoring/Source Testing

LABORATORY NO 1505014

DATE RECEIVED 02/19/2015

SAMPLE DESCRIBED AS
Two 6L Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Orange County Sanitation District
TBD (street manhole location)
NA

ST NO / PROJECT 15-321

Hydrocarbon speciation, excluding aromatic compounds, by cryo GC FID (normalized to NM/NEOC)

Type	Canister	Canister
Number	54774	54164
Pressure (Torr)	721	494
C_3, ppmv	< 0.1	< 0.1
C_4, ppmv	< 0.1	< 0.1
C_5, ppmv	< 0.1	< 0.1
C_6, ppmv	< 0.1	< 0.1
C_7, ppmv	< 0.1	< 0.1
C_8, ppmv	< 0.1	< 0.1
C_9-C_{12}, ppmv	< 0.1	< 0.1

Note: The reported values include BTEX (benzene, toluene, ethylbenzene and xylenes).
Note: Because this sample was scrubbed through chilled water, speciation does not represent all of the VOCs in the sample.

Date Approved: 9/30/15

Approved By:
Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 2 of 4

SAMPLE DESCRIBED AS	LABORATORY NO	1505014
Two 6L Canisters	REQUESTED BY	Eric Padilla

Benzene, Toluene, Ethylbenzene, and Xylenes, by cryo GC FID
(normalized to NM/NEOC)

Type	Canister	Canister
Number	54774	54164
Pressure (Torr)	721	494
Benzene, ppmv	< 0.1	< 0.1
Toluene, ppmv	< 0.1	< 0.1
Ethylbenzene, ppmv	< 0.1	< 0.1
m+p-Xylenes, ppmv	< 0.1	< 0.1
o-Xylene, ppmv	< 0.1	< 0.1

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 3 of 4

SAMPLE DESCRIBED AS	**LABORATORY NO**	1505014
Two 6L Canisters	**REQUESTED BY**	Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by cryo GC FID, normalized to NM/NEOC.

QUALITY CONTROL – End of run control recovery

CC318590	MDL	Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Methane, ppmv	0.3	NA	NA	NA	NA
Ethylene, ppmv	0.2	5.03	5.00	-0.70	PASS
Ethane, ppmv	0.1	NA	NA	NA	NA
Propane, ppmv	0.1	3	2.99	-0.20	PASS
Isobutane, ppmv	0.1	3.1	3.19	2.84	PASS
n-Butane, ppmv	0.1	3.03	2.97	-1.85	PASS
Isopentane, ppmv	0.1	2.02	2.03	0.35	PASS
n-Pentane, ppmv	0.1	2.01	2.01	0.20	PASS
Hexane, ppmv	0.1	2.02	2.05	1.29	PASS
Heptane, ppmv	0.1	1.02	1.05	3.14	PASS
Octane, ppmv	0.0	1.01	1.04	3.07	PASS

Note: QC limit for heptane and octane is 15%

CC318590		Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Benzene, ppmv	0.2	5.03	5.07	0.83	PASS
Toluene, ppmv	0.0	1.01	1.03	1.88	PASS
Ethylbenzene, ppmv	0.1	1.01	1.05	3.47	PASS
m+p-Xylene, ppmv	0.1	1.014	1.03	1.38	PASS
o-Xylene, ppmv	0.1	1.01	1.03	2.08	PASS

DATE ANAYLYZED 3/19/2015
REFERENCE NO: 15FI4AA
FI4-101-103

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 4 of 4

SAMPLE DESCRIBED AS	LABORATORY NO	1505014
Two 6L Canisters	REQUESTED BY	Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by cryo GC FID, normalized to NM/NEOC.

QUALITY CONTROL -- End of run control recovery

FF135	MDL	Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Methane, ppmv	0.3	0	0	NA	NA
Ethylene, ppmv	0.2	505	507	0.34	PASS
Ethane, ppmv	0.1	0	0	NA	NA
Propane, ppmv	0.1	336	338	0.53	PASS
Isobutane, ppmv	0.1	0	1	NA	NA
n-Butane, ppmv	0.1	253.9	256	0.65	PASS
Isopentane, ppmv	0.1	0	1	NA	NA
n-Pentane, ppmv	0.1	202.6	203	0.34	PASS
Hexane, ppmv	0.1	163.7	164	0.25	PASS
Heptane, ppmv	0.1	100.2	100	0.27	PASS
Octane, ppmv	0.0	24.47	24.5	0.26	PASS

Note: QC limit for heptane and octane is 15%

CLM001646		Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Benzene, ppmv	0.2	104	102	-1.84	PASS
Toluene, ppmv	0.0	30.8	30.6	-0.65	PASS
Ethylbenzene, ppmv	0.1	31.2	31.3	0.21	PASS
m+p-Xylene, ppmv	0.1	31	30.9	-0.29	PASS
o-Xylene, ppmv	0.1	31	30.8	-0.67	PASS

DATE ANAYLYZED 3/19/2015
REFERENCE NO: 15FI4AA
FI4-101-103

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Dr., Diamond Bar, CA 91765-4182

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 1

TO Rudy Eden, Senior Enforcement Manager
Science & Technology Advancement

LABORATORY NO. 1505013-01

DESCRIBED AS
One Tedlar™ Bag

DATE RECEIVED 2/19/2015

SOURCE I.D. NO. 15-321

SAMPLING LOCATION
Orange County Sanitation District
Orange County, CA

REQUESTED BY Eric Padilla

PROJECT/ST NO. PR1188

Reduced Sulfur Compounds by SCAQMD 307-91

AQMD No.	Labeled as	Sampling point		(ppmV)
-01	Bag#1	Orange County	Hydrogen Sulfide	0.022
			Carbonyl Sulfide / SO_2	0.011
			Methyl Mercatpan	0.010

REF: AAC-150158 (Attached)

Date Approved: 2/25/15 Approved By:

Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

AAC# 150158

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
SAMPLE ANALYSIS REQUEST

☐ DISTRICT INFORMATION
☐ INVOICE SOURCE
LABORATORY NO.

TO: : OTHER: ☐

SOURCE NAME: SCAQMD I.D. No.

Source Address: 21865 Copley Drive City: Diamond Bar

Mailing Address: City: Zip: 91765

Contact Person: Joan Niertit Title: Principal, AQ Chemist Tel: 909-396-2174

Analysis Requested by: Joan Niertit Date: 02/19/2015

Approved by: Office: Budget #:

REASON REQUESTED: Court/Hearing Board ☐ Permit Pending ☐ Hazardous/Toxic Spill ☐

Suspected Violation Rule(s) Other ☐

Sample Collected by: Date: Time:

One tedlar bag # 1 77346

Analysis Requested: Please analyze for rsulfur compounds,

Relinquished by	Received by	Firm/Agency	Date	Time
[signature]	[signature]	AAC	02/19/15	1635

Remarks: Please send report to Joan Niertit
Requestors extension: Phone = 909-396-2174, FAX 909-396-2099

Special Notes: client

Atmospheric Analysis & Consulting, Inc.

CLIENT : South Coast Air Quality Management District
PROJECT NAME : SCAQMD
AAC PROJECT NO. : 150158
REPORT DATE : 2/20/2015

On February 19, 2015, Atmospheric Analysis & Consulting, Inc. received one (1) Tedlar Bag for Total Reduced Sulfur analysis by SCAQMD 307.91. Upon receipt, the sample was assigned a unique Laboratory ID number as follows:

Client ID	Lab No.
Bag #1	150158-77346

SCAQMD 307.91 Analysis – Up to a 1 mL aliquot of sample is injected into the GC/SCD for analysis following SCAMQD307.91 as specified in the SOW.

No problems were encountered during receiving, preparation, and/or analysis of this sample. The test results included in this report meet all requirements of the NELAC Standards and/or AAC SOP# AACI- SCAQMD 307.91.

I certify that this data is technically accurate, complete and in compliance with the terms and conditions of the contract. The Laboratory Director or his designee, as verified by the following signature, has authorized the release of the data contained in this hardcopy data package.

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

Marcus Hueppe
Laboratory Director

This report consists of 4 pages.

Page 1

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

Atmospheric Analysis & Consulting, Inc.

LABORATORY ANALYSIS REPORT

CLIENT	: SCAQMD	SAMPLING DATE	: 02/19/2015
PROJECT NO.	: 150158	RECEIVING DATE	: 02/19/2015
MATRIX	: AIR	ANALYSIS DATE	: 02/20/2015
UNITS	: ppmV	REPORT DATE	: 02/20/2015

Total Reduced Sulfur Compounds Analysis by SCAQMD 307.91

Client ID	Bag #1
AAC ID	150158-77346
Analyte	Result
Hydrogen Sulfide	0.022
Carbonyl Sulfide / Sulfur Dioxide	0.011
Methyl Mercaptan	0.010
Ethyl Mercaptan	< 0.005
Dimethyl Sulfide	< 0.005
Carbon Disulfide	< 0.005
Isopropyl Mercaptan	< 0.005
tert-Butyl Mercaptan	< 0.005
n-Propyl Mercaptan	< 0.005
Methylethylsulfide	< 0.005
sec-Butyl Mercaptan	< 0.005
Thiophene	< 0.005
iso-Butyl Mercaptan	< 0.005
Diethyl Sulfide	< 0.005
n-Butyl Mercaptan	< 0.005
Dimethyl Disulfide	< 0.005
2-Methylthiophene	< 0.005
3-Methylthiophene	< 0.005
Tetrahydrothiophene	< 0.005
Bromothiophene	< 0.005
Thiophenol	< 0.005
Diethyl disulfide	< 0.005
Total Unidentified Sulfur	< 0.005
Total Reduced Sulfurs as H_2S	0.032

All compound's concentrations expressed in terms of H_2S (TRS does not include COS and SO_2)
Sample Reporting Limit (SRL) is equal to Reporting Limit x Canister Dil. Fac. x Analysis Dil. Fac.
(J) - Analyte was detected below the PQL and should be considered estimated

Marcus Hueppe
Laboratory Director

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

Atmospheric Analysis & Consulting, Inc.

Quality Control/Quality Assurance Report
SCAQMD 307.91

Date Analyzed: 2/20/2015 **Instrument ID:** SCD#10
Analyst: ZD **Calib. Date:** 10/20/2014

Opening Calibration Verification Standard

	Resp. (area)	Result (ppbV)	% Rec *	% RPD ****
Initial	15124	497	99.4	NA
Duplicate	14935	491	98.2	1.3
Triplicate	14933	491	98.2	1.3

Method Blank

Analyte	Result
H2S	ND

Duplicate Analysis Sample ID 150158-77346 x(

Analyte	Sample Result	Duplicate Result	Mean	% RPD ***
H2S	23.0	21.3	22.2	7.8

Matrix Spike & Duplicate Sample ID 150158-77346 x2

Analyte	Sample Conc.	Spike Added	MS Result	MSD Result	MS % Rec **	MSD % Rec **	% RPD ***
H2S	11.1	250.0	248.2	248.2	95.1	95.1	0.0

Closing Calibration Verification Standard

Analyte	Std. Conc.	Result (ppbV)	% Rec **
H2S	500.0	477.4	95.5

** Must be 95-105%*
*** Must be 90-110%*
**** Must be < 10%*
***** Must be < 5% RPD from Initial result.*

Marcus Hueppe
Laboratory Director

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

SOURCE TEST REQUEST FOR EQUIPMENT/ANALYSIS

Company: Los Angeles County Sanitation District
Source Test No.: 15-322
Address: TBD (street manhole location)
Request Date: March 3, 2015
Basic Equipment: Vacuum Truck
Control Device: N/A
Analysis/Equipment Requested By: Eric Padilla
Date Equipment Needed: March 10, 2015
For Compliance, Rule(s): PR 1188
Other (specify):

SAMPLE EQUIPMENT REQUEST

Prep Reference:
Prep Laboratory No.: ~~150 6249~~ 150 6250
Dry Ice Needed: ☐

Quantity and Description	I.D. Nos.
Two pairs of 25.3 setups (4 canisters, 8 vials, 2 cups/cupholders)	Nos: 54055, 54066, 54099, 54178
	Vials Nos: 13, 14, 15, 16, 17, 18, 19, 20
	Reference: Blue Book No. 41
	Page No. 88

SAMPLE EQUIPMENT ANALYSIS REQUEST

Source Test No.: 15-322
Analysis Laboratory No.: 150613

Sample Description	Analysis Requested
25.3 setups	VOC, fixed gases
used 54187 (vial 15)	
54099 (vial 14)	
others not used	

SAMPLE EQUIPMENT CHAIN OF CUSTODY

Sample Equipment #	From	To	For (S/T, Analysis, Cleanup, Not Used)	Date	Time
150 6250	[illegible]	[illegible]	Source Test	3-6-15	12:52 PM
	[illegible]	[illegible]	Analysis	3-10-15	12 40

Revision: January 2012

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Mike Garibay, Supervising AQ Engineer
Monitoring/Source Testing

LABORATORY NO 1506913

DATE RECEIVED 03/10/2015

SAMPLE DESCRIBED AS
Two 6L Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Los Angeles County Sanitation District
TBD (street manhole location)
Los Angeles, CA

ST NO / PROJECT 15-322

Carbon monoxide (CO), methane (CH_4), carbon dioxide (CO_2), ethane (C_2H_6), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

Type	Canister	Canister
Number	54187	54099
Pressure (Torr)	437	747
CO, ppm	< 1	< 1
CH_4, ppm	16	20
CO_2, ppm	863	895
Ethane, ppmvC	< 1	< 1
NM/NEOC, ppmvC	< 1	< 1

Date Approved: 5/25/15

Approved By:
Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS	LABORATORY NO	1506913
Two 6L Canisters	REQUESTED BY	Eric Padilla

Carbon monoxide (CO), methane (CH_4), carbon dioxide (CO_2), ethane (C_2H_6), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

QUALITY CONTROL -- End of run control recovery

CC91340	MDL	Theoretical	Measured	Percent Difference	QC Limit ±5% or ± 1
CO, ppmvC	0.3	10.40	10.33	-0.68	PASS
CH_4, ppmvC	0.3	10.17	10.30	1.25	PASS
CO_2, ppmvC	0.4	10.38	10.55	1.66	PASS
C_2H_4, ppmvC	0.4	NA	NA	NA	NA
C_2H_6, ppmvC	0.2	11.00	10.15	-7.74	PASS
NM/NEOC, ppmvC	0.2	10.64	10.43	-1.97	PASS

CC135067	MDL	Theoretical	Measured	Percent Difference	QC Limit ±5% or ± 1
CO, ppmvC	0.3	10100	10175	0.74	PASS
CH_4, ppmvC	0.3	10000	10070	0.70	PASS
CO_2, ppmvC	0.4	10100	10276	1.74	PASS
C_2H_4, ppmvC	0.4	NA	NA	NA	NA
C_2H_6, ppmvC	0.2	9900	9941	0.41	PASS
NM/NEOC, ppmvC	0.2	10000	10034	0.34	PASS

DATE ANALYZED 03/19/2015
REFERENCE NO: 15QM2AA
QM2-101-50

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Mike Garibay, Supervising AQ Enginee
Monitoring/Source Testing

LABORATORY NO 1506913

DATE RECEIVED 03/10/2015

SAMPLE DESCRIBED AS
Two 6L

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Los Angeles County Sanitation District
TBD (street manhole location)
Los Angeles, CA

ST NO / PROJECT 15-322

VOC by Total Organic Carbon

Type	Canister	Canister
Number	54187	54099
Pressure (Torr)	437	747
Type	Vial	Vial
Number	15	14
TOC, ppmC	11	8

Date Approved: 3/25/15 Approved By:

Rudy Eden, Senior Manager
Laboratory Services

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS		LABORATORY NO	1506913
Two 6L Canisters		REQUESTED BY	Eric Padilla

VOC by Total Organic Carbon.

QUALITY CONTROL: Pre and post recovery

QC check must bracket sample concentration

	MDL	Theoretical	Measured	Percent Difference	QC Limit ±10%
TC, ppmC	1	10.00	9.22	7.80	PASS
IC, ppmC	1	10.00	9.12	8.80	PASS
TC, ppmC	1	10.00	9.45	5.55	PASS
IC, ppmC	1	10.00	9.46	5.45	PASS

DATE ANALYZED 03/17/2015
REFERENCE NO 15TO20317B
TO2-26-75

1506913

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Mike Garibay, Supervising AQ Engineer
Monitoring/Source Testing

LABORATORY NO 1506913

DATE RECEIVED 03/10/2015

SAMPLE DESCRIBED AS
Two 6L Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Los Angeles County Sanitation District
TBD (street manhole location)
Los Angeles, CA

ST NO / PROJECT 15-322

Percent hydrogen (H_2), nitrogen (N_2), oxygen (O_2) and methane (CH_4) by SCAQMD Method 10.1 (GC TCD).

Type	Canister	Canister
Number	54187	54099
Pressure (Torr)	437	747
H_2, percent	< 0.2	< 0.2
O_2, percent	19.9	20.3
N_2, percent	76.9	76.7
CH_4, percent	< 0.2	< 0.2

Date Approved: 8/25/15

Approved By:
Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS Two 6L Canisters

LABORATORY NO 1506913

REQUESTED BY Eric Padilla

Percent hydrogen (H_2), nitrogen (N_2), oxygen (O_2) and methane (CH_4) by SCAQMD Method 10.1 (GC TCD).

QUALITY CONTROL -- End of run control recovery

CC12089	MDL	Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
H_2, percent	0.2% abs	1.04	1.02	-0.02	PASS
O_2, percent	0.2% abs	1.01	1.03	0.02	PASS
N_2, percent	0.2% abs	0.99	1.05	0.1	PASS
CH_4, percent	0.2% abs	1.05	1.02	-0.02	PASS

CC73109	MDL	Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
H_2, percent	0.2% abs	0.00	0.00	NA	NA
O_2, percent	0.2% abs	24.63	24.55	-0.08	PASS
N_2, percent	0.2% abs	4.94	4.94	0.0	PASS
CH_4, percent	0.2% abs	0.00	0.00	NA	NA

DATE ANALYZED 3/16/2015
REFERENCE NO: 15TC3AA
TC3-18-107

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 4

TO Mike Garibay, Supervising AQ Engineer
Monitoring/Source Testing

LABORATORY NO 1506913

DATE RECEIVED 03/10/2015

SAMPLE DESCRIBED AS
Two 6L Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Los Angeles County Sanitation District
TBD (street manhole location)
Los Angeles, CA

ST NO / PROJECT 15-322

Hydrocarbon speciation, excluding aromatic compounds, by cryo GC FID (normalized to NM/NEOC)

Type	Canister	Canister
Number	54187	54099
Pressure (Torr)	437	747
C_3, ppmv	< 0.1	< 0.1
C_4, ppmv	< 0.1	< 0.1
C_5, ppmv	< 0.1	< 0.1
C_6, ppmv	< 0.1	< 0.1
C_7, ppmv	< 0.1	< 0.1
C_8, ppmv	< 0.1	< 0.1
C_9-C_{12}, ppmv	0.1	< 0.1

Note: The reported values include BTEX (benzene, toluene, ethylbenzene and xylenes).

Date Approved: 4/25/15

Approved By:
Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 2 of 4

SAMPLE DESCRIBED AS	LABORATORY NO	1506913
Two 6L Canisters	REQUESTED BY	Eric Padilla

Benzene, Toluene, Ethylbenzene, and Xylenes, by cryo GC FID
(normalized to NM/NEOC)

Type	Canister	Canister
Number	54187	54099
Pressure (Torr)	437	747
Benzene, ppmv	< 0.1	< 0.1
Toluene, ppmv	< 0.1	< 0.1
Ethylbenzene, ppmv	< 0.1	< 0.1
m+p-Xylenes, ppmv	< 0.1	< 0.1
o-Xylene, ppmv	< 0.1	< 0.1

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 3 of 4

SAMPLE DESCRIBED AS **LABORATORY NO** 1506913

Two 6L Canisters **REQUESTED BY** Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by cryo GC FID, normalized to NM/NEOC.

QUALITY CONTROL -- End of run control recovery

CC318590	MDL	Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Methane, ppmv	0.3	NA	NA	NA	NA
Ethylene, ppmv	0.2	5.03	5.00	-0.70	PASS
Ethane, ppmv	0.1	NA	NA	NA	NA
Propane, ppmv	0.1	3	2.99	-0.20	PASS
Isobutane, ppmv	0.1	3.1	3.19	2.84	PASS
n-Butane, ppmv	0.1	3.03	2.97	-1.85	PASS
Isopentane, ppmv	0.1	2.02	2.03	0.35	PASS
n-Pentane, ppmv	0.1	2.01	2.01	0.20	PASS
Hexane, ppmv	0.1	2.02	2.05	1.29	PASS
Heptane, ppmv	0.1	1.02	1.05	3.14	PASS
Octane, ppmv	0.0	1.01	1.04	3.07	PASS

Note: QC limit for heptane and octane is 15%

CC318590		Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Benzene, ppmv	0.2	5.03	5.07	0.83	PASS
Toluene, ppmv	0.0	1.01	1.03	1.88	PASS
Ethylbenzene, ppmv	0.1	1.01	1.05	3.47	PASS
m+p-Xylene, ppmv	0.1	1.014	1.03	1.38	PASS
o-Xylene, ppmv	0.1	1.01	1.03	2.08	PASS

DATE ANAYLYZED 3/19/2015
REFERENCE NO: 15FI4AA
FI4-101-103

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 4 of 4

SAMPLE DESCRIBED AS	LABORATORY NO	1506913
Two 6L Canisters	REQUESTED BY	Eric Padilla

Hydrocarbon speciation and benzene, toluene and xylenes by cryo GC FID, normalized to NM/NEOC.

QUALITY CONTROL -- End of run control recovery

FF135	MDL	Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Methane, ppmv	0.3	0	0	NA	NA
Ethylene, ppmv	0.2	505	507	0.34	PASS
Ethane, ppmv	0.1	0	0	NA	NA
Propane, ppmv	0.1	336	338	0.53	PASS
Isobutane, ppmv	0.1	0	1	NA	NA
n-Butane, ppmv	0.1	253.9	256	0.65	PASS
Isopentane, ppmv	0.1	0	1	NA	NA
n-Pentane, ppmv	0.1	202.6	203	0.34	PASS
Hexane, ppmv	0.1	163.7	164	0.25	PASS
Heptane, ppmv	0.1	100.2	100	0.27	PASS
Octane, ppmv	0.0	24.47	24.5	0.26	PASS

Note: QC limit for heptane and octane is 15%

CLM001646		Theoretical	Measured	Percent Difference	QC Limit ±7.5%
Benzene, ppmv	0.2	104	102	-1.84	PASS
Toluene, ppmv	0.0	30.8	30.6	-0.65	PASS
Ethylbenzene, ppmv	0.1	31.2	31.3	0.21	PASS
m+p-Xylene, ppmv	0.1	31	30.9	-0.29	PASS
o-Xylene, ppmv	0.1	31	30.8	-0.67	PASS

DATE ANAYLYZED 3/19/2015
REFERENCE NO: 15FI4AA
FI4-101-103

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

SOURCE TEST REQUEST FOR EQUIPMENT/ANALYSIS

Company: Los Angeles City Sanitation District
Source Test No.: 15-324
Address: TBD (street manhole location)
Request Date: April 7, 2015
Basic Equipment: Vacuum Truck
Control Device: N/A
Analysis/Equipment Requested By: Eric Padilla
Date Equipment Needed: April 8, 2105
For Compliance, Rule(s): PR 1188
Other (specify):

SAMPLE EQUIPMENT REQUEST

Prep Reference:
Prep Laboratory No.: 1509711
Dry Ice Needed: ☐

Quantity and Description	I.D. Nos.
I { One pair of 25.3 setups (two canisters and four vials)	54055, 54110, 54251 Vial 1, 2, 3, 4

SAMPLE EQUIPMENT ANALYSIS REQUEST

Source Test No.: 15-324
Analysis Laboratory No.:

Sample Description	Analysis Requested
25.3 setups	VOC
II { 54055 (vial 2) & 54110 (Vial 3) used	
54251 - not used	

SAMPLE EQUIPMENT CHAIN OF CUSTODY

Sample Equipment #	From	To	For (S/T, Analysis, Cleanup, Not Used)	Date	Time
I	[signature]	[signature]	S/T	4-7-15	2:10
II	[signature]	[signature]	Analysis	4-8-15	1:30

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Rudy Eden, Sr. Enforcement Manager
Laboratory Services

LABORATORY NO 1509817

DATE RECEIVED 04/08/2015

SAMPLE DESCRIBED AS
Two Summa Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Los Angeles City Sanitation District
Street manhole location
Los Angeles, CA

ST NO / PROJECT 15-324

Carbon monoxide (CO), methane (CH_4), carbon dioxide (CO_2), ethane (C_2H_6), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

Type	Canister	Canister
Number	54055	54110
Pressure (Torr)	317	674
CO, ppm	< 1	< 1
CH_4, ppm	6	6
CO_2, ppm	829	548
Ethane, ppmvC	< 1	< 1
NM/NEOC, ppmvC	< 1	< 1

Date Approved: 3/15/16

Approved By:

Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS		**LABORATORY NO**	1509817
Two Summa Canisters		**REQUESTED BY**	Eric Padilla

Carbon monoxide (CO), methane (CH_4), carbon dioxide (CO_2), ethane (C_2H_6), and non-methane non-ethane organic carbon (NM/NEOC) in ppmvC by SCAQMD Method 25.1 (TCA FID).

QUALITY CONTROL -- End of run control recovery

CC91340	MDL	Theoretical	Measured	Percent Difference	QC Limit ±5% or ± 1
CO, ppmvC	0.3	10.40	10.14	-2.47	PASS
CH_4, ppmvC	0.3	10.17	10.13	-0.37	PASS
CO_2, ppmvC	0.4	10.38	10.40	0.20	PASS
C_2H_4, ppmvC	0.4	NA	NA	NA	NA
C_2H_6, ppmvC	0.2	11.00	10.02	-8.89	PASS
NM/NEOC, ppmvC	0.2	10.64	10.06	-5.46	PASS

CC135067	MDL	Theoretical	Measured	Percent Difference	QC Limit ±5% or ± 1
CO, ppmvC	0.3	10100	9841	-2.57	PASS
CH_4, ppmvC	0.3	10000	9718	-2.82	PASS
CO_2, ppmvC	0.4	10100	9928	-1.71	PASS
C_2H_4, ppmvC	0.4	NA	NA	NA	NA
C_2H_6, ppmvC	0.2	9900	9610	-2.92	PASS
NM/NEOC, ppmvC	0.2	10000	9703	-2.97	PASS

DATE ANALYZED 04/22/2015
REFERENCE NO: 15QM2AA
QM2-101-51

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
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TO	Rudy Eden, Sr. Enforcement Manager Laboratory Services	**LABORATORY NO**	1509817
		DATE RECEIVED	04/08/2015
SAMPLE DESCRIBED AS			
	Two Summa Canisters	**FACILITY ID NO**	NA
		REQUESTED BY	Eric Padilla
SAMPLING LOCATION			
	Los Angeles City Sanitation District Street manhole location Los Angeles, CA	**ST NO / PROJECT**	15-324

Percent hydrogen (H_2), nitrogen (N_2), oxygen (O_2) and methane (CH_4) by SCAQMD Method 10.1 (GC TCD).

Type	Canister	Canister
Number	54055	54110
Pressure (Torr)	317	674
H_2, percent	< 0.2	< 0.2
O_2, percent	20.1	20.1
N_2, percent	75.7	75.5
CH_4, percent	< 0.2	< 0.2

Date Approved: 3/15/16

Approved By:

Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS		**LABORATORY NO**	1509817
Two Summa Canisters		**REQUESTED BY**	Eric Padilla

Percent hydrogen (H_2), nitrogen (N_2), oxygen (O_2) and methane (CH_4) by SCAQMD Method 10.1 (GC TCD).

QUALITY CONTROL -- End of run control recovery

CC12089	MDL	Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
H_2, percent	0.2% abs	1.04	1.01	-0.03	PASS
O_2, percent	0.2% abs	1.01	1.02	0.01	PASS
N_2, percent	0.2% abs	0.99	1.02	0.0	PASS
CH_4, percent	0.2% abs	1.05	1.00	-0.05	PASS

CC73109	MDL	Theoretical	Measured	Absolute Difference	QC Limit 0.5% Abs.
H_2, percent	0.2% abs	0.00	0.00	NA	NA
O_2, percent	0.2% abs	24.63	24.41	-0.22	PASS
N_2, percent	0.2% abs	4.94	4.98	0.0	PASS
CH_4, percent	0.2% abs	0.00	0.00	NA	NA

DATE ANALYZED 4/16/2015
REFERENCE NO: 15TC3AA
TC3-18-108

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
REPORT OF LABORATORY ANALYSIS
Page 1 of 2

TO Rudy Eden, Sr. Enforcement Manager
Laboratory Services

LABORATORY NO 1509817

DATE RECEIVED 04/08/2015

SAMPLE DESCRIBED AS
Two Summa Canisters

FACILITY ID NO NA

REQUESTED BY Eric Padilla

SAMPLING LOCATION
Los Angeles City Sanitation District
Street manhole location
Los Angeles, CA

ST NO / PROJECT 15-324

VOC by Total Organic Carbon

Type	Canister	Canister
Number	54055	54110
Pressure (Torr)	317	674
Type	Vial	Vial
Number	2	3
TOC, ppmC	7	4

Date Approved: 3/15/16

Approved By:

Rudy Eden, Senior Manager
Laboratory Services
909-396-2391

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar CA 91765-1482

MONITORING & ANALYSIS
QUALITY CONTROL SUMMARY
Page 2 of 2

SAMPLE DESCRIBED AS Two Summa Canisters

LABORATORY NO 1509817

REQUESTED BY Eric Padilla

VOC by Total Organic Carbon.

QUALITY CONTROL: Pre and post recovery

QC check must bracket sample concentration

	MDL	Theoretical	Measured	Percent Difference	QC Limit ±10%
TC, ppmC	1	10.00	10.87	-8.65	PASS
IC, ppmC	1	10.00	10.84	-8.40	PASS
TC, ppmC	1	10.00	10.89	-8.90	PASS
IC, ppmC	1	10.00	11.17	-11.70	FAIL

DATE ANALYZED 4/23/2015
REFERENCE NO 15FI4AA
FI4-101-107

1509817