Carryl MacLeod
Project Manager, Marketing Business Unit

RECEIVED
By Alameda County Environmental Health 3:24 pm, Sep 08, 2017

Alameda County Health Care Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Former Standard Oil Station (Chevron 307233)
2259 First Street
Livermore, California
ACEHS Case RO0002908

I accept the *Soil Vapor Sampling and Depth to Groundwater Report*.

I agree with the conclusions and recommendations presented in this document. The information included is accurate to the best of my knowledge, and appears to meet local agency and Regional Board guidelines. This *Soil Vapor Sampling and Depth to Groundwater Report* was prepared by GHD Services, Inc., upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Carryl MacLeod
Project Manager

Attachment: Soil Vapor Sampling and Depth to Groundwater Report

Chevron Environmental Management Company
6001 Bollinger Canyon Road, San Ramon, CA 94583
Tel 925 842 3201
CarrylMacLeod@chevron.com

September 8, 2017 Reference No. 312264

Ms. Dilan Roe
Alameda County Environmental Health (ACEH)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: Soil Vapor Sampling and Depth to Groundwater Report
Former Standard Oil Station (Chevron 307233)
2259 First Street, Livermore, California
ACEH Case No. RO0002908

Dear Ms. Roe:

GHD is submitting this *Soil Vapor Sampling and Depth to Groundwater Report* for the former Standard Oil Station referenced above (Figure 1) on behalf of Chevron Environmental Management Company (CEMC). During a meeting with ACEH, the City of Livermore, CEMC, and GHD on July 13, 2017, ACEH requested that dual completion soil vapor probe VP-1 be sampled and current depth to water measurements be collected to evaluate whether historically high water levels observed in monitoring wells during the first semi-annual 2017 event changed subsurface conditions resulting in a potential vapor intrusion risk to nearby buildings. A summary of the soil vapor sampling, groundwater monitoring activities, and results is presented below.

1. Soil Vapor Sampling

On July 28, 2017, GHD collected soil vapor samples from VP1-5 and VP1-10 (Figure 2). Prior to initiating field work, GHD obtained an encroachment permit from the City of Livermore (Attachment A) to perform work at the site. The samples were collected using 1-liter SUMMA™ canisters connected to the sampling tubing. Prior to sample collection, a leak test was performed to ensure no leaks were detected, followed by sufficiently removing the stagnant air in the sampling apparatus by purging approximately three probe volumes using a purge canister.

Prior to collecting a soil vapor sample, the initial vacuum of the canister (approximately 30 inches of mercury) was measured and recorded on the chain-of-custody form (COC). The vacuum of each SUMMA™ canister was used to draw the soil vapor through the flow controller until a negative pressure of approximately 5 inches of mercury was observed on the vacuum gauge. This is the residual vacuum and was recorded on the COC. The purge and sampling flow rates were less than 200 milliliters per minute to minimize VOC stripping and ambient air intrusion. The SUMMA™ canisters were labeled and packaged after sampling and sent to Eurofins Air Toxics Inc. in Folsom, California, a State-certified analytical laboratory under COC for analysis. In accordance with the DTSC Advisory Active Soil Gas Investigations guidance document, leak testing was performed during sampling using helium. The soil vapor sampling data sheets are included as Attachment B.

GHD
10969 Trade Center Drive Suite 107 Rancho Cordova California 95670 USA
T 916 889 8900 **F** 916 889 8999 **W** www.ghd.com

2. Soil Vapor Laboratory Analytical Results

Soil vapor samples were analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tert-butyl ether (MTBE), by EPA Method TO-15; naphthalene by EPA Method TO-17; and O2, Co2, N, methane, and He by ASTMD-1946. The results of the vapor analyses indicate:

- No TPHg, BTEX, MTBE or naphthalene were detected at or above reporting limits from both sample points.
- Helium was not detected above the reporting limit in any of the samples.

Soil vapor data collected in 2008 and the most current soil vapor data are shown on Table 1. The laboratory analytical report is included as Attachment C. Soil vapor concentrations in VP-1 have declined to below detection limits since 2008.

3. Depth to Groundwater Measurements

On July 28, 2017, GHD collected depth to water (DTW) measurements from monitoring wells MW-5 and MW-7 for comparison to DTW measurements collected from these wells during the first semi-annual event 2017 when the groundwater table had risen on the order of 20 feet between November 2016 and March 2017 due to the historically wet winter. Additionally, DTW measurements were collected from all site monitoring wells by Gettler-Ryan on August 4, 2017 (Attachment D). As shown below, DTW in wells MW-5 and MW-7 (wells closest to VP-1, Figure 2) have fallen approximately 8.5 to 9 feet between March 2017 and July/August 2017.

- MW-5 (screen interval is 55-60 fbg)
    - DTW on 3/9/17 was 13.42 feet below top of casing (TOC)
    - DTW on 7/28/17 was 22.40 feet below TOC
    - DTW on 8/4/17 was 22.38 feet below TOC
- MW-7 (screen interval is 28-33 fbg)
    - DTW on 3/9/17 was 13.85 feet below TOC
    - DTW on 7/28/17 was 22.33 feet below TOC
    - DTW on 8/4/17 was 22.72 feet below TOC

Based on the significant fall in groundwater levels between March 2017 and July/August 2017, it is expected that the DTW in site wells will continue to return to their historical DTW ranges (typically 30 to over 45 feet) over the next several months given seasonal rainfall returns to normal.

4. Conclusions and Recommendations

Based on the results of the soil vapor sampling of VP-1 at 5 and 10 fbg, and declining groundwater levels, there does not appear to be a vapor intrusion risk to the nearby buildings. GHD recommends ongoing groundwater monitoring to confirm that seasonal groundwater levels continue to return to their typical ranges prior to the recent historical rainfall.

Additional data requested by ACEH in the above-referenced July 13, 2017 meeting, including a monitoring well network evaluation and soil data maps, will be submitted under separate cover.

Please contact Brian Silva at (916) 889-8908 if you have any questions or require additional information.

Sincerely,

GHD

Brian Silva

Greg Barclay, PG 6260

BRS/cw/1
Encl.

Figure 1 Site Location Map
Figure 2 Site Map

Table 1 Cumulative Soil Vapor Analytical Data

Attachment A Permit
Attachment B Soil Vapor Data Sheets
Attachment C Laboratory Report
Attachment D G-R Summary Sheet

cc: Carryl McLeod, Chevron EMC (*electronic only*)
Eric Uranaga, City of Livermore Community Development

Figures

SOURCE: TOPO! MAPS

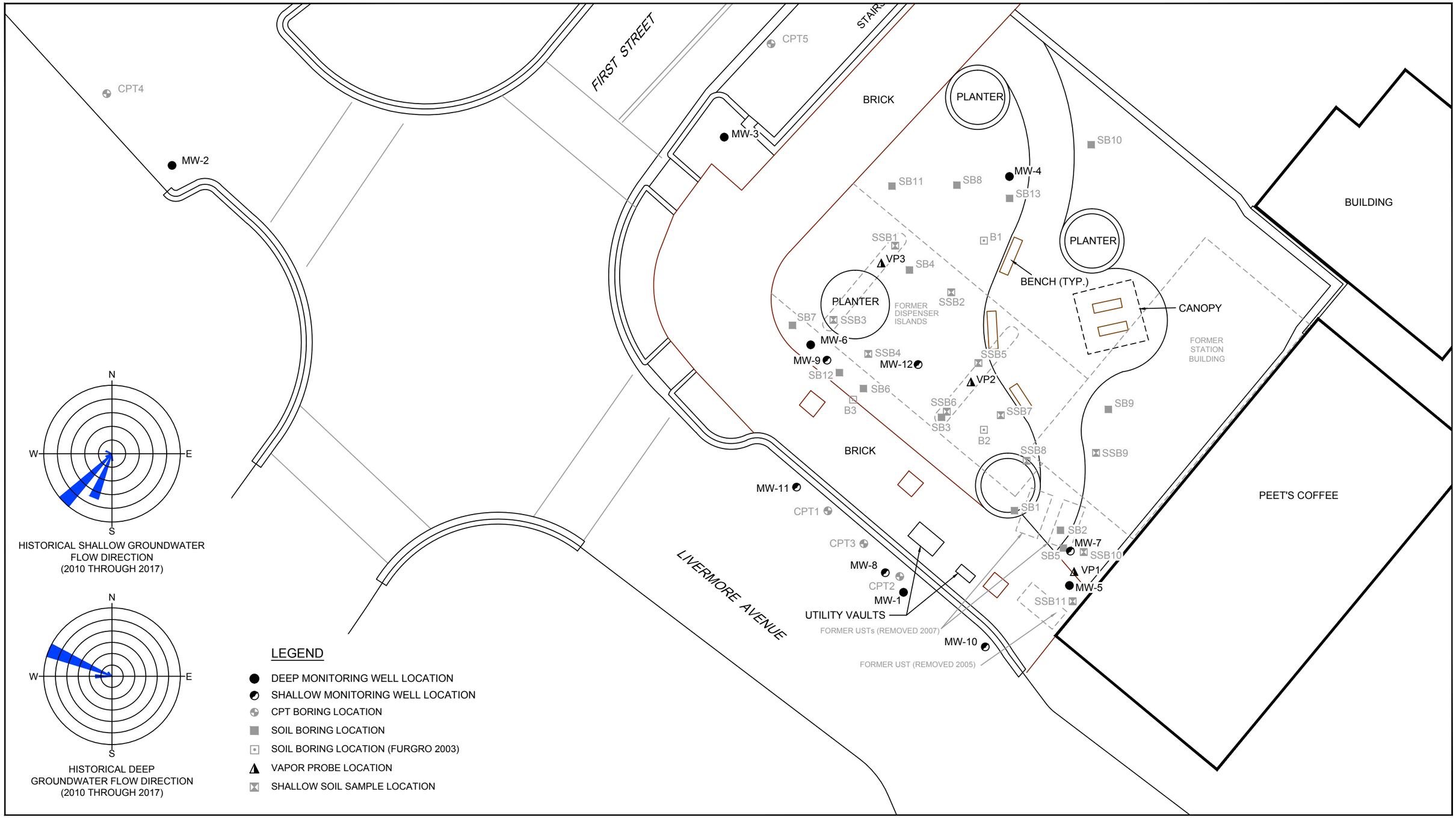
FORMER STANDARD OIL STATION (CHEVRON 307233)
2259 FIRST STREET
LIVERMORE, CALIFORNIA

312264-2017.2
Sep 7, 2017

VICINITY MAP

FIGURE 1

CAD File: P:\drawings\312000s\312264\312264-CORR\312264-2017.2(ROE001)\312264-2017.2(ROE001)GN\312264-2017.2(ROE001)GN-WA001.dwg



BASE MAP MODIFIED BY DRAWING FROM MORROW SURVEYING.

0 10 20ft

FORMER STANDARD OIL STATION (CHEVRON 307233)
2259 FIRST STREET
LIVERMORE, CALIFORNIA

312264-2017.2
Sep 7, 2017

SITE PLAN

FIGURE 2

CAD File: P:\drawings\312000s\312264\312264-CORR\312264-2017.2(ROE001)\312264-2017.2(ROE001)GN\312264-2017.2(ROE001)GN-WA002.dwg

Table

Table 1

Soil Vapor Analytical Data
Former Standard Oil Station
(Chevron 307233)
2259 First Street
Livermore, California

Sample ID	Date	Depth (fbg)	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes [a]	MTBE	TBA	DIPE	ETBE	TAME	EDB	1,2-DCA	Naphalene	VOCs	Helium	Oxygen	CO_2	Nitrogen	Methane
			Reported in micrograms per cubic meter ($\mu g/m^3$)															Reported in % Volume			
Low-Threat Policy	***Residential***		**--**	**<85,000**	**--**	**<1,100,000**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**<93,000**	**--**	**>4**	**--**	**--**	**--**	**--**
	Commercial		**--**	**<280,000**	**--**	**<3,600,000**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**<310,000**	**--**	**>4**	**--**	**--**	**--**	**--**
VP1-5	03/10/08	5 - 5.5	940	<3.2	18	5.6	<4.4	<3.6	<31	<17	<17	<17	<7.8	<4.1	<21	--	0.24	38	0.36	--	--
VP1-5	LAB DUPLICATE		**--**	<3.2	13	<4.4	<4.4	<3.6	<31	<17	<17	<17	<7.8	<4.1	<21	--	0.20	38	0.36	--	--
VP1-5	11/07/08	5 - 5.5	<250	<3.9	<4.6	<5.2	<5.2	<4.4	<15	<20	<20	<20	<9.3	<4.9	<25	ND	<0.12	19	2.5	--	--
VP1-5	LAB DUPLICATE		--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.12	19	2.5	--	--
VP1-5	7/28/17	5 - 5.5	<96	<0.75	<0.88	<1.0	<1.0	<0.85	--	--	--	--	--	--	<6.2	--	<0.12	18	2.0	80	<0.00024
VP1-5 Dup	7/28/17	5 - 5.5	<98	<0.77	<0.90	<1.0	<1.0	<0.86	--	--	--	--	--	--	<6.3	--	<0.12	18	2.1	80	<0.00024
VP1-10	03/10/08	9.5 - 10	<250	<3.9	<4.6	<5.2	<5.2	<4.4	<37	<20	<20	<20	<9.3	<4.9	<25	--	<0.12	20	1	--	--
VP1-10	11/07/08	9.5 - 10	260	<3.7	<4.4	<5.0	6.5	<4.2	<14	<19	<19	<19	<9.0	<4.7	<24	b	<0.12	19	2.1	--	--
VP1-10 Dup	11/07/08	9.5 - 10	270	<3.8	<4.5	<5.2	<5.2	<4.3	<14	<20	<20	<20	<9.1	<4.8	<25	b	<0.12	19	2.1	--	--
VP1-10 Dup	LAB DUPLICATE		270	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
VP1-10	7/28/17	9.5 - 10	<96	<0.75	<0.89	<1.0	<1.0	<0.85	--	--	--	--	--	--	<6.2	--	<0.12	18	1.9	80	<0.00024
VP2-5	03/10/08	5 - 5.5	500	<4.0	19	6.4	31	<4.6	<38	<21	<21	<21	<9.7	<5.1	<26	--	<0.13	17	2		
VP2-5 DUP	03/10/08	5 - 5.5	<260	<4.0	<4.8	<5.5	<5.5	<4.6	<38	<21	<21	<21	<9.7	<5.1	<26	--	<0.13	17	2		
VP2-10	03/10/08	9.5 - 10	450	<3.9	29	9.7	11	<4.4	<37	<21	<21	<21	<9.5	<5.0	<26	--	<0.12	18	1.6		
VP3-5	03/10/08	5 - 5.5	<260	<4.0	<4.8	<5.5	6.3	<4.6	<38	<21	<21	<21	<9.7	<5.1	<26	--	<0.13	17	2.3		
VP3-10	03/10/08	9.5 - 10	<250	<3.9	<4.6	<5.4	<5.4	<4.4	<37	<21	<21	<21	<9.5	<5.0	<26	--	<0.12	18	2.2		

Notes:

Total petroleum hydrocarbons as gasoline (TPHg) by EPA Method TO-3 (2008 samples) and by EPA Method TO-15 (2017 samples)

Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), Ethanol, Methyl Tertiary Butyl Ether (MtBE), t-Butyl Alcohol (TBA), di-Isopropyl ether (DIPE), Ethyl t-butyl ether (ETBE), t-amyl methyl ether (TAME), 1,2-Dibromoethane (EDB) and 1,2-Dichloroethane (1,2-DCA) by EPA Method TO-15

Helium, Oxygen, Carbon Dioxide (CO_2), nitrogen, and methane by modified ASTM D-1946

fbg = Feet below grade

Data in **bold** represent concentrations that exceed one or more of the Low-Threat Policy Exposure limits for petroleum vapor intrusion to indoor air.

<X = Not detected above laboratory method detection limit x

ND = Not detected above various laboratory method detection limits

-- = not analyzed or not applicable

a = Values for highest value of Xylenes detected.

b = See analytical laboratory report

Attachment A
Permit

APPLICANT

City of Livermore

Community Development Department
1052 S. Livermore Avenue
Livermore, CA 94550
(925) 960-4500

Encroachment
Permit No. EN170244
Type: Other

PERMIT TO DO WORK IN ACCORDANCE WITH CHAPTER 12.08 OF THE LIVERMORE MUNICIPAL CODE AND SPECIFICATIONS AS ADOPTED BY THE CITY OF LIVERMORE AND ANY SPECIAL REQUIREMENTS SHOWN OR LISTED HEREIN.

Inspection Fee - EN - 2016	$220.00
Permit Fee - BU - 2028	$90.00
Total:	***$310.00***

Applicant/Permittee:
Name: GHD Services
Address: 10969 Trade Center Drive
#107
Rancho Cordova CA, 95670
Phone: 916-889-6801

Contractor:
Name:
Address:
Phone:

PLEASE READ THIS PERMIT CAREFULLY. KEEP IT AT THE WORK SITE. TO ARRANGE FOR AN INSPECTION, PHONE (925) 960-4500 AT LEAST 24 HOURS BEFORE YOU START WORK.

JOB LOCATION: 2259 FIRST ST , LIVERMORE 94550

DESCRIPTION OF WORK: Sampling of Existing Soil Vapor Well VP-1 Located in the Southern Corner of Mills Square Park, Work is being Conducted on Behalf of Chevron at the Request of Alameda County Environmental Health. Sampling of the Vapor Well Should take Approximately 1 Hour (Work to Start ASAP)
PM# NA.

Attention is directed to the General Provisions printed on the reverse side of this permit and to the attached special requirements (to be determined as needed by the Engineering Division).

Prosecution of Work: All work authorized by the permit shall be performed in a workmanlike, diligent, and expeditious manner, and must be completed to the satisfaction of the City Engineer.

Liability and Damages: The permittee shall be responsible for all liability imposed by law for personal injury or property damage which may arise out of the work permitted and done by permittee under this permit, or which may arise out of the failure on the part of the permittee to perform his obligations under said permit in respect to maintenance and encroachment. The permittee shall protect and indemnify the City of Livermore, its officers and employees, and save them harmless in every way from all action at law for damage or injury to persons or property that may arise out of or be occasioned in any way because of his operations as provided in this permit.

Hold Harmless and Indemnification Agreement: GHD Services agrees to defend, indemnify and hold the City of Livermore, elected officials, officers, directors, employees, agents and volunteers harmless from and against any and all loss, liability, damage, including reasonable attorney and expert fees and/or court costs, arising out of or in connection with this agreement, except for the gross negligence and willful misconduct of the City of Livermore, its elected officials, officers, directors, employees, agents and volunteers.

GHD Services
Signature of Permittee:

By: _____

Title: Scientist

Date: 7-28-17

Date Work Completed:

City Engineer

By: Capurna Mills/DD

Date of Issue: 07-10-17

Inspector: _____

~~Encroachment Permit No. EN170244~~

City of Livermore

Community Development Department
1052 S. Livermore Avenue
Livermore, CA 94550
(925) 960-4500

SPECIAL REQUIREMENTS APPLICABLE TO WORK ASSOCIATED WITH

JOB LOCATION: *2259 FIRST ST , LIVERMORE 94550*

DESCRIPTION OF WORK: *Sampling of Existing Soil Vapor Well VP-1 Located in the Southern Corner of Mills Square Park, Work is being Conducted on Behalf of Chevron at the Request of Alameda County Environmental Health. Sampling of the Vapor Well Should take Approximately 1 Hour (Work to Start ASAP)*

See Attached Drawing/Plans

Post "No Parking" signs 72 hours in advance of scheduled work

All lane closures/ traffic control shall be done per Cal Trans Standards.

Pedestrian access must be maintained at all times, including if necessary, escorting pedestrians through the work area.

Traffic control shall be completed per Cal Trans Standards and any additional requirements deemed necessary by the City Engineer.

LIVERMORE CALIFORNIA

CITY OF LIVERMORE, CA

RECVD BY: LITOSTADO E100001789 4
PAYOR: CONESTOGA ROVERS AS
TODAY'S DATE: 07/26/17
REGISTER DATE: 07/26/17 TIME: 13:52

DESCRIPTION	AMOUNT
PUB WORKS-INSPECTION F	$220.00
CUST ID: PERMIT EN170244	
2016 PUB WORKS-INSPECTION FEES	
001-35350	$90.00
PLAN CHECK FEES	
CUST ID: 2259 FIRST ST	
2026 PLAN CHECK FEES	
001-35650	$310.00
TOTAL DUE:	$310.00
TENDERED:	$310.00
CHANGE:	$.00
CHECK :	$310.00
REF NUM: 70994	

Attachment B
Soil Vapor Data Sheets

SOIL VAPOR SAMPLING DATA SHEET

Soil Vapor Sampling Point ID:	VP1-5	**Date:**	7-28-2017
Job/Site Name:	CEMC 307233	**Technician:**	Ben Summersett
Project No.	312264	**PM:**	Brian Silva
Site Address:	2259 First St, Livermore, CA		

Vapor Sampling Apparatus Pressure Testing

Time	Vacuum Reading	Unit	Comments
1238	21	in Hg	fail
1250	21	in Hg	
1300	21	in Hg	Pass

Purge Volume

Calculated Purge Volume: 0.12 liters @ 43 seconds

Time	Flow	Volume	PID ~~Reading~~
1302	167 ml/min	0.12 L	complete

Sample Collection

Flow Control Orifice Setting: 167 ml/min Summa Canister ID: 1L2608 ~~1L2737~~

Summa Canister Size: 1 Liter Analysis: See COC

Time - Begin Sampling	Canister Vacuum	Time - End Sampling	Canister Vacuum
1303	29	1318	5 in Hg

Notes: Dup collected # 143006

TO 17 tube = VP1-5: G0149700 @ 1325

He 7 10%. Dup = G0139916

 89° @ 31% humidity

Can Serial #'s: VP1-5 = N0293

Dup = N2714

SOIL VAPOR SAMPLING DATA SHEET

Soil Vapor Sampling Point ID: VP1-10		**Date:**	7-28-17
Job/Site Name:	CEMC 307233	**Technician:**	Ben Summersett
Project No.	312264	**PM:**	Brian Silva
Site Address:	2259 First St, Livermore, CA		

Vapor Sampling Apparatus Pressure Testing

Time	Vacuum Reading	Unit	Comments
1213	27	in Hg	
1223	27	in Hg	Pass

Purge Volume

Calculated Purge Volume: 0.21 Liters @ 77 seconds

Time	Flow	Volume	~~PID Reading~~
1225			
1226	.167 ml/min	0.21 L	complete

Sample Collection

Flow Control Orifice Setting: .167 ml/min Summa Canister ID: 1L 2731

Summa Canister Size: 1 liter Analysis: See COC

Time - Begin Sampling	Canister Vacuum	Time - End Sampling	Canister Vacuum
1228	29	1236	5 in Hg

Notes: He 7/0 ic

TO 17 Tube @ 1240

G0153648 87° 31% humidity

Can Serial #'s: N1983

eurofins | Air Toxics

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager Brian Silva

Collected by: (Print and Sign) Ben Summerset

Company GHD Email brian.silva@ghd.com

Address 10969 Trade Center Dr. City Rancho Cordova State CA Zip 95670

Phone 916-889-8906 Fax

Project Info:
P.O. #
Project # Chevron 307233
Project Name 307233 Livermore

Turn Around Time:
☐ Normal
☒ Rush
3 days
specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
	VP1-5	N0293	7-28-17	1318	TPHg, BTEX, MTBE, and naphthalene by TO-15 (SIM) GC/MS; Oxygen, carbon dioxide, nitrogen, methane, and helium by ASTM D-1946	29	5		
	VP1-10	N1983	7-28-17	1236		29	5		
	Dup	N2714	7-28-17	—		29	5		

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	7-28-17 1742		7/28/17 1742
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes:

Lab Use Only

Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact? Yes No None	Work Order #

Form 1293 rev.11

TO-17 SAMPLE COLLECTION

eurofins | Air Toxics

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Eurofins assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922.

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630
(916) 985-1000 FAX (916) 985-1020

Page _____ of _____

Project Manager Brian Silva

Collected by: (Print and Sign) Ben Summerville

Company GHD Email

Address 10969 Trade Center Dr. City Rancho Cordova State CA Zip 95670

Phone 916-889-8908 Fax

Project Info:
P.O. #
Project # Chevron 307283
Project Name 307283-Livermore

Turn Around Time:
❑ Normal
❑ Rush 3 days
specify

Reporting Units:
❑ ppmv
❑ ppbv
❑ µg/m3
❑ mg/m3

Lab I.D.	Field Sample I.D. (Location)	Engraved or Stamped Tube #	Date of Collection (mm/dd/yy)	Start Time (hr:min)	Date of Retrieval (mm/dd/yy)	End Time (hr:min)	Pre-Test Flow Rate	Post-Test Flow Rate	Volume	Indoor Air	Outdoor Air	Soil Vapor	Other ( )
	VP1-5	G0149700	07/28/17	1325	07/28/17	1325			60ml	❑	❑	❑	❑
	VP1-10	G0153644	07/28/17	1240	07/28/17	1240			1	❑	❑	❑	❑
	Dup	G0139916	07/28/17	—	07/28/17	—			1	❑	❑	❑	❑
										❑	❑	❑	❑
										❑	❑	❑	❑
										❑	❑	❑	❑
										❑	❑	❑	❑
										❑	❑	❑	❑
										❑	❑	❑	❑
										❑	❑	❑	❑
										❑	❑	❑	❑

Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
	7-28-17 1742		7/28/17 1742
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time
Relinquished by: (signature)	Date/Time	Received by: (signature)	Date/Time

Notes: Analysis: # Naphthalene by EPA Method TO-17

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
			2.1, 3.0		Yes No None	

*Two coolers

Attachment C
Laboratory Report

eurofins | Air Toxics

8/3/2017
Mr. Ben Summersett
Chevron U.S.A. Inc.
10969 Trade Center Dr
Suite 107
Rancho Cordova CA 95670

Project Name: 307233 Livermore
Project #: Chevron 307233
Workorder #: 1707458A

Dear Mr. Ben Summersett

The following report includes the data for the above referenced project for sample(s) received on 7/28/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1707458A

Work Order Summary

CLIENT:	Mr. Ben Summersett GHD 10969 Trade Center Dr Suite 107 Rancho Cordova, CA 95670	**BILL TO:**	Ms. Carryl MacLeod Chevron U.S.A. Inc. 6001 Bollinger Canyon Road L4310 San Ramon, CA 94583
PHONE:	916-889-8900	**P.O. #**	SO#0015247972
FAX:	916-677-3687	**PROJECT #**	Chevron 307233 307233 Livermore
DATE RECEIVED:	07/28/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	08/03/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP1-5	Modified TO-15	4.5 "Hg	14.8 psi
02A	VP1-10	Modified TO-15	4.1 "Hg	15.1 psi
03A	Dup	Modified TO-15	4.9 "Hg	14.8 psi
04A	Lab Blank	Modified TO-15	NA	NA
05A	CCV	Modified TO-15	NA	NA
06A	LCS	Modified TO-15	NA	NA
06AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/03/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified TO-15
Chevron U.S.A. Inc.
Workorder# 1707458A

Three 1 Liter Summa Canister (100% Certified) samples were received on July 28, 2017. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
Initial Calibration	</=30% RSD with 2 compounds allowed out to < 40% RSD	</=30% RSD with 4 compounds allowed out to < 40% RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

The Chain of Custody (COC) information for sample VP1-10 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

The Chain of Custody (COC) information for sample VP1-5 and VP1-10 did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the samples.

Analytical Notes

A single point calibration for TPH referenced to Gasoline was performed for each daily analytical batch. Recovery is reported as 100% in the associated results for each CCV.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP1-5

Lab ID#: 1707458A-01A

No Detections Were Found.

Client Sample ID: VP1-10

Lab ID#: 1707458A-02A

No Detections Were Found.

Client Sample ID: Dup

Lab ID#: 1707458A-03A

No Detections Were Found.

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Client Sample ID: VP1-5

Lab ID#: 1707458A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**e073109**	**Date of Collection: 7/28/17 1:18:00 PM**	
Dil. Factor:	**2.35**	**Date of Analysis: 7/31/17 02:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.24	Not Detected	0.75	Not Detected
Toluene	0.24	Not Detected	0.88	Not Detected
Ethyl Benzene	0.24	Not Detected	1.0	Not Detected
m,p-Xylene	0.24	Not Detected	1.0	Not Detected
o-Xylene	0.24	Not Detected	1.0	Not Detected
Methyl tert-butyl ether	0.24	Not Detected	0.85	Not Detected
Naphthalene	1.2	Not Detected	6.2	Not Detected
TPH ref. to Gasoline (MW=100)	24	Not Detected	96	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	116	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	107	70-130

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Client Sample ID: VP1-10

Lab ID#: 1707458A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**e073110**	**Date of Collection: 7/28/17 12:36:00 PM**	
Dil. Factor:	**2.36**	**Date of Analysis: 7/31/17 02:57 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.24	Not Detected	0.75	Not Detected
Toluene	0.24	Not Detected	0.89	Not Detected
Ethyl Benzene	0.24	Not Detected	1.0	Not Detected
m,p-Xylene	0.24	Not Detected	1.0	Not Detected
o-Xylene	0.24	Not Detected	1.0	Not Detected
Methyl tert-butyl ether	0.24	Not Detected	0.85	Not Detected
Naphthalene	1.2	Not Detected	6.2	Not Detected
TPH ref. to Gasoline (MW=100)	24	Not Detected	96	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: Dup

Lab ID#: 1707458A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**e073111**	**Date of Collection: 7/28/17**	
Dil. Factor:	**2.40**	**Date of Analysis: 7/31/17 03:58 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.24	Not Detected	0.77	Not Detected
Toluene	0.24	Not Detected	0.90	Not Detected
Ethyl Benzene	0.24	Not Detected	1.0	Not Detected
m,p-Xylene	0.24	Not Detected	1.0	Not Detected
o-Xylene	0.24	Not Detected	1.0	Not Detected
Methyl tert-butyl ether	0.24	Not Detected	0.86	Not Detected
Naphthalene	1.2	Not Detected	6.3	Not Detected
TPH ref. to Gasoline (MW=100)	24	Not Detected	98	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	111	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	109	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1707458A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**e073108**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/31/17 01:27 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.10	Not Detected	0.32	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
Naphthalene	0.50	Not Detected	2.6	Not Detected
TPH ref. to Gasoline (MW=100)	10	Not Detected	41	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV

Lab ID#: 1707458A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**e073102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/31/17 07:46 AM**	

Compound	%Recovery
Benzene	80
Toluene	85
Ethyl Benzene	91
m,p-Xylene	98
o-Xylene	95
Methyl tert-butyl ether	93
Naphthalene	100
TPH ref. to Gasoline (MW=100)	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	93	70-130
4-Bromofluorobenzene	108	70-130

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Client Sample ID: LCS

Lab ID#: 1707458A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**e073106**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/31/17 11:52 AM**	

Compound	%Recovery	Method Limits
Benzene	106	70-130
Toluene	114	70-130
Ethyl Benzene	118	70-130
m,p-Xylene	126	70-130
o-Xylene	126	70-130
Methyl tert-butyl ether	119	70-130
Naphthalene	77	60-140
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	105	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	114	70-130

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Client Sample ID: LCSD

Lab ID#: 1707458A-06AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**e073107**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/31/17 12:36 PM**	

Compound	%Recovery	Method Limits
Benzene	106	70-130
Toluene	112	70-130
Ethyl Benzene	112	70-130
m,p-Xylene	119	70-130
o-Xylene	118	70-130
Methyl tert-butyl ether	119	70-130
Naphthalene	71	60-140
TPH ref. to Gasoline (MW=100)	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	108	70-130

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8/3/2017
Mr. Ben Summersett
Chevron U.S.A. Inc.
10969 Trade Center Dr
Suite 107
Rancho Cordova CA 95670

Project Name: 307233 Livermore
Project #: Chevron 307233
Workorder #: 1707458B

Dear Mr. Ben Summersett

The following report includes the data for the above referenced project for sample(s) received on 7/28/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1707458B

Work Order Summary

CLIENT:	Mr. Ben Summersett GHD 10969 Trade Center Dr Suite 107 Rancho Cordova, CA 95670	**BILL TO:**	Ms. Carryl MacLeod Chevron U.S.A. Inc. 6001 Bollinger Canyon Road L4310 San Ramon, CA 94583
PHONE:	916-889-8900	**P.O. #**	SO#0015247972
FAX:	916-677-3687	**PROJECT #**	Chevron 307233 307233 Livermore
DATE RECEIVED:	07/28/2017	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	08/03/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP1-5	Modified ASTM D-1946	4.5 "Hg	14.8 psi
02A	VP1-10	Modified ASTM D-1946	4.1 "Hg	15.1 psi
03A	Dup	Modified ASTM D-1946	4.9 "Hg	14.8 psi
04A	Lab Blank	Modified ASTM D-1946	NA	NA
04B	Lab Blank	Modified ASTM D-1946	NA	NA
05A	LCS	Modified ASTM D-1946	NA	NA
05AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 08/03/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified ASTM D-1946
Chevron U.S.A. Inc.
Workorder# 1707458B

Three 1 Liter Summa Canister (100% Certified) samples were received on July 28, 2017. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Since Nitrogen is used to pressurize samples, the reported Nitrogen values are calculated by adding all the sample components and subtracting from 100%.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

The Chain of Custody (COC) information for sample VP1-10 did not match the entry on the sample tag with regard to sample identification. The information on the COC was used to process and report the sample.

The Chain of Custody (COC) information for sample VP1-5 and VP1-10 did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the samples.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VP1-5

Lab ID#: 1707458B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	18
Nitrogen	0.24	80
Carbon Dioxide	0.024	2.0

Client Sample ID: VP1-10

Lab ID#: 1707458B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	18
Nitrogen	0.24	80
Carbon Dioxide	0.024	1.9

Client Sample ID: Dup

Lab ID#: 1707458B-03A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	18
Nitrogen	0.24	80
Carbon Dioxide	0.024	2.1

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Client Sample ID: VP1-5

Lab ID#: 1707458B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080206**	**Date of Collection: 7/28/17 1:18:00 PM**	
Dil. Factor:	**2.35**	**Date of Analysis: 8/2/17 06:47 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	18
Nitrogen	0.24	80
Carbon Dioxide	0.024	2.0
Methane	0.00024	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: VP1-10

Lab ID#: 1707458B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080207**	**Date of Collection: 7/28/17 12:36:00 PM**	
Dil. Factor:	**2.36**	**Date of Analysis: 8/2/17 07:09 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	18
Nitrogen	0.24	80
Carbon Dioxide	0.024	1.9
Methane	0.00024	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: Dup

Lab ID#: 1707458B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080208**	**Date of Collection: 7/28/17**	
Dil. Factor:	**2.40**	**Date of Analysis: 8/2/17 07:33 PM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.24	18
Nitrogen	0.24	80
Carbon Dioxide	0.024	2.1
Methane	0.00024	Not Detected
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister (100% Certified)

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Client Sample ID: Lab Blank

Lab ID#: 1707458B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080204**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/2/17 05:26 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
Carbon Dioxide	0.010	Not Detected
Methane	0.00010	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1707458B-04B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080205c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/2/17 05:50 PM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1707458B-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080202**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/2/17 04:35 PM**	

Compound	%Recovery	Method Limits
Oxygen	98	85-115
Nitrogen	88	85-115
Carbon Dioxide	99	85-115
Methane	101	85-115
Helium	100	85-115

Container Type: NA - Not Applicable

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Client Sample ID: LCSD

Lab ID#: 1707458B-05AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10080227**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/3/17 01:25 PM**	

Compound	%Recovery	Method Limits
Oxygen	101	85-115
Nitrogen	88	85-115
Carbon Dioxide	100	85-115
Methane	100	85-115
Helium	100	85-115

Container Type: NA - Not Applicable

Attachment D
G-R Summary Sheet

GETTLER-RYAN INC.

GROUNDWATER MONITORING SUMMARY SHEET AND ELECTRONIC REPORTING DATA SHEET

CLIENT/ FACILITY: **Chevron #307233**

GLOBAL ID#: **T0600196622**

JOB #: **17155876**

ADDRESS: **2259 First Street**

DATE: 8/4/17 (inclusive)

CITY: **Livermore, CA**

SAMPLER: GM

Well ID	Depth to Product	Depth to Water	Total Well Depth	List Item In Well	Additional Comments
MW-1		22.19	58.81	–	M/O
MW-2		22.79	58.61	–	
MW-3		22.28	59.35	–	
MW-4		23.60	58.88	–	
MW-5		22.38	58.82	–	
MW-6		23.22	58.81	–	
MW-7		22.72	32.73	STINGER	
MW-8		23.06	38.84	–	
MW-9		20.36	39.83	–	
MW-10		22.58	32.30	–	
MW-11		20.20	34.70	–	
MW-12		21.80	34.43	–	

Comments: